



CFA Institute

CFA Institute Research Challenge

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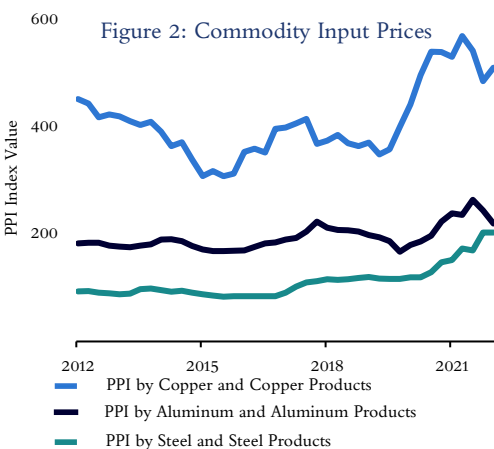
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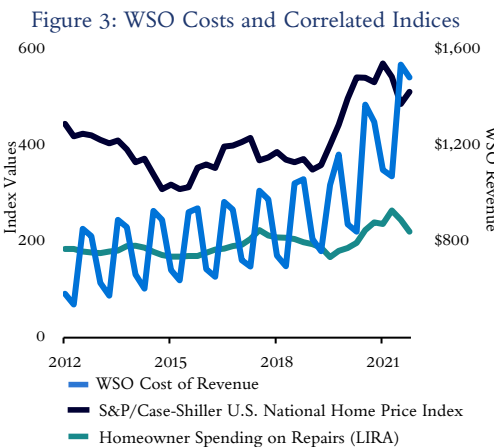
Figure 1: Company Overview

52-Week High	\$311
52-Week Low	\$220
Market Cap (m)	\$10,645
Shares Outstanding (m)	33.26
Avg. Volume (m)	288,847
Basic EPS (2021)	\$10.83
Beta	1.03
Annual Dividend	\$9.80
Dividend Yield	3.59%

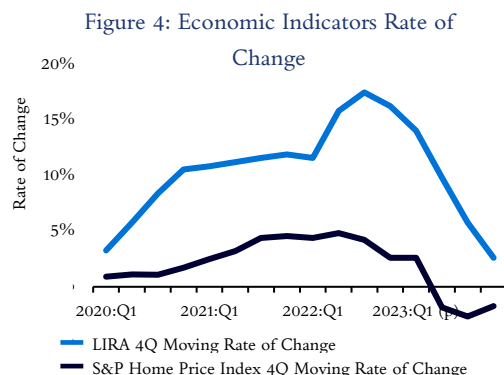
Source: Bloomberg



Source: FRED



Sources: Harvard Center for Joint Housing Studies, FRED, Bloomberg



Sources: FRED, Bloomberg

INVESTMENT THESIS

Watsco Inc. (NYSE: WATSCO) is placed with a **SELL** recommendation given a 12-month price target of \$235, implying 17% downside given the current price of \$282.23 on January 27th, 2023. This price target is formulated upon a dividend discount valuation model, a relative valuation, and a discounted cash flow analysis utilizing both a terminal perpetuity growth method and a multiples-based exit approach. Watsco's price target and recommendation is supported through sensitivity, simulation, and Monte Carlo analysis. This recommendation stems from inventory concerns revolving around SEER2 regulations, decreasing margins resulting from inflationary cost pressures, remodeling activity slowdown, risk of dividend deterioration, and institutional pessimism denoted by the open short interest on the stock.

SEER2 REGULATIONS RESULTING IN OBSOLETE INVENTORY

The SEER2 regulation rolled out by the Department of Energy requires manufacturers to redesign components in cooling systems to meet energy efficiency benchmarks. SEER2 standards, resulting from Department of Energy's desire to improve HVAC energy efficiency standards, makes inventory management more challenging for HVAC distributors, particularly in the southeast and southwest regions where the majority of Watsco's business operations occurs (Source: SEER2.com). Non SEER2 compliant HVAC units were required to be purchased and installed before January 1st, 2023, or will not be able eligible for instillation. These incompliant units must either have been modified or forfeited past the January 1st deadline. Failure to comply could result in fines and local building officials withholding a certificate of occupancy. According to Watsco's Q3 earnings call, 50% of their outdoor inventory did not meet the regulation standards as of 10/20/2022, presenting a significant risk to Watsco in the form of unsold inventory. An evaluation of Watsco's inventory glut was conducted, and \$108M worth of uncompliant inventory is expected to be unsold.

RISING INPUT COST AND SUPPLY CONSTRAINTS LEAD TO TIGHTENING MARGINS

Watsco's products contain commodity inputs like copper, aluminum, and steel. These commodity heavy products and components that Watsco sells have seen inflationary pressures over the last two years (Figure 2). Watsco's cost of revenue is correlated with the price of these commodities, showing a 0.59 correlation to PPI by Aluminum and Aluminum products, and a 0.52 correlation to PPI by copper and copper products. Price increases resulting from these upward price pressures are expected to be 10-15% more than current selling prices per company management. This combined with supply constraints have caused unfilled orders and delays for SEER2 compliant products. This will result in contracting QoQ profit margins which are expected to be further compounded by seasonality moving into Q1 of 2023.

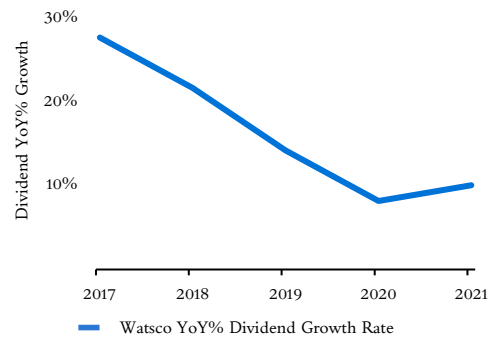
REMODELING ACTIVITY DRIVES WATSCO'S REVENUE

Watsco's revenue is derived from the distribution of systems and parts for current home renovations and repairs. Watsco's revenue is correlated to several leading economic indicators such as the S&P/Case-Shiller National Home price Index, and the leading indicator of remodeling activity (LIRA) from the Joint Center for Housing Studies of Harvard University with correlations of 0.78 and 0.75 respectively (Figure 3). Rising interest rates have resulted in a slowdown in housing activity, which is expected to continue into 2023; the slowdown in the four-quarter moving rate of change for both economic indicators will tamper WSO's demand, leading to decreased revenue. These economic indicators are flattening and the four-quarter moving rate of change is beginning to decline or turn negative, which will result in decreased revenue for Watsco (Figure 4).

DIVIDENDS AT RISK

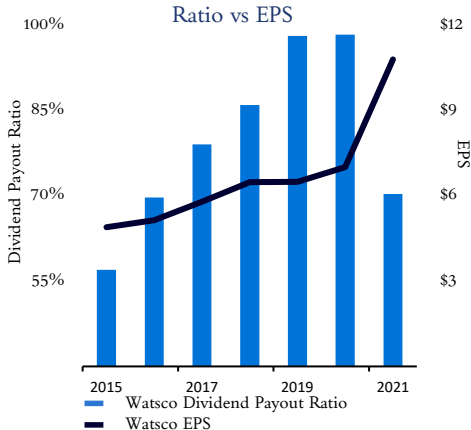
Watsco is known for being a well-paying dividend stock, with a current dividend yield of 3.59%. Watsco rewards shareholders for their loyalty with large dividend payouts and per share increases YOY. However, over the past 5 years, WSO's dividends have been growing at a decreasing rate. (Figure 5). With current inventory risk at hand, the threat of decreasing margins, a housing market

Figure 5: YoY Dividend Growth



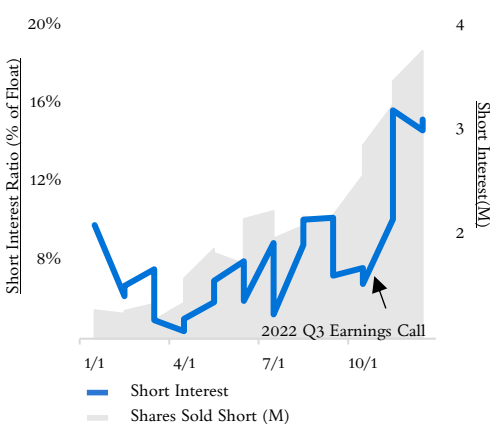
Source: Bloomberg

Figure 6: Dividend Payout Ratio vs EPS



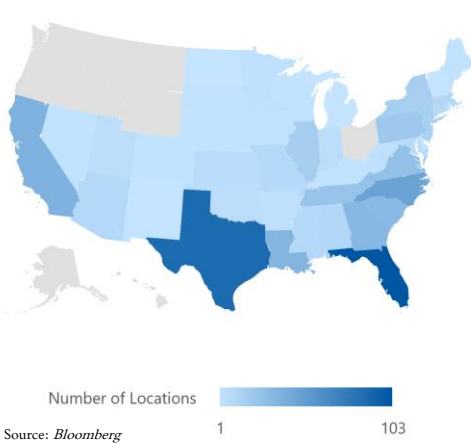
Source: Bloomberg

Figure 7: Short Interest Statistics



Source: Fintel

Figure 8: Geographical Locations



Source: Bloomberg

in peril, and tightening monetary supply for Watsco, dividend growth is at risk. If Watsco fails to raise its dividend, investors may pull their funds from the stock, favoring safer alternatives offering a more attractive yield.

Watsco has also had extraordinarily large dividend payout ratios, reaching upwards of 98% in 2019 and 2020 (Figure 6). A growing concern is that distributions to shareholders are being funded by debt, depicted within their latest 10Q (09-30-2022), which stated that their \$560 million syndicated multicurrency revolving credit agreement is used for most of their capital expenditures, including dividend payments. If revenue were to fall as predicted, Watsco would not have the necessary cash to maintain the current dividend levels, resorting to either cutting dividend payments or utilizing their revolving credit agreement to further finance dividends.

INSTITUTIONAL PESSIMISM

The short interest for Watsco currently sits at 12.26% of the float, rising 124% since their Q3 earnings call in late October of 2022 (Figure 7). According to FINRA as of January 11th, 2023, 80.1% of off financial exchange volume (Dark Pool Trading) are short trades against Watsco. It seems financial institutions such as Hedge Funds have large open short positions against Watsco, putting downside pressure on Watsco's stock price.

BUSINESS DESCRIPTION

Watsco is one of the largest distributors of residential and commercial HVAC equipment, supplies, and parts. Headquartered in Coconut Grove, FL the company operates in more than 40 states as well as Canada, Mexico, and the Caribbean. Approximately 90% of Watsco's revenue is generated from U.S. based sales, with the remainder coming from Canada and the Caribbean. Watsco operates in the sun belt region with Texas and Florida alone accounting for more than one-third of Watsco's distribution centers worldwide (Figure 8). Almost 70% of Watsco's sales come from products sourced from outside vendors such as Carrier Air Conditioning (whose products make up 60% of Watsco's revenue), Rheem, and Mitsubishi Electric. The remaining 30% of Watsco's revenue is generated from HVAC related products which includes tools, supplies, thermostats, and commercial refrigeration.

GEOGRAPHIC REGIONS AND STRATEGIC INITIATIVES

Shift to Ecommerce

Watsco moved towards an online user experience through their mobile app, OnCall Air, to make doing business in the HVAC industry more efficient. Run rate investment has jumped 12.5% for the company, rising from 40M in 2020 to 45M in 2021. The company is reluctant to comment on the success of the ecommerce platform outside of their technology marketing campaign. This makes finding data on user acquisition cost and other important metrics for measuring the success of the platform difficult.

Strategic Carrier Partnership

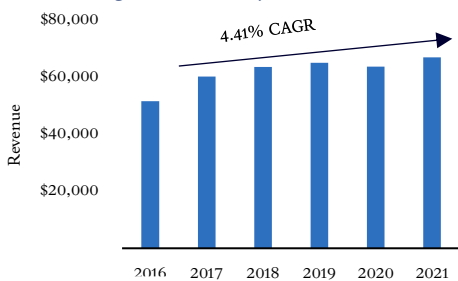
Watsco has a strategic partnership with Carrier Global in which Watsco holds the majority voting power. The companies have various joint ventures commonly seen in an 80/20 equity split favoring Watsco. Some of these ventures include Temperature Equipment Corporation (TEC), a component of their HVAC distribution, as well as various enterprises for geographical expansion. Despite paying for most acquisitions in cash, a sizable portion was still needed to be paid in repayment of indebtedness. The acquisition of various smaller HVAC companies and the creation of new joint ventures have not been successful in improving the company's competitive positioning, despite their efforts to become one of the top HVAC manufacturers in the world. (Source: Q3 10-Q).

INDUSTRY ANALYSIS & COMPETITIVE POSITIONING

INDUSTRY PERFORMANCE

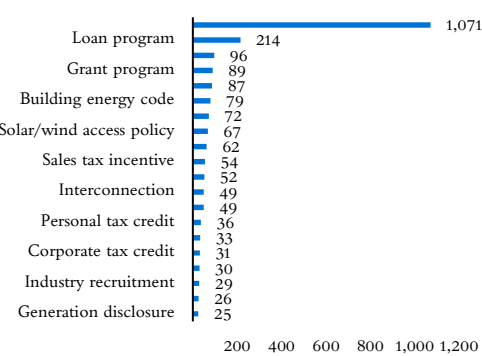
The HVAC/R industry has grown at an annual rate of 4.4% since 2016 (Figure 9). In aggregate, the industry has shown signs of slowing growth with nationwide HVAC shipments down 6% YoY through November 2022 as of most recent data release. Commercial HVAC units have slowed the most, with shipments down 19% YoY. A key industry strongpoint has been heating pumps, which are electric components of air conditioning systems capable of providing both heating and cooling to residential homes. Heat pump sales volume grew 6% YoY as of November, and demand is

Figure 9: Industry Growth (US Dollar)



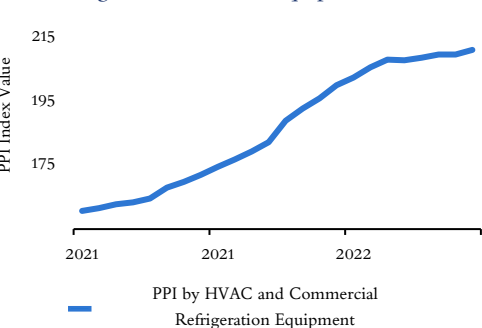
Source: IBISWorld

Figure 10: Incentives and Policies to Promote Energy Efficiency in the U.S.



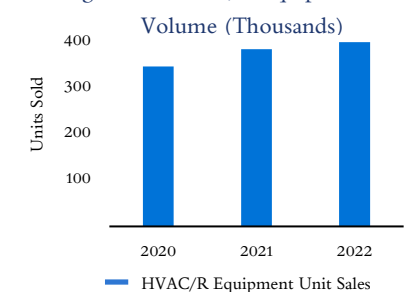
Source: Statista

Figure 11: HVAC/R Equipment Prices



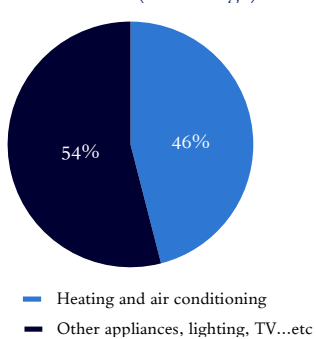
Source: FRED

Figure 12: HVAC/R Equipment Sales



Source: AHRI

Figure 13: Energy Consumption Breakdown (Percentage)



Source: DirectEnergy

expected to remain strong due to their versatility and energy efficiency. Rising costs of raw materials have been translating to more expensive HVAC parts and equipment in the second half of 2022. As a result, demand volume stagnated in the second half of 2022 as most industry sales growth was driven by price rather than volume. With continuing inflation and elevated costs for raw materials, demand is expected to remain hampered through 2023.

KEY DRIVERS

Growing Emphasis on Energy Efficiency

One of the most prevalent economy-wide trends has been the push to utilize more energy efficient technologies with the goal of reducing greenhouse gas emissions. This is especially true in recent years, and this shift has become a major contributor to the industry’s growth prospects. Businesses, consumers, and policymakers alike have become more environmentally conscious and demonstrated commitments towards expanding the implementation of energy efficient systems and components. This is done through the introduction of greater incentives and policies combined with more sustainable product development (Figure 10). This suggests strong medium-term industry growth potential as new and increasingly energy efficient components continue to roll out.

Regulations and Government Initiatives

On January 1st, 2023, a new Federal regulation took effect, raising minimum energy efficiency standards for HVAC/R equipment. Federal income tax credits are also available for homeowners who install certain energy efficiency upgrades, including qualifying ventilation fans and heat pumps. State governments have been setting electrification goals focusing on increasing heat pump implementation. The State of Maine has called for the installation of 100,000 heat pumps in homes and businesses by 2025 and the State of California is targeting 6 million heat pumps to be deployed by 2030. More than 15 other states have taken steps to encourage heat pump implementation.

SUPPLY-SIDE

Elevated Input & End-Product Costs

With rising cost for key metals, HVAC/R equipment prices have risen 31% since the beginning of 2021, and 16% in 2022 alone (Figure 11). As these prices have risen, sales volume has slowed, as HVAC/R units sold only grew 3.8% in 2022 (Figure 12). Industry experts estimate that prices will increase an additional 10-15% in 2023, resulting from higher raw material costs in combination with more stringent regulations. In an already-inflationary environment, further cost increases have a high likelihood of disincentivizing homeowners to upgrade their HVAC systems.

Ongoing Supply Chain & Inventory Hurdles

The supply chain disruptions resulting from the Covid-19 pandemic have lingered and continued to present inventory management and pricing challenges to the HVAC/R industry. These obstacles are particularly troublesome considering the recently implemented SEER2 regulations, and its prohibition on installing non-compliant systems and components after January 1, 2023. Due to the inefficiencies and uncertainty surrounding supply chains and delivery expectancies, many firms had to order over-estimated quantities to be able to continue servicing customers. This has resulted in companies ending 2022 with varying amounts sales and an overabundance of inventory.

DEMAND-SIDE

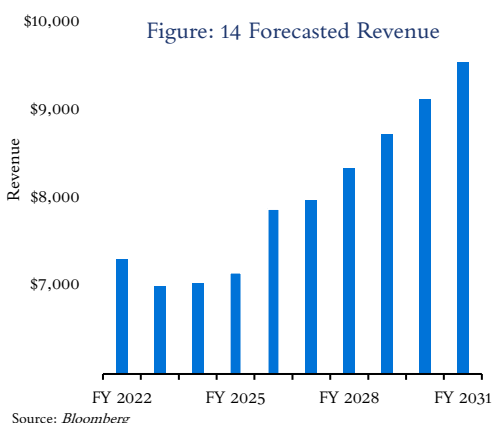
Long-Term Savings Potential

Homeowners are incentivized to upgrade their HVAC systems to more energy efficient systems due to the cost savings resulting from less energy consumption. Heating and cooling account for 46% of average American household energy consumption, translating to an average annual cost of \$1,049 (Figure 13). The Department of Energy estimates that households can save up to 30% on their utility bills by upgrading to high-efficiency HVAC systems in addition to installing programmable ‘smart’ thermostats. With energy costs rising dramatically in recent years, this is a particularly attractive reason for homeowners to pursue HVAC upgrades.

COMPETITIVE POSITIONING

Market Share

The HVAC/R industry is highly fragmented with more than 6,400 distribution companies. Watsco’s primary mid-to-large cap competitors include AAON, Johnson Controls, Lennox, and SPX Technologies. In 2021, Watsco’s latest filing year, they captured 9.3% of HVAC/R market revenue,



a 210-bps increase since 2017. Watsco distributes HVAC/R equipment to approximately 120,000 contractors and dealers.

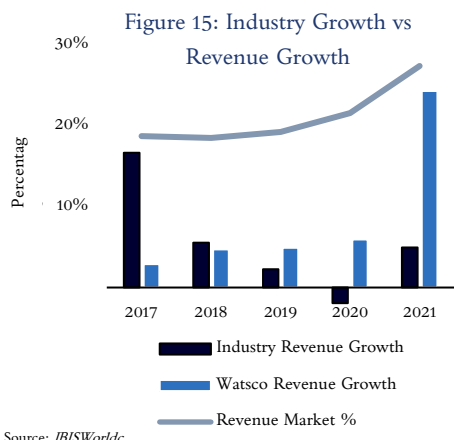
Concentrated Market Approach

Watsco’s advantage in distribution is that they are solely focused on HVAC/R equipment and are purely a distributor, not a manufacturer. Their competitors’ function as either manufacturer and distributor or engage in distributing products beyond just the HVAC/R market. As such, Watsco can allocate more resources towards acquiring and expanding distribution channels to capture greater market share, however it indicates that Watsco’s risk exposure is much more centralized than their competitors as they are reliant upon a single market.

FINANCIAL ANALYSIS

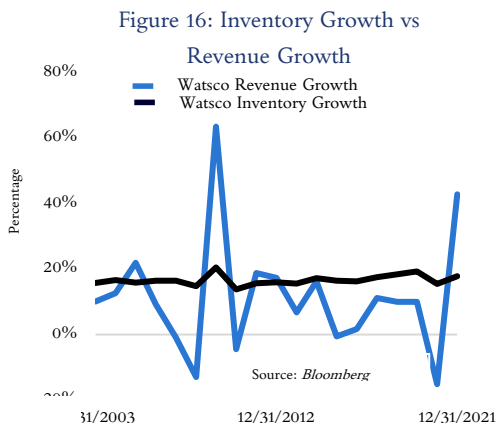
REVENUE

Watsco’s projected revenue is generated through the Extreme Gradient Boosting (XGBoost) supervised non-linear machine learning algorithm. Through the application of 5,000 iterations and the utilization of macroeconomic and microeconomic historical data including GDP, CPI, LIRA, PPI by Copper, PPI by Aluminum, S&P/Case Shiller National Home Price Index, Building Materials and Supplies Deals, and New Building Permits, a correlation was established with an R-squared value of 0.82. These independent variables account for overall cyclicality of the HVAC industry and Watsco's changing capital structure. The generated forecast projects revenue growth at a compound annual growth rate (CAGR) of 4.6% through FY31. The model predicts a decline in revenue of 4.2% in fiscal year 2023, followed by a recovery in FY25 and FY26 (Figure 14).



INVENTORY

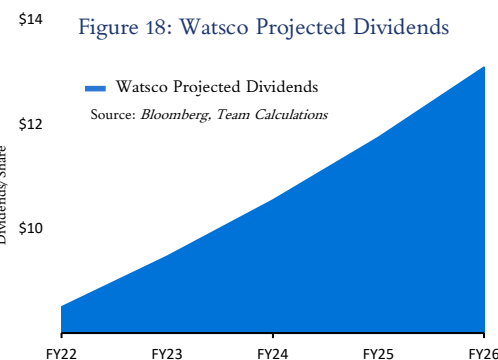
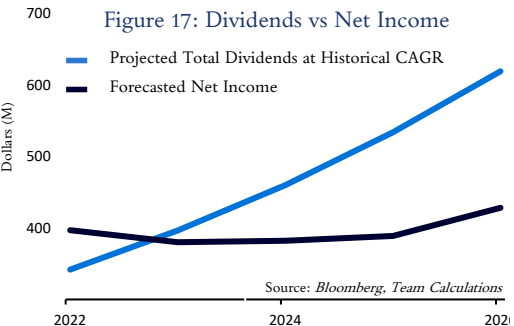
Watsco’s current inventory glut is problematic as management estimates that 50% of the company’s inventory is incompliant with SEER2 regulations as of their 2022 Q3 earnings call. Utilizing Watsco’s current inventory turnover rate, projections were extrapolated to calculate how much noncompliant inventory remained on the balance sheet after the calendar year-end. Given that Watsco sells approximately 1.17% of their inventory every day, they would only turn over 85% of their inventory before SEER2 regulations came in effect, leaving Watsco with an estimated \$108 million worth of noncompliant inventory. This large expected loss is a potential risk for the stock. With these assumptions it is important to note other idiosyncratic factors could reduce this expected loss, however management has given no public indication of any preventative measures.



During FY20 - FY21, inventories increased 42% due to management’s attempt to hedge supply chain constraints. Historically, inventory growth has aligned with revenue growth depicted in (Figure 16), averaging roughly 17% of revenue. After the current inventory issues resolve, Watsco’s inventory levels are expected to return to slightly below normal levels, effected by current supply side constraints from OEM’s.

DIVIDEND PAYMENTS

Watsco’s dividends have grown at a CAGR of 14.6% since 2015, an unsustainable growth rate with falling revenue. Based on the company’s forecasted dividend growth rate, it is projected that dividends paid out would exceed net income, resulting in a payout ratio above 100% (Figure 17). The management of the company is presented with two options: either to slow down the growth rate of dividends or to finance dividends through the use of their revolving credit agreement. Dividends are projected to grow at a CAGR of 11.4%, assuming that the company maintains its current payout ratio (Figure 18). Given this disequilibrium, the dividend payout ratio will decrease the payout ratio, leading to further deterioration of dividends.



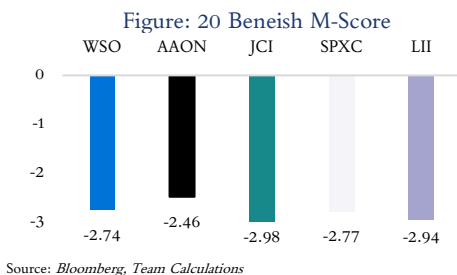
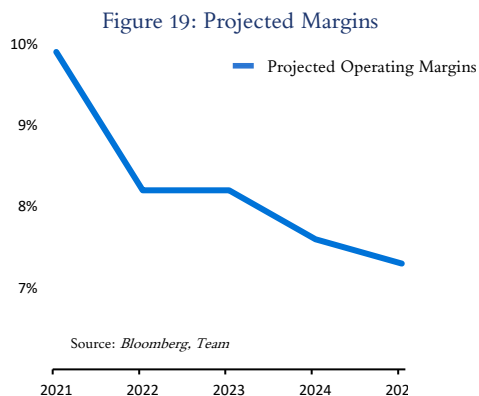
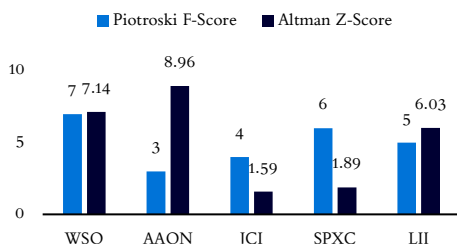


Figure 21: Additional Financial Metrics of Comparison



MARGINS

Watsco Inc. is projected to experience contraction in its margins in the year 2023, primarily due to several macroeconomic headwinds such as rising input costs and supply chain constraints. This is expected to result in a decrease in gross profitability and a decline in operating margins. Despite a notable increase of 80 basis points in net selling margins for Watsco during the third quarter of 2022, the company's gross profitability for the quarter is expected to be negatively impacted by the payments made to suppliers. Branch freight is anticipated to be negative in the third quarter of 2022, offsetting the increase in net selling margins brought about by higher priced inventory, ultimately resulting in a flat YoY performance of gross margins. Operating margins are projected to tighten to a more typical level of 8.2% for fiscal year 2022, following a high of 9.9% in fiscal year 2021, resulting from a robust housing market. It is further projected that operating margins will continue to decline in the near future, reaching 7.3% in 2025, which is in line with the company's historical average (Figure 19). This decrease in operating margins is based on the expected cost of goods sold as a percentage of revenue, which has historically been around 75%. Any additional cost increases would result in further deterioration of operational margins for Watsco in the short-medium term.

ALTMAN Z-SCORE, M-SCORE, ETC.

Additional metrics used to assess Watsco include the Piotroski F-score, Altman Z-score, and Beneish M-score. Watsco's Piotroski F-score, used to measure a company's financial strength and specifically used for value companies, is 7 on a scale of 1 (worst) to 9 (best) (Figure 20). This result can be interpreted to indicate that Watsco is an above average value company. The Altman Z-score is a measure of a company's risk of bankruptcy, with results above 3 indicating strong financial positioning and a score below 3 signals potential risks and financial trouble. Watsco's Altman Z-score was calculated at 7.14, meaning that it is not facing a material risk of bankruptcy (Figure 21). Lastly, the Beneish M-score measures the likelihood that a firm manipulates earnings, with results greater than -2 indicating a possibility that a firm manipulates earnings, and results less than -2 suggesting that earnings are reported in a more accurate and straightforward manner. Watsco's M-score was calculated to be -2.74, meaning that it is unlikely that they manipulate earnings (Figure 21).

VALUATION

Watsco is issued with a SELL recommendation with a 12-month price target of \$235, representing 17% downside given the closing price of \$282.27 on January 27th, 2022. Intrinsic valuation and share prices are derived using forecasts of economic cycles and Watsco's sensitivity to macro indicators. Appropriate models for Watsco given their large dividend and steady free cash flow generation include a DCF (Discounted Cash Flow) analysis utilizing both a perpetuity growth method and a multiples-based exit, relative valuation, and dividend discount model (DDM).

DISCOUNTED CASH FLOW TO EQUITY ANALYSIS

Discounted cash flow valuation was used to assess the company's fair value of equity. To project the terminal value, a perpetuity growth method, and an EBITDA exit multiple are utilized. Projected free cash flow was discounted at the company's weighted average cost of capital (WACC). For the perpetuity growth exit method, a terminal growth rate of 2% was utilized as a proxy to long-term GDP growth to project the long-term free cash flow generation of the company. For the multiples method, an EBITDA exit multiple of 14x was selected to reflect Watsco's 1-year implied forward EV/EBITDA multiple. The multiples method resulted in a calculated fair value of equity of \$243, representing an 13% downside in the share price of Watsco. The perpetuity growth method resulted in a calculated fair value of equity for Watsco of \$233, representing an 18% downside in the company's stock.

DIVIDEND DISCOUNT MODEL

A dividend discount model was also built to evaluate Watsco's distributions to shareholders. Historical dividends for the past 5 years were selected as the sample set, and the compounded annual growth rate was calculated to be 11.4%. Dividends are then projected into a terminal year, which was grown at 2% to model long-term GDP growth. The future projected dividends were then discounted at the company's cost of equity of 9.2%, and the terminal year dividend was

DDM Inputs	
Growth Rate	11.40%
Terminal Growth	2.00%
Discount Rate	9.20%
DCF Model Inputs	
Cost of Debt	3.74%
Cost of Equity	9.20%
WACC	8.80%
Terminal Growth Method	2%
EBITDA Exit Multiple	14.0x
Target Prices	
DCF (Perpetuity growth)	\$ 233.00
DCF (Multiples)	\$ 242.00
DDM	\$ 237.00
Relative Valuation	\$244.00
Final Price Target	\$ 235.00

Companies	EV/EBITDA		
	2020A	2021A	2022E
Watsco	17.9x	16.9x	15.1x
AAON	26.7x	42.2x	25.8x
Johnson Controls	17.7x	15.2x	15.1x
Lennox International	19.3x	18.3x	14.1x
SPX Technologies	20.2x	20.1x	15.1x

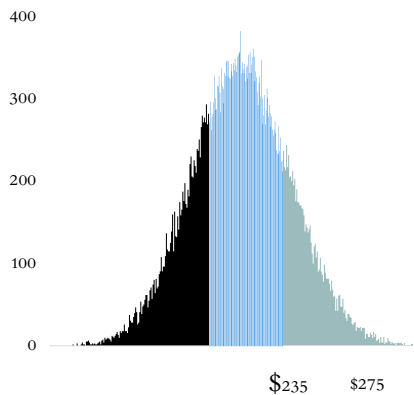
Companies	EV/Revenue		
	2020A	2021A	2022E
Watsco	1.8x	2x	1.6x
AAON	6.6x	7.9x	4.6x
Johnson Controls	1.7x	2.4x	1.7x
Lennox International	3.2x	3.2x	2.2x
SPX Technologies	2.5x	2.1x	2.3x

Companies	P/S		
	2020A	2021A	2022E
Watsco	1.6x	1.8x	1.5x
AAON	6.8x	7.8x	4.5
Johnson Controls	1.4x	2.1x	1.4x
Lennox International	2.9x	2.9x	1.9x
SPX Technologies	2.2x	2.2x	2.2x

Companies	P/E		
	2020A	2021A	2022E
Watsco	32.3x	29x	19.6x
AAON	47.8x	68.6x	43.9
Johnson Controls	18.2x	31.3x	16.4x
Lennox International	27.3x	25.5x	17.8x
SPX Technologies	37.9x	62x	24.6x

Sensitivity Analysis			
	Bull Case	Base Case	Bear Case
Revenue Growth CAGR	5.1%	4.6%	4.1%
COGS % Revenue	74.9%	75.1%	75.6%
Terminal Growth Rate	2.5%	2.0%	1.5%
Exit Multiple	14.5x	14x	13.5x
Intrinsic Value	\$293	\$235	\$207

Figure 22: Monte Carlo Simulation



calculated using a perpetuity growth method. This resulted in a total present value of \$236, representing a 17% downside in the company's stock price. Utilizing the three valuation approaches above, a price target was reached by equally assigning a 30% weighting to the valuation price targets of each model. This resulted in a price target of \$235, representing a 17% downside in the company's stock as of the current stock price of \$275.72 on 01/27/2023.

RELATIVE VALUATION

A relative valuation of \$244 was determined by a forward-looking multiples analysis focusing on the EV/EBITDA, EV/Revenue, P/E, and P/S ratios of Watsco and select competitors: AAON, Johnson Controls, Lennox International, and SPX Technologies. The multiples of these competitors were assigned weightings based off of their level of exposure to the HVAC/R industry, and weighted averages of their 2021 multiples were computed as a point of comparison to Watsco. Watsco's P/E and EV/EBITDA have historically traded in-line with the competition while their EV/Revenue and P/S ratios have consistently been lower. Due to this, the EV/Revenue and P/S values were not weighted into the calculation of the relative price.

SENSITIVITY ANALYSIS

Both the perpetuity growth method and the EBITDA multiples method were subjected to sensitivity analysis, with the perpetuity growth method testing changes to the terminal growth rate, and the initial discount rate. Both sensitivity analyses showed that Watsco is most sensitive to a change in the discount rate utilized in the DCF calculation, with the perpetuity growth's methods price targets having a standard deviation of \$26.90, reflecting a one standard deviation move in model inputs would result in an upward or downward movement in intrinsic value of 10%. The exit multiples approach's standard deviation of tested price targets was \$20.40, reflecting a decreased sensitivity to a change in exit multiple utilized than terminal growth rate. Given Watsco's current capital structure, an increase in their cost of equity could hurt the company's intrinsic valuation as debt does not play a huge role for them in rising capital.

The dividend discount model was subjected to sensitivity analysis of both the terminal growth rate vs the discount rate, and the short-term growth rate vs the discount rate. This sensitivity analysis suggests that Watsco's valuation is extremely sensitive to fluctuations in the discount rate, with a 1% rise in the discount rate resulting in almost an 11% drop in the stock price. Furthermore, it was found that Watsco's stock price was also sensitive to changes in the short-term growth rate of the companies' dividends, with only a 1% decrease in the short-term growth of the dividend resulting in more than a 4% downside for the fair value of the company's stock.

SCENARIO ANALYSIS

To further stress test the discounted cash flow model, a scenario analysis was conducted to evaluate how Watsco's intrinsic value would fluctuate from changes in revenue, costs as a percentage of revenue, and terminal values/exit multiples.

Bull Case Scenario: In this scenario, inflationary pressures subside earlier than expected. Revenue growth expands by 50 basis points, and cost pressures subside by 50 basis points as a percentage of revenue. Economic growth expectations are raised, and terminal growth is raised by 50 basis points to 2.5%. The EV/EBITDA exit multiple also increases from 14x to 14.5x.

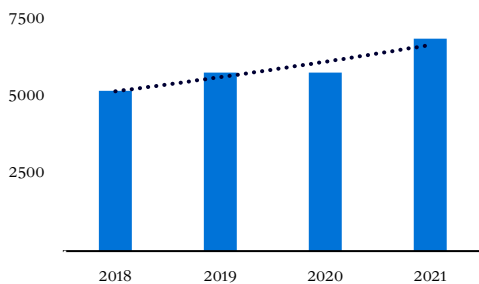
Bull Case Findings: Under this scenario the intrinsic share price of Watsco's intrinsic value rises to \$278 for the perpetuity growth method, and \$308 for the multiple's method. This results in a combined price target of \$293, a 6% upside in Watsco's share price

Bear Case Scenario: In this scenario, macro-economic conditions deteriorate beyond forecasts, ultimately leading to stagflation. Revenue growth contracts by 50 basis points, and costs as a percentage of revenue increase by 50 basis points. Economic growth prospects are dismal resulting in the terminal growth falling by 50 basis points, and the EV/EBITDA exit multiple falling from 14x to 13.5x.

Bear Case Findings: Under this scenario the intrinsic value of Watsco's share price falls to \$207 for the perpetuity growth method, and \$207 for the multiples-based exit approach. The resulting price target is \$207.50, a 23.8% downside in the company's stock price

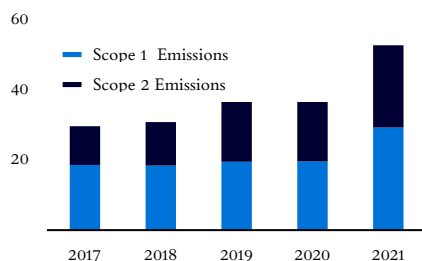
	S&P Global	Sustainalytics	Bloomberg	Refinitiv
Benchmark	100	1	100	100
WSO	20	21	33	27
AAON	N/A	26	41	50
JCI	75	15	76	78
LII	55	22	62	62

Figure 23: Number of Employees



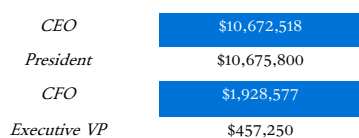
Source: Bloomberg

Figure 24: Absolute Emissions



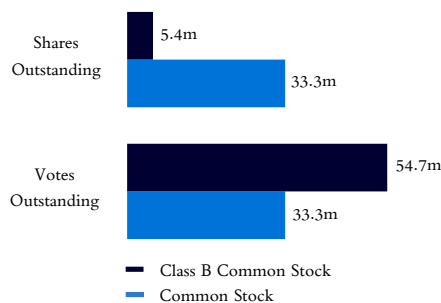
Source: Bloomberg

Figure 25: 2021 Total Executive Compensation



Source: Bloomberg

Figure 26: Shares & Votes Outstanding by Class



Source: Bloomberg, Team Research

MONTE CARLO SIMULATION

A Monte Carlo Simulation with 50,000 iterations was conducted. Inputs included: forecasted revenue utilizing economic factors, changes DCF model inputs, and changes DDM inputs (Figure 22). Distributions varied with 81.1% of the data points lying below the price target of \$235. Watsco has a higher downside than upside risk. The simulation considered various economic factors and changes in the inputs of both the DCF and DDM models, further supporting the validity of the price target.

ENVIRONMENTAL, SOCIAL AND GOVERNANCE

The table on the left illustrates Watsco's combined ESG scores against its major competitors.

ENVIRONMENTAL & SOCIAL

Watsco's environmental contributions originates from its role in serving the ongoing transition towards increasingly energy efficient HVAC components and systems – driven by regulations on minimum efficiency standards. Since 2020, Watsco's sales of energy efficient equipment have reduced an estimated 14.7M metric tons of CO2 output, above median compared to industry peers (Figure 23). Watsco has saved 7.4B gallons of water through its wholly owned subsidiary, Alert Labs. As minimum efficiency standards continue to rise, Watsco will continue to have a positive environmental impact through their primary operations. Since heating and air conditioning accounts for half of household energy consumption in the U.S., the impacts have the potential to be significant.

Watsco focuses on social efforts through investments into the safety, health, and the well-being of its employees, resulting in a 25% increase in employment over the past four years (Figure 23). Healthcare plans are provided for all employees. In 2021, Watsco employees completed more than 1,300 hours of health and safety training, resulting in 16% fewer employee injuries. In addition, Watsco offers a 401K program with matching contributions and provides stock purchase plans and stock-based compensation. Furthermore, Watsco's workforce completed more than 35,000 hours of training. Men make up 80% of the workforce, 75% of executives, and 78% of the board.

CORPORATE GOVERNANCE

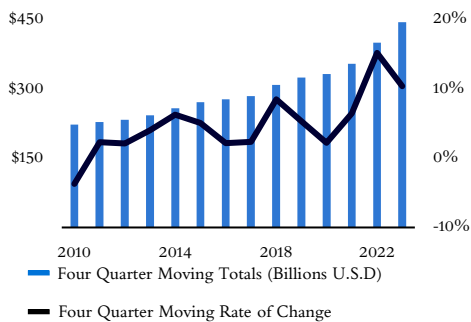
Board of Directors & Executive Management

Watsco utilizes a standard corporate governance structure, including a board of directors which oversees executive management. Watsco's board has nine directors and includes 4 committees – Audit, Compensation, Nomination & Governance, and Strategy. Seven of the nine directors are non-executives and are considered independent under NYSE listing standards as of 2021. Directors are elected to three-year terms, with no term limits, and are elected by either Common Stockholders or Class B Common Stockholders as separate classes (See [Dual-Class Structure](#) below for further voting information). As of 2019, Watsco's board of directors appoints an advisory board for additional advice and non-binding recommendations. Watsco's executive management team is comprised of only four individuals holding the following positions: Chief Executive Officer, President, Chief Financial Officer, and Executive Vice President. Watsco's executive compensation mix includes base salary, cash bonus, restricted stock awards, non-equity incentives, and health/retirement contributions. Furthermore, in 2021, 90% of total executive compensation was awarded to the CEO and President, while the remaining 10% was split between the EVP and CFO (Figure 25). It should be noted that Albert H Nahmad is the founder of Watsco, as well as the current CEO and Chairman of the Board. His son, Aaron J Nahmad, is the current President of the company and is also a board director. See Appendix 17 for more information regarding members of the Board of Directors and Executive Management team.

Dual-Class Structure

Watsco utilizes a dual-class structure comprised of Common Stock and Class B Common Stock. With regards to electing board directors, each class votes separately, and Common Stock shareholders are entitled to elect 25% (rounded up to the nearest whole) of allowable board members (3 seats) and Class B shareholders are entitled to elect the remaining allowable board members (6 seats). In instances where the classes vote together, Common shareholders are given one (1) vote per share while Class B shareholders are given ten (10) votes per share. Overall, Class

Figure 27: Homeowner Improvement and Repair



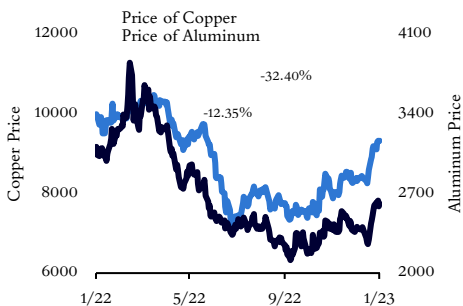
Source: Joint Center for Housing Studies of Harvard University

Figure 28 Watsco Share Price vs GSCPI Index



Source: Bloomberg

Figure 29: Commodity Price Volatility



Source: Bloomberg

Figure 30: Residential HVAC Prices

Region	Standard Efficiency		Higher Efficiency	
	1/26/2023	Previous	1/26/2023	Previous
North East	\$3,006	\$3,006	\$2,355	\$2,355
West Coast	\$2,856	\$2,856	\$2,238	\$2,238
Sunbelt	\$2,645	\$2,645	\$2,073	\$2,073
Mid-West	\$2,472	\$2,472	\$2,355	\$2,355

B shareholders hold more voting power with 62% of the total voting power being represented by Class B shares. This represents a corporate governance challenge, as the CEO and President control a significant majority of shareholder voting power – controlling six of the nine board seats through separate class voting. Furthermore, CEO Albert H Nahmad singularly controls 52% of cumulative voting power.

Shareholders

As of January 27, 2023, 82.19% of Common stock shares are held in the United States, as well as 9.95% of shares held in the United Kingdom. (Currently, the largest Watsco Common shareholder is BlackRock Inc (11.8%), followed by Vanguard Group Inc (9.5%) and Baillie Gifford & Co (6.5%). Institutional investors hold 99.3% of outstanding Common shares with insiders representing 0.7%. In addition, Insiders hold a substantial 84.8% of Class B shares, with CEO Albert H Nahmad and President Aaron J Nahmad holding 75.8% and 4.9% of outstanding Class B stock, respectively.

INVESTMENT RISKS

UPSIDE INVESTMENT RISKS

[M1] MARKET RISK: Housing Stabilization and Minimizing Pressures

Upside tailwinds for Watsco stem from macroeconomic catalysts, including housing market stabilization having a positive boost in HVAC sales, as consumers may be likely to spend on home improvements. An easing of freight costs will also prove to be fruitful, especially in Florida, their largest geographical consumer base. Relative resilience can be expected in replacement demand for residential HVAC systems given exposure to those southern states. The strength of lower freight costs and supply chain pressures was measured with two correlations; one between Watsco's share price and the Florida GDP Transport & Warehouse Index and one between Watsco's share price and the GSCPI Index, which measures supply chain pressure nationally. Correlations of 0.77 and 0.83 (Figure 28) respectively were found, proving that easing such costs will significantly influence Watsco's performance.

[M2] MARKET RISK: Commodity Volatility

Commodity price levels are starting to form yearly peak levels, potentially reducing material costs for HVAC systems and commercial refrigeration. The biggest materials in focus are copper and aluminum, with their prices down 13% and 32% from their one-year highs, respectively (Figure 29).

[F1] FIRM RISK: Higher-Efficiency Products

The introduction of SEER2 regulations from the Department of Energy to increase what is considered as an efficient regulatory supports a driven industry transition to higher-efficiency systems, leading to potentially stronger sustained pricing in products. It is also predicted, in a bull case, that gross margins will prove more resilient than expected as structural improvements outweigh temporary prices in favor of long-run cost saving benefits, despite a flat case reported on previous residential equipment price indices (Figure 30).

[F2] FIRM RISK: Partnership with Carrier Global

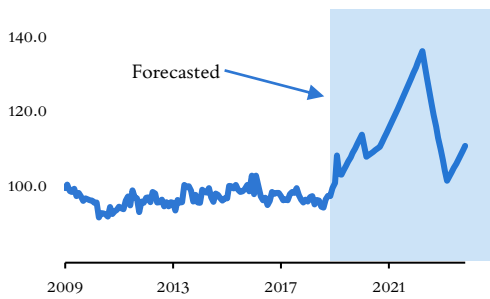
Given their strong relationship with Carrier, any company-specific tailwinds for Carrier will influence Watsco's performance. Multiple analysts expect Carrier to be the number one HVAC manufacturer in 2023, and effective from December 5th, 2022, onward Carrier will have an 8% price increase on its commercial applied offerings. Joint ventures between the two companies are likely to grow and follow industry patterns, and other acquisition opportunities can strengthen Watsco's portfolio for industry dominance, driving upside in their earnings.

DOWNSIDE INVESTMENT RISKS

[M1] MARKET RISK: Macroeconomic Capitulation

The HVAC industry has seen record-breaking quarters in earnings due to inflated product prices and increasing house remodeling in Q1 and Q2 of 2022. Global economies and other various companies also saw increased post-pandemic growth the past two years and forecast along with other economists in anticipating stagflation or recessionary pressures that will drive consumer demand and business growth lower because of a coming down from these high, unsustainable growth rates. Housing remodeling and construction is expected to cool down over the next few

Figure:31 PPI Wholesale Distribution of Hardware, Plumbing, and Heating Equipment

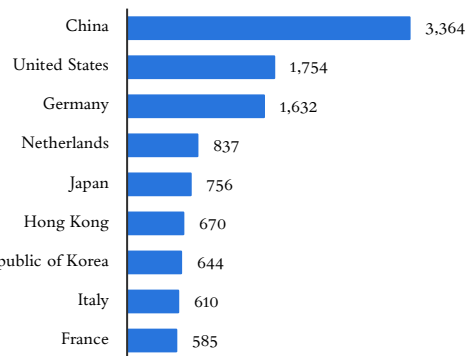


Source: U.S. Bureau of Labor Statistics, St. Louis Fed

Figure:32 Leading Merchandise Exporting Regions Worldwide in 2021

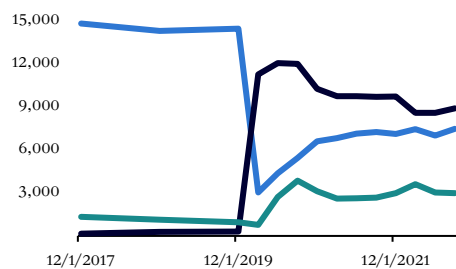
Export value in billion U.S. dollars

1,000 2,000 3,000 4,000



Source: Statista

Figure 33: Carrier Global Debt-to-Equity



Debt
Equity
Total Cash and Equivalents

Source: Bloomberg

quarters and a slowdown in the housing market will affect Watsco's performance as a collective. Factors such as increasing interest rates, increased labor costs, and reduced home prices contribute to the slow or stagnant growth expected in 2023. Should global economies slow down, Watsco's offshore expansion and activity in both Canada and Latin America will also subside.

[M2] MARKET RISK: Minimizing Demand for HVAC Systems

HVAC demand is expected to decrease, especially with a downturn in housing renovations as noted previously. With much of their record-breaking earnings coming this year due to increased product pricing, wholesale distribution revenue is expected to still grow but slowdown from previous years. The HVAC industry will grow exponentially in the long-term, but short and mid-term outlooks are pessimistic with OEM price increases moderating as inflation subsides from interest rate hikes. Further confirming this trajectory was the Federal Reserve stating this past December they will be raising the overnight lending rate throughout 2023. As demand weakens and prices begin to moderate Watsco's current inventory glut will hinder any anticipated growth in the foreseeable future.

[F1] FIRM RISK: Governance Risks from E-Commerce

Watsco is actively promoting the growth of its e-commerce subsidiary to its shareholders.

However, limited information is currently available regarding the specific strategy and role this plays within the overall business model of the company. As it is not directly listed on the financial statements and functions as a subsidiary, this lack of transparency poses a potential risk to the company's governance structure.

[F2] FIRM RISK: Tariff Pressure and International Tensions

Producers of HVAC equipment, notably Carrier and Rheem, acquire constituent parts from China or have Mexico manufacture a sizable portion of their goods for domestic use. Any constraints or major spikes in tariffs relating to such items bought or manufactured from both countries can force the firm to boost product pricing if trade tensions were to escalate. This might hurt Watsco by increasing their production costs and driving away consumers.

[F3] FIRM RISK: Cash Flow and Debt Misuse

Cash flow and debt misuse has resulted in a volatile dividend and poor debt coverage. Increasing the dividend as the cash flow allocation towards the dividend decreases demonstrates concern towards the handling of cash flow utilization. Furthermore, although they cover their debt properly, the leveraging of debt is used to increase the dividend for the sake of shareholder value. Adding to this are limited merger and acquisition opportunities, a key component of Watsco's business strategy, specifically in their partnership with Carrier Global. The room for expansion is minimized coming into the new year and given the forecast macroeconomic conditions slower growth in that area is expected.

[F4] FIRM RISK: Headwinds of Carrier Global

Any anticipated headwinds for Carrier Global can serve as a limitation for Watsco. From an industry point of view, Train Tech (TT), a competitor of Carrier, is currently leading in HVAC manufacturing due to their increasing offshore expansion. Carrier Global does not possess as much exposure to foreign markets. Other risks include Carrier's positive net debt a low Altman Z-score, signifying higher risk of defaulting, declining interest coverage, declining TTM free cash flow, and an earnings yield that is twice as less than AAA bond rating.

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APPENDIX 2: RELATIVE VALUATION

	EV/EBITDA			EV/Revenue			Weight
	2020A	2021A	2022E	2020A	2021A	2022E	
Watsco	17.9x	16.9x	15.1x	1.8x	2x	1.6x	
AAON	26.7x	42.2x	25.8x	6.6x	7.9x	4.6x	5.4%
Johnson Controls	17.7x	15.2x	15.1x	1.7x	2.4x	1.7x	76.0%
Lennox Internation	19.3x	18.3x	14.1x	3.2x	3.2x	2.2x	14.2%
SPX Technologies	20.2x	20.1x	15.1x	2.5x	2.1x	2.3x	4.4%
Weighted Average	18.5x	17.3x	15.5x	2.7x	1.9x	2x	
	Implied Value		\$281.01	Implied Value		\$404.34	

	P/E			P/S			Weight
	2020A	2021A	2022E	2020A	2021A	2022E	
Watsco	32.3x	29x	19.6x	1.6x	1.8x	1.5x	
AAON	47.8x	68.6x	43.9x	6.8x	7.8x	4.5x	3.8%
Johnson Controls	18.2x	31.3x	16.4x	1.4x	2.1x	1.4x	67.1%
Lennox Internation	27.3x	25.5x	17.8x	2.9x	2.9x	1.9x	23.7%
SPX Technologies	37.9x	62x	24.6x	2.2x	2.2x	2.2x	5.4%
Weighted Average	22.5x	33x	18.2x	2x	2.5x	1.7x	
	Implied Value		\$208.17	Implied Value		\$353.38	

Relative Valuation **\$244.59**

(P/E & EV/EBITDA)

APPENDIX 3: DIVIDEND DISCOUNT & DCF VALUATION MODELS

Initial Assumptions							
Short-Term Growth Rate	11.40%						
Terminal Growth	2.0%						
Discount Rate	9.20%						

DDM Assumptions	Historical						
	FY16	FY17	FY18	FY19	FY20	FY21	
Dividends	\$ 3.60	\$ 4.60	\$ 5.60	\$ 6.40	\$ 6.93	\$ 7.63	
Growth Rate YoY%		27.8%	21.7%	14.3%	8.2%	10.1%	

DDM Calculation	Projected						
	FY22	FY23	FY24	FY25	FY26	Terminal	
Projected Dividends	\$ 8.49	\$ 9.46	\$ 10.54	\$ 11.74	\$ 13.08	\$ 14.19	
Discounted		\$ 7.71	\$ 7.80	\$ 7.89	\$ 7.98	\$ 8.07	

PV of Future Dividends	\$39.46	WSO Stock Price	\$282.23
PV Terminal Value	\$197.13	Upside/Downside	-\$45.63
PV of Future Dividends	\$236.60	% Upside/Downside	-16%

Discounted Cash Flow Model:

Watsco - Operating Model and DCF Analysis - Base Case

(\$ in Millions Except Per Share and Per Unit Data)

1/27/2023

Company Name:	Watsco	Last Fiscal Year:	2021-12-31
Ticker:	WSO	Next Fiscal Year:	2022-12-31
Units (for Conversions):	1,000,000	Most Recent Quarter End Date:	2022-09-30
		Current Valuation Date:	2022-12-21
Current Share Price:	\$ 275.72		
Effective Tax Rate:	23.8%		
Selected Scenario:	Base		

Revenue Assumptions:	Units:	Historical				Projected									
		FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31
	\$ M	\$ 4,547	\$ 4,770	\$ 5,055	\$ 6,280	7,302.5	6,996.0	7,030.5	7,155.6	7,880.6	7,979.2	8,346.2	8,730.1	9,131.7	9,551.8

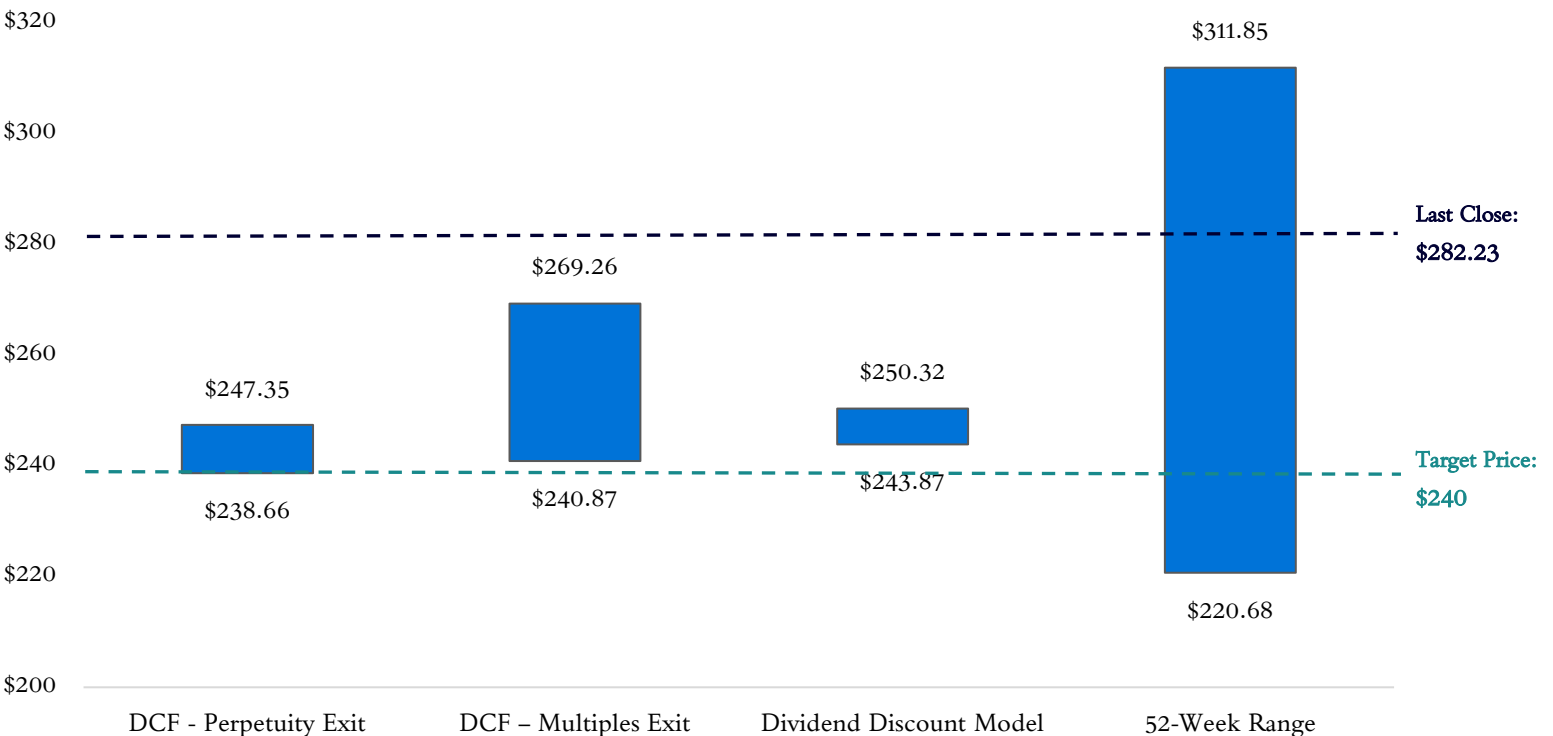
Expense and Cash Flow Assumptions:	Units:	Historical				Projected									
		FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31
Cost of Products % Revenue:	%	75.4%	75.7%	75.8%	73.4%	75.1%	75.1%	75.1%	75.1%	75.1%	75.1%	75.1%	75.1%	75.1%	75.1%
Intangible Asset Amortization:	\$ M	5.3	5.7	5.9	5.6	4.5	3.9	3.7	3.7	3.5	3.3	3.2	3.0	2.9	2.8
Depreciation % Revenue: (D+A%Rev)	%	0.5%	0.5%	0.5%	0.4%	0.5%	0.5%	0.5%	0.5%	0.5%	0.4%	0.4%	0.4%	0.4%	
Stock-Based Compensation:	\$ M	15.5	17.0	22.1	25.4	25.4	24.3	24.5	24.9	27.4	29.7	33.2	37.1	41.5	46.3
% Revenue:	%	0.3%	0.4%	0.4%	0.4%	0.3%	0.3%	0.3%	0.3%	0.3%	0.4%	0.4%	0.4%	0.5%	0.5%
Total Non-Tax-Deductible Expenses:	\$ M	20.8	22.7	28.0	31.0	29.9	28.2	28.2	28.6	30.9	33.0	36.4	40.1	44.3	49.1
Cash Taxes Paid in Excess of Book Taxes:	\$ M	(5.0)	(5.4)	(6.7)	(7.4)	(7.1)	(6.7)	(6.7)	(6.8)	(7.4)	(7.9)	(8.7)	(9.5)	(10.6)	(11.7)
Interest Expense, Net:	\$ M	2.7	4.0	1.2	1.0	5.8	5.5	5.6	5.7	6.2	6.9	7.7	8.5	9.5	10.5

Discounted Cash Flow (DCF) Analysis - Assumptions and Output:

Average Discount Rate (WACC):	7.6%	Terminal Value - Multiples Method:		Terminal Value - Perpetuity Growth Method:	
Initial Discount Rate (WACC):	8.8%				
Initial vs. Final Discount Rate Difference:	0.0%	Baseline Terminal EBITDA Multiple:	14.0 x	Baseline Terminal FCF Growth Rate:	2.0%
Final Discount Rate (WACC):	8.8%	Base	14.0 x	Base	2.0%
# of Years in Explicit Forecast Period:	10	Upside	14.5 x	Upside	2.5%
Stub Period Fraction:	0.027	Downside	13.5 x	Downside	1.5%
Percentage of Year Remaining:	0.250				
		Baseline Terminal Value:	\$ 11,990.3	Baseline Terminal Value:	\$ 11,242.7
		Implied Terminal FCF Growth Rate:	2.4%	Implied Terminal EBITDA Multiple:	13.1 x
		(+) PV of Terminal Value:	5,599.7	(+) PV of Terminal Value:	5,250.6
		(+) Sum of PV of Free Cash Flows:	3,416.9	(+) Sum of PV of Free Cash Flows:	3,416.9
		Implied Enterprise Value:	\$ 9,016.6	Implied Enterprise Value:	\$ 8,667.5
		% of Implied EV from Terminal Value:	62.1%	% of Implied EV from Terminal Value:	60.6%
		(+) Cash & Cash-Equivalents:	\$ (118.3)	(+) Cash & Cash-Equivalents:	\$ (118.3)
		(+) Equity Investments:	(114.8)	(+) Equity Investments:	(114.8)
		(+) Other Non-Core Assets, Net:	-	(+) Other Non-Core Assets, Net:	-
		(+) Net Operating Losses:	-	(+) Net Operating Losses:	-
		(-) Total Debt & Capital Leases:	(726.7)	(-) Total Debt & Capital Leases:	(726.7)
		(-) Preferred Stock:	-	(-) Preferred Stock:	-
		(-) Noncontrolling Interests:	-	(-) Noncontrolling Interests:	-
		(-) Unfunded Pension Obligations:	-	(-) Unfunded Pension Obligations:	-
		(-) Restructuring & Other Liabilities:	-	(-) Restructuring & Other Liabilities:	-
		Implied Equity Value:	8,056.8	Implied Equity Value:	7,707.7
		Shares Outstanding:	33,260	Shares Outstanding:	33,260
		Implied Share Price from DCF:	\$ 242.24	Implied Share Price from DCF:	\$ 231.74
		Premium / (Discount) to Current:	(12.1%)	Premium / (Discount) to Current:	(16.0%)

Unlevered Free Cash Flow Projections:	Units:	Historical				Projected										Normalized	
		FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32	
Total Revenue:	\$ M	4,546.7	4,770.4	5,054.9	6,280.2	7,302.5	6,996.0	7,030.5	7,155.6	7,880.6	7,979.2	8,346.2	8,730.1	9,131.7	9,551.8	9,991.2	
Revenue Growth:	%	4.7%	4.9%	6.0%	24.2%	16.3%	(4.2%)	0.5%	1.8%	10.1%	1.3%	4.6%	4.6%	4.6%	4.6%	4.6%	
Cost of Product Sales:	\$ M	3,426.4	3,613.4	3,832.1	4,612.6	5,484.2	5,254.0	5,279.9	5,373.9	5,918.4	5,992.4	6,268.0	6,556.3	6,857.9	7,173.4	7,503.4	
Gross Profit:	\$ M	1,120.3	1,157.0	1,222.8	1,667.5	1,818.3	1,742.0	1,750.6	1,781.8	1,962.3	1,986.8	2,078.2	2,173.8	2,273.8	2,378.4	2,487.8	
Gross Margin:	%	24.6%	24.3%	24.2%	26.6%	24.9%	24.9%	24.9%	24.9%	24.9%	24.9%	24.9%	24.9%	24.9%	24.9%	24.9%	
Operating Expenses:																	
(+) Selling, General, and Administrative:	\$ M	757.5	800.3	833.1	1,058.3	1,207.6	1,156.9	1,162.6	1,183.3	1,303.2	1,319.5	1,380.2	1,443.6	1,510.1	1,579.5		
(+) Other Operating Expenses:	\$ M	(9.3)	(9.7)	(11.3)	(19.6)	(14.8)	(14.2)	(14.3)	(14.5)	(16.0)	(16.2)	(16.9)	(17.7)	(18.5)	(19.4)		
(+) Intangible Asset Amortization:	\$ M	5.3	5.7	5.9	5.6	4.5	3.9	3.7	3.7	3.5	3.3	3.2	3.0	2.9	-		
Total Operating Expenses:	\$ M	753.4	796.4	827.7	1,044.3	1,197.3	1,146.6	1,152.0	1,172.5	1,290.7	1,306.6	1,366.4	1,429.0	1,494.4	1,560.2		
Operating Income (EBIT):	\$ M	366.8	360.6	395.2	623.3	621.1	595.4	598.6	609.3	671.6	680.2	711.8	744.8	779.4	818.2	949.2	
Operating (EBIT) Margin:	%	8.1%	7.6%	7.8%	9.9%	8.5%	8.5%	8.5%	8.5%	8.5%	8.5%	8.5%	8.5%	8.5%	8.6%	9.5%	
(-) Taxes, Excluding Effect of Interest:	\$ M	(87.3)	(85.8)	(94.0)	(148.3)	(147.8)	(141.7)	(142.5)	(145.0)	(159.8)	(161.9)	(169.4)	(177.3)	(185.5)	(194.7)	(225.9)	
Net Operating Profit After Tax (NOPAT):	\$ M	279.5	274.8	301.1	474.9	473.2	453.7	456.1	464.3	511.7	518.3	542.4	567.6	593.9	623.5	723.3	
Adjustments for Non-Cash Charges:																	
(+) Intangible Asset Amortization:	\$ M	5.3	5.7	5.9	5.6	4.5	3.9	3.7	3.7	3.5	3.3	3.2	3.0	2.9	-	2.7	
(+) Depreciation (and Amortization):	\$ M	22.1	24.5	25.9	28.1	35.0	33.5	33.7	34.3	37.8	31.9	33.4	34.9	36.5	38.2	40.0	
(+/-) Deferred Income Taxes:	\$ M	8.3	1.3	0.0	5.9	(7.1)	(6.7)	(6.7)	(6.8)	(7.4)	(7.9)	(8.7)	(9.5)	(10.6)	(11.7)	(11.5)	
(+/-) Other Items:	\$ M	(9.3)	(9.7)	(11.3)	(19.6)	(19.6)	(19.6)	(19.6)	(19.6)	(19.6)	(19.6)	(19.6)	(19.6)	(19.6)	(19.6)	(19.6)	
Total Adjustments for Non-Cash Charges:	\$ M	26.4	21.8	20.6	20.0	12.7	11.1	11.0	11.5	14.3	7.7	8.3	8.8	9.2	6.9	11.5	
Change in Net Working Capital:	\$ M	(163.3)	(0.8)	87.7	(237.4)	(162.1)	47.6	(5.3)	(19.4)	(112.5)	(15.3)	(57.0)	(59.6)	(62.3)	(62.3)	(53.1)	
% Change in Revenue:	%	(4.1%)	(0.3%)	30.8%	(19.4%)	(15.9%)	(15.5%)	(15.5%)	(15.5%)	(15.5%)	(15.5%)	(15.5%)	(15.5%)	(15.5%)	(14.8%)	-14.8%	
Capital Expenditures:	\$ M	30.8	268.7	24.2	116.2	200.0	26.9	34.4	37.0	53.5	40.4	48.0	50.2	52.5	54.9	54.9	
.	%	0.7%	5.6%	0.5%	1.9%	2.7%	0.4%	0.5%	0.5%	0.7%	0.5%	0.6%	0.6%	0.6%	0.6%	0.5%	
Annual Unlevered Free Cash Flow:	\$ M	438.4	28.7	209.8	616.1	448.0	390.3	438.0	458.2	585.0	501.0	559.7	585.7	613.0	637.8	732.9	
Unlevered Free Cash Flow for Remaind	\$ M					187.5	390.3	438.0	458.2	585.0	501.0	559.7	585.7	613.0	637.8	732.9	
Present Value of Free Cash Flow:	\$ M					187.3	373.3	385.1	370.3	434.5	342.0	351.1	337.8	324.9	310.7		
Discount Rate (WACC):	%					8.80%	8.80%	8.80%	8.80%	8.80%	8.80%	8.80%	8.80%	8.80%	8.80%	8.80%	
Cumulative Discount Factor - Normal:	#					0.998	0.917	0.843	0.775	0.712	0.654	0.601	0.553	0.508	0.467	0.429	
Cumulative Discount Factor - Mid-Year:	#					0.999	0.956	0.879	0.808	0.743	0.683	0.627	0.577	0.530	0.487	0.448	
Normal Discount Period:	#					0.027	1.027	2.027	3.027	4.027	5.027	6.027	7.027	8.027	9.027	10.027	
Mid-Year Discount Period:	#					0.014	0.527	1.527	2.527	3.527	4.527	5.527	6.527	7.527	8.527	9.527	
Annual Free Cash Flow Growth Rate:	%	51.9%	(93.5%)	632.1%	193.7%	(27.3%)	(12.9%)	12.2%	4.6%	27.7%	(14.4%)	11.7%	4.7%	4.6%	4.1%	14.9%	
Annual EBITDA:	\$ M	394.2	390.8	427.0	657.0	660.6	632.8	635.9	647.3	712.8	715.4	748.4	782.8	818.8	856.4	991.8	
Annual EBITDA Growth Rate:	%	N/A	(0.9%)	9.2%	53.9%	0.5%	(4.2%)	0.5%	1.8%	10.1%	0.4%	4.6%	4.6%	4.6%	4.6%	15.8%	
Annual Net Income:	\$ M	281.6	277.8	302.0	475.7	477.7	457.9	460.3	468.6	516.5	523.6	548.2	574.1	601.1	631.5	731.3	
Annual Net Income Growth Rate:	%	N/A	(1.3%)	8.7%	57.5%	0.4%	(4.1%)	0.5%	1.8%	10.2%	1.4%	4.7%	4.7%	4.7%	5.1%	15.8%	

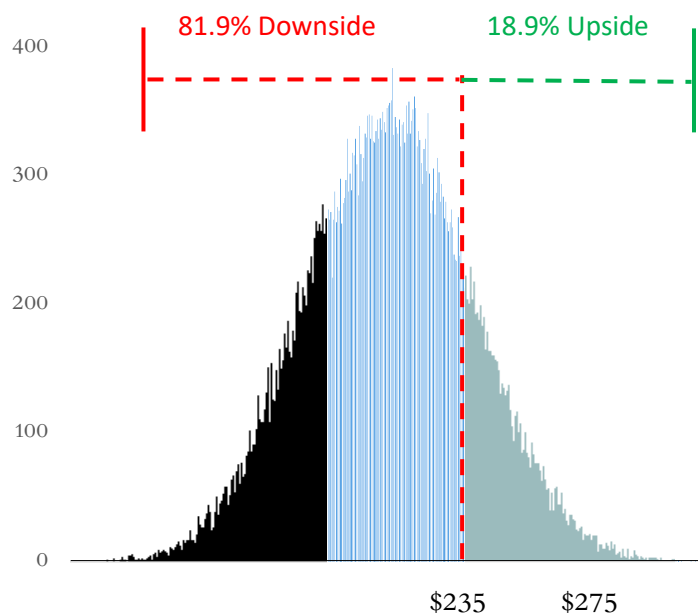
APPENDIX 4: FOOTBALL FIELD



APPENDIX 5: MONTE CARLO SIMULATION

A Monte Carlo simulation was performed using multiple variables including:

- Forecasted Revenue
- Forecasted Dividends
- WACC
- Forecasted Macroeconomic Indicators (GDP, CPI, LIRA, PPI by Copper, PPI by Aluminum, S&P/Case Shiller National Home Price Index Building Materials and Supplies Deals, and New Building Permits.



Simulation Statistics

Trials	50000
Target Price	\$ 235.00
25 th Percentile	\$ 212.65
Mean	\$ 222.34
Median	\$ 222.35
75 th Percentile	\$ 232.00
Standard Deviation	14.4
Skewness	0.00
Kurtosis	-0.02
Mean Upside	50.0%
Mean Downside	50.0%
Above Current Price	0.01%
Above Target Price	18.9%

After conducting 50,000 trials, it was determined that 18.9% of the data lies above the target price of \$235.00, while 81.1% of the data lies below the target price. This supports our recommendation that, when compared to the current market price of \$275.72 (an 0.01% upside), Watsco is overvalued.

APPENDIX 6: SENSITIVITY ANALYSIS

		Terminal FCF Growth Rate:								
		1.00%	1.25%	1.50%	1.75%	2.00%	2.25%	2.50%	2.75%	3.00%
Initial Discount Rate (WACC):	8.0%	\$ 240.38	\$ 246.42	\$ 252.94	\$ 259.97	\$ 267.60	\$ 275.88	\$ 284.92	\$ 294.81	\$ 305.70
	8.2%	232.54	238.17	244.21	250.72	257.75	265.38	273.67	282.73	292.66
	8.4%	225.14	230.38	235.99	242.02	248.53	255.57	263.20	271.51	280.58
	8.6%	218.14	223.02	228.24	233.85	239.88	246.38	253.42	261.06	269.38
	8.8%	211.50	216.06	220.93	226.14	231.77	237.77	244.27	251.31	258.96
	9.0%	205.20	209.47	214.01	218.87	224.08	229.67	235.69	242.19	249.24
	9.2%	199.22	203.21	207.46	212.00	216.84	222.04	227.63	233.65	240.15
	9.4%	193.53	197.27	201.25	205.49	210.01	214.85	220.04	225.62	231.64
9.6%	188.11	191.62	195.35	199.32	203.54	208.05	212.89	218.07	223.65	

		Terminal EBITDA Multiple:								
		12.0 x	12.5 x	13.0 x	13.5 x	14.0 x	14.5 x	15.0 x	15.5 x	16.0 x
Initial Discount Rate (WACC):	8.0%	\$ 231.31	\$ 237.74	\$ 244.17	\$ 250.59	\$ 257.02	\$ 263.45	\$ 269.88	\$ 276.30	\$ 282.73
	8.2%	227.95	234.27	240.59	246.91	253.23	259.55	265.87	272.19	278.51
	8.4%	224.64	230.85	237.07	243.29	249.50	255.72	261.93	268.15	274.37
	8.6%	221.38	227.50	233.61	239.72	245.84	251.95	258.07	264.18	270.29
	8.8%	218.19	224.20	230.21	236.22	242.24	248.25	254.26	260.28	266.29
	9.0%	215.04	220.96	226.87	232.78	238.70	244.61	250.53	256.44	262.35
	9.2%	211.95	217.77	223.58	229.40	235.22	241.04	246.85	252.67	258.49
	9.4%	208.91	214.63	220.35	226.08	231.80	237.52	243.24	248.96	254.68
9.6%	205.92	211.55	217.18	222.81	228.43	234.06	239.69	245.32	250.95	

		Terminal DDM Growth Rate:								
		1.00%	1.25%	1.50%	1.75%	2.00%	2.25%	2.50%	2.75%	3.00%
Initial Discount Rate (WACC):	8.4%	\$ 232.33	\$ 239.04	\$ 246.23	\$ 253.96	\$ 262.30	\$ 271.32	\$ 281.10	\$ 291.74	\$ 303.37
	8.6%	227.02	233.37	240.17	247.46	255.31	263.78	272.94	282.88	293.72
	8.8%	221.96	227.99	234.42	241.32	248.72	256.69	265.29	274.60	284.71
	9.0%	217.15	222.87	228.97	235.50	242.49	250.00	258.09	266.82	276.29
	9.2%	212.56	218.00	223.80	229.98	236.60	243.69	251.31	259.52	268.39
	9.4%	208.17	213.36	218.87	224.74	231.01	237.71	244.91	252.64	260.98
	9.6%	203.98	208.92	214.17	219.75	225.70	232.05	238.85	246.15	254.00
	9.8%	199.97	204.69	209.69	215.00	220.65	226.68	233.11	240.01	247.41
10.0%	196.13	200.64	205.41	210.47	215.84	221.57	227.67	234.20	241.19	

The sensitivity tables on the left show price variations based on input changes in both the DCF and DDM model. All sensitivity tables are calculated with the terminal growth in the columns, and the discount rate in the rows. Cells highlighted in red represent a 10% downside in the stock from the current price. Cells highlighted in green represent a 10% upside.

Denotes potential 10% upside in the companies stock price from current market price
 Denotes potential 10% downside in the companies stock price from current market price

APPENDIX 7: EXTREME GRADIENT BOOSTING REVENUE MODEL

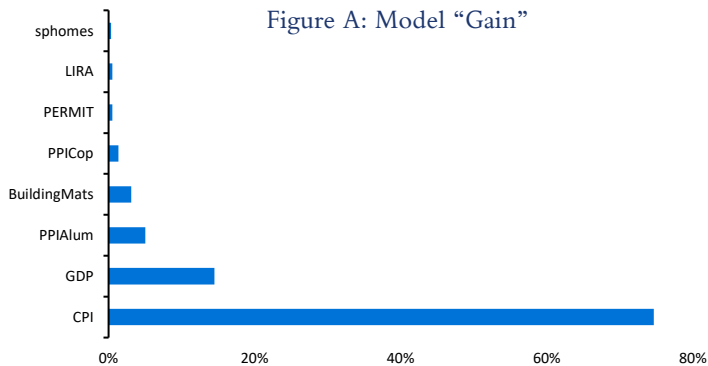
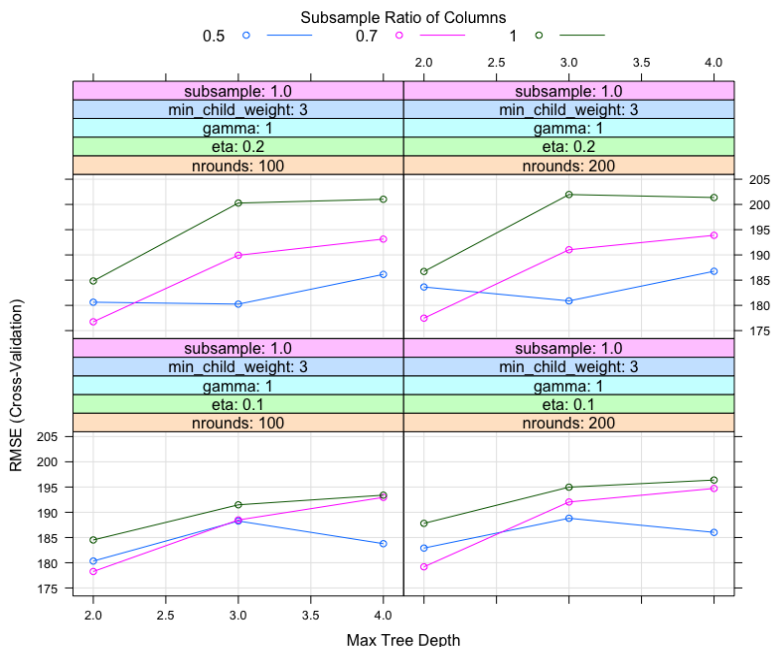


Figure B: XGBoost Tuning Table Output



Extreme Gradient Boosting (XGBoost) is a type of supervised nonlinear machine learning algorithm that uses a group of decision trees to make predictions. It starts with a single tree and adds more trees, each time adjusting the trees to correct the mistakes of the previous trees. This process continues until the group of trees, called an ensemble, is able to make accurate predictions. The final predictions are made by combining the predictions of each tree in the ensemble, with each tree being assigned a weight based on how well it performed.

Built in RStudio, the process begins by feeding historical data into the initial model. This historical data includes Watsco's revenue, GDP, CPI, LIRA, PPI by Copper, PPI by Aluminum, S&P/Case Shiller National Home Price Index, Building Materials and Supplies Deals, and New Building Permits over the past 80 quarters. Then, future predictions for these macro-economic indicators are fed into the model. These forward predictions were projected using a linear regression. The XGBoost model makes predictions on the forecasted future data before feeding the predictions into a tuning table which tunes the model using the tree with the lowest RSME (Figure B). The number of rounds ran inside the tuning table on each tree can vary from 100 to 200. The now tuned model then re-runs the prediction cycle, forecasting Watsco's quarterly revenue out for 20 quarters.

The model makes these predictions with a resulting R-squared of .82. The RSME and SME (standard error of mean) for the model were 190 and 159 respectively. Model gain, as graphed in Figure A, represents the most important variables in training the algorithm.

APPENDIX 8: INCOME STATEMENT

In Millions of USD except Per Share	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031
Revenue	\$ 7,302.53	\$ 6,996.01	\$ 7,030.47	\$ 7,155.64	\$ 7,880.63	\$ 7,979.18	\$ 8,346.22	\$ 8,730.15	\$ 9,131.73	\$ 9,551.79
+ Sales & Services Revenue	\$ 7,302.53	\$ 6,996.01	\$ 7,030.47	\$ 7,155.64	\$ 7,880.63	\$ 7,979.18	\$ 8,346.22	\$ 8,730.15	\$ 9,131.73	\$ 9,551.79
- Cost of Revenue	\$ 5,484.20	\$ 5,254.00	\$ 5,279.88	\$ 5,373.89	\$ 5,918.35	\$ 5,992.36	\$ 6,268.01	\$ 6,556.34	\$ 6,857.93	\$ 7,173.40
+ Cost of Goods & Services	\$ 5,484.20	\$ 5,254.00	\$ 5,279.88	\$ 5,373.89	\$ 5,918.35	\$ 5,992.36	\$ 6,268.01	\$ 6,556.34	\$ 6,857.93	\$ 7,173.40
Gross Profit	\$ 1,818.33	\$ 1,742.01	\$ 1,750.59	\$ 1,781.75	\$ 1,962.28	\$ 1,986.82	\$ 2,078.21	\$ 2,173.81	\$ 2,273.80	\$ 2,378.40
- Operating Expenses	\$ 1,192.77	\$ 1,142.70	\$ 1,148.33	\$ 1,168.78	\$ 1,287.19	\$ 1,303.29	\$ 1,363.24	\$ 1,425.95	\$ 1,491.54	\$ 1,560.16
+ Selling, General & Admin	\$ 1,207.57	\$ 1,156.89	\$ 1,162.58	\$ 1,183.28	\$ 1,303.17	\$ 1,319.47	\$ 1,380.16	\$ 1,443.65	\$ 1,510.06	\$ 1,579.52
+ Other Operating Expense	\$ (14.80)	\$ (14.18)	\$ (14.25)	\$ (14.51)	\$ (15.98)	\$ (16.18)	\$ (16.92)	\$ (17.70)	\$ (18.51)	\$ (19.36)
Operating Income (Loss)	\$ 625.56	\$ 599.30	\$ 602.25	\$ 612.98	\$ 675.08	\$ 683.52	\$ 714.97	\$ 747.86	\$ 782.26	\$ 818.24
- Non-Operating (Income) Loss	\$ 5.78	\$ 5.54	\$ 5.57	\$ 5.67	\$ 6.24	\$ 6.32	\$ 6.61	\$ 6.92	\$ 7.23	\$ 7.57
+ Interest Expense, Net	\$ 5.78	\$ 5.54	\$ 5.57	\$ 5.67	\$ 6.24	\$ 6.32	\$ 6.61	\$ 6.92	\$ 7.23	\$ 7.57
Pretax Income (Loss), Adjusted	\$ 619.78	\$ 593.76	\$ 596.69	\$ 607.31	\$ 668.84	\$ 677.20	\$ 708.36	\$ 740.94	\$ 775.02	\$ 810.67
- Abnormal Losses (Gains)	\$ 0.35	\$ 0.35	\$ 0.35	\$ 0.35	\$ 0.35	\$ 0.35	\$ 0.35	\$ 0.35	\$ 0.35	\$ 0.35
+ Disposal of Assets	\$ 0.35	\$ 0.35	\$ 0.35	\$ 0.35	\$ 0.35	\$ 0.35	\$ 0.35	\$ 0.35	\$ 0.35	\$ 0.35
Pretax Income (Loss), GAAP	\$ 619.43	\$ 593.41	\$ 596.34	\$ 606.96	\$ 668.49	\$ 676.85	\$ 708.01	\$ 740.59	\$ 774.67	\$ 810.32
- Income Tax Expense (Benefit)	\$ 136.83	\$ 131.09	\$ 131.73	\$ 134.08	\$ 147.66	\$ 149.51	\$ 156.38	\$ 163.58	\$ 171.10	\$ 178.97
+ Current Income Tax	\$ 134.37	\$ 128.73	\$ 129.36	\$ 131.67	\$ 145.01	\$ 146.82	\$ 153.58	\$ 160.64	\$ 168.03	\$ 175.76
+ Deferred Income Tax	\$ 2.46	\$ 2.36	\$ 2.37	\$ 2.41	\$ 2.65	\$ 2.69	\$ 2.81	\$ 2.94	\$ 3.07	\$ 3.22
Income (Loss) from Cont Ops	\$ 482.60	\$ 462.33	\$ 464.60	\$ 472.88	\$ 520.83	\$ 527.35	\$ 551.62	\$ 577.01	\$ 603.57	\$ 631.35
Income (Loss) Incl. MI	\$ 482.60	\$ 462.33	\$ 464.60	\$ 472.88	\$ 520.83	\$ 527.35	\$ 551.62	\$ 577.01	\$ 603.57	\$ 631.35
- Minority Interest	\$ 86.03	\$ 82.42	\$ 82.83	\$ 84.30	\$ 92.84	\$ 94.01	\$ 98.33	\$ 102.85	\$ 107.58	\$ 112.53
Net Income, GAAP	\$ 396.56	\$ 379.90	\$ 381.78	\$ 388.58	\$ 427.98	\$ 433.34	\$ 453.29	\$ 474.16	\$ 495.99	\$ 518.82

APPENDIX 9: BALANCE SHEET

In Millions of USD except Per Share	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031
Total Assets										
+ Cash, Cash Equivalents & STI	\$ 90.87	\$ 87.06	\$ 87.48	\$ 89.04	\$ 98.06	\$ 99.29	\$ 103.86	\$ 108.63	\$ 113.63	\$ 118.86
+ Cash & Cash Equivalents	\$ 90.87	\$ 87.06	\$ 87.48	\$ 89.04	\$ 98.06	\$ 99.29	\$ 103.86	\$ 108.63	\$ 113.63	\$ 118.86
+ Accounts & Notes Receiv	\$ 798.37	\$ 764.85	\$ 768.62	\$ 782.31	\$ 861.57	\$ 872.34	\$ 912.47	\$ 954.44	\$ 998.35	\$ 1,044.27
+ Accounts Receivable, Net	\$ 798.37	\$ 764.85	\$ 768.62	\$ 782.31	\$ 861.57	\$ 872.34	\$ 912.47	\$ 954.44	\$ 998.35	\$ 1,044.27
+ Inventories	\$ 1,151.69	\$ 1,103.35	\$ 1,108.78	\$ 1,128.52	\$ 1,242.86	\$ 1,258.40	\$ 1,316.29	\$ 1,376.84	\$ 1,440.17	\$ 1,506.42
+ Other ST Assets	\$ 24.44	\$ 23.41	\$ 23.53	\$ 23.95	\$ 26.37	\$ 26.70	\$ 27.93	\$ 29.22	\$ 30.56	\$ 31.97
+ Misc ST Assets	\$ 29.24	\$ 28.01	\$ 28.15	\$ 28.65	\$ 31.55	\$ 31.94	\$ 33.41	\$ 34.95	\$ 36.56	\$ 38.24
Total Current Assets	\$ 2,065.36	\$ 1,978.67	\$ 1,988.41	\$ 2,023.82	\$ 2,228.86	\$ 2,256.74	\$ 2,360.55	\$ 2,469.13	\$ 2,582.71	\$ 2,701.52
+ Property, Plant & Equip, Net	\$ 158.26	\$ 151.61	\$ 152.36	\$ 155.07	\$ 170.78	\$ 172.92	\$ 180.87	\$ 189.19	\$ 197.90	\$ 207.00
+ Property, Plant & Equip	\$ 351.10	\$ 336.36	\$ 338.02	\$ 344.04	\$ 378.89	\$ 383.63	\$ 401.28	\$ 419.74	\$ 439.05	\$ 459.24
- Accumulated Depreciation	\$ 192.84	\$ 184.75	\$ 185.66	\$ 188.96	\$ 208.11	\$ 210.71	\$ 220.41	\$ 230.54	\$ 241.15	\$ 252.24
+ Other LT Assets	\$ 816.20	\$ 781.94	\$ 785.79	\$ 799.78	\$ 880.81	\$ 891.83	\$ 932.85	\$ 975.76	\$ 1,020.65	\$ 1,067.60
+ Total Intangible Assets	\$ 825.74	\$ 791.08	\$ 794.98	\$ 809.13	\$ 891.11	\$ 902.25	\$ 943.76	\$ 987.17	\$ 1,032.58	\$ 1,080.08
+ Goodwill	\$ 584.20	\$ 559.68	\$ 562.43	\$ 572.45	\$ 630.45	\$ 638.33	\$ 667.69	\$ 698.41	\$ 730.54	\$ 764.14
+ Other Intangible Assets	\$ 214.96	\$ 205.93	\$ 206.95	\$ 210.63	\$ 231.97	\$ 234.87	\$ 245.68	\$ 256.98	\$ 268.80	\$ 281.16
+ Investments in Affiliates	\$ 115.94	\$ 111.07	\$ 111.62	\$ 113.61	\$ 125.12	\$ 126.68	\$ 132.51	\$ 138.61	\$ 144.98	\$ 151.65
+ Misc LT Assets	\$ (9.54)	\$ (9.14)	\$ (9.19)	\$ (9.35)	\$ (10.30)	\$ (10.43)	\$ (10.91)	\$ (11.41)	\$ (11.93)	\$ (12.48)
Total Noncurrent Assets	\$ 974.46	\$ 933.55	\$ 938.15	\$ 954.85	\$ 1,051.60	\$ 1,064.75	\$ 1,113.73	\$ 1,164.96	\$ 1,218.55	\$ 1,274.60
Total Assets	\$ 3,039.82	\$ 2,912.22	\$ 2,926.56	\$ 2,978.67	\$ 3,280.46	\$ 3,321.48	\$ 3,474.27	\$ 3,634.09	\$ 3,801.26	\$ 3,976.11
Liabilities & Shareholders' Equity										
+ Payables & Accruals	\$ 578.94	\$ 549.03	\$ 552.39	\$ 564.61	\$ 635.37	\$ 644.99	\$ 680.81	\$ 718.28	\$ 757.48	\$ 798.48
+ Accounts Payable	\$ 334.43	\$ 317.51	\$ 319.41	\$ 326.32	\$ 366.35	\$ 371.80	\$ 392.07	\$ 413.27	\$ 435.44	\$ 458.64
+ Other Payables & Accruals	\$ 244.51	\$ 231.52	\$ 232.98	\$ 238.29	\$ 269.01	\$ 273.19	\$ 288.74	\$ 305.02	\$ 322.04	\$ 339.84
+ ST Debt	\$ 89.27	\$ 80.09	\$ 81.12	\$ 84.87	\$ 106.57	\$ 109.52	\$ 120.51	\$ 132.00	\$ 144.02	\$ 156.60
+ ST Lease Liabilities	\$ 89.25	\$ 80.06	\$ 81.10	\$ 84.85	\$ 106.59	\$ 109.54	\$ 120.55	\$ 132.06	\$ 144.10	\$ 156.69
+ ST Finance Leases	\$ 2.27	\$ 2.03	\$ 2.06	\$ 2.16	\$ 2.72	\$ 2.80	\$ 3.08	\$ 3.38	\$ 3.69	\$ 4.02
+ ST Operating Leases	\$ 86.98	\$ 78.03	\$ 79.04	\$ 82.70	\$ 103.87	\$ 106.74	\$ 117.46	\$ 128.67	\$ 140.40	\$ 152.67
+ Current Portion of LT Debt	\$ 0.01	\$ 0.03	\$ 0.02	\$ 0.02	\$ (0.02)	\$ (0.02)	\$ (0.04)	\$ (0.05)	\$ (0.07)	\$ (0.09)
+ Other ST Liabilities	\$ 0.41	\$ 0.38	\$ 0.39	\$ 0.40	\$ 0.46	\$ 0.47	\$ 0.50	\$ 0.54	\$ 0.57	\$ 0.61
+ Derivatives & Hedging	\$ 0.41	\$ 0.38	\$ 0.39	\$ 0.40	\$ 0.46	\$ 0.47	\$ 0.50	\$ 0.54	\$ 0.57	\$ 0.61
Total Current Liabilities	\$ 668.62	\$ 629.50	\$ 633.90	\$ 649.87	\$ 742.40	\$ 754.98	\$ 801.82	\$ 850.82	\$ 902.07	\$ 955.68
+ LT Debt	\$ 223.08	\$ 223.09	\$ 223.09	\$ 223.09	\$ 223.07	\$ 223.06	\$ 223.05	\$ 223.04	\$ 223.03	\$ 223.02
+ LT Borrowings	\$ 23.57	\$ 44.23	\$ 41.91	\$ 33.47	\$ (15.39)	\$ (22.03)	\$ (46.77)	\$ (72.64)	\$ (99.71)	\$ (128.02)
+ LT Lease Liabilities	\$ 199.51	\$ 178.86	\$ 181.18	\$ 189.62	\$ 238.46	\$ 245.10	\$ 269.82	\$ 295.69	\$ 322.74	\$ 351.04
+ LT Finance Leases	\$ 7.15	\$ 6.38	\$ 6.47	\$ 6.78	\$ 8.59	\$ 8.84	\$ 9.75	\$ 10.71	\$ 11.71	\$ 12.76
+ LT Operating Leases	\$ 192.36	\$ 172.48	\$ 174.71	\$ 182.83	\$ 229.87	\$ 236.26	\$ 260.07	\$ 284.98	\$ 311.03	\$ 338.28
+ Other LT Liabilities	\$ 73.74	\$ 72.94	\$ 73.03	\$ 73.36	\$ 75.26	\$ 75.51	\$ 76.47	\$ 77.48	\$ 78.53	\$ 79.62
+ Deferred Tax Liabilities	\$ 73.74	\$ 72.94	\$ 73.03	\$ 73.36	\$ 75.26	\$ 75.51	\$ 76.47	\$ 77.48	\$ 78.53	\$ 79.62
Total Noncurrent Liabilities	\$ 296.83	\$ 296.03	\$ 296.12	\$ 296.45	\$ 298.32	\$ 298.58	\$ 299.53	\$ 300.52	\$ 301.56	\$ 302.64
Total Liabilities	\$ 965.45	\$ 925.53	\$ 930.02	\$ 946.32	\$ 1,040.72	\$ 1,053.55	\$ 1,101.35	\$ 1,151.34	\$ 1,203.63	\$ 1,258.33
+ Share Capital & APIC	\$ 1,086.67	\$ 1,042.81	\$ 1,047.74	\$ 1,065.65	\$ 1,169.39	\$ 1,183.49	\$ 1,236.01	\$ 1,290.94	\$ 1,348.41	\$ 1,408.51
+ Common Stock	\$ 21.99	\$ 21.87	\$ 21.88	\$ 21.93	\$ 22.23	\$ 22.27	\$ 22.42	\$ 22.58	\$ 22.74	\$ 22.92
+ Additional Paid in Capital	\$ 1,064.68	\$ 1,020.94	\$ 1,025.86	\$ 1,043.72	\$ 1,147.16	\$ 1,161.22	\$ 1,213.59	\$ 1,268.36	\$ 1,325.66	\$ 1,385.59
- Treasury Stock	\$ 78.16	\$ 81.30	\$ 80.95	\$ 79.66	\$ 72.24	\$ 71.23	\$ 67.47	\$ 63.54	\$ 59.43	\$ 55.13
+ Retained Earnings	\$ 796.90	\$ 760.25	\$ 764.37	\$ 779.33	\$ 866.02	\$ 877.80	\$ 921.69	\$ 967.60	\$ 1,015.61	\$ 1,065.84
+ Other Equity	\$ (43.03)	\$ (41.46)	\$ (41.63)	\$ (42.28)	\$ (46.00)	\$ (46.51)	\$ (48.39)	\$ (50.37)	\$ (52.43)	\$ (54.59)
Equity Before Minority Interest	\$ 1,762.37	\$ 1,680.30	\$ 1,689.52	\$ 1,723.04	\$ 1,917.16	\$ 1,943.55	\$ 2,041.83	\$ 2,144.63	\$ 2,252.16	\$ 2,364.63
+ Minority/Non Controlling Interest	\$ 312.00	\$ 306.39	\$ 307.02	\$ 309.31	\$ 322.58	\$ 324.38	\$ 331.10	\$ 338.12	\$ 345.47	\$ 353.15
Total Equity	\$ 2,074.37	\$ 1,986.69	\$ 1,996.54	\$ 2,032.35	\$ 2,239.74	\$ 2,267.93	\$ 2,372.92	\$ 2,482.75	\$ 2,597.62	\$ 2,717.79
Total Liabilities & Equity	\$ 3,039.82	\$ 2,912.22	\$ 2,926.56	\$ 2,978.67	\$ 3,280.46	\$ 3,321.48	\$ 3,474.27	\$ 3,634.09	\$ 3,801.26	\$ 3,976.11

APPENDIX 10: CASH FLOW STATEMENT

In Millions of USD except Per Share	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031
Cash from Operating Activities										
+ Net Income	\$ 477.66	\$ 457.92	\$ 460.34	\$ 468.59	\$ 516.50	\$ 523.58	\$ 548.24	\$ 574.06	\$ 601.10	\$ 629.42
+ Depreciation & Amortization	\$ 35.00	\$ 33.53	\$ 33.69	\$ 34.29	\$ 37.77	\$ 38.24	\$ 40.00	\$ 41.84	\$ 43.76	\$ 45.77
+ Non-Cash Items	\$ 115.82	\$ 110.96	\$ 111.51	\$ 113.49	\$ 124.99	\$ 126.55	\$ 132.37	\$ 138.46	\$ 144.83	\$ 151.49
+ Stock-Based Compensation	\$ 25.41	\$ 24.34	\$ 24.46	\$ 24.90	\$ 27.42	\$ 27.77	\$ 29.04	\$ 30.38	\$ 31.78	\$ 33.24
+ Deferred Income Taxes	\$ 2.46	\$ 2.36	\$ 2.37	\$ 2.41	\$ 2.65	\$ 2.69	\$ 2.81	\$ 2.94	\$ 3.07	\$ 3.22
+ Other Non-Cash Adj	\$ 87.95	\$ 84.26	\$ 84.67	\$ 86.18	\$ 94.91	\$ 96.10	\$ 100.52	\$ 105.14	\$ 109.98	\$ 115.04
+ Chg in Non-Cash Work Cap	\$ (165.88)	\$ 64.93	\$ (7.30)	\$ (26.51)	\$ (153.56)	\$ (20.87)	\$ (77.75)	\$ (81.32)	\$ (85.06)	\$ (88.98)
+ (Inc) Dec in Accts Receiv	\$ (99.91)	\$ 33.51	\$ (3.77)	\$ (13.69)	\$ (79.26)	\$ (10.77)	\$ (40.13)	\$ (41.97)	\$ (43.90)	\$ (45.92)
+ (Inc) Dec in Inventories	\$ (36.22)	\$ 48.34	\$ (5.43)	\$ (19.74)	\$ (114.34)	\$ (15.54)	\$ (57.89)	\$ (60.55)	\$ (63.33)	\$ (66.25)
+ Inc (Dec) in Other	\$ (29.75)	\$ (16.93)	\$ 1.90	\$ 6.91	\$ 40.03	\$ 5.44	\$ 20.27	\$ 21.20	\$ 22.18	\$ 23.20
Cash from Operating Activities	\$ 462.59	\$ 667.33	\$ 598.24	\$ 589.86	\$ 525.69	\$ 667.50	\$ 642.87	\$ 673.04	\$ 704.63	\$ 737.71
Cash from Investing Activities										
+ Change in Fixed & Intang	\$ (48.51)	\$ (48.92)	\$ (49.34)	\$ (49.75)	\$ (50.17)	\$ (50.58)	\$ (51.00)	\$ (51.41)	\$ (51.83)	\$ (52.25)
+ Disp in Fixed & Intang	\$ 1.47	\$ 1.53	\$ 1.59	\$ 1.66	\$ 1.72	\$ 1.79	\$ 1.86	\$ 1.94	\$ 2.01	\$ 2.09
+ Disp of Fixed Prod Assets	\$ 1.47	\$ 1.53	\$ 1.59	\$ 1.66	\$ 1.72	\$ 1.79	\$ 1.86	\$ 1.94	\$ 2.01	\$ 2.09
+ Acq of Fixed & Intang	\$ (25.73)	\$ (25.99)	\$ (26.26)	\$ (26.53)	\$ (26.81)	\$ (27.08)	\$ (27.36)	\$ (27.64)	\$ (27.93)	\$ (28.22)
+ Acq of Fixed Prod Assets	\$ (25.73)	\$ (25.99)	\$ (26.26)	\$ (26.53)	\$ (26.81)	\$ (27.08)	\$ (27.36)	\$ (27.64)	\$ (27.93)	\$ (28.22)
+ Net Cash From Acq & Div	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
+ Cash for Acq of Subs	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
+ Other Investing Activities	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Cash from Investing Activities	\$ (48.51)	\$ (48.92)	\$ (49.34)	\$ (49.75)	\$ (50.17)	\$ (50.58)	\$ (51.00)	\$ (51.41)	\$ (51.83)	\$ (52.25)
Cash from Financing Activities										
+ Dividends Paid	\$ (328.10)	\$ (365.50)	\$ (407.17)	\$ (453.58)	\$ (505.29)	\$ (532.73)	\$ (561.66)	\$ (592.16)	\$ (624.31)	\$ (658.21)
+ Cash From (Repayment) Debt	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
+ Cash From (Repay) ST Debt	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
+ Cash From LT Debt	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
+ Repayments of LT Debt	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
+ Cash (Repurchase) of Equity	\$ 23.96	\$ 27.33	\$ 31.16	\$ 35.54	\$ 40.53	\$ 46.21	\$ 52.70	\$ 60.10	\$ 68.54	\$ 78.16
+ Increase in Capital Stock	\$ 23.96	\$ 27.33	\$ 31.16	\$ 35.54	\$ 40.53	\$ 46.21	\$ 52.70	\$ 60.10	\$ 68.54	\$ 78.16
+ Decrease in Capital Stock	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
+ Other Financing Activities	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Cash from Financing Activities	\$ (304.13)	\$ (338.17)	\$ (376.00)	\$ (418.05)	\$ (464.77)	\$ (486.52)	\$ (508.96)	\$ (532.06)	\$ (555.77)	\$ (580.05)

APPENDIX 11: JOINT-VENTURES



2009 - Carrier Enterprise I

- Watsco holds 80% controlling interest with Carrier holding 20% non-controlling interest
- Partnership includes locations in Sun Belt states, Puerto Rico, and Carrier's export division in Miami
- Export division re-domiciled from Virgin Islands to Delaware in 2019

2011 - Carrier Enterprise II

- Watsco holds 80% controlling interest with Carrier holding 20% non-controlling interest
- Carrier contributed locations in Northeast US & Watsco contributed select locations of subsidiary Homans Associates LLC
- Partnership purchased Carrier's distribution operations in Mexico

2012 - Carrier Enterprise III

- Watsco holds 60% controlling interest with Carrier holding 40% non-controlling interest
- Contributed 35 of its company-owned locations in Canada

2021 - TEC Distribution. LLC

- Watsco holds 80% controlling interest with Carrier holding 20% non-controlling interest
- HVAC distributor operating from 32 locations in Illinois, Indiana, Kansas, Michigan, Minnesota, Missouri and Wisconsin
- \$105,200 paid to Temperature Equipment Corporation (Carrier contributed \$21,040 and Watsco contributed

APPENDIX 12: RATIO ANALYSIS

In Millions of USD except Per Share	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021
Liquidity Ratios										
Current Ratio	3.60	4.19	4.03	4.37	3.94	3.21	4.03	3.35	3.05	2.70
Quick Ratio	1.60	1.72	1.60	1.80	1.69	1.34	1.64	1.32	1.40	1.12
Cash Ratio	0.26	0.08	0.09	0.13	0.18	0.19	0.23	0.16	0.30	0.16
Solvency Ratios										
Debt-Equity	0.65	0.48	0.58	0.49	0.50	0.32	0.35	0.49	0.40	0.54
Total Debt	0.39	0.32	0.37	0.33	0.33	0.24	0.26	0.33	0.28	0.35
Financial Leverage	1.65	1.48	1.58	1.49	1.50	1.32	1.35	1.49	1.40	1.54
Debt to Capital Ratio	0.39	0.32	0.37	0.33	0.33	0.24	0.26	0.33	0.28	0.35
Interest Coverage Ratio	0.00	0.00	0.00	60.62	93.04	55.63	135.81	90.85	323.69	631.40
Fixed Charge Ratio				60.62	93.04	55.63	135.81	2.58	2.84	3.23
Activity Ratios										
Inventory Turnover	0	0	0	4.61	4.65	4.30	4.09	3.92	4.90	4.14
Days of Inventory on Hand	0	0	0	79.20	78.47	84.82	89.18	93.01	74.42	88.27
Receivables Turnover	0	0	0	9.12	8.87	9.08	9.06	8.94	9.44	8.99
Days of Sales Outstanding	0	0	0	40.03	41.16	40.19	40.29	40.84	38.65	40.59
Payables turnover	0	0	0	19.48	19.34	16.12	16.26	16.81	15.03	16.07
Number of Days Payables	0	0	0	18.74	18.87	22.64	22.44	21.71	24.28	22.72
Working Capital turnover	0	0	0	4.52	4.56	4.71	4.19	4.40	5.07	5.09
Fixed Asset Turnover	0	0	0	6.77	6.65	6.12	6.32	4.73	5.06	5.59
Total Asset Turnover	0	0	0	2.30	2.25	2.12	2.10	1.87	2.03	2.04
Valuation Ratios										
P/E Ratio	0.00	0.00	0.00	12.30	15.40	17.85	14.02	18.79	21.75	19.30
P/CF Ratio	0.00	21.94	25.83	18.68	19.15	20.62	30.59	20.50	16.32	34.73
P/S Ratio	0.00	0.00	0.00	1.01	1.26	1.46	1.15	1.44	1.73	1.93
P/BV Ratio	2.62	2.92	3.31	3.43	4.25	4.07	3.26	4.01	4.90	6.08
Basic EPS	0.00	0.00	0.00	4.90	5.15	5.60	6.48	6.44	7.00	10.80
Diluted EPS	0.00	0.00	0.00	4.55	4.78	5.23	6.06	6.03	6.56	10.13
Cash Flow/Share	0.00	4.33	4.14	6.27	7.82	8.24	4.55	8.79	13.88	9.01
EBITDA/Share	0.00	0.00	0.00	7.10	8.57	8.71	5.43	9.57	14.59	9.91
Dividends/Share	0.00	1.15	2.00	2.79	3.59	4.41	5.58	6.32	6.90	7.59
Dividend Payout Ratio	0.00	0.00	0.00	56.98%	69.80%	78.83%	86.12%	98.15%	98.57%	70.30%
Retention Rate	0.00	0.00	0.00	43.02%	30.20%	21.17%	13.88%	1.85%	1.43%	29.70%
Sustainable Growth Rate	0.00	0.00	0.00	6.18%	4.41%	2.84%	2.10%	0.26%	0.22%	6.23%
Profitability Ratios										
Gross Profit Margin	0.00	0.00	0.00	24.49%	24.51%	24.54%	24.64%	24.25%	24.19%	26.55%
Operating Margin	0.00	0.00	0.00	8.18%	8.18%	8.15%	8.18%	7.68%	7.93%	10.01%
Pretax Margin	0.00	0.00	0.00	4.80%	4.89%	5.45%	5.89%	5.75%	5.87%	7.13%
Net Profit Margin	0.00	0.00	0.00	4.20%	4.33%	4.80%	5.34%	5.16%	5.33%	6.67%
Operating ROA	0.00	0.00	0.00	18.80%	18.43%	17.29%	17.22%	14.33%	16.14%	20.38%
ROA	0.00	0.00	0.00	9.67%	9.75%	10.17%	11.24%	9.62%	10.85%	13.58%
ROTC	0.00	0.00	0.00	10.74%	10.82%	11.25%	12.26%	10.58%	11.89%	14.49%
ROE	0.00	0.00	0.00	14.37%	14.60%	13.43%	15.17%	14.34%	15.15%	20.97%
ROCE (Return on Common Equity)	0.00	0.00	0.00	14.37%	14.60%	13.43%	15.17%	14.34%	15.15%	20.97%

APPENDIX 14: SWOT ANALYSIS

Strengths

Strong market position in the HVAC distribution industry
 Large and well-established network of branches and distribution centers across the U.S.

Opportunities

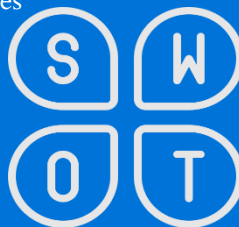
Growing demand for energy-efficient HVAC/R equipment
 Expansion into new geographical markets
 Growing demand for HVAC/R services and maintenance

Weaknesses

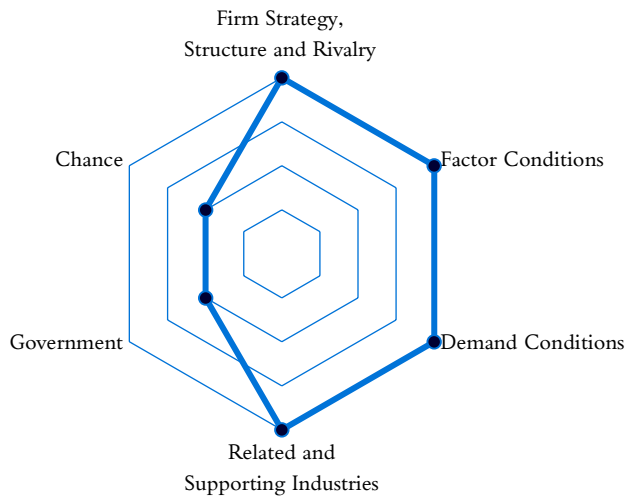
Dependent on the construction and remodeling industries, which can be affected by economic downturns
 Dependent on the construction and remodeling industries, which can be affected by economic downturns
 Operates in a highly competitive industry and has a high

Threats

Economic downturns can negatively impact the construction and remodeling industries, which in turn could negatively impact Watsco's business
 Faces intense competition from other HVAC distributors and manufacturers
 Increasing cash flow and debt misuse can limit its financial flexibility and ability to invest in growth



APPENDIX 14: PORTER'S DIAMOND MODEL



Firm Strategy, Structure and Rivalry

- Maximizes value for money for customers through effective procedures that also result in cost savings for the business
- Provides quick and simple accessibility to managers and supervisors, enabling a flexible and dependable organizational culture that aids in the development and advancement of the business
- Employees may quickly access the company's leadership to discuss issues due to their flatter organizational structure
- Its strategic development and concentration are influenced by competition with nearby rivals with frequent pressure to explore novel approaches and technologies and implement them into its

Chance

- Depending on the kind and timing of the incident, random occurrences may have a good or negative impact on their business
- Depending on how they affect the overall business operations and marketing communications of the company, random occurrences have had varying effects on Watsco, especially from a regional perspective

Government

- Watsco has been helped by industry regulations to retain and grow its competitive advantage in the direction of sustainable development. WSO industry rules also guarantee the continual upkeep of product quality, specifically through SEER regulation
- The government has aided company operations and growth strategies by acting as a catalyst with such regulations. This was accomplished by giving the business infrastructure capabilities and advantages. With its many internal consumer-related rules and regulations, the government has also functioned as a catalyst in helping the business satisfy demand
- The government has been a challenge particularly in its dealings with other nations, which has affected WSO's commercial relationships with global markets, customers, distributors, and retailers. However, these difficulties brought on by the governments and their interactions with other nations and areas have assisted Watsco in creating backup plans and strategies that would enable it to counter threats and vulnerabilities

Related and Supporting Industries

- Recognized expansion and globalization thanks to the existence of connected sectors in local and foreign markets, giving it the supplies needed for service efficiency and gain economies of scale
- Supporting industries have contributed to the growth of the whole sector in domestic markets, which has helped companies like Watsco advance and expand in company operations but also limits their market exposure and adds limited innovation with potential price pressures
- The existence of competing industries is a significant element in the expansion and development in business activities, as competitor companies add pressure businesses toward excellence and efficiency but also limitations such as price competition, increasing battles over market share control, and innovation stagnation

Factor Conditions

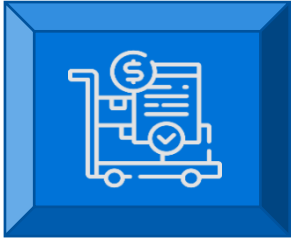
- Resources for equity capital are mostly created within the organization, using exclusively internal resources and methods
- Debt-based financing entails borrowing money from external sources and institutions
- Commodity price volatility can serve as a benefit or limitation, but due to global economic pressure on commodity prices, material costs can be lowered, allowing for cheaper production costs or improved-quality products with better materials

Demand Conditions

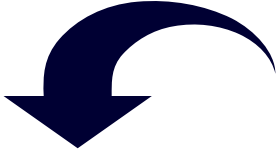
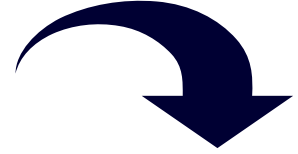
- For Watsco to effectively strategize and plan operations, it is crucial that they comprehend the dynamics at work with larger markets due to the growing size of local markets and domestic customers, but most of this has come from a single reliance in joint-ventures with Carrier Global, lacking partnership diversification
- For forecasting and projecting consumer behavior and desires in other markets, domestic customers and consumer behavior patterns are equally crucial. Depending on the response they have obtained in another market, Watsco can also affect customer behavior in one area if able to find such a solution

APPENDIX 15: SUPPLY CHAIN ANALYSIS

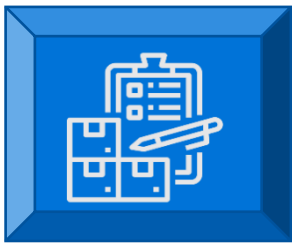
The process typically includes the following steps:



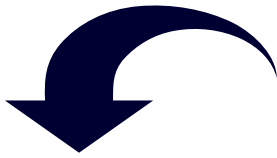
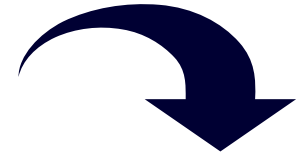
Procurement: Watsco sources products from various suppliers, including manufacturers, wholesalers, and distributors. The company has a team of buyers that negotiate prices, terms, and delivery schedules with suppliers.



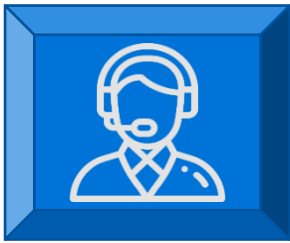
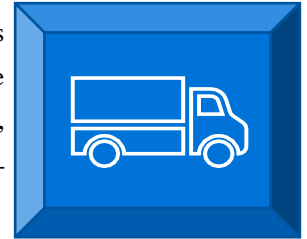
Logistics: Once the products are procured, Watsco uses a combination of its own fleet of trucks and third-party logistics providers to transport the products to its distribution centers.



Inventory Management: Watsco uses an inventory management system to track the flow of goods from suppliers to customers. The system is designed to ensure that their products are in the right place at the right time to meet customer demand.



Distribution: Watsco operates a network of distribution centers across North America that are strategically located to serve customers. The company uses a variety of distribution methods, such as next-day delivery, will-call, drop-shipping, and now e-commerce, to meet the needs of its customers.



Customer Service: Watsco's customer service team is responsible for answering customer questions, processing orders, and resolving any issues that may arise.

APPENDIX 16: EFFICIENCY RATINGS










Region	SEER	SEER2
Southeast	15	14.3
Southwest	15	14.3
North	14	13.4

With the introduction of SEER2 regulations in 2023, the standards of HVAC system efficiency have increased and altered to consider. All products sold through Watsco retail stores will need to meet such regulations, affecting the turnover of current inventory and new inventory that comes in. HVAC manufacturers acknowledge a lack of awareness in HVAC system standards, especially in residential construction firms.





Source: *MarketsandMarkets*

APPENDIX 17: ENVIRONMENTAL, SOCIAL AND GOVERNANCE

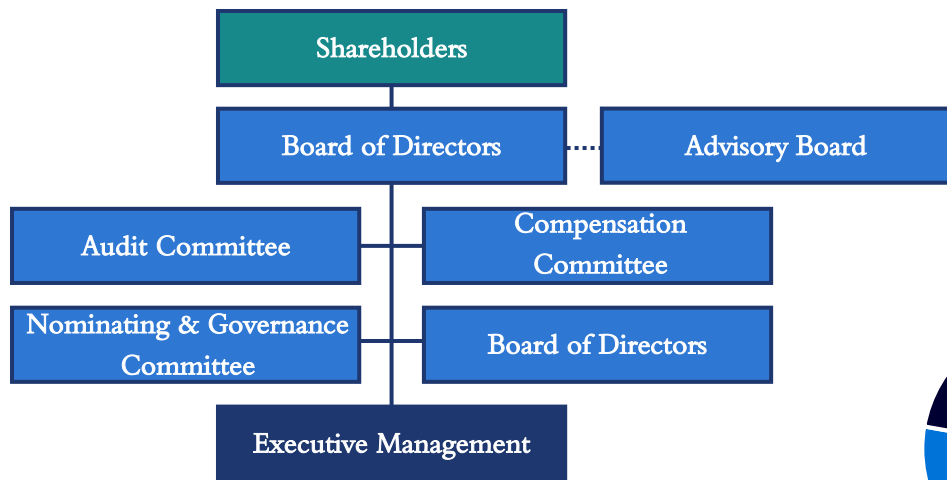
BOARD OF DIRECTORS

Name	Role(s)	Age	Tenure	Committee(s)	Elected by	Shares Owned	Noteworthy Information
 Albert H. Nahmad	Chairman, CEO, Founder	82	1972-Present	Strategy (Chair)	Class B Shareholders	4,148,778 Class B 1,494 Common	Founder of Watsco, envisioned and lead 1988 transition from manufacturer to industry-leading distributor
 Bob L. Moss	Co-Vice Chairman	75	1992-2012, 2014-Present	Nomination & Governance	Common Shareholders	39,200 Common	Founder & CEO of Moss & Associates with 53 years experience in construction industry
 Cesar L. Alvarez	Co-Vice Chairman	75	1997-2015, 2017-Present	Strategy	Class B Shareholders	None	Former Chairman & CEO and current Senior Chairman of Greenberg Traurig, P.A. law firm
 J Michael Custer	Independent & Lead Director	60	2018-Present	(Chair) Nomination & Governance, Audit	Class B Shareholders	None	Leads tax services at Kaufman Rossin P.A. accounting firm, former Deloitte partner, CPA
 Aaron (AJ) J. Nahmad	Director, President	41	2005-Present	Strategy	Class B Shareholders	266,925 Class B 2,992 Common	Son of Albert H. Nahmad, President since 2016, key leader in technology transformation
 Steven (Slava) Rubin	Independent Director	44	2018-Present	Compensation, Nomination & Governance	Common Shareholders	2,693 Common	Co-Founder & former CEO of Indiegogo, Co-Founder of Humbition (VC), and Vincent (alternative investing)
 Dr. Denise E. Dickins	Lead Independent Director	61	2021-Present	Audit, Compensation	Class B Shareholders	11,611 Common	Professor of Accounting and Auditing at East Carolina University, CPA
 John A. Macdonald	Director	66	2021-Present	Audit	Common Shareholders	2,000 Common	30+ years experience in energy and telecom sectors, former President and CEO of Enercare, Inc
 Valerie Schimel	Director	44	2022-Present	Strategy	Class B Shareholders	67,088 Class B	Daughter of Albert H. Nahmad, Founder and CEO of Munchkin Fun, LLC, President of Albert H. and Jane D. Nahmad Foundation

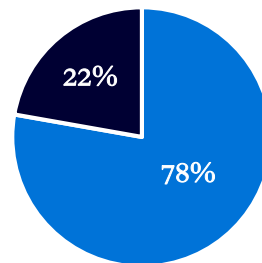
EXECUTIVE MANAGEMENT

Name	Role(s)	Age	Tenure	Base Salary	Total Compensation	Shares Owned	Noteworthy Information
 Albert H. Nahmad	Chairman, CEO, Founder	82	1972-Present	\$300,000	\$10,672,518	4,148,778 Class B 1,494 Common	Founder of Watsco, envisioned and lead 1988 transition from manufacturer to industry-leading distributor
 Aaron (AJ) J. Nahmad	Director, President	41	2005-Present	\$600,000	\$10,675,800	266,925 Class B 2,992 Common	Son of Albert H. Nahmad, President since 2016, key leader in technology transformation
 Barry S. Logan	Executive Vice President, Investor Relations	60	1992-Present	\$435,000	\$1,928,577	2,693 Common	Served in several roles at Watsco including Treasurer, CFO, SVP, and Director until becoming EVP in 2019
 Ana M. Menendez	Chief Financial Officer	58	1998-Present	\$350,000	\$357,250	44,904 Class B 70,345 Common	Chair of the Board of Miami branch of Federal Reserve Bank of Atlanta, Member of American Institute of CPA's and Florida Institute of CPA's

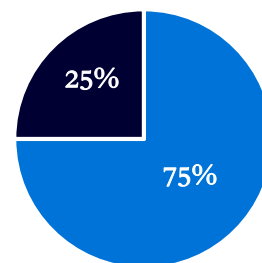
Governance Structure



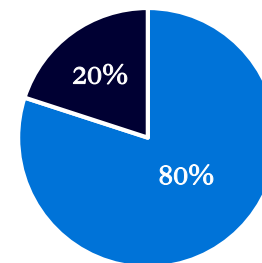
Board Diversity



Executive Diversity



Workforce Diversity



Common Stock vs Class B Stock

10-Year Performance

