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Apogee Enterprises: A crystal clear buying opportunity

Apogee Enterprises, Inc. (Apogee, APOG, the Company) is an established leader in the design and development of Architectural Products and Services, providing Architectural Glass, Aluminum Framing Systems, and Installation Services for buildings, as well as value-added Glazing Products for custom picture framing. With an increased focus on smaller-size commercial projects, anticipated synergies from the consolidation of subsidiaries, and the Company's market-leading product offerings, we believe Apogee presents an attractive investment opportunity. We initiate a BUY recommendation on Apogee Enterprises, Inc. and have established a 12-month price target of \$43 (+12%), formulated through our assumptions and proprietary Discounted Cash Flow (DCF) valuation methodology.

Favorable Revenue Mix | Smaller construction presents an enticing growth opportunity

We believe Apogee will continue to benefit from a shift in its business focus away from monumental building projects towards low- to mid-rise projects, a market characterized by reduced cyclicality and more favorable competitive advantages, which we believe will lead to a smoother revenue stream. We also believe Apogee will achieve profitability improvements by expanding its automation capabilities and minimizing lead times.

Improved Operation Efficiencies | Opening the door to long-term savings

Apogee is currently under reorganization, initiating consolidation between six of its business subsidiaries which we expect will generate an estimated \$30-\$50M in annual cost savings. Utilizing a lean enterprise platform, we believe Apogee's more consolidated business model will drive supply chain efficiencies and improve operating leverage, promoted through cost savings and enhanced profitability in the near-term.

Capitalizing on Green Infrastructure | Sustainability trends improve industry outlook

We believe Apogee is well positioned to capitalize on the distinct trends in sustainable building products, particularly through its low-emission coatings. Additionally, we believe the demand for energy efficient buildings and eco-friendly workspaces will stimulate commercial construction demand, allowing Apogee to further leverage its product differentiation. Potential green infrastructure spending under the new Biden Administration is also expected to be very favorable for eco-friendly, green building construction.

Key Information

Industry Outlook: Apogee competes in the U.S. Glass and Glazing industry where it controls 4% of overall market share. The industry is highly competitive with estimated FY2021 Sales of \$14B, forecasted to increase at an annual rate of 4.6% through FY2025. Nonresidential Construction Spending, a key industry driver, is expected to decline by 5% in FY2021, but will be largely offset by the Company's aggressive transition into the low- to mid-rise building market.

Financial Analysis: We believe Apogee is in a favorable financial position. The Company's healthy cash position coupled with reasonable debt levels and improving margins supports our long-term bullish prospects. We believe Apogee will continue to strengthen its financial position and improve profitability, primarily achieved through the expected synergies within its Architectural Framing Systems segment.

Valuation: We utilized an intrinsic valuation approach that is further supported by a multiples-based valuation technique. We believe our Discounted Cash Flow Analysis (DCF) is the most appropriate valuation methodology for the Company due to Apogee's historical Free Cash Flow (FCF) generation and our confidence in our Free Cash Flow assumptions going forward. Our DCF result is further validated by our Price-to-Earnings (P/E) multiple valuation.

Risks: Key risks include, but are not limited to, unsuccessful acquisition integration, management turnover, political gridlock, materials and wage inflation, and the competitive landscape.

PRICE PERFORMANCE AND KEY HISTORICAL EVENTS



January 21, 2021

Key Statistics

Trading Data

Closing Price	\$38.51
Target Price	\$43.00
52 Week High	\$38.80
52 Week Low	\$13.77
Avg Daily Vol (3 Mo)	297,978
Market Value	1016.1m
Enterprise Value	887.2m
Diluted Shares	26.5m
Dividend Yield	2.36%
Float	96.59%

Financial Metrics

Gross Margin	22.2%
Operating Margin	15.9%
EBITDA Margin	19.9%
Net Margin	11.9%
Diluted EPS	\$1.42
ROA	5.5%
ROE	12.0%
Cash Ratio	0.05x
Current Ratio	1.63x
Total Debt	168.5m
Debt to Equity	0.31
P/E	13.03
EV/EBITDA	7.01
P/BV	1.54
P/S	0.82

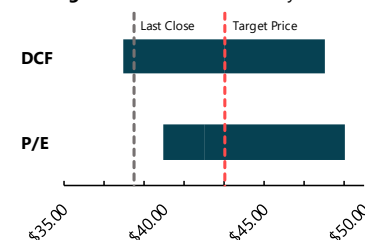
Estimates

	2020A	2021E	2022E
Q1	\$0.58	\$0.11 A	\$0.67
Q2	\$0.72	\$0.67 A	\$0.72
Q3	\$0.57	\$1.42 A	\$0.74
Q4	\$0.45	\$0.72	\$0.75
FY EPS	\$2.31	\$2.92	\$2.88
FY P/E	12.7x	13.0x	11.5x

DCF Summary

Est. Value of Operations	\$1,273.38
+Excess Cash	\$30.76
-Total Debt	\$168.50
-Underfunded Pension	\$6.20
Equity Value	\$1,129.43
/ Diluted Shares	26.73
DCF Value Per Share	\$43.00

Figure 1: Football Field Analysis



This report was published for educational purposes only.

COMPANY OVERVIEW

Incorporated in the State of Minnesota in 1949, Apogee Enterprises, Inc. is an established leader in the design and development of Architectural Products and Services, providing Architectural Glass, Aluminum Framing Systems, and Installation Services for commercial buildings, as well as value-added Glazing Products for custom picture framing. Headquartered in Minneapolis, Minnesota, Apogee employs 7,200 people across 9 subsidiaries and 21 properties located in the US, Canada, and Brazil. In FY2020, the Company generated revenues of \$1.38B versus \$1.40B in FY2019 which represented a 1.1% decline in annual revenue. Apogee has diversified strategic growth initiatives across three core architectural divisions which comprise 90% of the Company's revenues, supporting commercial construction projects' full lifecycles by leveraging its glass, framing, and installation capabilities for projects of all sizes. The Company's Large-Scale Optical (LSO) segment encompasses the remaining 10% of revenues through its Tru Vue business, a premier value-added framing and custom coating company. Apogee conducts 86% of its business in the United States, 9% in Canada and 5% in other international regions (Figure 2).

The **Architectural Framing Systems (AFS)** segment consists of six market leading businesses involved in the production and manufacturing of curtainwall, storefront, aluminum window, and entrance systems, which represented 48% of total revenues at \$687M in FY2020. The AFS segment operates under the Alumicor, EFCO, Linetec, Sotawall, Tubelite, and Wausau brands which are heavily reliant on industry standard bid wins and backlog. These businesses provide finishing services for metal components used in a variety of commercial building applications. The majority of growth in AFS has been derived from the recent Sotawall (FY2016) and EFCO (FY2017) acquisitions. We believe Apogee's AFS segment is positioned well to yield the highest long-term growth opportunity as synergies are realized between the Company's new and existing subsidiaries.

The **Architectural Glass (AG)** segment operates under the Viracon brand, offering a suite of glass products which represented 27% of the Company's total revenue at \$387M in FY2020. This segment fabricates glass for a variety of aesthetic, design, and energy-efficiency purposes. Glass and vinyl are also laminated and tempered for protection against severe weather. Viracon produces high performance glass typically used to fabricate insulating and/or laminated glass units for window, curtainwall, storefront, or entrance systems.

The **Architectural Services (AS)** segment provides project management and on-site installation services under the Harmon brand to design, engineer, fabricate, and install various architectural systems which represented 19% of revenue at \$269M in FY2020. The segment is heavily reliant on bid wins and backlog with average projects requiring 12-24 months to complete upon winning contracts.

The **Large-Scale Optical (LSO)** segment operates through the Tru Vue brand, manufacturing high performance glazing products, glass for technical and museum markets and custom framing solutions. LSO is Apogee's most profitable business, representing 6% of annual revenue at \$88M in FY2020, but translating into 20% of operating income. This segment is focused on converting the domestic and international custom picture-framing and fine art markets from clear, uncoated glass to value-added products that protect art from UV damage and minimize reflection.

ENVIRONMENTAL, SOCIAL, AND GOVERNANCE

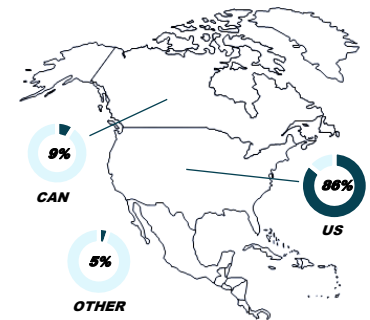
Environmental

Apogee has demonstrated a commitment to sustainability through a variety of eco-friendly initiatives, and we expect continuous improvement in this area. Hazardous materials in manufacturing are commonplace in the industry, which can cause contamination of air and water supply. As a result, APOG follows strict federal, state, and local regulations governing the use and storage of these materials as well as disposal of wastes. To comply with these regulations, APOG contracts outside vendors to collect and dispose of hazardous waste used within its production facilities. Apogee has stated it is fully compliant with all known laws and regulations surrounding its business operations to the best of its knowledge. The Company offers a wide range of products that help architects, developers, and building owners achieve green building and sustainability goals. These products can be found in both its framing materials and architectural glass coatings. Alumicor, EFCO, Sotawall, and Tubelite provide thermal insulation for curtainwall and storefront products, allowing for maximum efficiency in draft reduction and temperature control, saving on costs associated with electricity needed to heat and cool buildings. Viracon and Wausau Windows provide Low-Emissive (Low-E) coatings that have lower heat transfer properties and higher light transmission than reflective coatings. These coatings provide enhanced temperature control on the inside of the building, requiring less energy consumption to sustain interior temperatures.

Social

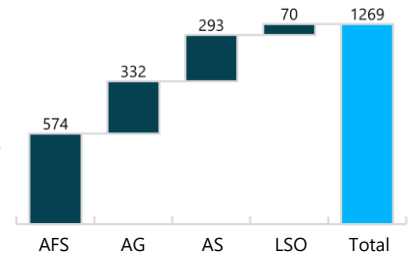
Apogee maintains a continual focus on providing a safe work environment for all employees. The Company has been frequently recognized for its commitment to safe business practices, evaluated annually through a safety assessment by the Company's Risk Roundtable, a group of safety leaders from each of Apogee's business units. The group references a ten-dimensional rubric to set goals and build action plans to help improve safety protocols. APOG's strict safety measures are illuminated through its Harmon division, a business committed to safety considering the physical demand of its work environment. As the primary glass installer for Apogee, Harmon has had tremendous success at maintaining a safe work environment and has been repeatedly recognized for its safe and secure workplace, earning the title of "Top Safety Contractor" in 2019. Apogee has fulfilled its promise of diversity by constructing a diverse management team and Board of Directors. In 2018, Apogee was recognized on the Honor Roll for Minnesota Census of Women in Corporate Leadership, conducted by St. Catherine University. The Honor Roll recognizes an elite group of companies that maintain at least 20% of its executive management and Board of Directors with women. 2018 was the third consecutive year that Apogee was named to the list. In 2017, Lloyd E. Johnson, a member of the Board of Directors, was awarded the, "2017 Power 300: Most Influential Black Corporate Directors" by Savoy Magazine. Johnson, who has served on the board since 2017, chairs Apogee's Audit Committee. The Company's core leadership team has also organized community events for philanthropic charities, such as United Way. In 2019, Apogee's employees and corporate matching gifts contributed over \$400,000 for United Way alone. From cancer research to college prep courses, Apogee has made a strong and long-term commitment

Figure 2: Regional Exposure by Revenue



Source: Company Information

Figure 3: Breakdown of Segment Revenue



*Adjusted for Intersegment Elimination

Source: Company Information

Subsidiaries by Segment

Architectural Framing Systems (AFS)



A leading manufacturer of architectural aluminum window, curtainwall, storefront and entrance systems



A full-service designer, manufacturer, and installer of proprietary high performance unitized curtainwall systems



A leading designer and manufacturer of energy efficient, custom aluminum window and curtainwall systems



A Canadian-based supplier of architectural aluminum building envelope products



A leader in eco-efficient aluminum storefront, curtainwall, and entrance systems



A leading architectural finishing company, offering high-performance paint and anodize finishes for aluminum

Architectural Glass (AG)



The leading North American fabricator of high performance, custom-coated architectural glass for global markets

Architectural Services (AS)



One of the largest U.S. full-service building glass and curtainwall installation companies

Large-Scale Optical (LSO)



A manufacturer of high performance glazing products for the custom picture framing, museum and technical glass markets

Source: apog.com

to better the lives of people by donating over \$1.1M in financial grants from 2014 to 2019 to over 30 charitable organizations and non-profits.

Governance

Ty Silberhorn, Chief Executive Officer, President and Director

Mr. Silberhorn was recently appointed as CEO and Director of Apogee in January 2021 after the Company's former CEO, Mr. Joseph Puihsys, retired. Prior to joining Apogee, Mr. Silberhorn spent over 20 years at 3M where he developed a successful track record driving operational excellence in multiple industries within the Company. During his tenure, Mr. Silberhorn served as Senior Vice President of Transformation, Technologies, and Services, where he worked to redefine 3M's efforts in the usage of digital transformation to further enable growth and productivity. Prior to this position, Mr. Silberhorn was Vice President and General Manager of the Safety & Industrial and Electronic divisions.

Nisheet Gupta, Executive Vice President and Chief Financial Officer

Mr. Gupta joined Apogee as EVP and CFO in June 2020, replacing the retiring Mr. James Porter. Before joining Apogee, Mr. Gupta worked at Land O' Lakes as Vice President and Head of Global Finance Operations. Prior to Land O' Lakes, Mr. Gupta served in various finance leadership roles at global companies including Ernst & Young and FedEx.

Board of Directors: Apogee's Board of Directors is composed of ten members, eight are independent and two are non-independent. The non-independent directors are Mr. Donald A. Nolan (Chairman of Board) and Mr. Ty Silberhorn (CEO). Mr. Nolan's tenure on the Board started in 2013 and was promoted to Chairman of the Board in January 2020. Mr. Nolan has successfully utilized his experience in strategy development and business operations to serve as an intermediary between the Board of Directors and Management. The diversity of Apogee's Board aligns well with the company's values as an equal opportunity employer. The Board includes two minority directors as well as three female directors, empowering the Company's leadership team to capitalize on diverse thoughts and perspectives (Figure 4).

Compensation: Executive Compensation is determined by the Company's Board of Director's Compensation Committee and is divided into four segments: Base Salary, Annual Cash Incentive, Restricted Stock (RS) and Two-Year Performance-Based Awards (Figure 5). Base Salary for FY2020 was determined by business plans, experience, job criticality, and economic conditions. Most of the Company's key executives took a significant pay reduction in FY2020, with the CEO taking a 25% decrease, and most other key executives taking a 20% decrease for the first 2 quarters due to disruptions and uncertainties of COVID-19. Annual Cash Incentives are rewarded to Management based on three performance metrics: Net Sales, Earnings before Tax, and Daily Working Capital. Long-Term Incentive Compensation is paid through two instruments, Restricted Stock Awards and Two-Year Performance-Based Awards. Each year, the Compensation Committee agrees on a fixed dollar amount of Restricted Stock to be awarded to Management. CEO RS is determined by annual performance, a percentage of base salary, and a compensation peer group. For other Named Executive Officers, Restricted Stock Awards are determined by annual performance and recommendations by the CEO. The Two-Year Performance-Based award compensates management with a long-term cash incentive based on ROIC and Earnings per Share (Appendix R). We believe the compensation plan put forth by the Committee is aligned with the Company's growth strategy and will deliver value to shareholders over the long-term.

INDUSTRY OVERVIEW

Glass and Glazing Contracting is a global industry that includes a myriad of sub-sectors. Companies within the industry select, cut, and install glass panels for large windows, curtainwalls, and skylights, for nonresidential buildings. The industry is highly fragmented with no single firm owning more than 4% of the overall industry market share. IBIS Research forecasts CY2021 sales for the industry to be around \$14B, and an expected annual growth of 4.6% through CY2025 (Figure 6). Considering the recent economic downturn and decline in new construction spending, Dodge Analytics projects Nonresidential Construction Spending will decline 5% in CY2021 (Figure 7). However, we believe that Apogee's business and services will remain resilient as many of its main customers reside in Healthcare, Education and Government, which are expected to grow at 10.5%, 1.5%, and 1.5%, respectively, through CY2023. Additionally, infrastructure initiatives from the Biden Administration that propose renovation and retrofitting of nonresidential buildings to become more sustainable will increase the demand for Low-E coatings and Thermal Framing products industry-wide.

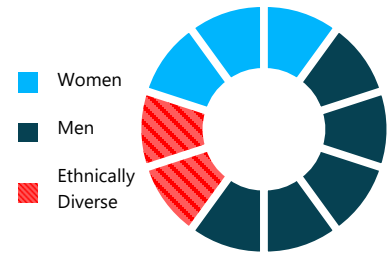
Macroeconomics

The Global Economy has slowed heavily following the disruptions of COVID-19. Global and U.S. Gross Domestic Product (GDP) contracted by 4.4% and 4.3% in FY2020, respectively, which can be attributed to the shutdown of global economies and challenging labor conditions forcing companies to cut capital expenditures. U.S. GDP is expected to rebound by 5.9% in CY2021, and Global GDP is expected to return to pre-pandemic levels, expanding 6.4% in FY2021 (Figure 8). The U.S. Glass and Glazing Industry relies heavily on new Nonresidential Construction activity, accounting for 52% of total revenue, with additions and repairs accounting for 27% and 20%, respectively. The Architectural Billing Index is another indicator that tracks Nonresidential Construction activity with general lead times of 9-12 months; scores over 50 represent expansion in the industry. The index has contracted since 1Q2020, and has failed to show signs of growth since the first shutdowns of the U.S. Economy last year (Figure 9).

Low Interest Rate Environment

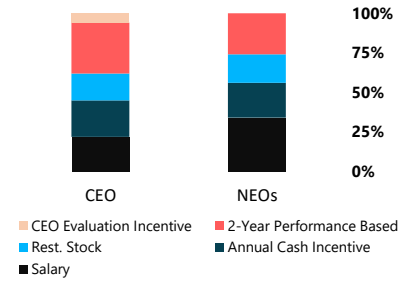
The Federal Reserve (the Fed) has stated that it will maintain its Accommodative Policy stance with low interest rates through CY2023. COVID-19 stalled economic activity in early CY2020, requiring The Fed to enact an emergency rate cut to near 0% in mid-March. Low interest rates have cushioned adverse economic effects of COVID-19, incentivizing businesses to borrow and invest in new projects. In relation to Apogee and its industries, a low interest rate environment should provide the Company and its customer's access to less expensive financing, which will be supportive for future demand and growth initiatives.

Figure 4: Board of Directors Minority Representation



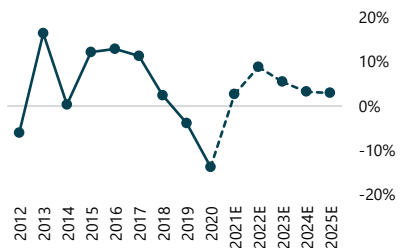
Source: APOG Proxy Statement FY2020

Figure 5: Management Salary Breakdown



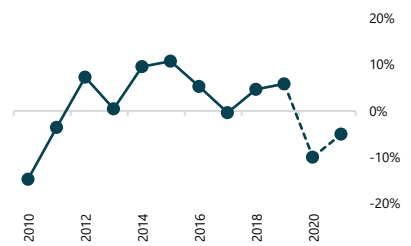
Source: APOG Proxy Statement FY2020

Figure 6: Glass and Glazing Revenue Outlook



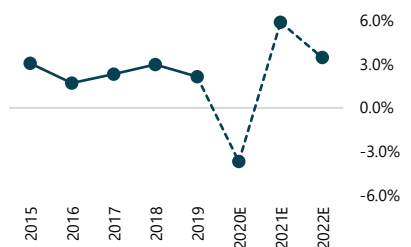
Source: IBIS Research

Figure 7: Nonresidential Construction



Source: FRED

Figure 8: Change in U.S. Gross Domestic Product



Source: Morgan Stanley, FRED

Fiscal Stimulus and Policy Changes

The severity of economic shutdowns has halted business around the world, sending global economies into a recession. Commercial investment has remained low, but the ABI has shown new contracts are being awarded for the next 12 months. COVID-19 related shutdowns have led to the injection of unprecedented amounts of Fiscal and Monetary stimulus into the economy. The Fed has reduced interest rates to all-time lows and increased purchases of U.S. Treasury and Government Agency securities. Going forward, proposed plans to enact a multi-trillion-dollar infrastructure bill by the Biden Administration should accelerate America's transition to a "greener" economy. The Biden Administration has planned to renovate and restore 4+ million buildings to align with new environmental specifications. This has the potential to positively impact the Glass and Glazing Industry, leading to a major uptick in demand.

Low Margins Industry Wide

The Glass and Glazing Industry is a low margin industry by nature, largely due to the high competition and cost structure of the industry. Industry participants exclusively bid on projects to gain business and must accurately forecast material and labor costs to ensure a reasonable profit. According to IBIS Research, Wages and Purchases are responsible for the majority of incurred expenses by companies, accounting for 30% and 43% of overall cost, respectively. The size of wage expenses as a percentage of revenue is primarily due to well-compensated architects and engineers tasked with designing and modeling products. Purchasing is the largest expense due to the cost of raw materials. In years leading up to the pandemic, Gross Margins stabilized within the industry. We believe the Glass and Glazing Industry could see greater margin pressure as cost cutting efforts recede and expenses related to business loss and operating disruptions from COVID-19 build.

COMPETITIVE LANDSCAPE

Oldcastle Building Envelope (OBE or Oldcastle)

Headquartered in Terrell, Texas, Oldcastle is a top supplier of value-added, glazing-focused, interior and exterior products and services. Operating 82 production locations around the world, OBE competes in each of Apogee's primary business segments with a strong presence in the United States. OBE operates under the CRH company umbrella of construction material companies, functioning specifically under its building products segment. OBE offers architectural glass and window products similar to Viracon's product line with a strong emphasis on value-added glazing techniques to protect from impacts and extreme weather. Additionally, OBE has a strong presence in the curtainwall and storefront product space with custom options available to its customers depending on building goals.

Analysis: In FY2019, CRH generated \$2.16B in Global Glass and Glazing revenue with 54% of the total revenue coming from the United States, approximately \$1.15B representing around 3% market share of the total U.S. Glass and Glazing Industry. APOG and OBE are two dominant players within the Architectural Glass and Glazing Industry with very similar target markets. OBE has the advantage of leveraging its two proprietary services (SystemSelect and VistaVision) that allow customers to receive recommendations and estimates based on their given building specifications. We believe these systems will be a useful resource for architects and contractors in the beginning stages of building plans. However, Harmon, a key subsidiary of Apogee, offers a full range of preconstruction services and engineering design from experts in the Glass and Glazing Industry. We believe APOG's primary focus on the Glass and Glazing Industry will better position Apogee for further development and innovation as OBE is only one subsidiary within a large company that focuses on many different industries.

Tecnoglass (TGLS)

Tecnoglass is a holding company engaged in the manufacturing, supply, and installation of architectural glass, windows, and associated aluminum products for the Global Commercial and Residential Construction Industries. Headquartered in Barranquilla, Columbia, Tecnoglass employs 5,528 employees, most of which are on one-year fixed-term employment contracts. Tecnoglass operates through the Tecnoglass, ESWindows, and Alutions brands. Tecnoglass produces five different architectural glass products which are laminated, monolithic, insulating, Low-E, Tecnobend, and Ultraview. Tecnobend products differentiate the company from its competitors with very few architectural glass companies offering a curved glass option for large scale buildings. ESWindows provides a variety of products within the curtainwall product space. Additionally, it has a large emphasis on residential products that enhance revenue streams for the brand. Alutions operates exclusively through Aluminum Framing Solutions and acts as a complimentary product when contractors are purchasing both glass and framing for new buildings.

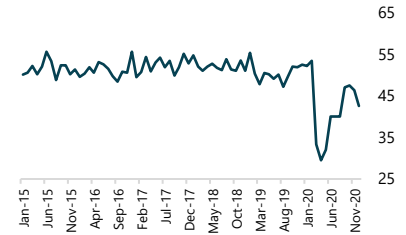
Analysis: Tecnoglass is the only publicly traded company we identified that competes with APOG in the Architectural Glass and Glazing Industry. In FY2019, Tecnoglass generated revenue of \$431M compared to APOG's \$1.38B, roughly a third of the size of APOG's business, despite being founded just seven years ago (Figure 11). According to its most recent 10-K, Tecnoglass's revenue represents 1% of the U.S. Glass and Glazing Industry. The majority of its business is conducted in the Southeastern U.S. with an emphasis on Florida high-rise multifamily structures. Considering its concentrated target market, we do not believe Tecnoglass is a large threat to APOG's overall market share.

Kawneer

Kawneer offers Architectural Product Solutions within the façade space, operating manufacturing facilities in Europe and North America as well as a full architectural service team. Headquartered in Norcross, Georgia, Kawneer operates under Arconic, a publicly traded holding company within its Building and Construction segment. Kawneer provides a similar product line to Apogee, offering architectural products such as curtainwalls, storefront framing, glazed glass, and sun-controlled products. Kawneer offers market solution products that include high-thermal performance glass, as well as hurricane and blast resistant solutions. Kawneer also offers sustainable building products that conserve energy and enhance building performance that adds a compliment to the aesthetics.

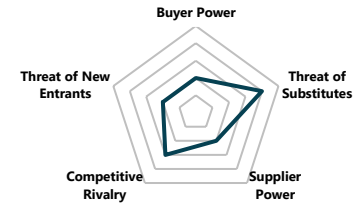
Analysis: Arconic's Building and Construction segment generated revenue of \$1.12B in FY2020 which includes the Kawneer brand as well as two smaller aluminum paneling companies that are used to create building façades. The Building

Figure 9: Architectural Billing Index



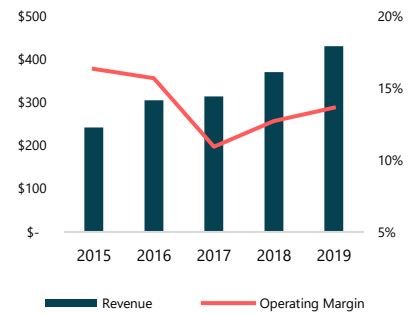
Source: American Institute of Architects

Figure 10: Porter's Five Forces Analysis



Source: Team Estimates

Figure 11: Tecnoglass Operating Metrics



Source: FactSet, TGLS Company Information

Competitors by Segment

Architectural Framing Systems (AFS)

KAWNEER Kawneer offers 39 different framing and curtainwall solutions with a variety of specifications that can fit any project size.



With 28 unique storefront and curtainwall products, OBE has a broad range of products that have been used in large scale projects. OBE also offers thermal storefronts that compete directly with APOG's thermal framing.

W&W NEW GLASS LLC W&W is largely known for its Architectural Services with a strong base in the United States. However, they are the exclusive distributor of Pilkington Planar products which are used in storefronts in over 100 countries. W&W is able to leverage Pilkington's diverse product portfolio to compete with companies like APOG that source its own framing and glass products. W&W also uses APOG's Sotawall curtainwall products exclusively in the New York City market.

Architectural Glass (AG)



Oldcastle offers 21 Architectural Glass products that each have a variety of uses. Products range from classic laminated glass to blast and hurricane resistant storm glass.

TECNOGLASS Tecnoglass is able to offer 6 types of glass that can be customized in an almost unlimited way. They are one of the only companies in the United States that is able to provide glass that can fit a bent surface to form a perfect circular shape. This alongside its Low-E offerings differentiate Tecnoglass from its competition.

and Construction segment recognizes sales in the U.S. and European region. We expect Kawneer to further assert itself as a major player in the Architectural Framing Segment, where it could challenge APOG's ability to capture market share going forward. However, we do not believe that Kawneer's glass products hold similar characteristics compared to APOG, as Kawneer is focused on smaller hung and horizontal sliding windows.

Benson Industries (Benson)

Benson designs, manufactures, and installs custom curtainwalls and glass for the architectural and construction community. Headquartered in Portland, Oregon, Benson is a global provider of curtainwall and architectural glass with over 600 employees and supporting offices in the U.S. and APAC regions. In 2013, Benson was acquired by MiTek Industries, an engineering steel company owned by Berkshire Hathaway as a part of its manufacturing segment. Benson is completely focused on commercial buildings and monumental skyscrapers with a large emphasis on its services available to customers including emergency board ups, 24-hour glass replacement, and architectural metal replacement.

Analysis: Benson's focus on architectural services while also providing physical products in framing and architectural glass gives the company a unique position to compete with APOG's Architectural Service and Glass business segments. Benson's focus on skyscrapers and large commercial buildings differs from APOG's shift towards low- to mid-rise commercial and office buildings and therefore does not make the company a competitor over the long-term.

W&W Glass, LLC (WW Glass)

WW Glass, LLC is a family owned business with a 70-year history in the curtainwall and glass industry. The company operates as a designer and installer of curtainwall and glass products, sourced several companies including APOG's Sotawall for New York based construction. WW Glass provides a broad range of services including custom CAD drawings specific to the customer's needs, full product installation, and Face-To-Face visits. Headquartered in Nanuet, New York, WW Glass services a diverse portfolio of customers ranging from small construction projects to high-rise residential buildings. WW Glass conducts the majority of its business in the U.S., primarily on the East and West Coast.

Analysis: WW Glass is positioned to compete with Apogee's Architectural Service segment. While the company uses Sotawall's products in New York projects, there are still many other bids taken in and out of the U.S. market that compete directly with APOG's addressable market in three of its largest segments. We believe WW Glass is a costly middleman in the Architectural Services industry, as Apogee is capable of providing both materials and services needed to complete any job.

INVESTMENT SUMMARY

We believe Apogee will experience considerable financial benefits as it shifts its business strategy away from monumental building projects towards low- to mid-rise projects. The Company has also embarked on consolidation initiatives that we anticipate will further support profitability improvements in the future after the expenses related to the acquisitions of Sotawall and EFCO are finished. In addition, we believe green infrastructure demand coupled with funding from the new U.S. Presidential Administration will boost Apogee's top-line in the mid-term and beyond, allowing the Company to leverage its sustainable building products. (Figure 12).

Favorable Revenue Mix | Smaller size construction presents an enticing growth opportunity

Monumental projects have historically served as a fundamental component of Apogee's business, but the Company has increasingly shifted its focus away from monumental building projects towards expanding its presence within the low- to mid-rise commercial construction space, which represents approximately 50% of the Company's Total Addressable Market. We believe this transition represents a favorable long-term growth proposition that will be beneficial in allowing the Company to generate a more diversified revenue stream and improved profitability. For example, in FY2012, roughly 60% or \$167M of Viracon's revenue could be attributed to monumental projects but has since decreased to less than 20% or \$77M ending FY2020. This shift in strategy supplemented an increase in overall Company profitability and volume with Architectural Glass Operating Margin expanding by 90bps y/y in FY2020 despite 160bps of expenses related to the VELOCITY (Appendix BB) startup cost and increased foreign competition in the monumental building landscape. We are encouraged by Management's initiatives as revenues continue to stabilize and cost uncertainties attached to long lead times associated with larger projects are diminished (Figure 13). We believe shifting the Company's focus to low- to mid-rise building projects will allow Apogee reduce revenue cyclicality and related project costs, smoothing its bottom line. For example, in the Healthcare Industry, new hospital builds represent an attractive growth driver in and beyond FY2021 as Healthcare construction activity is expected to increase considerably (Figure 14). Seven major hospital builds in the U.S. with project sizes from \$1 to \$4 billion have been announced, advanced, or completed in CY2020. Upon examination of our local Healthcare market, we validated this trend via two major hospital expansions underway in the Duluth, Minnesota market. In 4Q2020, Management announced that the Company has received orders for 56 similar hospital projects that are expected to rollout within 3 years. Apogee's new vision within the low- to mid-rise projects is expected to bring long-term financial benefits of reduced revenue cyclicality and increased profitability that was absent in large monumental projects.

The ongoing COVID-19 pandemic has forced businesses to redesign the workplace to support organizational priorities, causing a sudden and robust shift in the way employers choose to situate employees. We believe the preference to work from home has accelerated, but it has limitations as organizational success is still dependent on face-to-face interaction and collaboration. The COVID-19 pandemic has established a precedent where, in many situations, it is deemed unnecessary for employees to work in centralized locations. Work from Home has become increasingly popular, demonstrating that the work that usually took place in offices can be conducted at home. However, as of 3Q2020, 88% of real estate experts believe that COVID-19 will encourage investments in flexible office concepts and improve potential for new, innovative business models (Figure 15). Many companies may now be expected to offer employees informal

Kawneer provides several glass options that deviate from traditional large glass panes that are commonly used on monumental buildings. These products include hung, sliding, casement, and tilt turn windows. This gives buyers more options to fit their project specifications.

W&W's exclusive product relationship with Pilkington Planar allows the company to only provide glass fasteners that can be used on its glass with no way to substitute. This creates a network effect around W&W's products that doesn't allow for cross integration with other glass suppliers.

Architectural Services (AS)

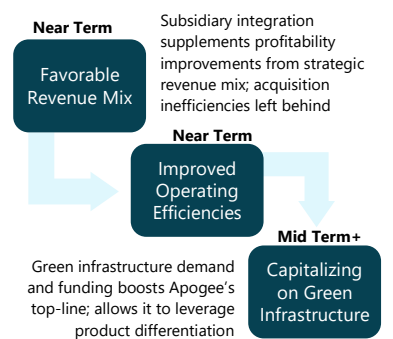
Technoglass acquired GM&P in 2017, a consulting and glazing installation business that was previously its largest installation customer. This has led them to continue vertically integrating its business from product selection all the way to installation and warranty issuance.

Benson has a roster of experienced installation superintendents, key personnel, and engineers that work together to provide its clients with a high quality of service. Benson works closely with its own manufacturing and engineering department to ensure precision and quality.

W&W has a large service segment that offers several high end services that compete on the same level of APOG's services. Some of its unique services include CAD drawings, in-house and third party mock-ups and testing systems, and technical installation support services.

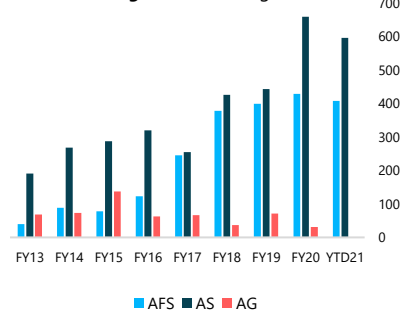
Source: Various

Figure 12: Investment Thesis



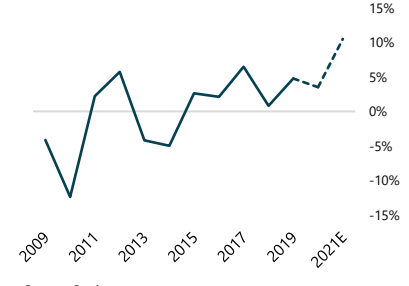
Source: Team Estimates

Figure 13: Backlog



Source: APOG Company Information

Figure 14: U.S. Healthcare Construction Spending



Source: Statista

offices in the suburbs alongside a formal office in the city center. Subsequently, we expect the prevalence of satellite commercial office space to increase significantly, boding well considering Apogee's overall business strategy shift. Retrofit and renovation projects represent a relatively significant portion of Apogee's revenue stream at an estimated 10% of revenue, with some bids totaling over \$100 million. We expect continued growth from businesses attempting to attract talent into perhaps older structures that are outside urban areas. Companies have been trending towards squeezing more people onto floor plates for years, with just 8 square meters per employee becoming a typical density as of FY2020. COVID-19 has been a unique global phenomenon that has caused organizations to turn in the opposite direction, requiring more space per employee. Diverting attention to interiors, building owners are increasingly focused on reconfiguring inside space to accommodate for generally accepted standards by the Center for Disease Control that the pandemic has created, including physical distancing requirements and directional layouts for floors. Despite the current Work from Home environment, we believe Apogee has the ability to generate healthy revenue streams in the future as organizations look to renovate and expand new and existing office space.

Improved Operation Efficiencies | Opening the door to long-term savings

Apogee has recently engaged in acquisitions to expand its AFS offerings, but unexpected costs and operational inefficiencies had led to negative profitability impacts, including a \$42.6 million pre-tax charge and a \$3.1 million impairment on the acquisition of EFCO in FY2019. During FY2020, Management had planned to integrate and synergize by consolidating its six AFS businesses to diminish inefficiencies. Apogee adopted cost saving initiatives that will drive \$30-\$50M in annual cost savings, bolstering the Company's fundamental position by improving operational efficiency which we believe will be a sustainable trend. We did not attempt to forecast future impairments and acquisition charges as we believe the bulk of these expenses are in the rearview.

Reduced Cost Structure: While recent acquisitions expand the Company's end offerings, many operating responsibilities within AFS were duplicated causing unneeded expenses. Independent functions including HR, Finance, and Engineering have been centralized, improving operating leverage. We expect procurement, overhead cost reductions, and minimizations in controllable costs to generate between \$10-\$20M annual cost improvements in SG&A expenses with full recognition as soon as FY2023 (Figure 16). If these synergies were implemented 3 years prior, then a reduction of \$5M per year from FY2018 to FY2020 would have generated over 100bps of savings in SG&A expense as a percentage of sales (Figure 17). Reinstating pre-COVID-19 salaries may partially offset near-term cost savings, but we do not believe it will affect the Company's long-term savings initiatives. Additionally, optimizations through lean enterprise platforms had identified and cut waste, eliminating non-essential processes which produced an additional \$15M in annual savings. We believe these cost cuts are sustainable and can extend across the Company's supply chain where we have forecasted a reduction in the Company's COS by 75bps annually beginning in FY2022. Despite a \$28.8M decline in AFS revenue in 3Q2020, Operating Margins expanded 150bps to 5.3% from 3.8% (Figure 18). From the announcement of this initiative to present day, Net Margins have expanded 740 bps to 11.9% (3Q2020) from 4.5% (3Q2019). We believe management can continue to drive long-term cost savings within its Architectural Framing Segment as reorganization and consolidation of the segment continues.

Commercial Excellence: We believe efforts by the Company to reduce costs from lost bidding will provide cost savings of \$10 to \$15M annually with similar run rates expected moving forward. Historically, the Company has been troubled by its bid and fulfillment orders, project management, sales and marketing efforts, and pricing strategies as Management seeks to improve project selection efficiencies. We believe the Company's shift to low- to mid-rise projects will serve as a fundamental tailwind in reducing excess bid costs. With project lead times subsequently improved from 12-24 months to just two weeks, Apogee will bid projects more effectively. Implementing data analytics to analyze prior project characteristics will aid Apogee in constructing a comprehensive set of proprietary information the Company can use to bid future projects, improving profitability.

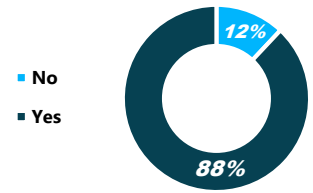
Capitalizing on Green Infrastructure | Sustainability trends improve industry outlook

Apogee provides market leading energy efficient glass through its Architectural Glass segment (AG). APOG's glass products are differentiated through the use of patented coating technology that provides greater energy efficiency in addition to improved aesthetics. We believe the global shift towards constructing sustainable infrastructure provides a promising long-term growth prospect for the Company. In FY2020, Globe Newswire forecasted the Global Nonresidential Green Building market to grow from \$785B in FY2019, to \$810B in FY2020 (Figure 19). This decline in growth can be attributed to the economic shutdowns across the world as a result of the COVID-19 pandemic. Going forward, Global Nonresidential Green Building is expected to grow at a 12.4% CAGR through FY2023 to \$1.1T according to The Business Research Company, demonstrating strong growth prospects.

Sustainable infrastructure as a long-term growth driver. Sustainable infrastructure is becoming increasingly important to organizations. This demand has led to the Leadership in Energy and Environmental Design (LEED) certification which validates the sustainability and efficiency of buildings leading to increased value, vast cost savings, and greater occupancy with environmentally friendly initiatives (Figure 20). From FY2015 to FY2018, LEED certified buildings produced \$1.2B in energy cost savings domestically. LEED certified buildings have provided on average a 14% reduction in 5-year operating costs, and an average property value increase of 7%. Renovating of older, less efficient buildings provides firms with an attractive investment opportunity, driving growth in the sustainable building market. In FY2018, buildings renovated to LEED standards saved an average of 9% in operating costs in the first year after renovation. For green retrofits, it typically requires an average of 6 years for property owners to completely recoup their investment, and property value rises an average of 5% (Figure 21). We believe Apogee is well positioned as a leader in green retrofits with its Renovations line of business, where the Company goes to market with its subsidiaries together to obtain bids. Sustainably built buildings also

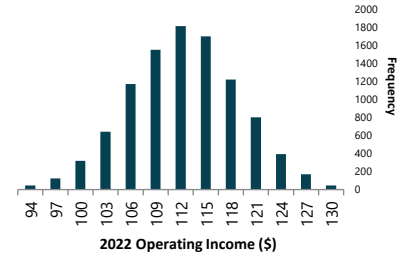
Figure 15: Encouraged Interest in Flexible Office Concepts

Industry Poll: Do you think COVID-19 will encourage investments in flexible office concepts and improve potential for new (innovative) business models?



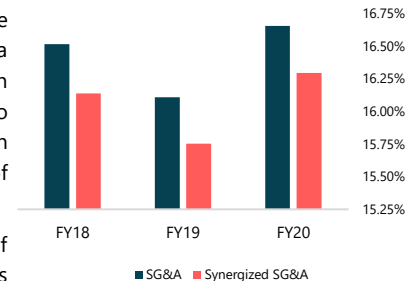
Source: Source: Real estate in the new reality, KPMG International, 2020

Figure 16 : SG&A Flexing 2022 Operating Income



Source: APOG Company Information, Team Estimates

Figure 17: Synergized SG&A



Source: Company Information, Team Estimates

Figure 18: AFS Synergized Operating Margins



Source: Team Estimates

Figure 19: U.S. Buildings LEED Certified



Source: Statista

benefit from lower vacancy rates and higher leasing revenues. Vacancy rates in LEED certified buildings are 4% lower than non-certified buildings, and leases can be up to 20% higher, proving sustainable buildings more profitable for property owners. As a result, demand for green construction is expected to increase to approximately 45% in FY2021 compared to 32% in FY2018.

Apogee's market leading energy efficient product offerings will help the company gain a competitive advantage as the market moves towards a more sustainable future. A key industry report from Dodge found that the most influential drivers causing the movement towards sustainable construction are client demands and environmental concerns, comprising 34% and 33% of total responses, respectively, demonstrating the invocation of environmental regulations are being equally influenced by the pull of the market. We believe APOG is fully aware of this paradigm shift, planning to fully capitalize on the trend. The Company's products include a comprehensive selection of high-performance Thermal Framing Systems and top of the line Architectural Glass Coatings to reduce energy and greenhouse gas consumption. Apogee's advanced sustainable Thermal Framing products are led by Alumicor's Thermawall 2600 and EFCO's XTHERM, which are highly functional thermal products designed to improve buildings' energy efficiency. Management has advanced its position in the Architectural Glass Coating Segment by developing a broad selection of reflective and Low-Emissive coatings. Using its patented Viracon technology, the Company has developed low heat transfer properties and higher light transmissive windows. The new coatings have been designed to meet and exceed LEED certified building standards. Viracon's Low-Emissive glass provides an average energy savings of 15.7% per building or property. Going forward, we believe Apogee's line of sustainable products will boost the Company's competitive position and help drive future revenue growth into the next generation of building designs.

Accommodative government policy and consumer sentiment leads a revolution to modernized green infrastructure. Environmental responsibility has become increasingly more important in the eyes of consumers, contributing to the election of President Joe Biden who promises to prioritize environmental regulation and clean energy alternatives in his term. President Biden's campaign pledges to upgrade 4+ Million buildings and weatherize 2 Million homes over his 4-year term in an effort to raise energy efficiency and reduce costs. We believe the new U.S. Presidential Administration's initiative could have a profound impact on future demand in the sustainable building products market where Apogee has a significant position. President Biden has also stated that he supports renovating existing buildings to higher energy efficiency standards and vows to provide direct funding, cash rebates and low-cost financing to support this initiative. The Administration's investment into green infrastructure is estimated to be nearly \$2T with a plan to deploy this funding over his four-year term. We believe this presents a clear indication of the importance Americans put on environmentally friendly construction, which will provide strong long-term growth opportunities for Apogee's business.

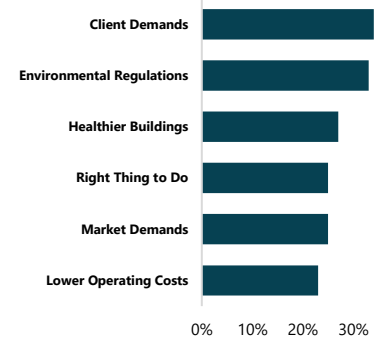
FINANCIAL ANALYSIS

Sales and Profitability

Challenged by current environmental headwinds in the construction industry, Apogee's topline FY2020 revenues declined 1.1%. APOG's growth has primarily been driven by strategic acquisitions, and price mix and volume improvements. Ultimately, the Company's initiatives supported a 5-year Sales CAGR of 7.2% (Figure 22). Acquisitions of EFCO and Sotawall in FY2016 and FY2017 contributed to topline expansion with AFS growth of 25.0% and 72.9%, respectively, explaining the strong 5-year Sales CAGR of 17.34% for the segment. We are confident that the AFS segment exhibits the most attractive long-term growth potential, and these acquisitions have been important for the Company to capitalize on the attractive growth in the segment. Architectural Glass and Architectural Services reported weaker 5-year Sales CAGRs of 0.50% and 1.82%, respectively. Sales in these segments were primarily driven through price and volume increases. The Large-Scale Optical segment accounts for 6.2% of Sales with very modest future growth expected. LSO revenue has been significantly impacted by retail store closures as the products are provided through these channels. Sales have begun to recover with the reopening of retail store locations and the current environment favoring home decoration products. We expect sales to recover fully to pre-pandemic levels and to continue growing in line with historical averages.

FY2020 presented new challenges to Apogee's top line growth, but the Company was able to expand its Gross Margin to 23.0% compared to 20.9% in the FY2019 (Figure 23). This improvement was driven from the FY2020 operating improvements in the AG segment, and a one-time \$42.6M project related charge in FY2019 associated with the EFCO acquisition. Gross Margins for the Company have fluctuated over time but have been significantly depressed since FY2019 compared to historical levels. This is mainly attributable to project related charges associated with the acquisition of EFCO, as well as diminishing price and volume mix in its AG segment. The successful integration of EFCO and Sotawall is a critical factor in the normalization and further improvement of profitability. Management has stated that the EFCO charges are not recurring, and this has been reflected in FY2021 profitability estimates. AFS posted Operating Margin of 7.7% in 2Q2021, a significant improvement over 2Q2020 Operating Margins of 5.3%. We expect this trend to continue, and for this improvement in profitability to raise margins above historical levels. Large-Scale Optical, Apogee's most profitable business, has posted consistent and impressive margins relative to its architectural segments, with an average Operating Margin of 25.5% in the last 5 years. The profitability characteristics of the LSO segment make it an important segment despite its size. Looking forward, we expect an improvement in overall profitability alongside the successful integration between EFCO, Sotawall, and previously existing subsidiaries. We have forecasted a long-term Gross Margin of 24.1%, and an Operating Margin of 8.11%, which reflects a considerable improvement in profitability from the development of synergies within the subsidiaries.

Figure 20: Key Drivers of Future Green Building



Source: Dodge Data & Analytics

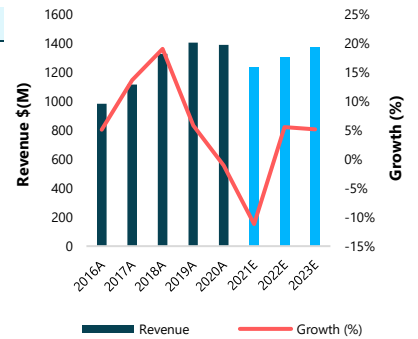
Figure 21: LEED Certification Benefits

New Builds	2012	2015	2018
1-Year Cost Savings	8%	9%	8%
5-year Cost Savings	15%	14%	14%
Increased Asset Value	5%	7%	7%
Payback time	8 Yrs	8 Yrs	7 Yrs

Retrofits	2012	2015	2018
1-Year Cost Savings	9%	9%	9%
5-Year Cost Savings	13%	13%	13%
Increased Asset Value	4%	7%	5%
Payback time	7 Yrs	6 Yrs	6 Yrs

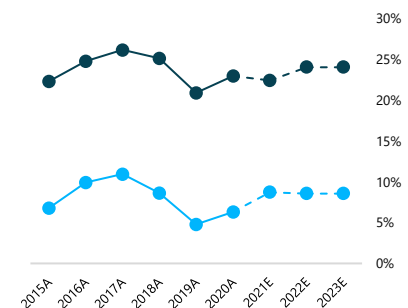
Source: Dodge Data & Analytics

Figure 22: Revenue History & Forecast



Source: APOG Company Information, Team Estimates

Figure 23: Gross & Operating Margins



Source: APOG Company Information, Team Estimates

Return Analysis

To further evaluate the source and quality of Apogee's returns, we conducted a 3-factor DuPont analysis on the company's Return on Assets (ROA), and Return on Equity (ROE). In FY2020, ROA increased 5.5% from 4.3% the previous year, and has averaged 7.7% annually for the last 5 years. Net Margins were pressured in recent years: Since its first large acquisition of Sotawall in FY2016, Net Margins have declined from a high of 7.7% to 3.3% in FY2019 but have since improved to 4.5% in FY2020. This has driven ROA downward until FY2020 when margins showed considerable improvement. Asset Turnover has declined from 1.4x to 1.2x from FY2017 to FY2020 but remains near historical averages. The downwards trend of Asset Turnover over the last 5 years bears some responsibility for the drop in ROA as well. ROE rose to 12.0% in FY2020, up from 9.2% in the previous year, and has averaged 14.2% in the prior 5 years (Figure 24). The recent increase in ROE was driven by the recovery of Apogee's bottom line in FY2020. The difference in ROA and ROE represents the leverage taken on by Apogee. APOG's Equity Multiplier has been steadily increasing since FY2012 and is 2.2x as of FY2020 from the introduction of more leverage to fund acquisitions. This has had a significant impact on ROE, but the company has been intentionally deleveraging itself during the first two quarters of FY2021 causing ROE to drop to 9.3%.

Dupont Analysis									
	2016	2017	2018	2019	2020	2021E	2022E	2023E	Trend
Net Margin	6.7%	7.7%	6.0%	3.3%	4.5%	6.3%	5.9%	5.9%	
Asset Turnover	1.49	1.42	1.30	1.31	1.23	1.15	1.18	1.20	
Equity Multiplier	1.62	1.67	2.00	2.15	2.18	1.99	1.96	1.94	
ROE	16.1%	18.2%	15.5%	9.2%	12.0%	14.3%	13.7%	13.8%	
ROA	9.9%	10.9%	7.8%	4.3%	5.5%	7.2%	7.0%	7.1%	
Solvency									
Debt/Equity	5.0%	13.9%	42.2%	49.5%	42.2%	98.9%	96.5%	94.3%	
Liquidity									
Current Ratio	1.90	1.60	1.62	1.63	1.38	1.44	1.53	1.60	
Cash Ratio	0.34	0.10	0.09	0.08	0.05	0.12	0.20	0.26	

Free Cash Flow

APOG's Free Cash Flow (FCF) Yield has risen from -4.4% in FY2011 to 8.3% in FY2020, remaining within that range for all 10 years (Figure 25). We forecast FCF of \$87M in FY2021, a 155% improvement from \$34M in FY2020. Thereafter, we expect FCF to grow in line with historical averages of 2-5%. Free Cash Flows are not sensitive to changes in the tax rate, operating tax would have to shift substantially to have a profound impact on our price target (Figure 26). Capex is steady at approximately 4.5% of Sales preceding the Sotawall and EFCO acquisitions. Management has indicated that it expects Capital Expenditures to be around \$25M for FY2021, further suppressed over the next 2 years due to COVID-19 implications. We expect Capital Expenditures to subsequently return to historical averages in the long-term, steadily expanding Free Cash Flow. APOG has used leverage to fund acquisitions and has issued a significant amount of debt in each of the past 3 fiscal years. In FY2020, APOG paid down a significant portion of its debt resulting in a net loss on its debt activity. This trend has continued into FY2021, APOG has utilized available cash to reduce its financial leverage. The Company utilizes its generated Cash Flow to return value to shareholders through dividends and share repurchases. The Company's Dividend Payout Ratio was 30% in FY2020 but has averaged 25% over the past 5 years. We expect APOG's Payout Ratio to remain at its current level of 30% and expect the Company to generate significant FCF expansion (Figure 27). In 3Q2021, the Company repurchased shares at a cost of \$16M, representing 43% of Net Income. We believe repurchases will remain close to the Company's 5-year average of 41% as it still has 1.5 million shares available under its current repurchase program.

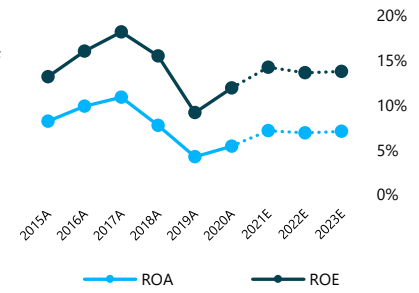
Capital Structure

Apogee has maintained an average Debt-to-Equity ratio of 19% over the last 10 years but took on additional debt in FY2018 which increased its Debt-to-Equity ratio to 42.2%, an increase of 14% versus FY2017 (Figure 28). The recent acquisitions of EFCO and Sotawall are the primary causes of the elevated debt levels as leverage was used to fund both acquisitions. Management has taken action to reduce debt in FY2021 to strengthen the Company's financial position. Interest rates are considerably attractive at abnormally low levels providing the Company an opportunity for low cost capital. Therefore, we believe APOG will choose to take advantage of the low rate environment by holding more leverage on its Balance Sheet than usual. This was confirmed when management extended its long-term loan in 3Q2021. As of 3Q2021, Apogee has slightly reduced its leverage, and now has a Debt-to-Equity ratio of 31%. As interest rates rise and Management is confident extra funding is not necessary, we expect Debt-to-Equity levels to reduce to a more conservative level of 20%-25% in the long-term. APOG has remained relatively liquid with a Current Ratio of 1.38x in FY2020 and has maintained an average Current Ratio of 1.8x in the last 10 years, demonstrating the Company's ability to comfortably cover its short-term liabilities. We expect to see the Company's Current Ratio to rise back to 1.8x by FY2025 as the Company rebuilds its cash position and pays off short-term debt. Cash reserves were low after the two acquisitions and the recent repayments of debt. APOG has maintained an average Cash Ratio of 0.23x for the last 10 years, and currently has a Cash Ratio of 0.06x as of 2Q2021. Management has elected to rebuild a cash position since the acquisitions, and we forecast this to continue until Apogee's liquidity is sufficient at a Cash Ratio above 0.25x. Apogee has already taken action to reduce its debt, and we believe the Company will continue to normalize its Balance Sheet, seeing no immediate issues concerning leverage and liquidity. Management has stated that it is open to considering smaller acquisitions, thus we feel future debt levels will be highly dependent on the Company's acquisition activity in the future.

VALUATION

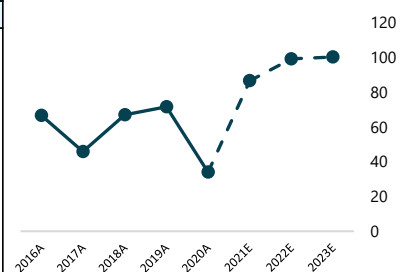
We initiate a BUY recommendation on Apogee Enterprises, Inc. (APOG) based on our 12-month price target of \$43 which represents 12% upside from the closing price of \$38.51 on 01/20/2021. In constructing our 12-month price target for

Figure 24: Return on Assets (ROA) & Return on Equity (ROE)



Source: APOG Company Information, Team Estimates

Figure 25: Free Cash Flow (FCF) Projections



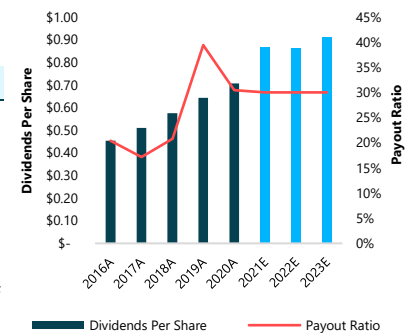
Source: APOG Company Information, Team Estimates

Figure 26: Operating Tax Sensitivity

Operating Tax Rate	Operating Tax Sensitivity	
	Price Target	Upside
26%	\$42.80	11%
22%	\$45.27	18%
24%	\$44.04	14%
26%	\$42.80	11%
28%	\$41.57	8%
30%	\$40.34	5%
32%	\$39.11	2%
34%	\$37.87	(2%)
36%	\$36.64	(5%)

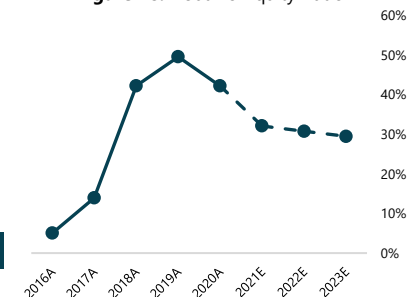
Source: Team Estimates

Figure 27: Dividend Payout and Ratio Forecast



Source: APOG Company Information, Team Estimates

Figure 28: Debt-To-Equity Ratio



Source: APOG Company Information, Team Estimates

APOG, we utilized an approach which incorporates a combination of intrinsic and multiple-based valuation techniques. We believe our Discounted Cash Flow (DCF) Analysis is the most appropriate valuation reflection of our views on APOG due to our confidence in our Free Cash Flow estimates, and belief that our intrinsic value is prudently supported by our Price-to-Earnings (P/E) multiple valuation. Our DCF model outcome of \$43 was derived using a 10-year FCF projection for APOG taking into account historical and industry characteristics (Figure 29). We believe our estimates for APOG and its businesses are reasonable and prudent, as our assumptions account for historical performance, Macroeconomic and Industry outlook, Management commentary, and expectations for Apogee's overall ability to capitalize on initiatives to improve operational efficiencies.

Bullish Outlook on Sales Recovery: We implemented a multi-stage forecast within our sales assumptions as quarterly results in FY2021 have shown that COVID-19 implications have had a material negative impact on Apogee's core business. We forecasted an 11% y/y revenue decline in FY2021 preceding a modest rebound in sales of 5.5% y/y in FY2022. Sales are expected to grow approximately 5% per annum thereafter until tapering off to a long-term growth rate of 3.5% in FY2027. Due to the historical variability in sales performance of the Company's distinct segments, we performed a detailed attribution of APOG's business segments to estimate future revenue growth to particular areas of Apogee's business. These differences are primarily due to 1) The impact of newly acquired firms' contribution to revenue growth and 2) Varying severity of COVID-19 impacts on each segment. We used normalized segment sales growth projections based on historical percentage of sales, historical sales growth, Management guidance, and future growth opportunities. We anticipate Apogee's architectural businesses to continue to serve as the primary growth engine near expected industry rates, with LSO dragging down top-line growth at 1% annually. Thereafter, we employed a perpetual growth rate of 2%, in line with OECD estimates for long-term real U.S. GDP growth.

Estimating an appropriate discount rate: We arrived at a discount rate of 9% by calculating Apogee's Weighted Average Cost of Capital (WACC) (Figure 30). Equity accounts for 86% of the Company's capital structure where a 10.2% Cost of Equity was employed via the standard Capital Asset Pricing Model (CAPM). A regression analysis returned a 3-year adjusted Beta of 1.4x (Appendix K), and an estimated market return of 8% was determined using a Dividend Discount Model of the S&P 500 with an assumed 7% dividend growth rate. As a result of drastic interest rate cuts, we elected to use a normalized risk-free rate of 2.5% as the current 10-year U.S. Treasury bond is too low to realistically be used into perpetuity. Apogee's FY2020 Cost of Debt of 2% was applied to the remaining 14% of capital structure attributable to debt. To audit the impact inconsistencies in WACC have on our valuation, we constructed a sensitivity analysis to flex Apogee's Cost of Capital in increments of 25bps in either direction (Appendix N).

Initiatives to reduce operating expenses have a significant impact on valuation: As the company continues to improve efficiencies, specifically within AFS, we are expecting operating expenses to follow suit. Cost savings projected by Management are reflected in our Cash Flow analysis, including a 50bps savings in SG&A expense as a percentage of revenue through FY2023 and a 25bps improvement in Cost of Goods Sold expense throughout the entire duration of our 10-year forecast.

Figure 29: Discount Rate Calculation

Discounted Cash Flow Valuation		
Year	FCF	PV
2021E	\$86.71	\$79.55
2022E	\$100.08	\$84.23
2023E	\$102.05	\$78.80
2024E	\$98.93	\$70.08
2025E	\$103.94	\$67.55
2026E	\$109.22	\$65.13
2027E	\$109.78	\$60.05
2028E	\$113.49	\$56.96
2029E	\$117.33	\$54.02
2030E	\$121.32	\$51.25
Terminal:	\$1,306.89	\$52.05
Est. Value of Operations		\$1,273.38
+Excess Cash		\$30.76
-Total Debt		\$168.50
-Underfunded Pension		\$6.20
Equity Value		\$1,129.43
/ Diluted Shares		\$26.39
DCF Value Per Share		\$43.00
Misvaluation:		12%

Source: Team Estimates

Figure 30: Discount Rate Calculation

Cost of Capital	
Equity Assumptions	
Cost of Equity	10.20%
Risk-Free Rate	2.50%
Market Return	8.00%
Beta (3y)	1.40
Capital Structure, Equity	86.00%
Debt Assumptions	
Cost of Debt	2.00%
Capital Structure, Debt	14.00%
Tax Rate	26.00%
Weighted Average Cost of Capital	9.00%

Source: Team Estimates

Segment Analysis: Apogee Enterprises, Inc.	Period:	Line of Sight					Secondary					Long-Term				
		FY16A	FY17A	FY18A	FY19A	FY20A	FY21E	FY22E	FY23E	FY24E	FY25E	FY26E	FY27E	FY28E	FY29E	FY30E
Sales		981	1115	1326	1403	1387	1232	1300	1367	1437	1511	1588	1643	1700	1759	1820
% y/y		5%	14%	19%	6%	-1%	-11%	5.5%	5.1%	5.1%	5.1%	5.1%	3.5%	3.5%	3.5%	3.5%
Architectural Framing Systems		309	386	677	721	687	574	605	639	674	711	750	777	806	835	866
% y/y		3%	25%	75%	6%	-5%	-16%	5.5%	5.5%	5.5%	5.5%	5.5%	3.7%	3.7%	3.7%	3.7%
% of revenue		31%	35%	51%	51%	49%	47%	47%	47%	47%	47%	47%	47%	47%	48%	48%
Architectural Glass		378	412	384	367	387	332	351	370	390	412	434	450	467	484	502
% y/y		9%	9%	-7%	-4%	5%	-14%	5.5%	5.5%	5.5%	5.5%	5.5%	3.7%	3.7%	3.7%	3.7%
% of revenue		38%	37%	29%	26%	28%	27%	27%	27%	27%	27%	27%	27%	27%	28%	28%
Architectural Services		246	271	214	286	269	293	308	323	339	356	374	386	399	412	426
% y/y		7%	10%	-21%	34%	-6%	9%	5.0%	5.0%	5.0%	5.0%	5.0%	3.3%	3.3%	3.3%	3.3%
% of revenue		25%	24%	16%	20%	19%	24%	24%	24%	24%	24%	24%	24%	23%	23%	23%
Large-Scale Optical		89	90	88	88	88	70	81	82	83	83	84	85	86	87	88
% y/y		1%	1%	-2%	0%	-1%	-20%	15.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
% of revenue		9%	8%	7%	6%	6%	6%	6%	6%	6%	6%	5%	5%	5%	5%	5%

Risks to implied target price: We performed a sensitivity analysis to assess the impact of unexpected changes in valuation factors within our analysis. We believe near-term sales growth and the discount rate are the two most important valuation components to consider. We assume that if our discount rate increases more than 40 bps or near-term sales decreases by more than 50 bps, we would downgrade APOG to a HOLD recommendation. We also varied our discount rate within a Monte Carlo simulation, observing a 63% probability that our model would output a target price above 10% upside or \$42 per share. Conversely, we find only a 4% probability of a target price below 10% upside or \$34 per share.

Figure 31: Historical PE: APOG vs SP Small Cap Building Products



Source: APOG Company Information, FactSet, SP Small Cap Building Products

		Valuation Sensitivity										
		Near-Term Sales Growth										
		2.5%	3.0%	3.5%	4.0%	4.5%	5.0%	5.5%	6.0%	6.5%	7.0%	7.5%
Discount Rate (WACC)	8.00%	\$42	\$43	\$44	\$45	\$47	\$48	\$50	\$51	\$53	\$55	\$57
	8.25%	\$40	\$41	\$43	\$44	\$45	\$47	\$48	\$50	\$51	\$53	\$55
	8.50%	\$39	\$40	\$41	\$42	\$44	\$45	\$46	\$48	\$49	\$51	\$53
	8.75%	\$38	\$39	\$40	\$41	\$42	\$44	\$45	\$46	\$48	\$49	\$51
	9.00%	\$37	\$38	\$39	\$40	\$41	\$42	\$43	\$45	\$46	\$48	\$50
	9.25%	\$35	\$36	\$37	\$39	\$40	\$41	\$42	\$43	\$45	\$46	\$48
	9.50%	\$34	\$35	\$36	\$37	\$38	\$40	\$41	\$42	\$44	\$45	\$47
	9.75%	\$33	\$34	\$35	\$36	\$37	\$38	\$40	\$41	\$42	\$44	\$45
	10.00%	\$32	\$33	\$34	\$35	\$36	\$37	\$39	\$40	\$41	\$42	\$44

Multiples valuation supports suggested upside potential: Apogee is a mature firm with relatively stable earnings and little debt, we identified Price-to-Earnings (P/E) as the most appropriate multiple available to supplement and justify our intrinsic valuation result. Our P/E valuation objective of \$42 represents 9% upside. We attached a 12x multiple to Apogee's projected bottom-line for FY2021 over diluted shares outstanding. We believe our P/E ratio assignment is conservative relative to Apogee's post-EFCO acquisition mean of 12.4x (*Appendix E*). Due to a lack of publicly-listed companies similar in size and scope, we elected to compare Apogee to companies within the S&P Small Cap Building Products index, demonstrating APOG trades at a discount to its peers (*Figure 31 & Appendix M*).

RISKS

Integration of Acquisitions (R1)

Recent acquisitions of Sotawall and EFCO have put significant pressure on the profitability of Apogee. This was largely due to unforeseen issues and project related charges with the acquisition of EFCO, but management has stated the situation has since improved. Apogee has consistently made acquisitions, and management has stated the company is open to new acquisition targets. If the company is not able to successfully integrate the subsidiaries it will continue to have a material impact on profitability. New acquisitions are subject to the loss of key personnel and/or customers, lack of return on investment, and unforeseen liabilities and expenses. To prevent future integration issues, we believe Apogee will conduct thorough analysis of acquisition targets before purchasing. Although the failure to integrate subsidiaries and acquisitions is not likely, it would have a significant impact on the profitability of Apogee justifying its placement on the risk matrix (*Figure 33*).

Management Turnover (R2)

Joseph F. Puishys, former Apogee CEO, President, and Director of 10 years, announced his retirement in 3Q2020 to officially replace Ty R. Silberhorn on January 4th, 2021. CEO turnover is inherently risky, as there is no certainty the incoming executive will be as or more effective than the previous. Although Silberhorn has an excellent track record and exceptional qualifications, there is inherent risk as an external hire. In addition, Nisheet Gupta was hired as the new CFO in 2020, and Curtis Dobler was brought on board as the new Chief Human Resources Officer in 2019. A high frequency of executive turnover can pose a threat if new management cannot be integrated effectively. We believe the Board of Directors will ensure that ownership among the new management team is addressed quickly to align incentives with shareholders. The new management team will have a moderate impact on Apogee's growth if unsuccessful, but we believe this as unlikely considering the qualifications of the incoming executives.

Political Gridlock (R3)

The infrastructure overhaul proposed by the Biden Administration is an important catalyst for Apogee, considering its focus on green retrofits and renovations. The prospective plan upgrades 4+ million buildings and weatherizes 2+ million homes at a cost of \$2 trillion, but the proposal could face opposition from Republicans in Congress. The Democratic Party has taken control of each chamber of congress, which improves the chances of a large infrastructure bill passing. However, the Democratic majority is limited, and lack of bi-partisan support may damage the probability of a larger bill passing. Considering substantial Federal spending on various COVID-19 relief packages, fiscally conservative Republicans and Democrats may be motivated to restrain government spending to focus on reducing the U.S. debt burden. If the United States government engages in political gridlock over Federal infrastructure spending it could negatively impact Apogee's potential growth prospects. We are confident in the ability of the Biden Administration to successfully implement the green infrastructure plan, which is reflected in the risk matrix.

Wage and Raw Material Price Inflation (R4)

Apogee uses raw glass, aluminum and labor in its general operations, and fluctuations in costs may have an impact on the profitability of business, or the ability to compete with price levels. Although Apogee does have contracts with suppliers, a prolonged glass shortage could present a significant challenge for business operations. Apogee also sources aluminum from domestic and international suppliers where input costs are affected by trade policies primarily between the U.S. and Canada. Suppliers are subject to the general economic conditions as well, indirectly affecting Apogee's raw materials costs. Price changes are generally mitigated by raising prices, but still pose a threat to the business if there are considerable fluctuations in the cost of raw materials. Apogee is also able to mitigate some price changes by utilizing the derivatives market to hedge price inflation. Wages are another significant input cost for Apogee that will have a significant impact on profitability. Wage inflation is occurring industry wide as a byproduct of the COVID-19 pandemic as skilled labor becomes scarcer. Apogee mitigates this with price flexibility, utilizing its strong network to win contracts. The inflation of wages and raw materials is common in the industry, but Apogee has historically been able to prevent these risks from having a profound impact on profitability.

Competition (R5)

Apogee operates in a highly competitive space with moderate barriers to entry, low switching costs, and moderate product differentiation. If competitors change prices, products or services, or there are new entrants to the industry, it could negatively impact Apogee's business. The AFS and the AG segments face significant foreign competition from imported goods, if the relative strength of the U.S. dollar favors imports for an extended period of time it would have a negative impact on Apogee's ability to win bids (*Figure 34*). The LSO segment is also subject to international competition, if the competition is able to lower prices and raise production capacity, it will put pressure on profitability (*Figure 35*). To mitigate this risk, we believe Apogee will expand market share with its more favorable project mix and customer relationships. Competition is prevalent in the industry, but Apogee continues to secure bids on new projects despite the onslaught of local and regional rivals.

Figure 32: Price to Earnings: Sensitivity Analysis

Price to Earnings Sensitivity		
	Price Target	Upside
12.00x	\$42.09	9%
14.00x	\$49.10	28%
13.50x	\$47.35	23%
13.00x	\$45.59	18%
12.50x	\$43.84	14%
12.00x	\$42.09	9%
11.50x	\$40.33	5%
11.00x	\$38.58	0%
10.50x	\$36.83	-4%
10.00x	\$35.07	-9%

Source: APOG Company Information

Figure 33: Risk Matrix

Probability	Impact		
	Low	Medium	High
High			
Medium	R4		R2
Low		R3	R1

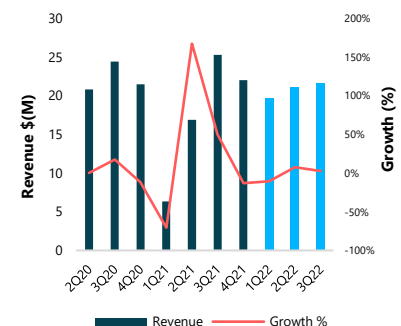
Source: Team Estimates

Figure 34: United States Dollar Index



Source: FactSet

Figure 35: Quarterly LSO Revenue



Source: Company Information, Team Estimates

- A. Consolidated Financial Statements
- B. Financial Analysis
- C. Segment Analysis
- D. DCF Valuation Summary
- E. P/E Valuation Summary
- F. DDM Valuation Summary
- G. Sum of the Parts Valuation Summary
- H. Key Assumptions
- I. Adjusted Earnings
- J. Tax Reconciliation
- K. Adjusted Beta
- L. Trading Multiple History
- M. Relative Valuation Metrics
- N. Sensitivity Analysis
- O. Scenario Analysis
- P. Monte Carlo Simulation
- Q. Football Field Analysis
- R. Key Management and Board Members
- S. Audit Compensation, Governance, and Executive Committees
- T. Board of Directors Composition
- U. Porter's Five Forces Analysis
- V. SWOT Analysis
- W. Historical Stock Chart
- X. Surprise History
- Y. Tecnoglass Comparison
- Z. Comparables: Key Metrics
- AA. Industry Jargon
- BB. Velocity
- CC. Works Cited

APPENDIX A: CONSOLIDATED FINANCIAL STATEMENTS

Consolidated Income Statement: Apogee Enterprises, Inc.

Period:	FY19A	1Q20A	2Q20A	3Q20A	4Q20A	FY20A	1Q21A	2Q21A	3Q21A	4Q21E	FY21E	1Q22E	2Q22E	3Q22E	4Q22E	FY22E	FY23E	FY24E
Sales	1403	355	357	338	337	1387	289	319	314	310	1232	302	325	333	340	1300	1367	1437
Cost of sales	1109	274	271	264	260	1068	229	243	244	239	956	229	247	253	258	987	1038	1091
Gross profit	294	81	86	74	77	319	60	76	70	71	277	73	78	80	82	313	329	346
Selling, general, and administrative expense	226	58	59	53	62	231	54	53	20	43	169	47	50	52	53	202	212	223
Operating income (EBIT)	67	23	28	22	16	88	6	23	50	28	107	26	28	29	29	111	117	123
Interest expense, net	9	3	2	2	2	8	2	0	1	2	5	2	2	2	2	7	7	7
Pretax income (EBT)	59	20	25	20	14	80	4	23	49	26	102	24	26	27	27	104	110	116
Income tax provision	13	5	6	5	2	18	1	5	11	7	25	6	7	7	7	27	29	30
Net income	46	15	19	15	12	62	3	18	37	19	77	18	19	20	20	77	81	86
EPS (Diluted)	1.63	0.58	0.72	0.57	0.45	2.31	0.11	0.67	1.42	0.72	2.89	0.67	0.72	0.74	0.75	2.88	3.04	3.20
Diluted shares outstanding	28	27	27	27	27	27	26	27	26	27	27	27	27	27	27	27	27	27
EBITDA	117	34	39	33	28	135	19	36	62	39	157	37	40	41	42	159	167	176

Consolidated Balance Sheet: Apogee Enterprises, Inc.

Period:	FY19A	1Q20A	2Q20A	3Q20A	4Q20A	FY20A	1Q21A	2Q21A	3Q21A	4Q21E	FY21E	1Q22E	2Q22E	3Q22E	4Q22E	FY22E	FY23E	FY24E
Assets																		
Cash and cash equivalents	17	21	14	10	15	15	12	19	55	73	30	78	83	88	93	50	68	78
Accounts receivable	193	209	202	198	197	197	156	166	173	186	193	189	192	194	197	203	214	225
Inventories	133	138	149	148	145	145	141	101	103	107	109	108	109	110	111	112	118	124
Other current assets	29	24	26	41	25	25	21	26	14	11	20	11	12	12	12	21	22	23
Current assets	372	393	391	397	382	382	331	312	346	377	351	386	395	404	412	387	421	450
Property, plant, and equipment, net	316	318	319	326	324	324	320	314	302	298	307	297	296	295	293	302	300	306
Intangible assets	148	145	145	143	140	140	136	138	137	140	140	140	140	140	140	140	140	140
Goodwill	186	185	186	186	186	186	191	193	193	186	186	186	186	186	186	186	186	186
Operating lease assets	0	47	53	56	53	53	50	54	63	53	53	53	53	53	53	53	53	53
Other long-term assets	46	45	45	42	44	44	44	45	46	42	37	42	43	43	44	39	41	43
Total assets	1068	1132	1139	1150	1129	1129	1072	1054	1086	1096	1074	1104	1112	1120	1128	1106	1141	1178
Liabilities																		
Accounts payable	72	73	68	67	69	69	62	66	70	68	63	69	69	70	70	65	69	72
Current portion of debt	0	0	155	155	5	5	155	152	2	-71	5	-71	-71	-71	-71	5	5	5
Accrued payroll and benefits	41	26	30	33	40	40	26	36	40	40	35	40	41	41	42	37	39	41
Excess billings	21	20	19	26	33	33	15	24	26	30	33	30	30	30	30	33	33	33
Operating lease liabilities	0	11	10	9	11	11	10	11	12	12	11	12	12	12	12	11	11	11
Other current liabilities	93	85	87	108	118	118	110	73	62	73	95	74	76	77	78	101	106	111
Current liabilities	228	215	371	400	277	277	380	362	212	153	243	155	157	160	162	253	263	274
Long-term debt	246	293	117	96	213	213	56	16	167	243	168	243	243	243	243	168	168	168
Long-term operating lease liability	0	37	44	49	43	43	41	45	53	52	43	52	52	52	52	43	43	43
Other long-term liabilities	99	102	103	91	80	80	92	106	107	94	80	94	94	94	94	80	80	80
Total liabilities	572	647	636	635	612	612	567	528	539	542	534	544	546	549	551	543	554	565
Shareholder's Equity																		
Common stock	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9
Additional paid-in capital	152	150	152	153	154	154	154	156	156	155	154	155	155	155	155	154	154	154
Accumulated retained earnings	368	360	374	385	388	388	382	395	415	423	411	429	435	440	446	434	459	484
Other equity	-32	-35	-32	-32	-34	-34	-41	-33	-32	-32	-34	-32	-32	-32	-32	-34	-34	-34
Total shareholder's equity	496	485	503	515	517	517	504	526	548	554	540	560	566	572	578	563	587	613
Total liabilities and shareholder's equity	1068	1132	1139	1150	1129	1129	1072	1054	1086	1096	1074	1104	1112	1120	1128	1106	1141	1178

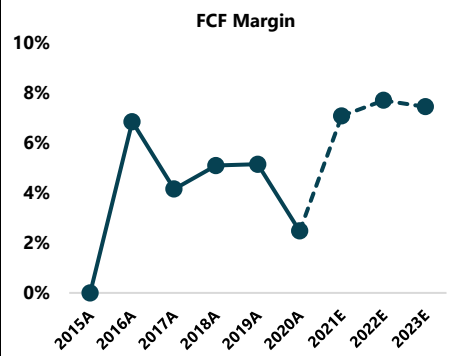
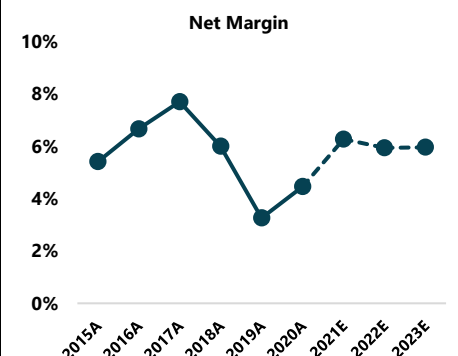
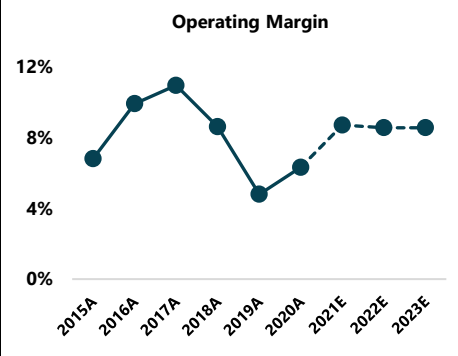
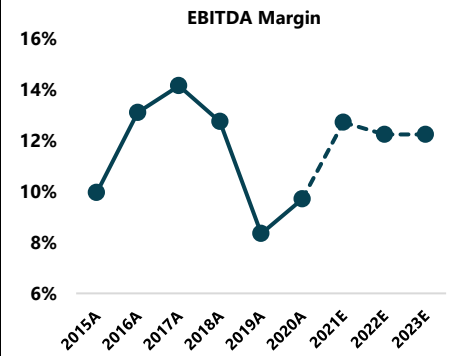
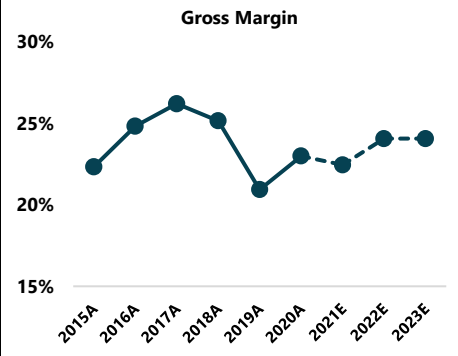
Partial Statement of Cash Flows: Apogee Enterprises, Inc.

Period:	FY19A	1Q20A	2Q20A	3Q20A	4Q20A	FY20A	1Q21A	2Q21A	3Q21A	4Q21E	FY21E	1Q22E	2Q22E	3Q22E	4Q22E	FY22E	FY23E	FY24E
Net Operating Profit Less Adjusted Taxes (NOPLAT)	50	17	20	16	12	65	5	17	37	21	80	19	21	21	22	82	87	91
+Depreciation and Amortization	50	11	12	12	12	47	13	13	13	11	49	11	12	12	13	48	50	53
-Change in Net Operating Working Capital	-20	-33	2	23	42	32	4	5	-34	-3	15	-2	-2	-2	-2	-7	-8	-9
-Increase in Current Operating Assets	39	21	-1	6	-15	12	-51	-19	34	17	-49	4	4	4	4	17	19	20
+Increase in Operating Current Liabilities	19	-13	1	28	27	44	-47	-14	0	14	-33	2	2	2	2	9	10	11
-Capital Expenditures	48	13	13	19	10	46	8	7	0	8	27	10	11	11	11	38	43	54
Free Cash Flow	72	49	16	-14	-29	34	5	18	83	27	87	22	24	24	25	100	102	99

All figures in millions of U.S. Dollar except per share items.

APPENDIX B: FINANCIAL ANALYSIS

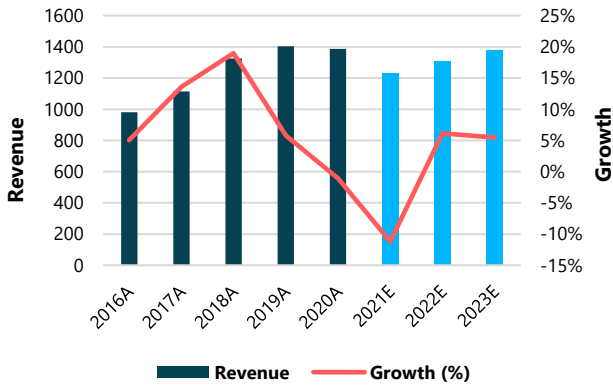
Ratio Analysis								
Performance Metrics	FY16A	FY17A	FY18A	FY19A	FY20A	FY21E	FY22E	FY23E
Profitability Ratios								
Gross Margin	24.8%	26.2%	25.1%	20.9%	23.0%	22.45%	24.06%	24.06%
EBITDA Margin	13.1%	14.2%	12.8%	8.3%	9.7%	12.72%	12.25%	12.25%
Operating Margin	9.9%	11.0%	8.6%	4.8%	6.3%	8.72%	8.56%	8.56%
Net Margin	6.7%	7.7%	6.0%	3.3%	4.5%	6.26%	5.92%	5.94%
FCF Margin	6.8%	4.1%	5.1%	5.1%	2.5%	7.04%	7.70%	7.47%
Solvency Ratios								
Debt to assets ratio	3.1%	8.3%	21.1%	23.0%	19.3%	16.1%	15.6%	15.2%
Debt to capital ratio	4.8%	12.2%	29.7%	33.1%	29.7%	24.3%	23.5%	22.8%
Debt to equity ratio	5.0%	13.9%	42.2%	49.5%	42.2%	32.1%	30.7%	29.5%
Financial leverage ratio (Equity multiplier)	1.6x	1.7x	2.0x	2.2x	2.2x	2.0x	2.0x	1.9x
Operating CF-to-total liabilities	3.1%	8.3%	21.1%	23.0%	19.3%	16.1%	15.6%	15.2%
Degree of operating leverage	0.71	0.18	-0.04	-0.64	-1.21	-0.12	0.04	0.07
Liquidity Ratios								
Current ratio	1.90	1.60	1.62	1.63	1.38	1.44	1.53	1.60
Quick ratio	1.32	1.10	1.11	0.92	0.76	0.92	1.00	1.07
Cash ratio	0.34	0.10	0.09	0.08	0.05	0.12	0.20	0.26
Operating CF-to-current liabilities	0.73	0.67	0.61	0.42	0.39	0.83	0.52	0.52
Defensive interval ratio	150.99	41.84	32.23	27.56	23.61	64.98	90.81	116.62
Cash conversion cycle	126 Days	120 Days	114 Days	117 Days	123 Days	121 Days	121 Days	121 Days
Times Interest Earned Ratio (TIE)	164 Days	126 Days	21 Days	8 Days	10 Days	28 Days	19 Days	20 Days
Activity Ratios								
Total asset turnover	1.49x	1.42x	1.30x	1.31x	1.23x	1.15x	1.18x	1.20x
Fixed asset turnover	4.85x	4.52x	4.36x	4.44x	4.28x	4.01x	4.31x	4.56x
Working capital turnover	6.16x	10.00x	10.35x	9.71x	13.21x	11.43x	9.71x	8.64x
Inventory turnover	11.64x	11.20x	11.67x	8.31x	7.39x	8.79x	8.79x	8.79x
Days inventory on hand (DOH)	31 Days	32 Days	31 Days	43 Days	49 Days	41 Days	41 Days	41 Days
Receivables turnover	5.68x	6.00x	6.26x	7.28x	7.05x	6.40x	6.40x	6.40x
Days sales outstanding (DSO)	63 Days	60 Days	58 Days	49 Days	51 Days	56 Days	56 Days	56 Days
Payables turnover	11.39x	13.02x	14.51x	15.36x	15.47x	15.10x	15.10x	15.10x
Number of days of payables	32 Days	28 Days	25 Days	24 Days	24 Days	24 Days	24 Days	24 Days
Payout Ratios and Growth Measures								
Dividend Payout Ratio	20.2%	17.1%	20.6%	39.1%	30.3%	30.0%	30.0%	30.0%
Repurchase Payout Ratio	38.1%	12.6%	42.4%	94.8%	40.6%	40.0%	40.0%	40.0%
Total Payout Ratio	58.3%	29.7%	63.0%	133.9%	70.9%	70.0%	70.0%	70.0%
Plowback Ratio	41.7%	70.3%	37.0%	(33.9%)	29.1%	30.0%	30.0%	30.0%
Internal Growth Rate	4.4%	8.8%	3.1%	(1.4%)	1.7%	2.3%	2.2%	2.2%
Sustainable Growth Rate	7.2%	14.7%	6.1%	(3.0%)	3.6%	4.5%	4.3%	4.3%
Asset Quality Ratios								
Asset quality ratio	82.0%	69.4%	62.6%	64.4%	62.6%	61.3%	62.2%	63.2%
D&A-to-PP&E and Intangibles	14.1%	10.1%	11.6%	10.7%	10.1%	11.0%	10.8%	11.4%
Dupont Analysis								
Net Profit Margin	6.7%	7.7%	6.0%	3.3%	4.5%	6.3%	5.9%	5.9%
Asset Turnover	1.49x	1.42x	1.30x	1.31x	1.23x	1.15x	1.18x	1.20x
Equity Multiplier	1.62x	1.67x	2.00x	2.15x	2.18x	1.99x	1.96x	1.94x
ROE	16.1%	18.2%	15.5%	9.2%	12.0%	14.3%	13.7%	13.8%
Default Risk - Altman's Z-score								
Working capital-to-total assets	0.24x	0.14x	0.13x	0.14x	0.09x	0.10x	0.12x	0.14x
Retained earnings-to-total assets	0.04x	0.08x	0.03x	-0.01x	0.02x	0.02x	0.02x	0.02x
EBIT-to-total assets	0.15x	0.16x	0.11x	0.06x	0.08x	0.10x	0.10x	0.10x
Market value of equity-to-total liabilities	4.64x	5.42x	2.39x	1.71x	1.31x	1.75x	1.72x	1.69x
Sales-to-total assets	1.49x	1.42x	1.30x	1.31x	1.23x	1.15x	1.18x	1.20x
Altman's Z-score	5.11x	5.46x	3.29x	2.69x	2.40x	2.68x	2.72x	2.75x
Earnings Quality - Beneish M-Score								
Receivables-to-sales	17.6%	16.7%	16.0%	13.7%	14.2%	15.6%	15.6%	15.6%
Days sales in receivables index (DSRI)		0.95	0.96	0.86	1.03	1.10	1.00	1.00
Gross margins	24.8%	26.2%	25.1%	20.9%	23.0%	22.4%	24.1%	24.1%
Gross margin index (GMI)		0.95	1.04	1.20	0.91	1.02	0.93	1.00
Asset quality	82.0%	69.4%	62.6%	64.4%	62.6%	61.3%	62.2%	63.2%
Asset quality index (AQI)		0.85	0.90	1.03	0.97	0.98	1.02	1.02
Sales	981.2	1,114.5	1,326.2	1,402.6	1,387.4	1,232.2	1,300.2	1,366.7
Sales growth index (SGI)		1.14	1.19	1.06	0.99	0.89	1.06	1.05
Depreciation-to-gross PP&E	11.2%	10.5%	13.1%	11.4%	10.5%	11.7%	11.5%	12.2%
Depreciation index (DEPI)		1.07	0.80	1.14	1.09	0.90	1.01	0.95
SG&A-to-sales	14.9%	15.2%	16.5%	16.1%	16.7%	13.7%	15.5%	15.5%
SGA index (SGAI)		1.02	1.09	0.98	1.03	0.82	1.13	1.00
Leverage	30.1%	32.0%	41.5%	44.3%	43.3%	38.3%	38.0%	37.8%
Leverage index (LVGI)		1.07	1.29	1.07	0.98	0.88	0.99	0.99
Total accruals to total assets	(9.7%)	(4.9%)	(4.7%)	(4.7%)	(4.0%)	(11.7%)	(5.0%)	(4.8%)
Beneish M-score		(3.70)	(3.73)	(3.56)	(3.53)	(3.72)	(3.60)	(3.54)



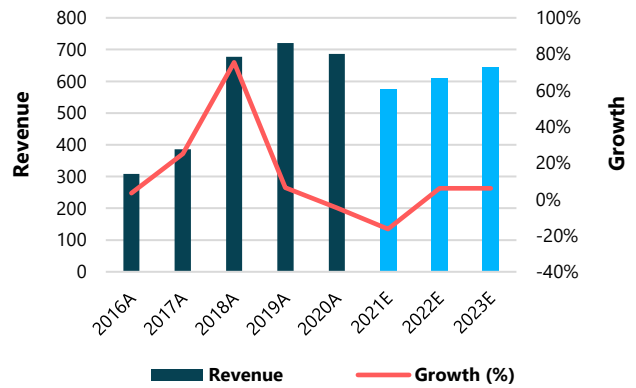
APPENDIX C: SEGMENT ANALYSIS

Segment Analysis: Apogee Enterprises, Inc.	Line of Sight					Secondary						Long-Term			
	Period:	FY16A	FY17A	FY18A	FY19A	FY20A	FY21E	FY22E	FY23E	FY24E	FY25E	FY26E	FY27E	FY28E	FY29E
Sales	981	1115	1326	1403	1387	1232	1300	1367	1437	1511	1588	1643	1700	1759	1820
% y/y	5%	14%	19%	6%	-1%	-11%	5.5%	5.1%	5.1%	5.1%	5.1%	3.5%	3.5%	3.5%	3.5%
Architectural Framing Systems	309	386	677	721	687	574	605	639	674	711	750	777	806	835	866
% y/y	3%	25%	75%	6%	-5%	-16%	5.5%	5.5%	5.5%	5.5%	5.5%	3.7%	3.7%	3.7%	3.7%
% of revenue	31%	35%	51%	51%	49%	47%	47%	47%	47%	47%	47%	47%	47%	48%	48%
Architectural Glass	378	412	384	367	387	332	351	370	390	412	434	450	467	484	502
% y/y	9%	9%	-7%	-4%	5%	-14%	5.5%	5.5%	5.5%	5.5%	5.5%	3.7%	3.7%	3.7%	3.7%
% of revenue	38%	37%	29%	26%	28%	27%	27%	27%	27%	27%	27%	27%	27%	28%	28%
Architectural Services	246	271	214	286	269	293	308	323	339	356	374	386	399	412	426
% y/y	7%	10%	-21%	34%	-6%	9%	5.0%	5.0%	5.0%	5.0%	5.0%	3.3%	3.3%	3.3%	3.3%
% of revenue	25%	24%	16%	20%	19%	24%	24%	24%	24%	24%	24%	24%	23%	23%	23%
Large-Scale Optical	89	90	88	88	88	70	81	82	83	83	84	85	86	87	88
% y/y	1%	1%	-2%	0%	-1%	-20%	15.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
% of revenue	9%	8%	7%	6%	6%	6%	6%	6%	6%	6%	5%	5%	5%	5%	5%

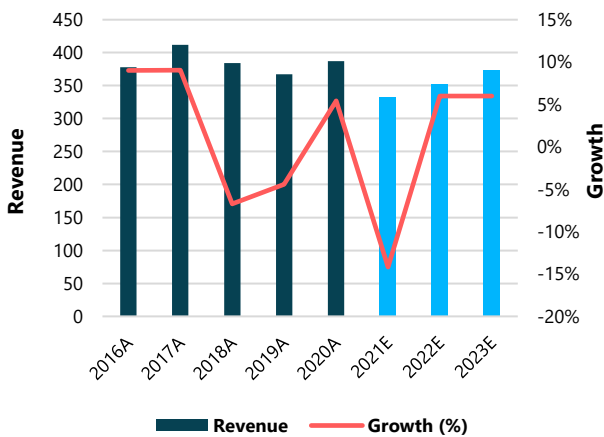
Revenue History & Forecast



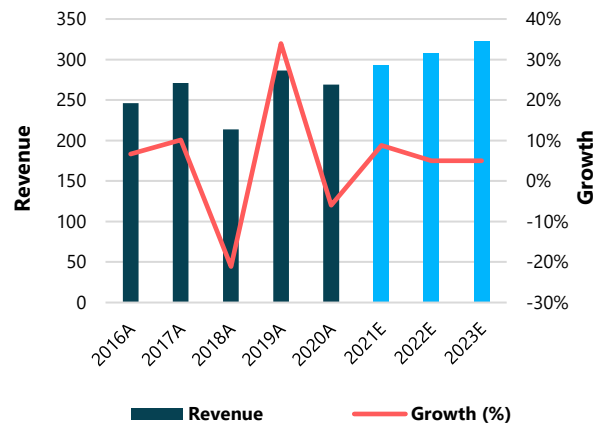
AFS Revenue & Forecast



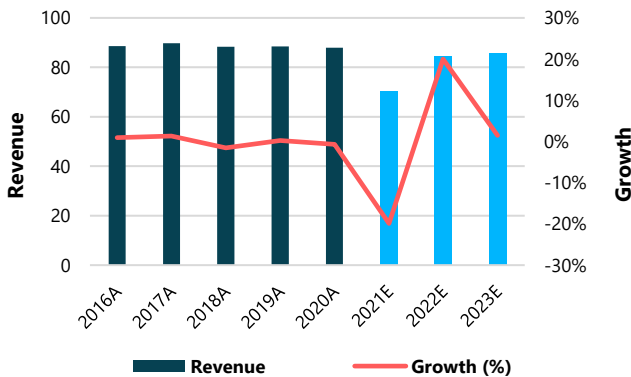
AG Revenue & Forecast



AS Revenue & Forecast



LSO Revenue & Forecast



APPENDIX D: DCF VALUATION SUMMARY

APOG: Enterprise DCF Valuation			
Forecast Year	Free Cash Flow	Discount Factor	Present Value
2021E	\$86.71	0.9174	\$79.55
2022E	\$100.08	0.8417	\$84.23
2023E	\$102.05	0.7722	\$78.80
2024E	\$98.93	0.7084	\$70.08
2025E	\$103.94	0.6499	\$67.55
2026E	\$109.22	0.5963	\$65.13
2027E	\$109.78	0.5470	\$60.05
2028E	\$113.49	0.5019	\$56.96
2029E	\$117.33	0.4604	\$54.02
2030E	\$121.32	0.4224	\$51.25
Terminal Value:	\$1,306.89	0.4224	\$552.05
Present Value:			\$1,219.67
Midyear Adjustment Factor:			1.0440
Value of Operations:			\$1,273.38
Non-Operational Assets			
+Value of Excess Cash:			\$30.76
Enterprise Value:			\$1,304.13
Debt and Debt Equivalents			
-Current Value of Debt:			\$168.50
-Underfunded Pension:			\$6.20
Equity Value:			\$1,129.43
Shares Outstanding:			\$26.39
Estimated Equity Value Per Share:			\$43.00
Current Share Price:			\$38.51
Misvaluation:			12%

APPENDIX E: P/E VALUATION SUMMARY

APOG: PE Multiple Valuation	
CY21 Projected Earnings:	\$93.75
Price to Earnings:	12.00x
Diluted Shares:	26.729
	\$3.51
Estimated Equity Value Per Share:	\$42.00
Current Share Price:	\$38.51
Misvaluation:	9%

APPENDIX F: DDM VALUATION SUMMARY

APOG: Dividend Discount Model											
Period:	2020A	2021E	2022E	2023E	2024E	2025E	2026E	2027E	2028E	2029E	2030E
Dividends Paid	\$17.86	\$18.71	\$23.15	\$23.09	\$24.35	\$25.68	\$27.09	\$28.56	\$29.61	\$30.69	\$31.81
Diluted Shares	28	27	27	27	27	27	27	27	27	27	27
Dividend	\$0.64	\$0.70	\$0.87	\$0.86	\$0.91	\$0.96	\$1.01	\$1.07	\$1.11	\$1.15	\$1.19
Dividend Growth	-	10.1%	23.7%	-0.3%	5.5%	5.5%	5.5%	5.5%	3.7%	3.6%	3.6%
WACC:	9.0%										
Average Dividend:	\$0.98										
Average Growth:	6.6%										
DDM Value (PT):	\$30.00										
Current Share Price:	\$38.51										
Misvaluation:	(22.1%)										

APPENDIX G: SUM OF THE PARTS VALUATION

Sum-of-the-Parts Analysis								
	FY2015	FY2016	FY2017	FY2018	FY2019	FY2020	FY2021E	FY2022E
AFS								
Net Revenue	\$346,471	\$377,713	\$411,881	\$677,198	\$720,829	\$686,596	\$720,926	\$756,972
Growth	-	9.0%	9.0%	64.4%	6.4%	-4.7%	5.0%	5.0%
Operating Income (EBIT)	\$16,431	\$35,504	\$44,656	\$59,031	\$49,660	\$36,110	\$50,142	\$52,649
Pretax Income (EBT)	\$15,988	\$35,219	\$44,190	\$56,388	\$45,606	\$31,687	\$48,307	\$49,878
Net Income	\$11,831	\$26,062	\$32,701	\$41,727	\$33,748	\$23,449	\$35,747	\$36,910
AG								
Net Revenue	\$298,395	\$308,593	\$385,978	\$384,137	\$367,203	\$387,191	\$406,551	\$426,878
Growth	-	3.4%	25.1%	-0.5%	-4.4%	5.4%	5.0%	5.0%
Operating Income (EBIT)	\$21,808	\$31,911	\$44,768	\$32,764	\$16,503	\$20,760	\$24,915	\$26,161
Pretax Income (EBT)	\$21,558	\$31,751	\$44,505	\$31,274	\$14,217	\$18,266	\$23,880	\$24,599
Net Income	\$15,953	\$23,495	\$32,934	\$23,142	\$10,520	\$13,517	\$17,671	\$18,203
AS								
Net Revenue	\$230,650	\$245,935	\$270,937	\$213,757	\$286,314	\$269,140	\$279,906	\$291,102
Growth	-	6.6%	10.2%	-21.1%	33.9%	-6.0%	4.0%	4.0%
Operating Income (EBIT)	\$7,442	\$11,687	\$18,494	\$10,420	\$30,509	\$23,582	\$22,665	\$23,572
Pretax Income (EBT)	\$7,268	\$11,575	\$18,311	\$9,384	\$28,920	\$21,848	\$21,946	\$22,486
Net Income	\$5,378	\$8,566	\$13,550	\$6,944	\$21,401	\$16,168	\$16,240	\$16,640
LSO								
Net Revenue	\$87,693	\$88,541	\$89,710	\$88,303	\$88,493	\$87,911	\$89,230	\$90,568
Growth	-	1.0%	1.3%	-1.6%	0.2%	-0.7%	1.5%	1.5%
Operating Income (EBIT)	\$21,954	\$22,963	\$22,467	\$22,000	\$23,003	\$22,642	\$22,706	\$23,046
Pretax Income (EBT)	\$21,897	\$22,927	\$22,407	\$21,662	\$22,484	\$22,076	\$22,471	\$22,692
Net Income	\$16,204	\$16,966	\$16,581	\$16,030	\$16,638	\$16,336	\$16,628	\$16,792

Sum-of-the-Parts Valuation				
	AFS	AG	AS	LSO
P/E Multiple*	13	10	13	16
Net Income	\$36,910	\$18,203	\$16,640	\$16,792
Market Value	\$479,831	\$182,029	\$216,316	\$268,668
Shares Outstanding	26474	26474	26474	26474
Target Price	\$18.12	\$6.88	\$8.17	\$10.15
Estimated Equity Value per Share	\$43.32			

APPENDIX H: KEY ASSUMPTIONS

Discount Rate Assumptions		
Input	Value	Assumption
Capital Structure (Debt)	14.22%	APOG Q3 2021 10-Q
Capital Structure (Equity)	85.78%	Market Capitalization
Risk-Free Rate	2.50%	We elected to use a normalized risk-free rate due to the abnormally low yield on the 10yr T-bond as a result of accommodative monetary policy in response to the COVID-19 pandemic. The current 10yr yield of 0.93% is too low to be realistically used into perpetuity. (Duff & Phelps U.S. Normalized Risk-Free Rate of 2.5%)
Market Return	8.00%	Determined using a Dividend Discount Model of the S&P 500 Index with an assumed dividend growth rate of 6.70% (estimated using historical averages with a recency bias) and a current price of \$3730.
Cost of Equity	10.20%	Standard Capital Asset Pricing Model (CAPM)
Cost of Debt	2.27%	FY2020 Interest Expense / Q3 2021 Total Debt
Tax Rate	26.00%	A tax reconciliation was performed to determine APOG's average operating tax rate over the past 3 years.
Key Income Statement Assumptions		
Input	Value	Assumption
AFS Sales	5.50%	We expect AFS to modestly outperform industry growth rates as it moves into mid- to low-rise structures, characterized by increased volume. Growth tapers to 2/3 of initial value beginning FY2026
AG Sales	5.50%	We expect AFS to modestly outperform industry growth rates as it moves into mid- to low-rise structures, characterized by increased volume. Growth tapers to 2/3 of initial value beginning FY2026
AS Sales	5.00%	In-line with consensus expectations and industry growth rates. Growth tapers to 2/3 of initial value beginning FY2026
LSO Sales	1.00%	6 year average sales growth
Elimination	(3.29%)	Interpreted as a percentage of revenue before intersegment elimination.
Cost of Sales / Sales	72.25%	25 bps improvement from 5 year historical average, due to majority of unusual acquisition costs being attributable to cost of sales
SG&A / Sales	15.50%	50 bps improvement from 5 year historical average, pricing in initiatives to implement synergies in segment consolidation
Interest Rate	3.44%	3 yr average synthetic interest rate
Dividend Payout Ratio	30.00%	3yr Average
Share Repurchase Ratio	40.00%	5yr Average
Key Balance Sheet Assumptions		
Input	Value	Assumption
Operating Cash	2.00%	Historical cash required to operate the business
Accounts Receivable to Sales	15.64%	5yr Average
Inventories to COS	11.38%	3yr Average
PP&E to Sales	23.08%	In line with stated Company expectations for Capital Expenditures
Terminal Value Assumptions		
Input	Value	Assumption
Terminal Sales Growth	2.00%	OECD Estimates for long-term real U.S. GDP growth through 2060
Terminal ROIC	9.00%	Terminal ROIC is equal to terminal WACC, assuming zero economic profit into perpetuity
Terminal WACC	9.00%	WACC

Brief Assumptions: Apogee Enterprises, Inc.

Period:	FY21E	FY22E	FY23E	FY24E	FY25E	FY26E	FY27E	FY28E	FY29E	FY30E
AFS Sales Growth	-16.4%	5.5%	5.5%	5.5%	5.5%	5.5%	3.7%	3.7%	3.7%	3.7%
AG Sales Growth	-14.2%	5.5%	5.5%	5.5%	5.5%	5.5%	3.7%	3.7%	3.7%	3.7%
AS Sales Growth	8.8%	5.0%	5.0%	5.0%	5.0%	5.0%	3.3%	3.3%	3.3%	3.3%
LSO Sales Growth	-19.9%	15.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
COS to Sales	73.5%	72.3%	72.3%	72.3%	72.3%	72.3%	72.3%	72.3%	72.3%	72.3%
SG&A to Sales	13.7%	15.5%	15.5%	15.5%	15.5%	15.5%	15.5%	15.5%	15.5%	15.5%
Tax Rate	26.0%	26.0%	26.0%	26.0%	26.0%	26.0%	26.0%	26.0%	26.0%	26.0%
D&A to Sales	3.7%	3.7%	3.7%	3.7%	3.7%	3.7%	3.7%	3.7%	3.7%	3.7%

APPENDIX I: ADJUSTED EARNINGS

Adjusted Net Earnings: Apogee Enterprises, Inc.

	1Q18	2Q18	3Q18	4Q18	FY2018	1Q19	2Q19	3Q19	4Q19	FY2019	1Q20	2Q20	3Q20	4Q20	FY2020	1Q21	2Q21	3Q21
Net earnings / loss	16.10	17.41	23.65	22.33	79.49	15.37	20.51	21.89	-12.08	45.69	15.44	19.28	15.23	11.96	61.91	2.88	17.66	37.27
Acquisition related expense	0.68	3.74	0.42	0.26	5.10	0.00	0.00	0.00	42.60	40.95	0.00	0.00	-2.64	2.00	-0.64	-	1.00	0.00
Acquired EFCO project matters	-	-	-	-	-	-	-	-	-	-	-	-	-2.64	2.00	-0.64	-	-	-
Acquired project profits / charges	-	-	-	-	-	-	-	-	42.60	40.95	0.00	0.00	0.00	-	-	-	-	-
Acquisition-related costs	0.68	3.74	0.42	0.26	5.10	0.00	0.00	0.00	0.00	0.00	-	-	-	-	-	-	-	-
Post-acquisition and acquired project matters	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.00	0.00
Restructuring charges	-	-	-	3.03	3.03	-	-	-	0.00	0.00	-	-	-	-	-	-	-	-
Restructuring-related costs	-	-	-	3.03	3.03	-	-	-	0.00	0.00	-	-	-	-	-	-	-	-
Legal/litigation expense	-	-	-	-	-	-	-	-	-	-	-	-	2.78	0.00	2.78	-	-	0.00
Cooperation agreement advisory costs	-	-	-	-	-	-	-	-	-	-	-	-	2.78	0.00	2.78	-	-	0.00
Amortization of intangible assets	2.05	2.63	2.92	2.91	10.52	2.87	1.07	0.72	0.24	4.89	0.00	0.00	0.00	0.00	0.00	-	-	-
Amortization of short-lived acquired intangibles	2.05	2.63	2.92	2.91	10.52	2.87	1.07	0.72	0.24	4.89	0.00	0.00	0.00	0.00	0.00	-	-	-
Intangible asset impairment	-	-	-	-	-	-	-	-	3.14	3.14	-	-	-	0.00	0.00	-	-	-
Impairment charge	-	-	-	-	-	-	-	-	3.14	3.14	-	-	-	0.00	0.00	-	-	-
Gain/loss on asset sale	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-19.35
Gain on sale of building	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-19.35
Other adjustments	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.38	1.32	1.37
COVID-19	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.38	1.32	1.37
Non-GAAP tax effect	-0.90	-2.16	-0.97	-0.92	-5.16	-0.69	-0.25	-0.17	-10.85	-11.56	0.00	0.00	-0.03	-0.31	-0.48	-0.39	-0.55	4.22
Income tax impact on above adjustments	-0.90	-2.16	-0.97	-0.92	-5.16	-0.69	-0.25	-0.17	-10.85	-11.56	0.00	0.00	-0.03	-0.31	-0.48	-0.39	-0.55	4.22
*Adjusted net earnings	17.94	21.62	26.02	27.61	92.98	17.55	21.33	22.44	23.04	83.12	15.44	19.28	15.34	13.65	63.58	3.87	19.42	23.52

*APOG uses adjusted earnings due to one-time costs associated with the Sotawall and EFCO acquisitions. The table above highlights the adjustments the Company makes to arrive at its adjusted earnings. We chose not to project these acquisition related costs in our pro-forma statements as it would likely be inaccurate due to variety and variability in these expenses.

APPENDIX J: TAX RECONCILIATION

APOG Tax Reconciliation							
Period:	2015	2016	2017	2018	2019	2020	
Statutory federal income tax rate	35.0%	35.0%	35.0%	32.7%	21.0%	21.0%	
Tax rate change revaluation				(3.7%)			
Manufacturing deduction	(2.3%)	(3.4%)	(3.3%)	(2.2%)			
State and local income taxes, net of federal tax benefit	1.2%	1.6%	1.6%	1.8%	2.7%	4.0%	
Foreign tax rate differential			(1.6%)	(0.7%)	0.8%	(0.3%)	
Tax credits - research & development	(1.1%)	(0.8%)	(0.7%)	(0.9%)	(2.7%)	(1.6%)	
Other, net	(0.6%)	0.5%	(0.9%)	0.7%	0.3%	(0.7%)	
Tax credits - 48C	(9.9%)						
Effective income tax rate	22.3%	32.9%	30.1%	27.7%	22.1%	22.4%	
Operating Tax	30%*	33.2%	33.3%	28.6%	23.7%	25.0%	

*48C Tax Credits are excluded for consistency

APPENDIX K: ADJUSTED BETA

Standard CAPM

3 Year Beta Regression (Adjusted)

Regression Statistics	
Multiple R	0.62
R Square	38%
Adjusted R Square	0.36
Standard Error	0.07
Observations	37

We utilized a regression analysis to calculate Apogee's Beta. To obtain the most accurate result, we used trading data over the past three years to incorporate the stock's performance following its large acquisitions of EFCO and Sotawall. Our beta is adjusted to account for mean reversion, providing a more accurate estimate of APOG's beta into perpetuity. We believe a beta of 1.4 is a reasonably representative beta value for the Company.

ANOVA						
	df	SS	MS	F	Significance F	
Regression	1	0.12	0.12	21.69	0.000045	
Residual	35	0.19	0.01			
Total	36	0.30				

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	-0.02	0.01	-1.79	0.083	-0.05	0.00
X Variable 1	1.57	0.34	4.66	0.000045	0.89	2.26

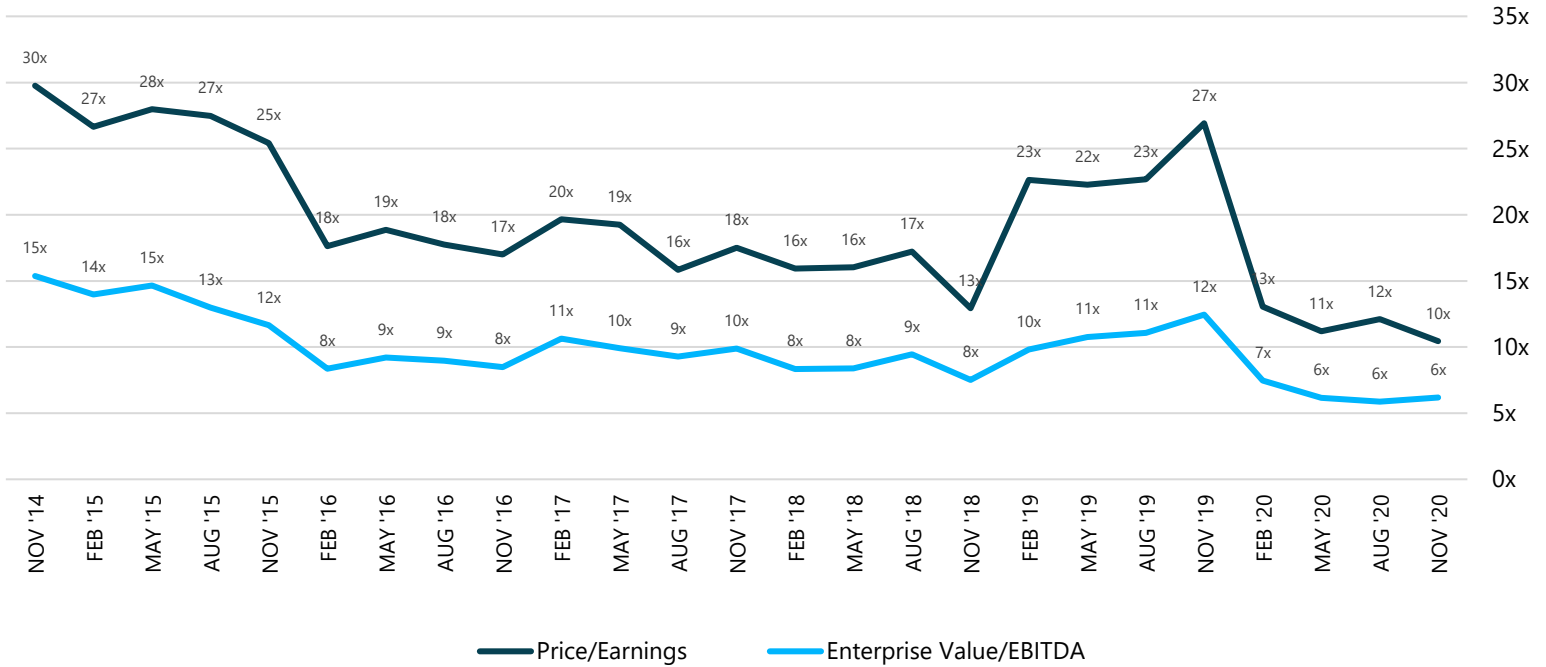
Adjustment: = 1.57 (.67) + 1.00 (.33)

P-value indicates excellent statistical significance at the 1% level.

Adjusted Beta: 1.4

APPENDIX L: TRADING MULTIPLE HISTORY

APOG: Trading Multiple History

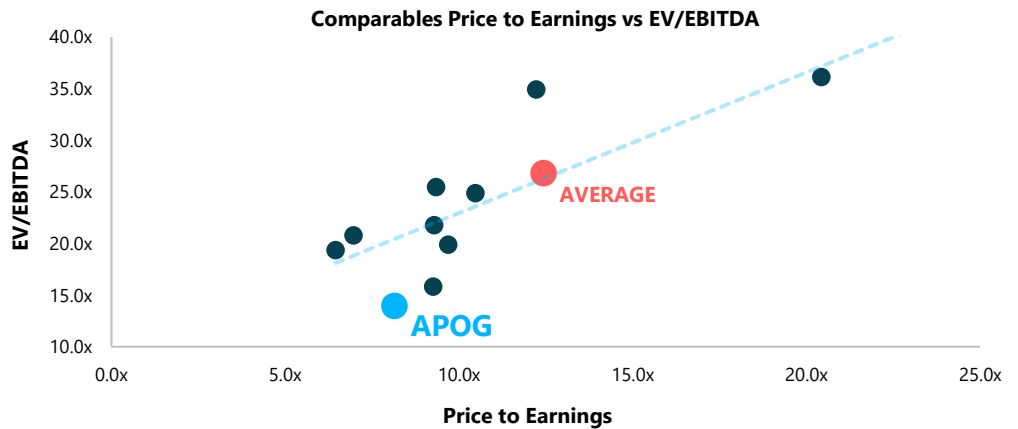


APPENDIX M: RELATIVE VALUATION METRICS

SP Small Cap Building Products Multiples Valuation				
Ticker	Market Value	Price to Sales Actual	Enterprise Value/EBITDA	Price to Earnings Actual
APOG	838	0.77x	8.16x	13.92x
TGLS	335	0.87x	6.45x	19.36x
ARNC	3,160	0.58x	6.97x	20.79x
ROCK	2,664	2.82x	20.43x	36.14x
AAON	3,419	7.19x	29.66x	48.92x
IIIN	464	1.00x	10.47x	24.90x
GFF	1,198	0.47x	9.69x	19.88x
AMWD	1,589	1.01x	9.35x	25.46x
UFPI	3,365	0.71x	9.27x	15.82x
NX	742	0.99x	9.29x	21.78x
PGTI	1,198	1.61x	12.23x	34.94x
REZI	3,104	0.64x	13.09x	-
Average		1.63x	12.45x	26.80x
Median		0.99x	9.69x	23.34x

*Denotes Outlier

We identified the S&P Small Cap Building Products Index as the most appropriate peer group to compare APOG's trading multiples. Even excluding outliers, Apogee trades inexpensively compared to its peers on both a Price to Earnings and Price to Sales basis.



APPENDIX N: SENSITIVITY ANALYSIS

Valuation Sensitivity												
Near-Term Sales Growth												
	2.5%	3.0%	3.5%	4.0%	4.5%	5.0%	5.5%	6.0%	6.5%	7.0%	7.5%	
Discount Rate (WACC)	8.00%	\$42	\$43	\$44	\$45	\$47	\$48	\$50	\$51	\$53	\$55	\$57
	8.25%	\$40	\$41	\$43	\$44	\$45	\$47	\$48	\$50	\$51	\$53	\$55
	8.50%	\$39	\$40	\$41	\$42	\$44	\$45	\$46	\$48	\$49	\$51	\$53
	8.75%	\$38	\$39	\$40	\$41	\$42	\$44	\$45	\$46	\$48	\$49	\$51
	9.00%	\$37	\$38	\$39	\$40	\$41	\$42	\$43	\$45	\$46	\$48	\$50
	9.25%	\$35	\$36	\$37	\$39	\$40	\$41	\$42	\$43	\$45	\$46	\$48
	9.50%	\$34	\$35	\$36	\$37	\$38	\$40	\$41	\$42	\$44	\$45	\$47
	9.75%	\$33	\$34	\$35	\$36	\$37	\$38	\$40	\$41	\$42	\$44	\$45
	10.00%	\$32	\$33	\$34	\$35	\$36	\$37	\$39	\$40	\$41	\$42	\$44

Operating Tax Sensitivity			
	Price Target	Upside	
Operating Tax Rate	26%	\$42.80	11%
	22%	\$45.27	18%
	24%	\$44.04	14%
	26%	\$42.80	11%
	28%	\$41.57	8%
	30%	\$40.34	5%
	32%	\$39.11	2%
	34%	\$37.87	(2%)
	36%	\$36.64	(5%)

Valuation Sensitivity												
COGS to Sales												
	73.50%	73.25%	73.00%	72.75%	72.50%	72.25%	72.00%	71.75%	71.50%	71.25%	71.00%	
SG&A to Sales	15.10%	\$39	\$40	\$41	\$42	\$44	\$45	\$46	\$47	\$49	\$50	\$51
	15.20%	\$38	\$39	\$41	\$42	\$43	\$44	\$46	\$47	\$48	\$49	\$51
	15.30%	\$38	\$39	\$40	\$41	\$43	\$44	\$45	\$46	\$48	\$49	\$50
	15.40%	\$37	\$38	\$40	\$41	\$42	\$43	\$45	\$46	\$47	\$48	\$50
	15.50%	\$37	\$38	\$39	\$40	\$42	\$43	\$44	\$45	\$47	\$48	\$49
	15.60%	\$36	\$37	\$39	\$40	\$41	\$42	\$44	\$45	\$46	\$47	\$49
	15.70%	\$36	\$37	\$38	\$39	\$41	\$42	\$43	\$44	\$46	\$47	\$48
	15.80%	\$35	\$36	\$38	\$39	\$40	\$41	\$43	\$44	\$45	\$46	\$48
	15.90%	\$35	\$36	\$37	\$38	\$40	\$41	\$42	\$43	\$45	\$46	\$47

Terminal Sales Sensitivity			
	Price Target	Upside	
Terminal Sales Growth	2.0%	\$42.80	11.2%
	4.5%	\$43.34	12.5%
	4.0%	\$43.23	12.3%
	3.5%	\$43.13	12.0%
	3.0%	\$43.02	11.7%
	2.5%	\$42.91	11.4%
	2.0%	\$42.80	11.2%
	1.5%	\$42.70	10.9%
	1.0%	\$42.59	10.6%
0.5%	\$42.48	10.3%	

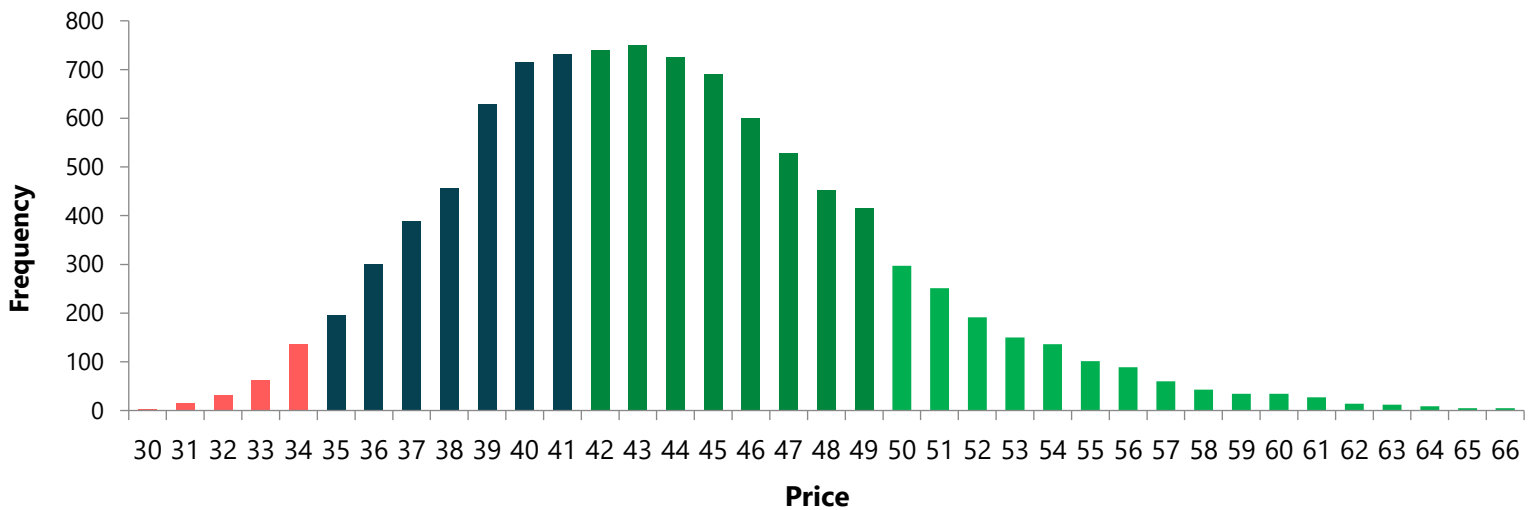
APPENDIX O: SCENARIO ANALYSIS

Scenario Summary			
Changing Cells:	Base	Bear	Bull
Architectural Framing Systems Sales Growth	6%	2%	8%
Architectural Glass Sales Growth	6%	2%	8%
Architectural Services Sales Growth	5%	2%	5%
Large-Scale Optical Sales Growth	1%	0%	2%
Operating Tax Rate	26%	31%	21%
Cost of Sales / Sales	72%	73%	72%
SG&A / Sales	16%	16%	15%
Result Cells:			
Target Price	\$43.00	\$29.00	\$53.00
<i>Misvaluation:</i>	12%	-25%	38%

Bear Case: In our bear case, we assume that Apogee's competitive landscape intensifies coupled with political gridlock prolonging green infrastructure improvements, therefore causing declines in growth rates to 2% across Apogee's three Architectural businesses. The Company's LSO segment sustains no growth falling to 0% as retail environments struggle to reach pre-COVID-19 levels of consumption. A new political administration implementing tax hikes, shifting tax rates to a projected bound of 31% as management has failed to attain prior levels near current 21% level. Our weighted average cost of capital expand to 10% as costs regarding COS and SG&A increase to 73% and 16% attributed to failures within an AFS consolidation and unsustainable cost cuts moving forward. We arrive at a bear case valuation of \$29 implying a discount of 25% on last close.

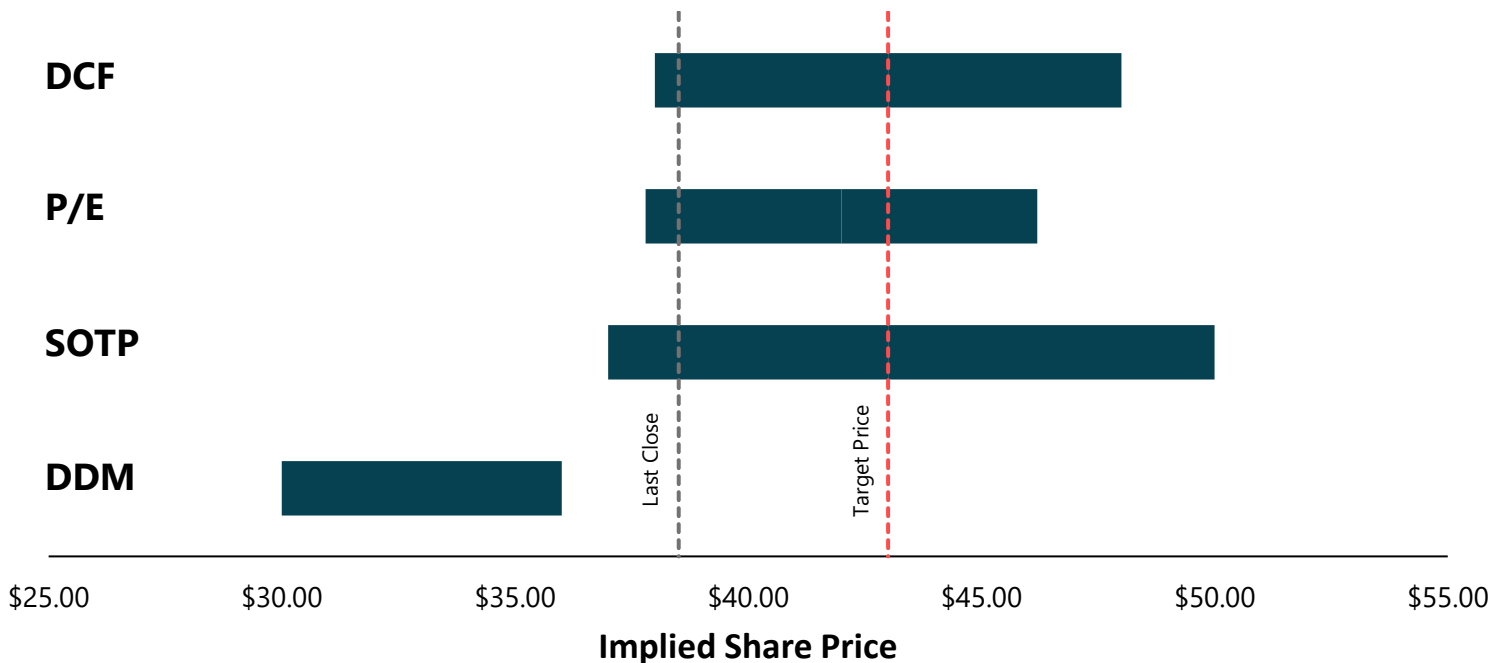
Bull Case: Resembled in our optimistic forecast we assumed accelerated green infrastructure spending and a higher adoption of low- to mid-rise buildings. As a result, we expect AFS and AG to growth at 7%, while AS maintains long-term growth of 5% respectively. Strong business sentiment supported by improved retail consumption ensuing LSO's growth advancements of 2%. Companywide tax rate declining to 21% from favorable management stream lines. Additionally, weighted average cost of capital reduced to 8.5% as consolidation within AFS improves COS to 72% and SG&A contracts to 15% from reduce redundancies producing more fruitful operating conditions. We arrive at a bull case valuation of \$53 representing a premium of 38% on last close.

Monte Carlo Simulation - Weighted Average Cost of Capital (WACC)



We utilized a Monte Carlo simulation to assess the potential outcomes of APOG’s stock price via varying discount rate scenarios. We shocked our Weighted Average Cost of Capital at a standard deviation of 1% for 10,000 simulations accounting for all possibilities in company specific, industry, and macroeconomic factors. The simulation output is in-line with our DCF valuation at an average price of \$43.39. We observed a 63% probability that our model would output a target price above 10% upside or \$42 per share. Conversely, we find only a 4% probability of a target price below 10% upside or \$34 per share, fortifying our confidence in our valuation assumptions.

APPENDIX Q: FOOTBALL FIELD ANALYSIS



APPENDIX R: KEY MANAGEMENT AND BOARD MEMBERS

Donald A. Nolan, Chair of the Board of Directors

Mr. Nolan occupies the Non-Executive Chairman position at Apogee Enterprises. He is also on the board of Meridian Adhesives Group LLC. Mr. Nolan's past careers include President, CEO and Director at Kennametal Inc., and Direct Sales Representative at General Electric. He also served as the Senior VP- Global Packaging & Automotive Coatings at The Valspar Group.

James Porter, Former Chief Financial Officer

Mr. Porter completed his tenure at Apogee in June of 2020, after spending 22 years with the Firm. During fiscal 2020, Mr. Porter led a company-wide procurement savings program that was directed to reduce freight, services and materials costs. The results of the procurement savings project is anticipated to save \$30M in FY21.

Curtis Dobler, Chief Human Resources Officer & Executive Vice President

Mr. Dobler joined Apogee Enterprises in 2019, and holds the position of Chief Human Resources officer. Prior to Apogee, Mr. Dobler worked as the CHRO, at Applied Materials.

Executive Performance Payout						
Performance Goals	Potential Payout	Potential Payout	Potential Payout	Actual Payout	Actual Payout	Actual Payout
Metric	Weighting (%)	Target Payout as a Percent of Fiscal 2020 Salary (%)	Target Payout Level (\$)	Percentage of Target(%)	Approved PayoutAmount(\$)	Percent of Fiscal 2020 Salary(%)
Joseph F. Puishys						
Net Sales	25	26.25	245,437	0	0	0
EBT	65	68.25	638,138	0	0	0
DWC	10	10.5	98,175	0	0	0
	100	105	981,750	0	0	0
James S. Porter						
Net Sales	25	18.75	84,000	0	0	0
EBT	65	48.75	218,400	0	0	0
DWC	10	7.5	33,600	61.8	20,787	3.71
	100	75	336,000	6.18	20,787	3.71
Curtis J. Dobler						
Net Sales	25	15	57,750	0	0	0
EBT	65	39	150,150	0	0	0
DWC	10	6	23,100	61.8	14,276	3.71
	100	60	231,000	6.18	14,276	3.71
Brent C. Jewell						
Net Sales	25	11.25	58,437	0	0	0
EBT	65	29.25	151,938	0	0	0
DWC	10	4.5	23,375	61.8	14,453	3.71
	100	45	233,750	6.18	14,453	3.71
Patricia A. Beithon						
Net Sales	25	15	55,650	0	0	0
EBT	65	39	144,690	0	0	0
DWC	10	6	22,260	61.8	13,764	3.71
	100	60	222,600	6.18	13,764	3.71

Executive Performance Targets						
	Weighting(%)	Threshold	Target	Maximum	Actual Performance	Percentage
Net Sales	25	\$1,414,571,000	\$1,447,500,000	\$1,491,822,000	1,387,439,000	0
EBT	65	\$108,509,000	\$115,500,000	\$118,368,000	79,750,000	0
DWC	10	57.9 days	55.4 Days	53.3 days	56.7 days	61.8

Insider Ownership				
Rank	Type	%OS	Position (000)	Mkt Val (MM)
-	Insiders / Stakeholders	2.44	644	23
1	Puishys Joseph F	1.07	283	10
2	Beithon Patricia A	0.56	147	5
3	Porter James S	0.49	129	5
4	Johnson Gary Robert	0.17	44	2
5	Jewell Brent C	0.15	41	1

Apogee Compensation Peer Group		
Masonite International Corporation	Quanex Building Products Corporation	Cornerstone Building Brands, Inc
AZZ Inc.	Griffon Corporation	Quaker Chemical Corporation
BMC Stock Holdings, Inc.	H.B. Fuller Company	Graco Inc.
Eagle Materials, Inc.	LCI Industries	Tennant Company
EnPro Industries, Inc.	Aegion Corporation	Gibraltar Industries, Inc.

APPENDIX S: AUDIT, COMPENSATION, GOVERNANCE, AND EXECUTIVE COMMITTEES

The Audit Committee is made up of six independent directors, and is chaired by Mr. Johnson. The Audit Committee is responsible for overseeing financial controls, internal audit functions, compliance with legal requirements, and establishing procedures for pre-approval of independent registered public accounting firm. The Compensation Committee is made up of six independent directors, and is chaired by newly appointed (2020) chairwoman Ms. Wagner. The Compensation Committee is principally responsible for risk management within compensation programs, practices and policies with regards to compensation and executive compensation. The Nominating and Corporate Governance Committee is made up of six independent directors, and is chaired by newly appointed (2020) chairman Mr. Parker. The Corporate Governance Committee manages risk associated to succession planning, Board of Director and Board of Committee overall performance, governance practices, and non-employee director compensation.

Compensation	Fiscal 2020
Annual Cash Retainers:	
Non-Executive Chair of the Board	\$135,000(1)
Board Member	65,000(2)
Audit Committee Chair	30,000
Audit Committee Member	15,000
Compensation Committee Chair	25,000
Compensation Committee Member	10,000
Nominating and Corporate Governance Committee Chair	25,000
Nominating and Corporate Governance Committee Member	10,000
Strategic Process Committee Chair(3)	30,000
Strategic Process Committee Member(3)	15,000
Equity Grant	105,000(4)
Charitable Matching Contributions Program	\$2,000 maximum aggregate annual match

APPENDIX T: BOARD OF DIRECTORS COMPOSITION

EXECUTIVE LEADERSHIP



FINANCIAL MANAGEMENT



BUSINESS OPERATIONS



RISK MANAGEMENT



STRATEGY DEVELOPMENT AND EXECUTION



CONSTRUCTION/BUILDING PRODUCTS EXPERIENCE



PORTFOLIO MANAGEMENT/ MERGERS & ACQUISITIONS



PUBLIC COMPANY BOARD EXPERIENCE

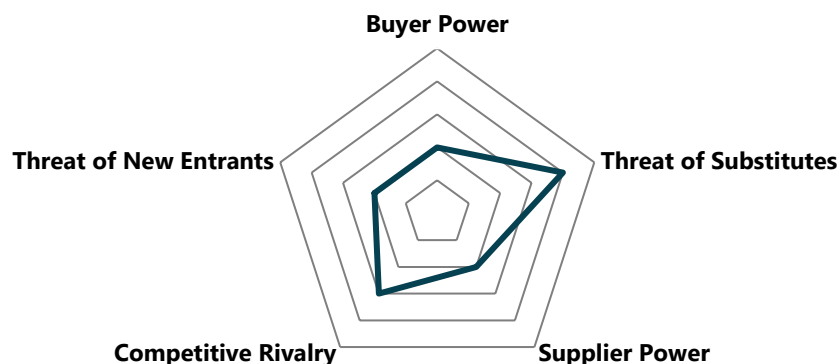


APPENDIX U: PORTER'S FIVE FORCES ANALYSIS

Main Category	Subcategories	Assessment
Buyer Power	Buyer Concentration	There is no customer of material importance to APOG's sales. The company sells to a diverse set of industries with a diversified product line that can accommodate all project sizes.
	Product Differentiation	APOG's product line is highly diverse however, there are few products that are not susceptible to substitution by buyers depending on overall pricing. APOG is able to offer custom coatings on its glass products that aren't offered by any other company in the US.
	Buyers' Profit Margins	APOG's products are used for a long duration as window and framing replacements on mid to high rise buildings happens sparsely. APOG is competitively positioned in its pricing of Glass and Framing products compared to its competitors.
	Backward Integration	APOG's customers can range from contractors looking to build 100 story buildings all the way to artists looking to frame their art. It doesn't make a lot of sense for APOG's customers to create similar products since it is a capital and time strenuous business.
	Importance to Buyers	Customers need glass and framing solutions in order to build buildings and therefore make the products critical to business operations.
	Buyers Volume	Volume of purchases is highly dependent on project size and the contractors building performance goals.

Main Category	Subcategories	Assessment
Threat of Substitutes	Number of Substitutes	The Glass and Framing Industry is a highly saturated market with APOG only taking up roughly 3% of the total US market share. This makes APOG the largest producer of Glass and Framing products in the US which allows them to leverage its supply chain to provide product in a timely manner to its customers.
	Relative Price	APOG's size allows it to stay competitively priced within the market. With little product differentiation, APOG's services allow it to capture and retain market share in the industry.
	Relative Quality	APOG's 70+ years of experience and high quality products that are used globally are one of its key advantages.
	Incentive to Substitute	Long lasting relationships and high customer satisfaction will keep customers from switching to a new producer.

Main Category	Subcategories	Assessment
Supplier Power	Supplier Concentration	APOG acquires many of its raw materials from international countries. A weakening US dollar could pose as a headwind towards competitive product pricing in the future.
	Product Differentiation	Low product differentiation among suppliers of aluminum and glass.
	Suppliers' Input to Buyer	Local suppliers with direct contacts.
	Dependence on the Industry	High dependence for raw materials.
	Forward Integration	APOG's value added products diversify it from its raw material suppliers. No supplier would be capable or willing to acquire APOG or any other industry participants.

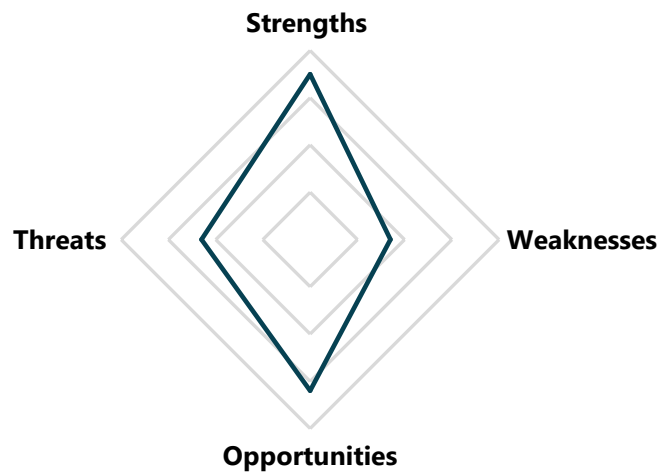


Main Category	Subcategories	Assessment
Competitive Rivalry	Concentration	The Glass and Glazing Industry is highly fragmented, with APOG being the largest company in the US with roughly 4% market share. Many of APOG's competitors are private companies or subsidiaries of large conglomerates. TGLS is the only public company that is a true competitor to APOG which takes up roughly 1% of the US market share per its most recent 10-K.
	Size of Competitors	APOG is the dominant player in the US for glass and framing products. Many other competing companies are able to offer similar products, however. The fragmented industry allows for smaller local companies to gain market share in specific areas.
	Industry Growth	The Industry is expected to grow at a 4.6% CAGR from FY 20-24 (Source: IBIS)
	Fixed Costs	All companies in the Glass and Framing Industry incur roughly the same fixed costs of raw materials. There is little differentiation of sourcing these materials.
	Product Differentiation	APOG and other companies do not have much product differentiation in general. The majority of these differences comes in the value add to these products such as Low-E glass or custom coatings. Services are also a contributing factor to product differentiation and can vary from company to company.
	Diversity of Competitors	APOG is headquarter and primarily operates within the United States. They are able to capture some sales in the EMEA region but also see trouble gaining market share there as it is a saturated market. APOG's biggest competitors are also headquarter and operate mostly in the United States but have some operations globally that allow them to tap into international markets.
	Excess Capacity	APOG and industry participants alike have large backlogs due to the nature of the business they are in. Buildings take a long time to build from start to finish however, contractors will accept bids from material companies like APOG well in advance of physical delivery of the product.

Main Category	Subcategories	Assessment
Threat of New Entrants	Scale Economics	APOG and the rest of the industry rely heavily on nonresidential construction spending which has seen a decline throughout the pandemic and projected to drop 11% over the next year. However, with the new administration pushing for large amounts of stimulus relating to infrastructure, there could be a long term increase in spending. Government funded projects usually are not as sensitive to competitive pricing but to the size and quality of the companies that they contract to build. This is a positive for the larger more established companies in this industry.
	Product Differentiation	There is little product differentiation that can be offered. Companies can differentiate through service offerings such as installation and architectural engineers to help design and suggest products.
	Switching Costs	There are low switching costs between companies as the majority of the business revolves around single project bids. Quality of service is something to consider in a customs switching costs.
	Capital Requirement	The capital requirements for Architectural Glass and Framing manufacturing is very high in terms of manufacturing equipment and R&D spending. New entrants would have to invest time and money into the research and production process.
	Expertise Requirement	APOG has been established in this industry for 72 years and has a significant brand name associated with its products, leading to a high barrier of entry.
	Cost Advantage	APOG is able to keep competitive pricing through its size and relationships with suppliers. New competitors would have a hard time finding suppliers that are willing to sell raw materials at lower margins compared to APOG and industry leaders alike.
	Legal & Regulatory Barriers	The Glass and Framing Industry is subject to strict regulatory requirements to ensure that safe sustainable practices are being implemented and enforced constantly.
	Defense of Market Share	Market share is highly fragmented but APOG has the largest share in the United States at around 4%.

APPENDIX V: SWOT ANALYSIS

Strengths	Weaknesses
Robust services, offering vertical integration throughout segments.	Revenues heavily tied to macroeconomic activity which can be very cyclical in nature creating challenges for revenue generation and forecasts.
Network Effect.	Highly fragmented.
Proprietary custom glass & glazing for businesses of all sizes.	Unexpected charges related to past and future acquisitions.
Large North American distribution capabilities.	Generalized product line.
Opportunities	Threats
Expand market presence in mid-size and low-rise buildings representing 50% of TAM.	Long-term adoption of a work from home (WFH) environment reducing future office space needs.
Increased automation within manufacturing plants resulting in increased productivity and lower cost.	COVID-19 and lockdowns persisting past 2021 causing prolonged decrease in US GDP.
Wide offering of sustainable and energy efficient glass products, taking advantage of continued macro shifts into environmentally friendly buildings.	Forex rates creating favorable conditions for international competitors.
Long-term savings through AFS consolidation initiatives.	CEO of 10 years retiring with brand new CEO taking over at start of 2021.

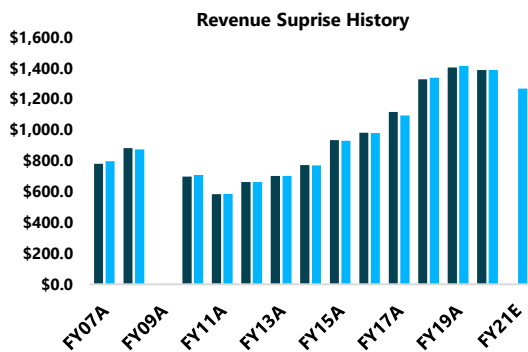


APPENDIX W: HISTORICAL STOCK CHART

APOG Earnings, M&A History

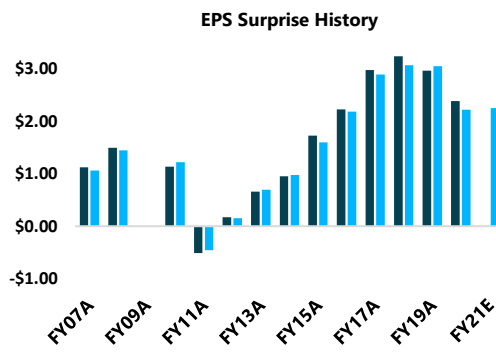


APPENDIX X: SURPRISE HISTORY



After Event	Mean	Surp (%)
778.8	795.6	-2.1
881.8	872.1	1.1
696.7	707.5	-1.5
582.8	585.4	-0.5
662.5	660.9	0.2
700.2	701.0	-0.1
771.4	769.9	0.2
933.9	929.6	0.5
981.2	978.2	0.3
1,114.5	1,091.6	2.1
1,326.2	1,336.0	-0.7
1,402.6	1,413.5	-0.8
1,387.4	1,385.7	0.1
1,266.7	-	-

■ Actual ■ Estimate



After Event	Mean	Surp (%)
1.1	1.1	5.7
1.5	1.4	3.1
-	-	-
1.1	1.2	-7.1
-0.5	-0.5	-12.3
0.2	0.2	13.3
0.7	0.7	-5.0
1.0	1.0	-2.4
1.7	1.6	8.0
2.2	2.2	1.8
3.0	2.9	3.0
3.2	3.1	5.5
3.0	3.0	-2.6
2.4	2.2	7.3
-	2.2	-

APPENDIX Y: TECNOGLASS COMPARISON

APOG, TGLS: Consolidated Income Statement and Performance Figures				
Company: Period:	Apogee Enterprises (APOG)		Tecnoglass (TGLS)	
	2019	2020	2019	2020
Revenue	1402.64	1387.44	370.98	430.91
<i>Growth</i>	5.8%	-1.1%	18.0%	16.2%
Gross Profit	293.57	318.96	120.22	135.81
<i>Gross Profit Margin</i>	20.9%	23.0%	32.4%	31.5%
EBITDA	117.08	134.64	70.35	81.55
<i>Growth</i>	-30.8%	15.0%	27.1%	15.9%
<i>EBITDA Margin</i>	8.3%	9.7%	19.0%	18.9%
EBIT	67.28	87.85	47.20	58.81
<i>Growth</i>	-41.1%	30.6%	37.3%	24.6%
<i>EBIT Margin</i>	4.8%	6.3%	12.7%	13.6%
EBT	58.66	79.75	14.46	37.20
<i>Growth</i>	-46.6%	35.9%	25.6%	157.2%
<i>EBT Margin</i>	4.2%	5.7%	3.9%	8.6%
Net Income	45.69	61.91	8.49	24.27
<i>Growth</i>	-42.5%	35.5%	48.2%	186.0%
<i>Net Income Margin</i>	3.3%	4.5%	2.3%	5.6%

TECNOGLASS



FactSet: Tecnoglass, Inc. is a holding company, which engages in the manufacture, supply, and installation of architectural glass, windows, and associated aluminum products for the global commercial and residential construction industries. Its products include insulating glass, laminated glass, monolithic glass, and low-e glass. It operates through the following geographical segments: Colombia, United States, Panama, and Other. The company was founded on September 21, 2011 and is headquartered in Barranquilla, Colombia.

Ratio Analysis	Tecnoglass (TGLS)				Apogee Enterprises (APOG)				
	FY2016	FY2017	FY2018	FY2019	FY2017	FY2018	FY2019	FY2020	
Activity Ratios									
Total asset turnover	0.77x	0.67x	0.76x	0.76x	1.42x	1.30x	1.31x	1.23x	
Fixed asset turnover	1.66x	1.53x	1.89x	1.75x	2.29x	1.93x	2.01x	1.86x	
Working capital turnover	2.30x	2.24x	2.17x	2.22x	10.00x	10.35x	9.71x	13.21x	
Inventory turnover	3.49x	3.00x	2.73x	3.57x	11.20x	11.67x	8.31x	7.39x	
Days inventory on hand (DOH)	105 Days	121 Days	134 Days	102 Days	33 Days	31 Days	44 Days	49 Days	
Receivables turnover	3.30x	2.85x	4.00x	3.90x	6.00x	6.26x	7.28x	7.05x	
Days sales outstanding (DSO)	110 Days	128 Days	91 Days	94 Days	61 Days	58 Days	50 Days	52 Days	
Payables turnover	4.52x	3.44x	3.43x	4.24x	13.02x	14.51x	15.36x	15.47x	
Number of days of payables	81 Days	106 Days	106 Days	86 Days	28 Days	25 Days	24 Days	24 Days	
Liquidity Ratios									
Current ratio	2.69x	2.16x	2.39x	2.50x	1.60x	1.62x	1.63x	1.38x	
Quick ratio	1.52x	1.25x	1.03x	1.23x	1.10x	1.11x	0.92x	0.76x	
Cash ratio	0.34x	0.34x	0.27x	0.37x	0.10x	0.09x	0.08x	0.05x	
Operating CF-to-current liabilities	-0.04x	0.12x	-0.04x	0.21x	0.67x	0.61x	0.42x	0.39x	
Defensive interval ratio	671.51	852.48	628.97	751.01	441.11	384.94	338.50	334.44	
Cash conversion cycle	296 Days	356 Days	331 Days	282 Days	121 Days	115 Days	118 Days	125 Days	
Solvency Ratios									
Debt to assets ratio	50.6%	47.9%	49.5%	45.6%	8.3%	21.1%	23.0%	19.3%	
Debt to capital ratio	63.7%	64.8%	64.5%	58.1%	12.2%	29.7%	33.1%	29.7%	
Debt to equity ratio	175.8%	184.3%	181.9%	138.8%	13.9%	42.2%	49.5%	42.2%	
Financial leverage ratio (Equity multiplier)	3.48x	3.85x	3.68x	3.04x	1.67x	2.00x	2.15x	2.18x	
Operating CF-to-total liabilities	-0.01x	0.04x	-0.01x	0.07x	0.39x	0.25x	0.17x	0.18x	
Degree of operating leverage	0.80x	-9.11x	2.08x	1.52x	1.88x	-0.34x	-7.13x	-28.21x	
Coverage Ratios									
Interest coverage (times interest earned - TIE) ratio	2.85x	1.73x	2.23x	2.58x	-210.73x	25.95x	7.80x	10.85x	
Cash coverage ratio	3.77x	2.78x	3.32x	3.58x	121.44x	114.73x	117.85x	124.79x	
Profitability Ratios									
Gross profit margin	36.93%	31.54%	32.40%	31.52%	26.20%	25.15%	20.93%	22.99%	
Operating profit margin	15.69%	10.93%	12.72%	13.65%	10.97%	8.62%	4.80%	6.33%	
Pretax margin	12.87%	3.66%	3.90%	8.63%	11.02%	8.29%	4.18%	5.75%	
Net profit margin	7.60%	1.73%	2.43%	5.69%	7.70%	5.99%	3.26%	4.46%	
Operating cash flow margin	-1.01%	4.52%	-1.36%	6.21%	11.13%	9.61%	6.87%	7.73%	
Return on Investment									
Return on assets (ROA)	5.87%	1.16%	1.84%	4.31%	10.93%	7.78%	4.28%	5.48%	
Return on net operating assets	7.65%	1.76%	2.82%	7.04%	23.95%	18.39%	9.93%	14.42%	
Return on total capital	1.33%	0.92%	0.78%	0.35%	22.80%	15.72%	9.07%	11.96%	
Return on equity (ROE)	20.41%	4.48%	6.78%	13.11%	18.23%	15.54%	9.21%	11.98%	
Effective tax rate	40.95%	50.30%	41.32%	34.76%	30.14%	27.66%	22.11%	22.36%	
Return on invested capital - 1	16.51%	14.14%	17.37%	18.49%	18.12%	17.12%	11.65%	14.09%	
Free cash flow yield	-6.16%	7.11%	6.12%	10.66%	7.13%	7.26%	3.34%	4.95%	
DuPont Analysis									
Return on equity	16.74%	1.50%	2.08%	8.29%	18.23%	15.54%	9.21%	11.98%	
Tax burden	48.45%	15.86%	19.14%	41.72%	69.86%	72.34%	77.89%	77.64%	
Interest burden	82.03%	33.52%	30.64%	63.24%	100.47%	96.15%	87.19%	90.78%	
EBIT margin	15.69%	10.93%	12.72%	13.65%	10.97%	8.62%	4.80%	6.33%	
Asset turnover	0.77x	0.67x	0.76x	0.76x	1.42x	1.30x	1.31x	1.23x	
Equity multiplier	3.48x	3.85x	3.68x	3.04x	1.67x	2.00x	2.15x	2.18x	

APPENDIX Z: COMPARABLES: KEY METRICS

SP Small Cap Building Products Industry Metrics												
Company	Ticker	Market Value	Enterprise Value	3-Year Sales Growth	Operating Margin	EBITDA Margin NTM	Free Cash Flow Yld NTM	Total Debt/ EBITDA	Short Int Days to Cover	Return on Equity NTM	Dividend Yield	
Apogee Enterprises	APOG	962.5	1,140.0	-2.1	5.7%	11.5%	7.48%	1.21x	3.34	-	2.36%	
Tecnoglass	TGLS	326.1	501.9	20.0	15.6%	24.2%	11.02%	3.12x	2.36	20.1%	6.79%	
Arconic	ARNC	3,231.8	3,863.8	-	5.3%	11.5%	4.34%	2.26x	2.78	12.6%	-	
Gibraltar Industries	ROCK	3,076.3	2,919.8	16.9	10.9%	14.5%	2.78%	0.00x	4.40	-	0.00%	
AAON	AAON	3,660.6	3,588.4	32.5	18.7%	24.1%	1.36%	0.05x	20.68	-	0.65%	
Insteel Industries	IIIN	483.8	417.7	21.5	5.2%	11.0%	4.90%	0.00x	2.32	-	0.63%	
Griffon	GFF	1,310.1	2,306.8	29.0	7.3%	10.3%	7.48%	4.39x	3.15	11.0%	1.54%	
American Woodmark	AMWD	1,656.2	2,234.6	54.2	7.3%	14.3%	8.25%	2.35x	2.64	13.7%	0.00%	
UFP Industries	UFPI	3,459.5	3,499.8	24.1	6.5%	7.8%	6.50%	0.83x	3.43	14.0%	0.82%	
Quanex Building Products	NX	849.9	968.1	-1.7	6.6%	12.7%	6.97%	1.14x	5.86	11.3%	1.76%	
PGT Innovations	PGTI	1,313.7	1,668.1	71.8	11.7%	17.7%	6.32%	2.98x	3.00	12.5%	0.00%	
Resideo Technologies	REZI	3,538.9	4,742.9	-	5.7%	10.6%	-	3.62x	2.30	14.0%	0.00%	
Average				29.8	9.1%	14.4%	5.99%	1.89x	4.81	13.7%	1.22%	
Median				24.1	7.3%	12.7%	6.41%	2.26x	3.00	13.1%	0.64%	

APPENDIX AA: INDUSTRY JARGON

Industry Jargon	
Term	Definition
Acrylic	A transparent thermoplastic used as a lightweight or shatter resistant alternative to glass.
Aluminum	A light, strong, noncorrosive metal that can either be extruded into shapes or used in sheet or coil form and bent into shapes.
Architectural Glass	Glass that is used as a building material, typically as a transparent glazing material in the building envelope.
Contractor	Select and install the glass panels in the buildings for new work, additions, alterations, maintenance and repairs.
Curtainwall	A non-load bearing wall of glass panes and supporting framework, usually built from aluminum, intended to enclose the building and resist weather.
Envelope	The physical separator between the conditioned and unconditioned environment of a building.
Façade	The face of a building, often facing the street or an open area as the principle front.
Fenestration	Any opening in a building's envelope including windows, doors, and skylights.
Glazing	The glass that is installed in the window frame.
Green Building	Refers to the structure and processes that are environmentally responsible and resource efficient throughout a buildings life-cycle.
Nonresidential Building	A building that is intended for use other than long-term dwelling.
Retrofit	Refers to the process of adding new materials and features to a building, updating the overall efficiency and appearance.
Storefront	The entryway of a commercial building on the ground floor, typically built from glass to draw attention to the establishment.

APPENDIX BB: VELOCITY



Velocity Glass is Apogee's newest architectural glass fabricator delivering insulated glass at accelerated lead times. Located in Dallas, Texas, Velocity serves the unique needs of the commercial construction industry at an effective out its shift within low- to mid-rise as its high quality products coupled by short lead times will bring reduced cyclicity benefits to the overall Apogee business.

- 1) Bloomberg Terminal
- 2) Apogee Company Management
- 3) FactSet
- 4) Apogee Company (10-K,10-Q,8-K, Investor Deck, Conferences, Proxy Statement, Product Brochures, Services)
- 5) FRED
- 6) American Institute of Architects. Architecture Billing Index
- 7) Organisation for Economic Co-operation and Development. OECD Real GDP Forecast
- 8) Federal Reserve. (Federal Open Markets Committee Meeting Minutes)
- 9) IBIS Industry Report. Glass and Glazing Industry
- 10) Dodge Data & Analytics. Dodge Analytic Forecasts
- 11) Proprietary Industry Research
- 12) The Business Research Company. Nonresidential Green Building Market
- 13) Morgan Stanley. MS Global Market Outlook
- 14) Wharton University of Pennsylvania wrds Wharton Research Data Services
- 15) Kawneer Company Website. <https://www.kawneer.com>
- 16) W&W Glass Company Website. <https://www.wglass.com>
- 17) Benson Company Website. <https://www.bensonglobal.com>
- 18) Oldcastle Infrastructure Website. <https://oldcastleinfrastructure.com>
- 19) US Glass Magazine. <https://www.usglassmag.com>
- 20) Business Insider Website <https://www.businessinsider.com>
- 21) National Glass Association. <https://www.glass.org>
- 22) Allwork Website <https://allwork.space/>
- 23) Centers for Disease Control and Prevention
- 24) Businesswire Website <https://www.businesswire.com/>
- 25) Real Page Website <https://www.realpage.com/>
- 26) Joe Biden Campaign Website. <https://joebiden.com/clean-energy/>
- 27) Yahoo! Finance
- 28) Viracon. Viracon Coatings
- 29) Beckers Hospital Review Website <https://www.beckershospitalreview.com/>
- 30) Associated General Contractors of America
- 31) Statista. Green Buildings in the US
- 32) Forbes Website How Business Owners can Sharpen Their Strategy With Satellite Offices
- 33) Duff & Phelps. Normalized Risk Free Rate
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- 39) Hive Life Website More Enterprises Likely to Adopt Satellite Offices to Cut Costs
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- 42) U.S. Department of the Treasury. US Treasury Rates
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