



# CFA Institute

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## CFA Institute Research Challenge

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## Recommendation

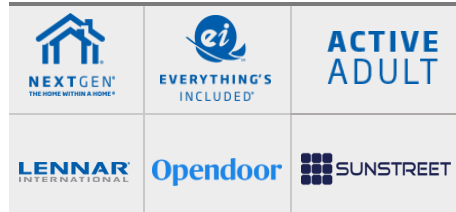
**HOLD**

Share Price (as of 1/18/19)	\$44.10
Target Price	\$44
Downside	0.50%

## Background

Sector	Consumer Discretionary
Industry	Consumer Durables
Sub Industry	Homebuilding
CEO	Richard Beckwith
CFO	Diane Bessette
Founded	1954
Headquartered	Miami, Florida
Market Cap	14.37B
Shares Outstanding	292.5M
Enterprise Value	23.3B

## Products



## INVESTMENT SUMMARY

We initiate coverage on Lennar Corp with a hold recommendation and a 12-month price target of \$44.00. The price target offers a downside of 0.50% based on Lennar's share price of \$44.10 on January 18, 2019. We arrived at our price target using a combination of a relative and absolute valuation. Specifically, the valuation was 75% weighted on a DCF analysis and 25% weighted on an EV/EBITDA multiple analysis. We used the DCF model to arrive at an intrinsic value for Lennar Corp and the EV/EBITDA multiple to account for market sentiment. Our recommendation was driven by the following factors:

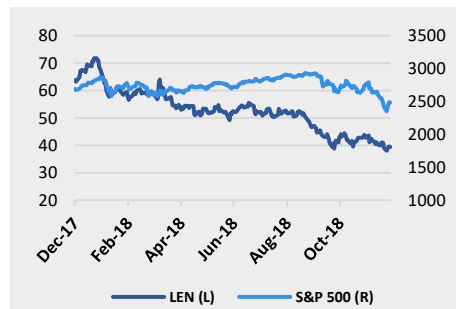
**Stagnant borrowing costs.** The Fed's recent switch to a dovish wait and see approach has calmed recent volatility of homebuilding stocks. Interest rates are a key economic variable for the homebuilding industry, as they have a direct impact on housing demand. During the last FOMC meeting, the Fed penciled in 2 more potential rate hikes for 2019 on an as needed basis to keep the economy running as efficiently and productive as possible. We see this as favorable to Lennar Corp and our DCF model reflects the renewed confidence in the housing market.

**Increased labor costs resulting from a tight labor market.** With the U.S. economy at full employment, it has become increasingly difficult for companies to find workers. Homebuilders rely heavily on construction labor to fill orders for new homes, and given the current labor shortage in the economy, this could put upward pressure on labor costs. Unless the current labor market begins to show signs of slowing down, rising labor costs will continue to squeeze homebuilders' margins.

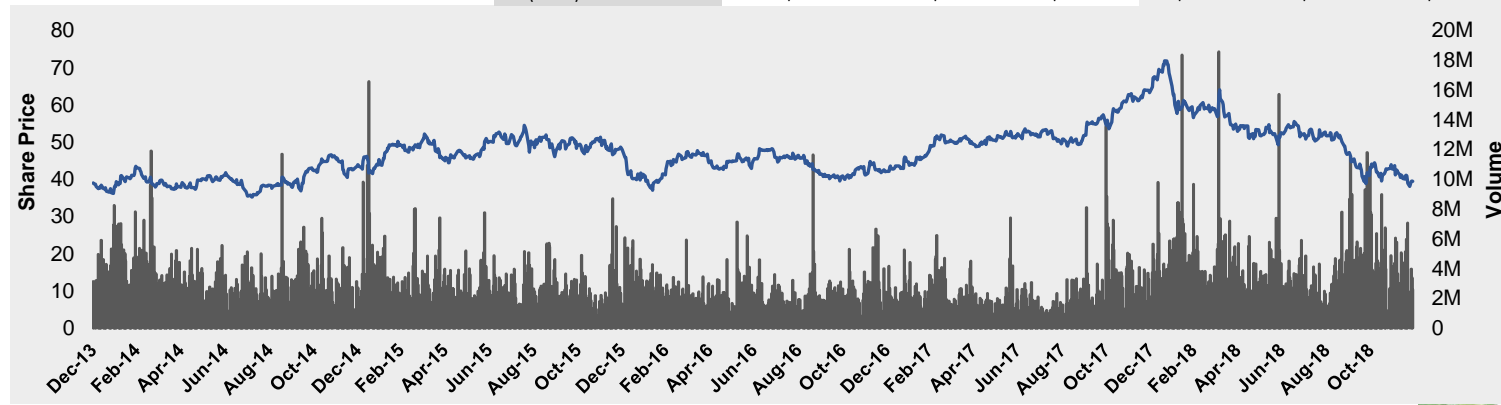
**Home prices have outpaced wage growth leading to lesser affordability among homebuyers.** Home prices in the U.S. have increased steadily over the past 5 years, but income growth has been stagnant. When coupled with rising mortgage rates, rising home prices present an obstacle to first-time homebuyers and existing homebuyers. Affordability concerns undoubtedly present a challenge to homebuilders moving forward, and it will be difficult for these firms to grow revenues against a backdrop of waning housing supply. Given the increases in the prices of construction materials and the constrained supply of housing, Lennar Corp is moving back towards a more simplistic approach by dialing back on Everything's Included strategy to offset the rising home prices.

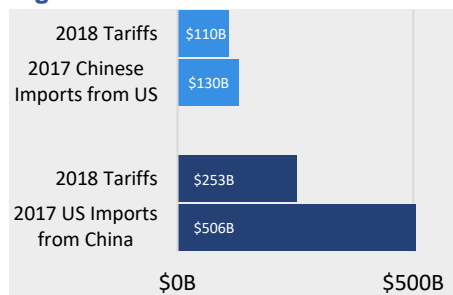
Key Financials	16	17	18	19E	20E	21E
Revenue Growth	15.5%	15.6%	5.92%	4.40%	5.40%	6.87%
COGS	8.03B	9.39B	15.53B	17.05B	17.98B	19.23B
Gross Profit Margin (%)	21.90%	20.90%	22.55%	19.31%	19.25%	19.20%
EBIT Margin (%)	12.20%	11.10%	11.60%	8.68%	8.79%	9.09%
Net Income	911.8M	810.5M	1.70B	2.08B	2.19B	2.43B
EPS (Basic)	\$4.05	\$3.38	\$5.51	\$6.37	\$6.71	\$7.44

## 1-Year Stock Price Performance

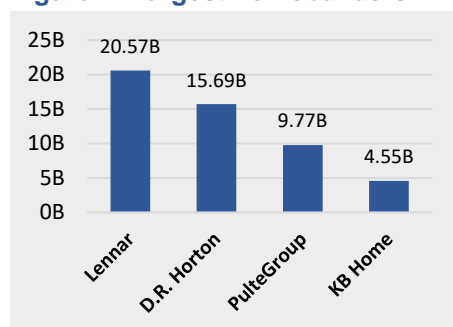


## 5-Year Stock Price Performance

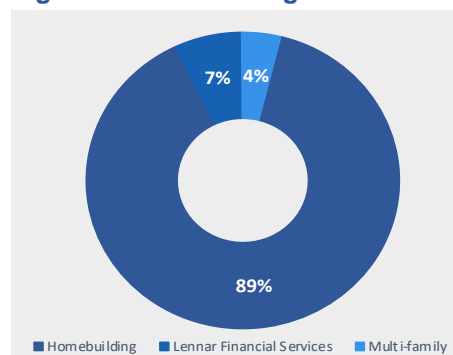


**Figure 1: U.S. and China Tariffs**

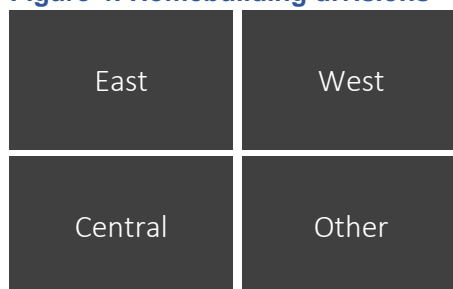
Source: US Census Bureau, Team Research  
Data as of Sept 24, 2018

**Figure 2: Largest homebuilders**

Source: CapitalIQ, Team Research

**Figure 3: Revenue Segments**

Source: Team Research

**Figure 4: Homebuilding divisions**

Source: Team Research

**Trade progress between the U.S. and China will provide a rising tide effect for the U.S. stock market.** Investors have welcomed the progress between the U.S. and China early on this year. Tariffs contributed to the depressed stock prices for homebuilders for much of 2018 and pushed up materials costs. We see materials costs coming down if a favorable ultimatum is reached between the U.S. and China. We also expect the trade progress to positively impact Lennar Corp's margins.

## CURRENT HIGHLIGHTS

On October 29th, 2017, Lennar Homes, the wholly owned subsidiary, merged with CalAtlantic, another major homebuilding corporation. CalAtlantic's home building division comprises of \$11.2 billion of revenues or 98% of consolidated revenues. Similarities with CalAtlantic's operations are expected to create synergies with Lennar Homes' core business. Some implications of the CalAtlantic merger were: (1) The merger made Lennar Corp the largest homebuilder in the U.S. by revenue (**fig. 2**), (2) CalAtlantic's stockholders received 0.855 shares of Lennar stock in exchange for each share of CalAtlantic, and (3) CalAtlantic shareholders now own about 26% of Lennar.

## BUSINESS DESCRIPTION

Lennar Corporation ("Lennar") (hereafter referred to as the company, the firm, or the business) was founded in 1954 and is headquartered in Miami, Florida. Today, it is the largest consumer homebuilder in the United States through its acquisitions over the years. The company is primarily a homebuilder that also engages in real estate related financial services, commercial real estate, investment management, and development of multifamily rental properties. The company's reportable segments are as follows: **(1) Lennar Homebuilding** (which composes of 89% of revenues), **(2) Lennar Financial Services** (representing approximately 7% of revenues), and **(3) Lennar Multifamily** (which brings in about 4% of revenues) (**fig. 3**).

**(1) Home Building.** The Homebuilding segment is further divided into East, Central, West, and Other (**fig. 4**). The segment generated \$11.2 billion (89% of revenues) in FY17. The homebuilding segment includes the construction and sale of single-family attached and detached homes, as well as the purchase, development, and sale of residential land. Additionally, the segment sells single-family homes in communities targeted to first time home buyers, move-up homebuyers, active adult homebuyers, and luxury homebuyers with the 2017 acquisition of WCI. The homebuilding mission is focused on the profitable development of residential communities.

**(2) Lennar Financial Services.** The Financial Services segment provides mortgage financing, title insurance, and closing services for both buyers of homes and other parties involved. There were approximate 314,800 title insurance policies issued and 110,000 title and closing service transactions during the most recent fiscal year. The segment provides loans to about 80% of Lennar's homebuyers, originating about 31,600 residential mortgage loans (\$9 billion) in the most recent year. The segment uses mortgage loans and factored receivables on loans but not yet paid as collateral for \$1.45 billion in revolver financing from its 365-day warehouse repurchase facility. All residential mortgages that Lennar originates are sold shortly

**Figure 5: Revenue Segment CAGR**

2014-2017	Homebuilding 16.8%
Financial Services 19.2%	Multi-family 78.2%

Source: CapitalIQ, Team Research

after in the secondary mortgage market. After the loans are sold, Lennar potentially has liability for breach of contract.

**(3) Lennar Multifamily.** Through joint ventures, the multifamily segment develops, constructs, and manages multifamily rental properties. It was also Lennar's fastest growing segment from 2014 through 2017 (**fig. 5**). There are currently interests in 53 communities, 13 of which are completed, 34 partially completed, and 6 either owned or under contract. Joint venture participants contribute cash and undeveloped land to the long-term investment vehicle. The segment's pro-rata share in unconsolidated entities is 21% (\$407 million stake).

## INDUSTRY OVERVIEW AND COMPETITIVE POSITIONING

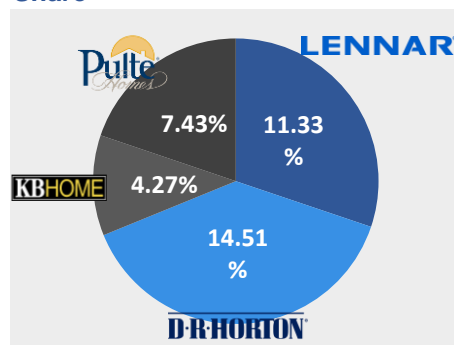
**Industry Overview.** The Homebuilding industry is both highly competitive and fragmented. It contains large national builders as well as small regional builders. Some of the largest names in the industry include: D.R. Horton, Lennar, PulteGroup, NVR, Toll brothers, and KB homes. In the U.S., homebuilders typically operate in six major regions: The Sun Belt, Central, Southeast, mid-Atlantic, Midwest, and West (**fig. 6**). The Northeast, a densely populated region, is where small privately financed regional builders compromise a bulk of the market share. Most homebuilders tend to focus on certain niche markets, ranging from the luxury home market all the way down to entry-level. Markets within the homebuilding industry vary based on a consumer's ability to obtain adequate financing. Most homebuilders, though, concentrate on the "first-time" homebuyer segment. Here, the average home price is modestly higher than that of an entry-level model. Strategically, all homebuilders generally adhere to a similar operating model that centers primarily on land purchases and construction activity.

**Competitive Positioning.** The highly competitive nature of the homebuilding industry causes homebuilders to compete on many different fronts, such as: acquisition of land, labor and material to construct homes, and overall customer base. In terms of market concentration, the 10 largest publicly traded homebuilders accounted for 25% of single-family unit sales in 2017. Lennar currently makes up about 12% of this 25%, but their recent merger with CalAtlantic has strategically placed them in a position to rapidly increase market share (**fig. 7**). Large homebuilders like Lennar have an added advantage over smaller homebuilders, during weakening economic times due to the ease with which they can acquire debt financing and raise equity. Currently, homebuilders are actively competing on prices which can vary depending on the region in which the home sale is being made, as well as competing for skilled workers. Labor costs for companies operating in this space can fluctuate depending on the stage in the economic cycle. Labor shortages are common and push labor costs higher for homebuilders.

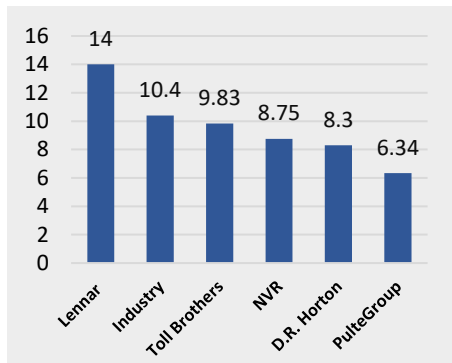
**Industry Metrics.** The two main forces for the industry's revenue are consumer demand and pricing trends, which tend to be tied to market demand and supply conditions. In aggregate, the S&P composite 1500 homebuilding reported revenue per share growth of 16.4% down slightly from the growth of 19% in 2016. Homebuilders try to maintain and increase their margins through geographical diversity. Operating income for the homebuilding sub sector has gradually improved since the downfall in 2009 with modest gains in 2018. These increased gains in operating income are

**Figure 6: Lennar's Homebuilding Operations**

Source: CapitalIQ, Team Research

**Figure 7: Homebuilding Market Share**

Source: Team Research

**Figure 8: Peer EV/EBIT Multiples**

Source: CapitalIQ, Team Research

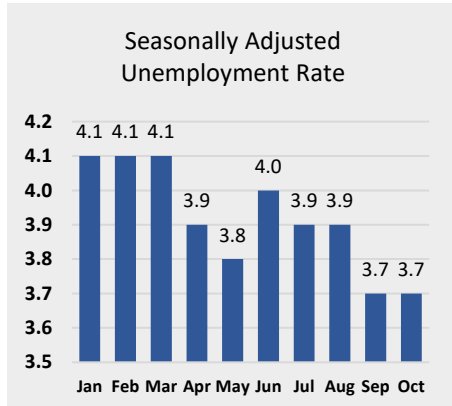
primarily due to the high operating leverage of homebuilders but will work in reverse if revenues were to decline. The Homebuilding industry was trading at an EV/EBIT of 13.0x at the end of 2017 and has since then lowered to 10.4x as of November 2018. When compared to the industry average, Lennar was trading at a premium with an EV/EBIT of 14.0x as of the same date (**fig. 8**). After the CalAtlantic merger, Lennar became the largest industry player in terms of revenues, but also the most expensive with an EV/Revenue of 1.35x. The Homebuilding EV/Revenue ratio is 1.1x, placing Lennar at a premium.

**Competitive Forces.** The homebuilding industry has relatively low barriers to entry, but simply entering the industry does not guarantee large market share. The more established home builders who have been in the industry for a long time, such as Lennar, may be better positioned for changes in the economic cycle as they have survived through them in the past. However, the highly competitive nature of the homebuilding industry limits pricing power which ultimately affects revenue. As far as bargaining power with suppliers, the homebuilding industry competes heavily for the raw materials needed to build homes which shifts power to suppliers (**fig. 9**).

In addition, gaining power over buyers within the homebuilding sub-industry is tough, because consumers are always trying to maximize their value while paying the least amount of money which shifts power to homebuyers. Bargaining power of buyers can especially increase during an economic downturn, making the housing market a buyers' market. Such a situation occurred in the 2008 global financial crisis when home prices plummeted and severely impacted homebuilders. Lennar has attempted to diversify its revenue sources in recent years through its financial services segment. However, mortgage rates have risen steadily over the past 5 years while wages have remained flat. Overall, the homebuilding environment is highly competitive as firms compete over geographical land space as well as market share.

**Figure 9: Porter's Forces**

Source: Team Research

**Figure 10: Unemployment Rate 2018**

Source: BLS, Team Research

## MACROECONOMIC DRIVERS

With a recovering stock market, interest rates poised to rise, increasing borrowing costs, and a tight labor market (**fig. 10**), the macroeconomic environment will certainly impact business operations in the consumer durables industry. Home building makes up about 52% of the industry and has very low barriers to entry. The consumer durables market has been growing at a rate of 13.6% in 2018 and is projected to grow 8.5% in 2019.

**Interest Rates.** In recent years mortgage interest rates have fallen, providing support of property values and lowering borrowing costs for buyers. Although, mortgage rates have been fairly attractive, dropping from 6.9% in 2006 to 4.6% in mid-2018, they are showing signs of rising in the near term as the economies strengthens. The national average mortgage rate has risen to almost 5%, up from 4% only a few months prior, which has stifled demand for new homes (**fig. 11**). In the future, we see the increased mortgage rates adversely affecting companies who originate and facilitate home mortgages as the demand for these items will certainly be impacted. On average, the consumers purchasing power decreases 12% for a 1% increase in the interest rate received on the mortgage. With the economy strong and unemployment low, it has led

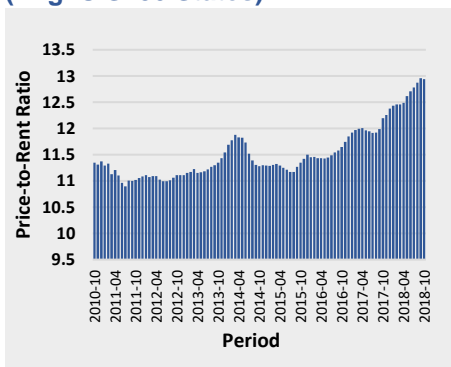
**Figure 11: Mortgage Rates 2018**

Mortgage Rates 2018		
Term	15-Year	30-Year
Average Rate	4.36	4.94

Source: FRED, Team Research

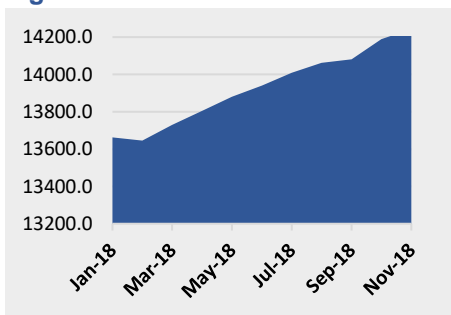


**Figure 12: Price-To-Rent Ratio**  
(Avg. U.S. 50 States)



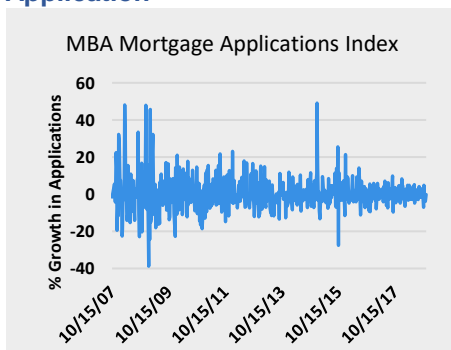
Source: Team Research

**Figure 13: PCE Index**



Source: FRED

**Figure 14: MBA Mortgage Application**



Source: Team Research

the Fed to have a more hawkish view on rates which will inevitably lead to further increases in mortgage rates experienced by borrowers.

**Price to Rent Ratio.** The price to rent ratio offers insight into how much homes are worth and whether or not it becomes more favorable to rent in certain cases. For the price to rent ratio, a ratio from 1-15 implies that it is better to own a home than rent. However, a ratio above 15 would imply that it may be better to rent due to the home's value over time. The ratio is calculated by taking the average list price of a home and dividing it by the product of the average rent price and 12, which annualizes the numbers. From this ratio, the consumer can gauge whether it is more valuable to buy or rent a home. The ratio has been increasing as home prices rise while the annual rent experienced by renters has decreased making the future more favorable for renters (fig 12). This is especially important for potential first-time homebuyers who may be swayed to rent rather than purchase a home due to the favorable rent prices compared to home prices.

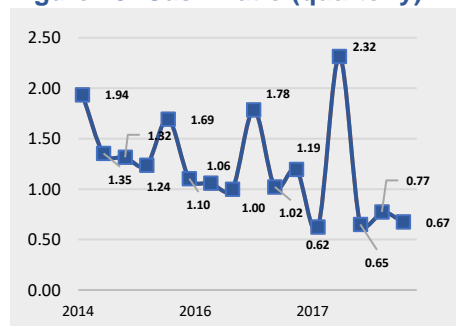
**Inflation.** Inflation can have many long-term effects on Lennar because of the increasing cost of land, materials, as well as labor resulting in increased prices of homes. When inflation is present, it is usually accompanied by higher interest rates which counter the increase in the price of goods. Due to the competitive nature of the homebuilding industry, the price paid for input costs are key drivers for gaining a competitive edge over another firm. When inflation is high, the prices paid for input costs rise dramatically which leads to shrinking margins for firms that are not prepared. Also, consumers will experience higher prices on everyday items which would leave them less pay to deploy on other things, such as a home. Consumer confidence tends to move lower when inflation is high because the consumers notice the increase in prices which makes them less optimistic about the future of the economy.

**Mortgage Application.** Mortgage applications offer direct insight into the future of the homebuilding sector. The mortgage application index tracks the number of consumers who have applied for a home mortgage. The percentage growth in mortgage applications have slowed but are now less volatile than in the historic past. While the growth is lower than some of the previous years, the numbers are showing a slow and stable recovery which benefit mortgage originators. This information is useful to Lennar because it allows them to gauge the future demand for homes, so they can match their supply with the future demand to make sure the operations are efficient, and they aren't sitting on large amounts of inventory. Early on in 2019, there has been a resurgence in mortgage applications, setting the stage for an improved year for homebuilders.

**Employment Trends.** In 2017 average unemployment was around 4.1%, and with so many individuals employed and an overall healthy economy, the homebuilding industry may struggle finding skilled laborers to deploy into the homebuilding operations in the coming months. With a fully employed economy, the choice for labor is already limited so the fact that some home builders require specialized labor to be deployed which is super limited and thus requires a large premium to be paid which could ultimately be seen in the companies' margins. With demand for housing being relatively strong the

need for labor will continue to increase while the available supply remains limited, leading to higher costs for homebuilders.

**Figure 15: Cash Ratio (quarterly)**

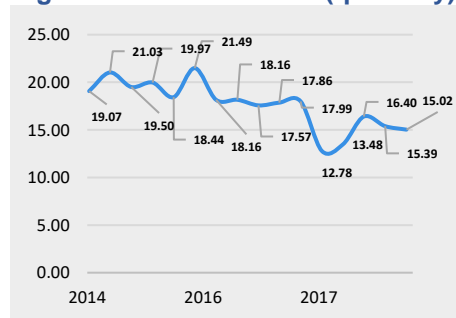


Source: Bloomberg, Team Research

## FINANCIAL ANALYSIS

**Liquidity.** Cash as a percentage of total assets has decreased steadily over the past 7 quarters, moving from 8.72% on fiscal year ended 2016 to 3.75% in Q3 2018. The cause of the cash decline in the most recent three quarters were large debt principal redemptions that exceeded borrowing by \$382 million, \$36.5 million, and \$740 million in FY2018Q1, FY2018Q2, and FY2018Q3, respectively. The firm's cash ratio declining less than one in recent quarters could be a potential problem for the firm if cash flows from operations fall short as \$1.101 billion in unsecured loans mature (**fig. 15**). Although, this is an unlikely problem given the firm's recent strength in operating cash flows and non-withdrawn \$2.6 billion capacity credit facilities. The cash ratio fell below 1 and remained below for the past 3 quarters. Additionally, if short term liabilities become due faster than the firm can turn inventory into cash, the firm may default on its obligations. At the end of the second quarter, Lennar Corp's total debt to total capital ratio was 0.424, and the ratio was 0.50 for fiscal year end 2017. The company repaid \$575 million of 8.38% CalAtlantic senior notes during the second quarter. It also paid off the remaining \$250 million of Rialto's 7% senior note and \$250 million of 6.9% Lennar senior notes for a total redemption of \$1.1 billion for fiscal year ended 2018. As mentioned in Lennar's conference calls, management is focused on redeeming debt related to the CalAtlantic acquisition, which may have an adverse effect on liquidity ratios. Recently paid down debt freed up Lennar's \$2 billion credit facility. Untapped credit facilities may be the reason why the firm may be more comfortable with a lower cash and current ratio relative to previous quarters (**figs. 15 & 16**). Total debt to assets (leverage ratio) decreased at a CAGR of -1.56% since Q4FY16. The decrease falls in line with the firm's plan to pay down its debts, which it expressed in its most recent earnings call. The implication of the debt repayments are increases to the interest coverage ratio, which is a positive result in terms of the firm's liquidity position. The interest coverage ratio increased from 46.13 in FY18Q1 to 184.11 in FY18Q3, a 299% increase.

**Figure 16: Current Ratio (quarterly)**



Source: Bloomberg, Team Research

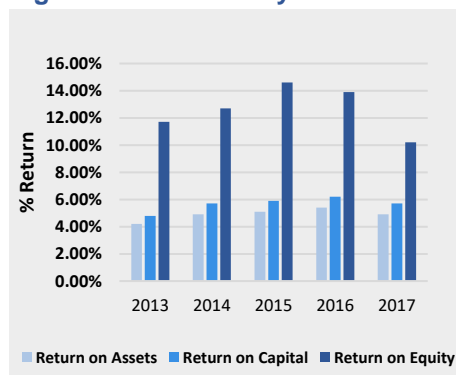
**Figure 17: Cash Conversion Cycle**

Ratio	2015	2016	2017
DSO	3.03	3.03	3.53
DIO	409.65	383.26	365.52
DPO	19.43	19.42	16.92
CCC	393.25	366.88	352.13

Source: CapitalIQ, Team Research

**Asset Management.** Lennar's business is asset intensive, so the rate at which they turn inventory is crucial for the business' ability to generate consistent cash flow. The majority of Lennar's assets are current in nature, so the total asset turnover ratio proves to be more effective than the fixed asset turnover. Lennar's total asset turnover has increased each year signaling strength in sales number as well as assets ability to generate cash. Furthermore, a large component of the current assets account is inventory which is composed of land and land under development, homes under construction and finished homes, as well as consolidated inventory not owned. Inventory turn has been increasing at a compounded annual rate of 10.15% over the past 6 years reflecting Lennar's continuous purchasing of inventory due to selling out of their current stockpile. Over the past 5 years Inventory has composed on average, 75% of Lennar's current assets, so investors prefer to see the inventory get turned into cash relatively quickly. The cash conversion cycle (CCC) offers insight into the difference between the amount of days it takes Lennar to collect cash from sales to the amount of days it takes to buy materials from its suppliers. The CCC has been decreasing for the company which a positive (**fig. 17**). On average CCC declined year over year at 5.8%

Figure 18: Profitability Measures



Source: Bloomberg, Team Research

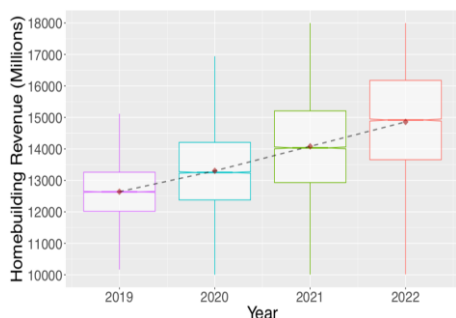
showing that the firm is having more success turning the inventory into cash as well as maintaining good relationships with their suppliers. CCC in the most recent period was 370.7 which is about one year. Lennar's CCC in days is 22.26% higher than the industry average of 303.2, which indicates that the firm is still behind in operational efficiency compared to its peers.

**Profitability.** Over the last 5 years Lennar has grown its bottom line through strategic acquisitions which have supplied additional assets to its balance sheet. As Lennar begins its shift towards becoming a pure-play homebuilder, their profitability will mostly be driven by the strategic acquisitions of CalAtlantic and WCI. The synergies provided by these mergers include: **(1) greater efficiencies and opportunities** due to increased concentration of local market share, **(2) reduced general and administrative costs** and **(3) reduced homebuilding costs**, **(4) savings in corporate and division overhead costs**, **(5) expected expanded opportunities for growth through a higher-end more luxurious product**, **(6) greater presence in the state of Florida and customer diversity**. These synergies will improve profitability by reducing cost while providing support for additional revenue growth, ultimately increasing Lennar's bottom line over time.

## VALUATION

**Recommendation.** Using a Monte-Carlo simulation based DCF model that applies distributions of various possible sales growth rates (15,000 iterations per year and segment), we arrived at a price range for intrinsic value that is normally distributed around a mean intrinsic value of \$51.77 per share. A multiples valuation approach provided a valuation of \$36.24 per share. Using a 75% and 25% weight for the DCF valuation and multiples valuation, respectively, we arrived at an intrinsic value of \$43.88. Consequently, we recommend a hold rating for the class A equity shares of NYSE: LEN. The appendix contains details on the calculations, code, and output. Revenue growth rates were derived from an excel revenue model that projects trends in homes sold, the average price of homes, and total land sold ([appendix E](#)). The Monte-Carlo results are reconciled with an excel DCF table provided in the appendix with a difference of \$0.40 per share. The graphs provided follow box and whisker plot format.

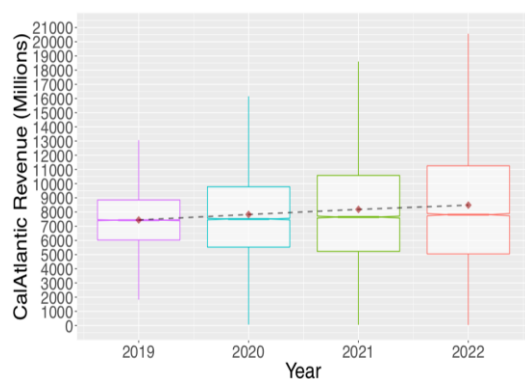
Figure 19: Homebuilding Revenue Projections



Source: Team Research

**Home-Building Revenues.** Sales growth rate projections were separated by segment. For Home Building, we assumed mean sales growth rates of 5.1%, 5.1%, 6.57%, and 8.58% for 2019, 2020, 2021, and 2022, respectively ([fig. 19](#)).

Figure 20: CalAtlantic Revenue Projections



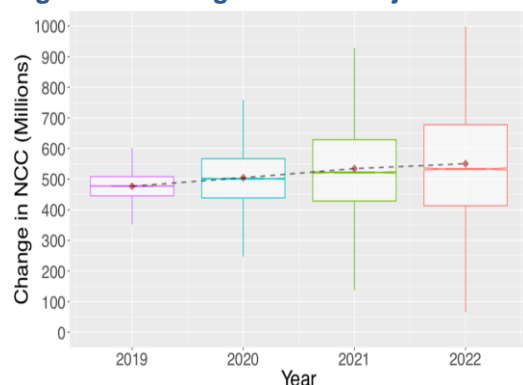
Source: Team Research

**CalAtlantic Revenues.** For the CalAtlantic segment, we assumed mean sales growth rates of 5.1%, 5.1%, 6.57%, and 8.58% for 2019, 2020, 2021, and 2022, respectively ([fig. 20](#)).

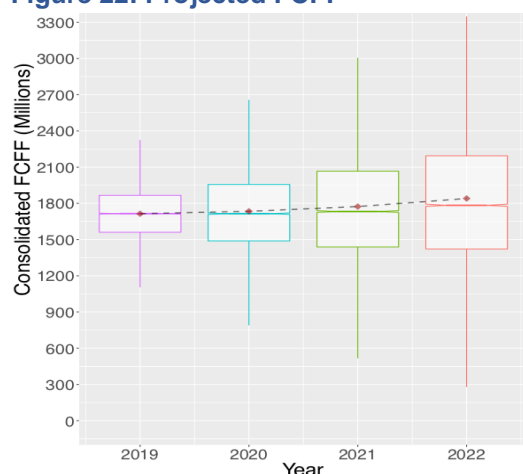
**Lennar Multi-Family Revenues.** For the Multi-Family segment, we assumed a mean sales growth rate of 18% for 2019 through 2022.

**Lennar Financial Service Revenues.** For the Financial Services segment, we assumed a mean sales growth rate of 4.87%, 5.1%, 6.57%, and 8.58% for 2018, 2019, 2020, and 2021, respectively. These figures assume financial service revenue vary with homebuilding revenues using a percentage of sales of 7% as they have behaved historically.

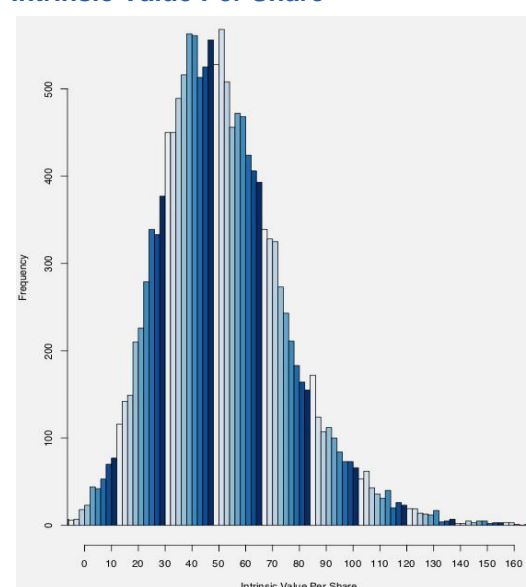


**Figure 21: Change in NCC Projections**

Source: Team Research

**Figure 22: Projected FCFF**

Source: Team Research

**Figure 23: Sensitivity Analysis - Intrinsic Value Per Share**

Source: Team Research

**Changes in net working capital.** For changes in NWC, we assumed a mean cash outflow growth rate of 18% for each forecast year using a standard deviation of 10% for the growth rate (historical average). Changes in NWC for 2019 were forecasted to be a mean of negative \$689 million with a standard deviation of \$58.62 million. Projected growth in outflows reflect further investment in inventory as the business grows.

**Non-cash charges.** For changes in NCC, we assumed a mean compounded growth rate of 5% for each forecast year, which also uses a standard deviation of 10% for the growth rate (historical average). Changes in NCC for 2018 were forecasted to be a mean of \$477 million with a standard deviation of \$45.85 million (fig. 21).

**Projected Cash Flows (Discounted).** The simulation provides a graph projecting various possible FCFs and their probability. Results show average future cash flows in the forecast period were \$1.768 billion (fig. 22).

**Terminal Value.** The terminal value was calculated under the assumption that free cash flow would perpetually grow at a rate of 2% in conformance with the long-term historical real GDP growth rate of the United States.

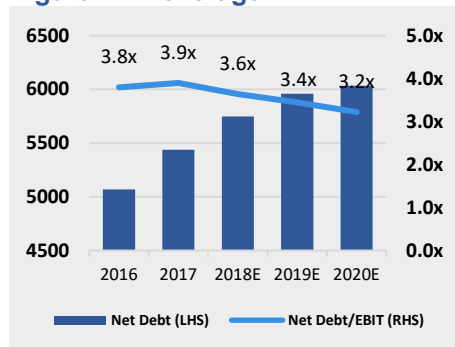
**WACC.** The weighted cost of capital for Lennar was estimated to be 9.31%. The cost of debt was calculated by weighting Lennar's 26 issues of debt rates by their respective principal amounts. CAPM assumptions are used in deriving the cost of equity. A beta of 1.42 was calculated by regressing one year of S&P 500 changes in price data to corresponding changes in LEN stock price data during the same time period. A 10-year government bond risk free rate of 3.125%, as well as an expected market return of 10.17%, were used to calculate the cost of equity.

**Intrinsic Value Per Share.** Created from previously generated data, the simulation provides a histogram forecasting various possible end results for intrinsic values per share (IVPS) and their likelihood. Results showed the average IVPS was \$51.77 per share (fig. 23).

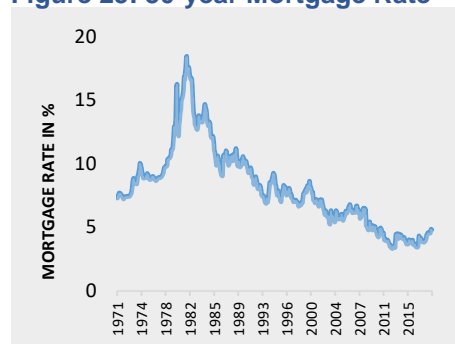
**Risks to Target Price Actualization.** The assumed sales growth rate distributions used in the simulation likely do not reflect reality since they are assumed to be normally distributed. Additionally, stronger than expected sales revenues from merger synergies (not accounted for in the model) may create results that differ greatly from the simulation. Additionally, if macro-economic conditions unexpectedly improve from their current condition, then our projections will not reflect reality.

## INVESTMENT RISKS

**Substantial levels of Debt.** Due to the homebuilding nature of Lennar the firm has large debt levels that are used to finance the purchase of land and home sites. As of November 30, 2017, Lennar's consolidated debt was \$6.9 billion. The indentures on the senior notes do not restrict issuance of future debt.

**Figure 24: Leverage**

Source: CapitalIQ, Team Research

**Figure 25: 30-year Mortgage Rate**

Source: Team Research

The credit facilities used by Lennar also allow for more credit to be issued in the future when it is needed. The substantial level of debt for Lennar increases the possibility that they would be unable to pay interest expense with the generated cash. Furthermore, the acquisition of Cal Atlantic led to Lennar Corp absorbing \$3.8 billion worth of additional in debt from the transaction. Lennar may be vulnerable to increased interest payments if interest rates were to rise which would ultimately impact the bottom line and earnings.

**Interest Rate & Mortgage Rate.** Increases in interest rates would impact Lennar's interest payments, but also could have ripple effects by increasing mortgage rates which would reduce the demand for homes by consumers. The Lennar financial segment could also be adversely affected by increasing interest rates as 61% of their mortgage loans were made to buyers of homes that Lennar built. If a decrease in demand were to arise, the financial segment would be impacted as less consumers would originate mortgages as well as decreased refinance transactions as rates push higher. Lennar does try to counter act these interest rate risks by using financial instruments to hedge the exposure such as interest rate swaps, forward contracts, and option contracts.

**CalAtlantic Merger.** Lennar has never dealt with an acquisition with a similar size to CalAtlantic, so their ability to deploy past merger techniques may not prove to be effective. The success of the acquisition is largely reliant on the results from the integration of personnel, operations, strategies, technologies, and other components. Lennar may not realize the full potential of the benefits if they fail to integrate the operations in a timely manner or if it becomes costlier than originally intended. Upon completion of the merger, Lennar sold \$1.2 billion in debt to finance the acquisition. Lennar became subject to the CalAtlantic debt which amounts to \$3.8 billion. Lennar estimated that the merger would increase the ratio of homebuilder debt to total capital from 34.4% to a pro forma level of 45.5%. Lennar expects to reduce this ratio to pre-merger levels by end of fiscal 2019, but if the combined companies do not generate the expected cash flow, the ratio may remain high. After the CalAtlantic merger, Lennar paid equity and cash consideration to their shareholders resulting in a substantial amount of goodwill totaling \$3.4 billion.

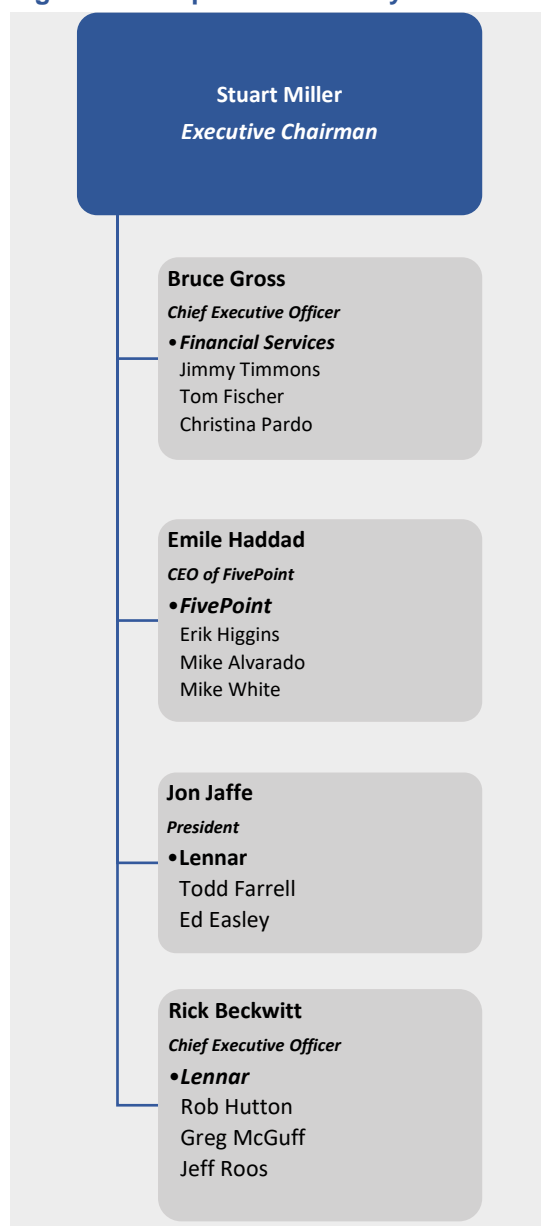
**Availability of Land.** There is strong competition among homebuilders for land that is suitable for residential development. The future availability of finished and partially finished developed lots and undeveloped land that meet Lennar's internal criteria are limited and depend on a lot of factors that are out of Lennar's control. These factors include: general land availability, competition with other homebuilders and land buyers for desirable property, inflation in land prices, zoning, allowable housing density, and other regulatory requirements. Should any suitable land or lots become less available, the number of homes that Lennar could build, and sell could be reduced. This would result in the cost of land increasing and ultimately affecting the operations of the homebuilding segment. The acquisition of CalAtlantic will increase the supply of land but will also increase the rate at which Lennar builds homes which could lead to a flat line due to housing density regulations in some areas.

**Figure 26: Natural Disaster Risk**

Location	Natural Risk	Probability	Impact
San Francisco, CA	Earthquakes	Medium	Medium-High
Sacramento, CA	Wildfires	High	Medium-High
Miami, Florida	Hurricanes	High	Medium-High
Houston, Tx	Floods	Low	Medium-High

Source: Team Research

Figure 27: Corporate Hierarchy



Source: Lennar Investor Relations, Team Research

**Natural Risks.** Lennar has homebuilding operations in several regions that are at risk of natural disasters such as wildfires, floods, and hurricanes (fig. 26). The company, for example, has homebuilding operations in several California cities, which pose risks ranging from earthquakes to the more recent wildfires.

## CORPORATE GOVERNANCE

### Board of directors/qualifications.

The board of directors is equipped with many members who have long time industry experience and have been through large cycles in the housing and financial markets.

**John Jaffe** was elected as the president of Lennar and has worked for Lennar more than 30 years and has been the company's chief operating officer since 2004. Mr. Jaffe led Lennar's expansion into California in 1995 and is responsible for their dominant position in the Western United States.

**Stuart Miller** will continue his leadership role with Lennar as the newly appointed Executive Chairman. Mr. Miller will continue to be actively involved in all the company's aspects including the company's operation and assisting in setting a strategic vision for Lennar. Mr. Miller has worked for Lennar for more than 35 years and has served as Chief Executive Officer for 21 years

**Rick Beckwitt** was elected as the new Chief Executive Officer by the board of directors. Mr. Beckwitt has worked for Lennar for 12 years and has been the company's president since 2011. Mr. Beckwitt has been involved in the home building and construction industry for more than 30 years. Prior to joining Lennar, Beckwitt was on the board of directors of D.R. Horton, one of Lennar's main competitors in the industry. Beckwitt helps various positions including president of the company.

**Compensation Committee.** According to Lennar's investor relations, the board determines compensation of senior executive officers by taking information about (1) compensation being paid by other homebuilders or companies engaged in similar activities, (2) CEO, President, and other members of senior management recommendations, and (3) factors the Compensation Committee believes are relevant into account. The firm uses compensation data of publicly-traded peer group companies to make compensation decisions that match market rates and ensure that compensation decisions are reasonable.

**Board of Directors.** The business affairs of the Company are managed under the direction of the Board. The Board believes that the primary responsibilities of directors are to exercise their business judgment in good faith and to act in what they reasonably believe is in the best interests of the Company and its stockholders, as well as the Company's employees, customers, and others who rely on it. Directors must fulfill their responsibilities consistent with their fiduciary duty to stockholders, in compliance with all applicable rules and regulations.

## Appendix A

## Principal Stockholders

Name	Title of Class	Amount	Percent of Class
Stuart A. Miller	Class B Common Stock	21,409,652	68.40%
Hotchkis & Wiley Capital Management LLC	Class B Common Stock	3,177,660	10.20%
The Ospraie Portfolio, Ltd.	Class B Common Stock	3,025,000	9.70%
FMR LLC	Class A Common Stock	16,001,215	12.30%
Capital Group International, Inc.	Class A Common Stock	9,043,800	7.00%

Class A Common Stock entitles the holder to one vote. Class B Common Stock entitles the holder to ten votes

## Appendix B

## Product Description



Home solution providing accommodation for multi-generational living. Benefits include decreased transportation cost and share mortgage costs.



Home solutions ranging from retail home sales to immigrant reinvestment programs.



Wi-Fi Certified home designs that offer increased connectivity and a luxurious appeal.



Platform for current homeowners to sell their home and settle into a new home in one seamless transaction.



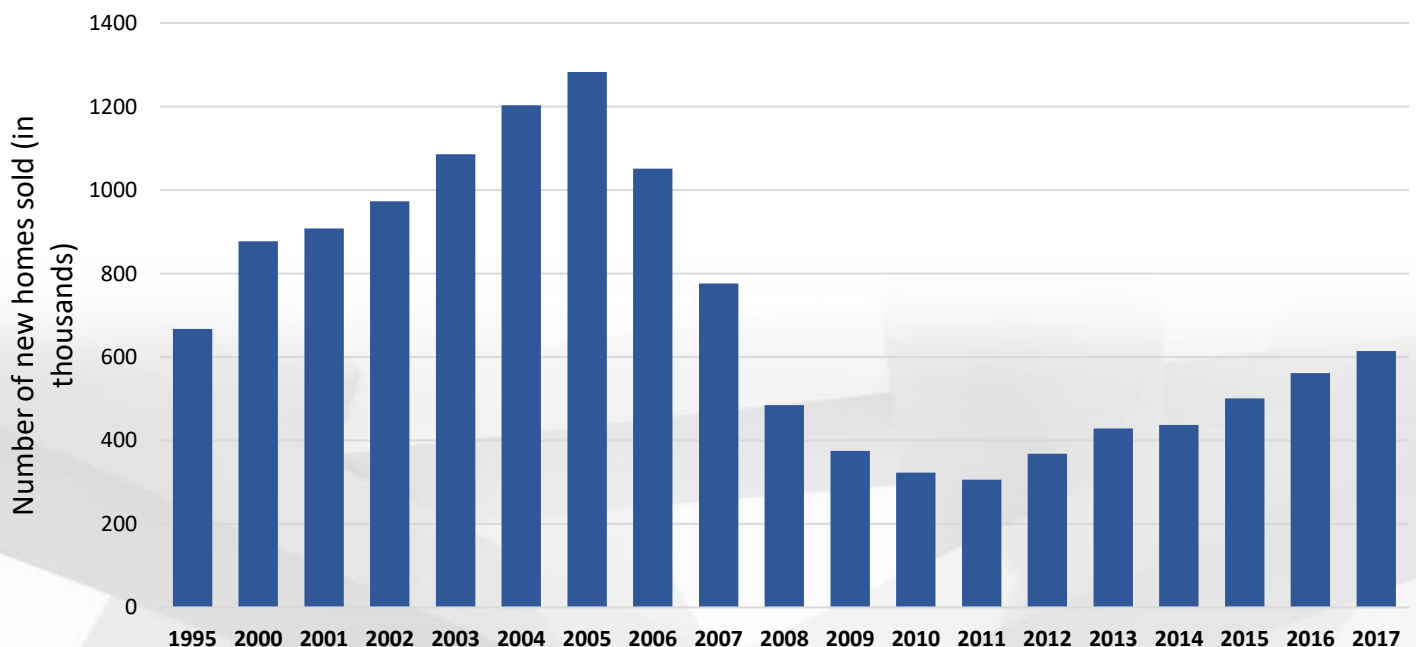
Communities across the U.S. designed for residents who are 55+.



Provides homes with solar panels to make use of renewable energy.

## Appendix C

## New Home Sales from 1995 - 2017 (in thousands)



## Appendix D

## Lennar Income Statement Projections

(\$ K USD)	Historical					Projected				
	2013	2014	2015	2016	2017	2018	2019P	2020P	2021P	2022P
<b>Revenue</b>										
Lennar Homebuilding	\$ 5,354,947	\$ 7,025,130	\$ 8,466,945	\$ 9,741,337	\$ 11,200,242	\$ 19,077,597	\$ 20,386,945	\$ 21,418,524	\$ 22,830,005	\$ 24,800,234
Lennar Financial Services	\$ 384,618	\$ 454,381	\$ 620,527	\$ 687,255	\$ 770,109	\$ 867,831	\$ 1,363,793	\$ 1,432,801	\$ 1,527,223	\$ 1,659,022
Rialto	\$ 138,856	\$ 230,521	\$ 221,923	\$ 233,966	\$ 281,243	\$ 205,071	\$ -	\$ -	\$ -	\$ -
Lennar Multifamily	\$ 14,746	\$ 69,780	\$ 164,613	\$ 287,441	\$ 394,771	\$ 421,132	\$ 496,936	\$ 586,384	\$ 691,933	\$ 816,481
<b>Total Revenue</b>	<b>\$ 5,893,167</b>	<b>\$ 7,779,812</b>	<b>\$ 9,474,008</b>	<b>\$ 10,949,999</b>	<b>\$ 12,646,365</b>	<b>\$ 20,571,631</b>	<b>\$ 22,247,674</b>	<b>\$ 23,437,710</b>	<b>\$ 25,049,161</b>	<b>\$ 27,275,738</b>
<b>Cost of Revenues</b>										
Lennar Homebuilding	\$ (4,621,872)	\$ (5,991,409)	\$ (7,195,304)	\$ (8,396,405)	\$ (9,931,203)	\$ (16,822,947)	\$ (17,655,828)	\$ (18,549,213)	\$ (19,657,456)	\$ (21,229,893)
Lennar Financial Services	\$ (298,832)	\$ (374,243)	\$ (492,732)	\$ (523,638)	\$ (614,585)	\$ (680,401)	\$ (1,077,089)	\$ (1,131,590)	\$ (1,198,525)	\$ (1,293,663)
Rialto	\$ (112,728)	\$ (186,442)	\$ (188,328)	\$ (250,658)	\$ (303,738)	\$ (226,655)	\$ -	\$ -	\$ -	\$ -
Lennar Multifamily	\$ (31,734)	\$ (80,773)	\$ (171,784)	\$ (216,267)	\$ (321,339)	\$ (378,437)	\$ (408,315)	\$ (481,811)	\$ (568,537)	\$ (670,874)
<b>Total Cost</b>	<b>\$ (5,065,166)</b>	<b>\$ (6,632,867)</b>	<b>\$ (8,048,148)</b>	<b>\$ (9,386,968)</b>	<b>\$ (11,170,865)</b>	<b>\$ (18,108,440)</b>	<b>\$ (19,141,232)</b>	<b>\$ (20,162,614)</b>	<b>\$ (21,424,519)</b>	<b>\$ (23,194,430)</b>
<b>Gross Profit</b>	<b>\$ 828,001</b>	<b>\$ 1,146,945</b>	<b>\$ 1,425,860</b>	<b>\$ 1,563,031</b>	<b>\$ 1,475,500</b>	<b>\$ 2,463,191</b>	<b>\$ 3,106,442</b>	<b>\$ 3,275,096</b>	<b>\$ 3,624,643</b>	<b>\$ 4,081,308</b>
Corporate SG&A	\$ (146,060)	\$ (177,161)	\$ (216,244)	\$ (232,562)	\$ (285,889)	\$ (343,934)	\$ (371,956)	\$ (391,852)	\$ (418,793)	\$ (456,019)
<b>EBITDA</b>	<b>\$ 681,941</b>	<b>\$ 969,784</b>	<b>\$ 1,209,616</b>	<b>\$ 1,330,469</b>	<b>\$ 1,189,611</b>	<b>\$ 2,119,257</b>	<b>\$ 2,734,487</b>	<b>\$ 2,883,244</b>	<b>\$ 3,205,849</b>	<b>\$ 3,625,289</b>
Depreciation	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Amortization	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
<b>EBIT</b>	<b>\$ 681,941</b>	<b>\$ 969,784</b>	<b>\$ 1,209,616</b>	<b>\$ 1,330,469</b>	<b>\$ 1,189,611</b>	<b>\$ 2,119,257</b>	<b>\$ 2,734,487</b>	<b>\$ 2,883,244</b>	<b>\$ 3,205,849</b>	<b>\$ 3,625,289</b>
Taxes	\$ (177,015)	\$ (341,091)	\$ (390,416)	\$ (417,378)	\$ (417,857)	\$ (545,171)	\$ (656,277)	\$ (691,979)	\$ (769,404)	\$ (870,069)
<b>EBT</b>	<b>\$ 504,926</b>	<b>\$ 628,693</b>	<b>\$ 819,200</b>	<b>\$ 913,091</b>	<b>\$ 771,754</b>	<b>\$ 1,574,086</b>	<b>\$ 2,078,210</b>	<b>\$ 2,191,266</b>	<b>\$ 2,436,446</b>	<b>\$ 2,755,219</b>
Less: Net Earnings (Loss) attributable to noncontrolling interest	\$ 25,252	\$ (10,223)	\$ 16,306	\$ 1,247	\$ (38,726)	\$ (121,745)	\$ -	\$ -	\$ -	\$ -
<b>Net Earnings attributable to Lennar</b>	<b>\$ 479,674</b>	<b>\$ 638,916</b>	<b>\$ 802,894</b>	<b>\$ 911,844</b>	<b>\$ 810,480</b>	<b>\$ 1,695,831</b>	<b>\$ 2,078,210</b>	<b>\$ 2,191,266</b>	<b>\$ 2,436,446</b>	<b>\$ 2,755,219</b>

<b>Shares Outstanding</b>	230.4	232.8	240.2	240.1	237.2	327.2	327.2	327.2	327.2	327.2
<b>Earnings Per Share</b>	\$ 2.08	\$ 2.74	\$ 3.34	\$ 3.80	\$ 3.42	\$ 5.18	\$ 6.35	\$ 6.70	\$ 7.45	\$ 8.42

## Appendix E

## Revenue Model

(in thousands \$)	Historical					Projected				
	2013	2014	2015	2016	2017	2018	2019P	2020P	2021P	2022P
<b>Lennar Homebuilding (Includes CalAtlantic)</b>										
(#) Homes Sold	18,290	21,003	24,292	26,563	29,394	43,631	44,940	46,288	48,371	51,515
(YoY Growth)		14.83%	15.66%	9.35%	10.66%	48.44%	3.00%	3.00%	4.50%	6.50%
Avg Price/Home	\$289	\$326	\$343	\$360	\$375	\$415	\$423	\$432	\$440	\$449
(YoY Growth)		12.67%	5.26%	4.86%	4.33%	10.54%	2.00%	2.00%	2.00%	2.00%
Total(\$ ) Land Sold	\$62,875	\$185,448	\$131,041	\$182,820	\$164,953	\$229,343	\$247,690	\$267,505	\$280,880	\$294,924
(YoY Growth)		194.95%	-29.34%	39.51%	-9.77%	39.04%	8.00%	8.00%	5.00%	5.00%
Revenue From Homebuilding	\$ 5,354,947	\$ 7,025,130	\$ 8,466,945	\$ 9,741,337	\$ 11,200,242	\$ 18,336,208	\$ 19,270,762.27	\$ 20,253,144.92	\$ 21,583,573.84	\$ 23,436,040.31
(YoY Growth)							5.10%	5.10%	6.57%	8.58%
<b>Lennar Financial Services</b>										
(%) of Homebuilding Revenue	7.18%	6.47%	7.33%	7.06%	6.88%	4.55%	5.00%	5.00%	5.00%	5.00%
Lennar Financial Services Revenue	\$384,618	\$454,381	\$620,527	\$687,255	\$770,109	\$867,831	\$963,538	\$1,012,657	\$1,079,179	\$1,171,802
(YoY Growth)		18.14%	36.57%	10.75%	12.06%	12.69%	11.03%	5.10%	6.57%	8.58%
Rialto Revenue	\$138,856	\$230,521	\$221,923	\$233,966	\$281,243	\$223,550	\$0	\$0	\$0	\$0
		66.01%	-3.73%	5.43%	20.21%	-20.51%	-100.00%			
<b>Lennar Multifamily</b>										
Revenue From Lennar Multifamily	\$14,746	\$69,780	\$164,613	\$287,441	\$394,771	\$416,017	\$490,900	\$579,263	\$683,530	\$806,565
(YoY Growth)		373.2%	135.9%	74.6%	37.3%	5.4%	18.00%	18.00%	18.00%	18.00%
<b>Total Revenue</b>	<b>\$5,893,167</b>	<b>\$7,779,812</b>	<b>\$9,474,008</b>	<b>\$10,949,999</b>	<b>\$12,646,365</b>	<b>\$19,843,605</b>	<b>\$20,725,201</b>	<b>\$21,845,065</b>	<b>\$23,346,282</b>	<b>\$25,414,407</b>
<b>EBIT Approximation (12% of total Rev)</b>	<b>\$707,180</b>	<b>\$933,577</b>	<b>\$1,136,881</b>	<b>\$1,314,000</b>	<b>\$1,517,564</b>	<b>\$2,381,233</b>	<b>\$2,487,024</b>	<b>\$2,621,408</b>	<b>\$2,801,554</b>	<b>\$3,049,729</b>



## Appendix F

## COGS/SG&A Assumptions

	Historicals				
	2013	2014	2015	2016	2017
<b>COGS</b>					
Homebuilding (% of revenue)	86.31%	85.29%	84.98%	86.19%	88.67%
Lennar Financial Services (% of revenue)	77.70%	82.36%	79.41%	76.19%	79.80%
Rialto (% of revenue)	81.18%	80.88%	84.86%	107.13%	108.00%
Lennar Multifamily (% of revenue)	215.20%	115.75%	104.36%	75.24%	81.40%
<b>SG&amp;A (% of revenue)</b>	-2.48%	-2.28%	-2.28%	-2.12%	-2.26%
<b>Tax Rate</b>	25.96%	35.17%	32.28%	31.37%	35.13%

	Assumptions	2018	2019P	2020P	2021P	2022P
<b>COGS</b>						
Homebuilding (% of revenue)		88.18%	86.60%	86.60%	86.10%	85.60%
Lennar Financial Services (% of revenue)		78.40%	78.98%	78.98%	78.48%	77.98%
Rialto (% of revenue)		110.53%	0%	0%	0%	0%
Lennar Multifamily (% of revenue)		89.86%	82.17%	82.17%	82.17%	82.17%
<b>SG&amp;A (% of revenue)</b>		-1.67%	-1.67%	-1.67%	-1.67%	-1.67%
<b>Tax Rate</b>		24.00%	24.00%	24.00%	24.00%	24.00%

## Appendix G

## WACC Calculation

WACC Calculation	
Lennar Beta	1.42
Risk Free Rate on a (10-year) Treasury	3.125%
Cost of Equity (CAPM)	13.13%
Cost of Debt	5.15%
Effective Tax Rate	24.00%
<b>WACC</b>	<b>9.31%</b>

Expected Market Return	10.168%
Market Cap (\$B)	13.287
Total Debt	9.407
Total Capital	22.694

Weight of Equity	Weight of Debt
58.55%	41.45%

## Appendix H

## Monte Carlo Revenue Growth Assumptions

	Revenue Growth Assumptions					Standard Deviation
	2018	2019	2020	2021	2022	All Years
CalAtlantic Revenue Growth	7.35%	0.0510	0.0510	0.0657	0.0858	30.00%
Home Building Rev. Growth	7.35%	0.0510	0.0510	0.0657	0.0858	7.63%
Financial Service Revenue Growth	66.67%	0.1103	0.0510	0.0657	0.0858	13.65%
MultiFamily Rev. Growth	6.69%	0.1800	0.1800	0.1800	0.1800	20.00%
NCC Growth	10%	0.0500	0.0500	0.0500	0.0500	10.00%
NWC Growth Rate	212%	0.1800	0.1800	0.1800	0.1800	10.00%

## Appendix I Expense Projections

	Expense PROJECTIONS (\$ In millions)			
	2019	2020	2021	2022
LEN HomeBuilding COGS	\$ 10,943.15	\$ 11,501.01	\$ 12,256.51	\$ 13,308.46
Financing COGS	\$ 761.00	\$ 799.80	\$ 852.34	\$ 925.50
CalAtlantic COGS	\$ 6,420.10	\$ 6,747.38	\$ 7,190.61	\$ 7,807.77
Multifamily COGS	\$ 408.33	\$ 481.83	\$ 568.56	\$ 670.90
Consolidated Corporate SG&A 1.67%	\$359.22	\$378.61	\$404.60	\$440.41
Total Expenses	\$ 18,891.81	\$ 19,908.62	\$ 21,272.63	\$ 23,153.04
EBITDA (EBIT)	\$2,618.61	\$2,762.46	\$2,954.76	\$3,218.89
Forward Enterprise Value	\$17,806.53	\$18,784.72	\$20,092.36	\$21,888.45
Cash	1337.807	1338.807	1339.807	1340.807
Debt	8544	8544	8544	8544
Market Cap	\$10,600	\$11,580	\$12,888	\$14,685
Price/Share (MULTIPLES)	\$36.24	\$39.58	\$44.06	\$50.20
Blended Price/Share (EXCEL)	\$44.20			
Blended Price/Share (MonteCarlo \$51	\$44.00			

## Appendix J Monte Carlo figures

Monte-Carlo Numbers	2019	2020	2021	2022	Terminal Value
EBIT	2619	2762	2955	3219	\$ 25,331
Taxes	-550	-580	-620	-676	
NCC	\$477	\$501	\$526	\$552	
Change in NWC	(689)	(813)	(960)	(1,132)	
Capital Expenditures	-\$126	-\$135	-\$141	-\$147	
FCFF	1730	1735	1759	1815	

## Appendix K Monte Carlo I/O

Inputs		Outputs	
WACC	9.31%	Enterprise Value(NPV)	\$23,395
Taxes	21.00%	Firm Value	\$24,784
Cash =	\$1048+\$340 Rialto Sale	Equity Value	\$15,263
Marketable Securities =	0.00%	Intrinsic Value/Share	\$52.17
Interest Bearing Debt =	9407.98		
Minority Interest =	113		
Shares Outstanding =	292.540824		

## Appendix L NWC Assumptions

% of total inflow					
	2013	2014	2015	2016	2017
Decrease in restricted cash			8%	8%	2%
Decrease (increase) in receivables					41%
Increase in inventories					
Increase in other assets	2%				
(Increase) decrease in loans held-for-sale	18%			74%	
Increase in accounts payable and other liabilities	80%	100%	92%	18%	57%
% of total outflow					
Decrease in restricted cash	0%	1%			
Decrease (increase) in receivables	4%	6%	6%	32%	
Increase in inventories	96%	72%	72%	62%	82%
Increase in other assets		1%	2%	5%	5%
(Increase) decrease in loans held-for-sale		21%	20%		13%
Increase in accounts payable and other liabilities					
	2013	2014	2015	2016	2017
Inflows	228,142	326,087	246,666	121,241	624,270
Outflows	(1,696,274)	(1,908,699)	(1,560,232)	(806,304)	(811,629)
NWCChange	(1,468,132)	(1,582,612)	(1,313,566)	(685,063)	(187,359)

**NWC Outflow Growth**  
**18%**

**2018                      2019                      2020                      2021                      2022**

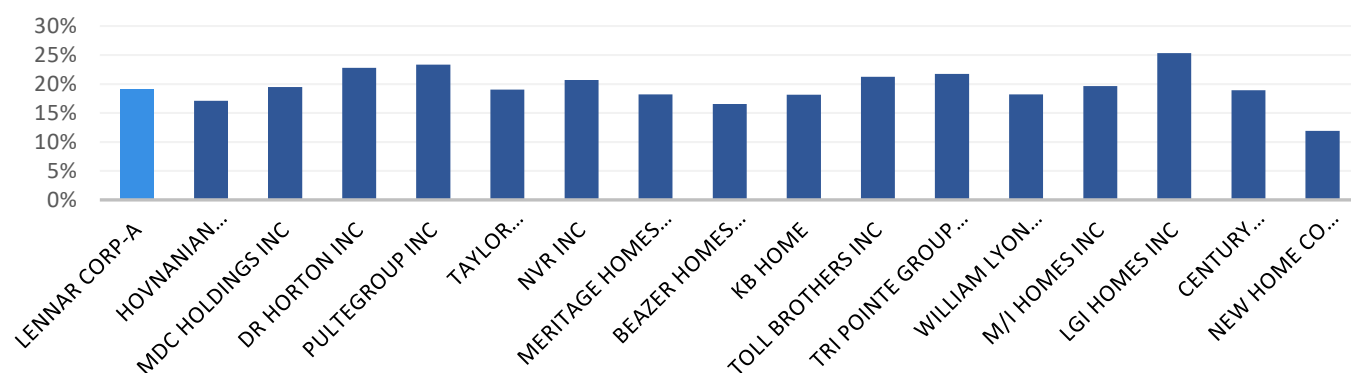
## Appendix M Cost of Debt Calculation

Company	Security	Cpn	Maturity	Price	Spread	Yield	Curr	Amt (MM)	weights	weighted cost
Senior Unsecured Bonds (25 Issues)			03/20/2023	98.06027845	216.2531141	5.15300846	USD	8162		
Lennar Corp	LEN 4 ¼ 12/01/18	EJ787580 Corp	4.125 12/01/2018	100.004	141.404	3.96256	USD	275	3.37%	0.134%
Lennar Corp	LEN 4 ¼ 06/15/19	EK060017 Corp	4.5 06/15/2019	100.011	172.883	4.47458	USD	500	6.13%	0.274%
Lennar Corp	LEN 4 ¼ 11/15/19	EK613018 Corp	4.5 11/15/2019	100.292	126.406	4.10012	USD	600	7.35%	0.301%
Lennar Corp	LEN 6 ¼ 05/01/20	AS626964 Corp	6.625 05/01/2020	103.052	150.168	4.42213	USD	268	3.28%	0.145%
Lennar Corp	LEN 2.95 11/29/20	AQ037945 Corp	2.95 11/29/2020	97.3265	134.402	4.34301	USD	7	0.09%	0.004%
Lennar Corp	LEN 2.95 11/29/20	AS629000 Corp	2.95 11/29/2020	97.3265	134.402	4.34301	USD	293	3.59%	0.156%
Lennar Corp	LEN 8 ¼ 01/15/21	AR343224 Corp	8.375 01/15/2021	107.461	168.73	4.68602	USD	0	0.00%	0.000%
Lennar Corp	LEN 8 ¼ 01/15/21	AS631495 Corp	8.375 01/15/2021	107.461	168.73	4.68602	USD	397	4.86%	0.228%
Lennar Corp	LEN 4 ¼ 04/01/21	JK279955 Corp	4.75 04/01/2021	99.856	178.263	4.81266	USD	500	6.13%	0.295%
Lennar Corp	LEN 6 ¼ 12/15/21	AR343439 Corp	6.25 12/15/2021	103.232	186.689	4.89427	USD	0	0.00%	0.000%
Lennar Corp	LEN 6 ¼ 12/15/21	AS638306 Corp	6.25 12/15/2021	103.232	186.689	4.89427	USD	292	3.58%	0.175%
Lennar Corp	LEN 4 ¼ 01/15/22	AM042770 Corp	4.125 01/15/2022	97.0046	213.765	5.16479	USD	600	7.35%	0.380%
Lennar Corp	LEN 5 ¼ 10/01/22	AS638383 Corp	5.375 10/01/2022	101.018	206.651	5.07966	USD	241	2.95%	0.150%
Lennar Corp	LEN 4 ¼ 11/15/22	EJ410770 Corp	4.75 11/15/2022	98.6537	209.474	5.1275	USD	0	0.00%	0.000%
Lennar Corp	LEN 4 ¼ 11/15/22	EJ785569 Corp	4.75 11/15/2022	98.6537	209.474	5.1275	USD	575	7.04%	0.361%
Lennar Corp	LEN 4 ¼ 12/15/23	QJ511051 Corp	4.875 12/15/2023	97.477	242.096	5.45043	USD	400	4.90%	0.267%
Lennar Corp	LEN 4 ¼ 04/30/24	AN283046 Corp	4.5 04/30/2024	95.0932	252.781	5.55613	USD	650	7.96%	0.442%
Lennar Corp	LEN 5 ¼ 11/15/24	AR346074 Corp	5.875 11/15/2024	99.7475	285.608	5.92549	USD	0	0.00%	0.000%
Lennar Corp	LEN 5 ¼ 11/15/24	AS638426 Corp	5.875 11/15/2024	99.7475	285.608	5.92549	USD	421	5.16%	0.306%
Lennar Corp	LEN 4 ¼ 05/30/25	EK874750 Corp	4.75 05/30/2025	94.7279	268.363	5.7291	USD	500	6.13%	0.351%
Lennar Corp	LEN 5 ¼ 06/01/26	AS638392 Corp	5.25 06/01/2026	96.1003	282.378	5.89846	USD	396	4.85%	0.286%
Lennar Corp	LEN 5 06/15/27	AR348627 Corp	5 06/15/2027	93.5664	287.911	5.96934	USD	1	0.01%	0.001%
Lennar Corp	LEN 5 06/15/27	AS638379 Corp	5 06/15/2027	93.5664	287.911	5.96934	USD	346	4.24%	0.253%
Lennar Corp	LEN 4 ¼ 11/29/27	AQ037924 Corp	4.75 11/29/2027	92.4185	274.298	5.84261	USD	0	0.00%	0.000%
Lennar Corp	LEN 4 ¼ 11/29/27	AS636117 Corp	4.75 11/29/2027	92.4185	274.298	5.84261	USD	900	11.03%	0.644%
<b>Cost of Debt</b>										<b>5.153%</b>

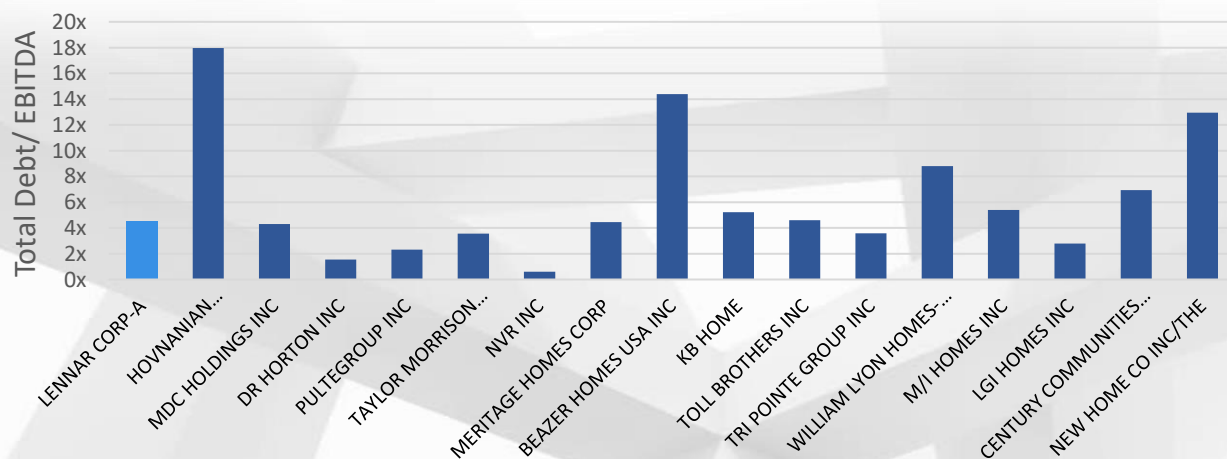
## Appendix N Market Cap and P/E for Lennar and Comparables

Name	Ticker	Mkt Cap (USD)	BF P/E	BF EV/EBITDA	BF EV/EBIT	BF EV/Rev	LF P/BV
<b>Lennar Corp</b>	<b>LEN US</b>	<b>\$ 14,371,200,580</b>	<b>6.6847</b>	<b>5.6628</b>	<b>5.9624</b>	<b>0.7924</b>	<b>1.3528</b>
DR Horton Inc	DHI US	\$ 14,134,413,022	8.1436	6.3986	6.6506	0.8978	1.6437
PulteGroup Inc	PHM US	\$ 7,001,873,007	6.6836	5.9367	6.0691	0.9202	1.487
Toll Brothers Inc	TOL US	\$ 4,892,484,800	6.5264	6.3626	6.6042	1.0263	1.0867
Meritage Homes Corp	MTH US	\$ 1,546,290,963	7.4908	8.1074	9.4017	0.7636	0.903
TRI Pointe Group Inc	TPH US	\$ 1,845,786,023	7.8287	7.8026	9.5326	1.0572	0.9415
KB Home	KBH US	\$ 1,881,778,987	6.8523	5.754	8.6147	0.7248	0.9334
Taylor Morrison Home Corp	TMHC US	\$ 1,938,022,077	6.3442	5.531	7.2641	0.6088	0.7786
MDC Holdings Inc	MDC US	\$ 1,676,923,652	7.8505	5.6975	7.6677	0.6822	1.0941
M/I Homes Inc	MHO US	\$ 692,373,993	6.1587	6.8144	9.8426	0.6548	0.8352
William Lyon Homes	WLH US	\$ 526,306,526	4.9102	12.6126	12.9125	0.9501	0.6347
Century Communities Inc	CCS US	\$ 659,009,387	4.6454	6.288	7.6472	0.6187	0.82
NVR Inc	NVR US	\$ 8,578,233,082	12.3464	8.5935	8.7247	1.1761	5.071
LGI Homes Inc	LGIH US	\$ 898,690,573	5.3612	5.8138	5.8106	0.8256	1.4674
Hovnanian Enterprises Inc	HOV US	\$ 207,740,149	26.9231	10.3222	--	0.9329	--
New Home Co Inc/The	NWHM US	\$ 167,594,954	11.3416	10.9155	--	--	0.6492
<b>Current Premium to Comps Mean</b>			<b>-6.0905</b>	<b>-23.1397</b>	<b>-28.0259</b>	<b>-7.0235</b>	<b>7.0104</b>
<b>Mean (Including LEN US)</b>		<b>\$ 3,607,461,176</b>	<b>7.1183</b>	<b>7.3676</b>	<b>8.2841</b>	<b>0.8522</b>	<b>1.2642</b>

## Appendix O Gross Margin for Lennar and Comparables



## Appendix P Total Debt/EBITDA for Lennar and Comparables



## Appendix Q R Console Output for Revenue Projections

```
> #Remember inputs in the individual revenues models must have matching iterations & years.
> setwd("D:/Users/MinhaiTower/Documents/Actual Documents/R Programming studies/Projects/CFA NYSE-LEN Monte Carlo")
> library(ggplot2)
> library(readr)
> library(dplyr)
> library(scales)
>
> #Brings in Calatlantic Revenue Model
> source("LEN.HomebuildingRevenueModel.R")
[1] "Standard Deviation of Homebuilding Revenue For 2019 = $ 915.502486932441 million"
      Revenue      Trial      Year
Min. : 8156 Trial 1 2022: 0 Min. :2019
1st Qu.:12011 Trial 1 2021: 0 1st Qu.:2019
Median :12632 Trial 1 2020: 0 Median :2019
Mean :12631 Trial 1 2019:15000 Mean :2019
3rd Qu.:13256 Trial 1 2019:15000 3rd Qu.:2019
Max. :16154 Max. :2019
[1] "Standard Deviation of Homebuilding Revenue For 2020 = $ 1360.2144535649 million"
      Revenue      Trial      Year
Min. : 8472 Trial 1 2022: 0 Min. :2020
1st Qu.:12359 Trial 1 2021: 0 1st Qu.:2020
Median :13243 Trial 1 2020:15000 Median :2020
Mean :13286 Trial 1 2019: 0 Mean :2020
3rd Qu.:14203 Trial 1 2019:15000 3rd Qu.:2020
Max. :19224 Max. :2020
[1] "Standard Deviation of Homebuilding Revenue For 2021 = $ 1774.90593920234 million"
      Revenue      Trial      Year
Min. : 8426 Trial 1 2022: 0 Min. :2021
1st Qu.:12940 Trial 1 2021:15000 1st Qu.:2021
Median :14070 Trial 1 2020: 0 Median :2021
Mean :14162 Trial 1 2019: 0 Mean :2021
3rd Qu.:15300 Trial 1 2021:15000 3rd Qu.:2021
Max. :22363 Max. :2021
[1] "Standard Deviation of Homebuilding Revenue For 2022 = $ 2215.53473981682 million"
      Revenue      Trial      Year
Min. : 8600 Trial 1 2022:15000 Min. :2022
1st Qu.:13845 Trial 1 2021: 0 1st Qu.:2022
Median :15229 Trial 1 2020: 0 Median :2022
Mean :15387 Trial 1 2019: 0 Mean :2022
3rd Qu.:16812 Trial 1 2019:15000 3rd Qu.:2022
Max. :25561 Max. :2022
Warning messages:
1: The plyr::rename operation has created duplicates for the following name(s): ('colour')
2: Removed 2430 rows containing non-finite values (stat_boxplot).
3: Removed 2430 rows containing non-finite values (stat_summary).
4: Removed 2430 rows containing non-finite values (stat_summary).
> source("CalatlanticRevenueModel.R")
[1] "Standard Deviation of Calatlantic Revenue $ 2108.1774034778"
[1] "Standard Deviation of Calatlantic Revenue For 2019 = $ 2108.1774034778 million"
      Revenue      Trial      Year
Min. : 603.8 Trial 1 2022: 0 Min. :2019
1st Qu.: 602.0 Trial 1 2021: 0 1st Qu.:2019
Median : 742.0 Trial 1 2020: 0 Median :2019
Mean : 743.7 Trial 1 2019:15000 Mean :2019
3rd Qu.: 884.8 Trial 1 2019:15000 3rd Qu.:2019
Max. :1575.3 Max. :2019
[1] "Standard Deviation of Calatlantic Revenue For 2020 = $ 3228.707204262 million"
      Revenue      Trial      Year
Min. : 783.8 Trial 1 2022: 0 Min. :2020
1st Qu.: 552.4 Trial 1 2021: 0 1st Qu.:2020
Median : 750.3 Trial 1 2020:15000 Median :2020
Mean : 783.0 Trial 1 2019: 0 Mean :2020
3rd Qu.: 9783.0 Trial 1 2019:15000 3rd Qu.:2020
Max. :26758.3 Max. :2020
[1] "Standard Deviation of Calatlantic Revenue For 2021 = $ 4293.057385934 million"
      Revenue      Trial      Year
Min. : 982.4 Trial 1 2022: 0 Min. :2021
1st Qu.: 524.0 Trial 1 2021:15000 1st Qu.:2021
Max. :1857.8 Max. :2021
```

```
Median : 7701.8 Trial 1 2020: 0 Median :2021
Mean : 8352.6 Trial 1 2019: 0 Mean :2021
3rd Qu.:10706.3 Trial 1 2019:15000 3rd Qu.:2021
Max. :13027.4 Max. :2021
[1] "Standard Deviation of Calatlantic Revenue For 2022 = $ 5443.92630142733 million"
      Revenue      Trial      Year
Min. : -1438 Trial 1 2022:15000 Min. :2022
1st Qu.: 5137 Trial 1 2021: 0 1st Qu.:2022
Median : 8037 Trial 1 2020: 0 Median :2022
Mean : 9065 Trial 1 2019: 0 Mean :2022
3rd Qu.:11777 Trial 1 2019:15000 3rd Qu.:2022
Max. :45158 Max. :2022
Warning messages:
1: The plyr::rename operation has created duplicates for the following name(s): ('colour')
2: Removed 740 rows containing non-finite values (stat_boxplot).
3: Removed 740 rows containing non-finite values (stat_summary).
4: Removed 740 rows containing non-finite values (stat_summary).
> source("Lenmar.Other.RevenueModel.R")
[1] "Standard Deviation of LEN.Fin.Svc Revenue $ 84.183633843965"
[1] "Standard Deviation of Multifamily Revenue For 2019 = $ 84.183633843965 million"
      Revenue      Trial      Year
Min. :175.8 Trial 1 2022: 0 Min. :2019
1st Qu.:440.2 Trial 1 2021: 0 1st Qu.:2019
Median :496.6 Trial 1 2020: 0 Median :2019
Mean :496.5 Trial 1 2019:15000 Mean :2019
3rd Qu.:552.1 Trial 1 2019:15000 3rd Qu.:2019
Max. :819.4 Max. :2019
[1] "Standard Deviation of Multifamily Revenue For 2020 = $ 141.49553770574 million"
      Revenue      Trial      Year
Min. :164.2 Trial 1 2022: 0 Min. :2020
1st Qu.:486.5 Trial 1 2021: 0 1st Qu.:2020
Median :578.4 Trial 1 2020:15000 Median :2020
Mean :585.9 Trial 1 2019: 0 Mean :2020
3rd Qu.:674.5 Trial 1 2019:15000 3rd Qu.:2020
Max. :1312.0 Max. :2020
[1] "Standard Deviation of Multifamily Revenue For 2021 = $ 206.082068752163 million"
      Revenue      Trial      Year
Min. :169.8 Trial 1 2022: 0 Min. :2021
1st Qu.:546.2 Trial 1 2021:15000 1st Qu.:2021
Median :672.5 Trial 1 2020: 0 Median :2021
Mean :692.9 Trial 1 2019: 0 Mean :2021
3rd Qu.:817.5 Trial 1 2019:15000 3rd Qu.:2021
Max. :1733.8 Max. :2021
[1] "Standard Deviation of Multifamily Revenue For 2022 = $ 286.599301643649 million"
      Revenue      Trial      Year
Min. :160.8 Trial 1 2022:15000 Min. :2022
1st Qu.:613.7 Trial 1 2021: 0 1st Qu.:2022
Median :780.7 Trial 1 2020: 0 Median :2022
Mean :818.8 Trial 1 2019: 0 Mean :2022
3rd Qu.:985.0 Trial 1 2019:15000 3rd Qu.:2022
Max. :2202.4 Max. :2022
Warning messages:
1: The plyr::rename operation has created duplicates for the following name(s): ('colour')
2: Removed 1775 rows containing non-finite values (stat_boxplot).
3: Removed 1775 rows containing non-finite values (stat_summary).
4: Removed 1775 rows containing non-finite values (stat_summary).
> source("Lenmar.FinServicesRevenueModel.R")
[1] "Standard Deviation of Financial Service Revenue For 2019 = $ 119.013532744307 million"
      Revenue      Trial      Year
Min. :491.3 Trial 1 2022: 0 Min. :2019
1st Qu.:884.2 Trial 1 2021: 0 1st Qu.:2019
Median :965.5 Trial 1 2020: 0 Median :2019
Mean :964.5 Trial 1 2019:15000 Mean :2019
3rd Qu.:1045.0 Trial 1 2019:15000 3rd Qu.:2019
Max. :1504.7 Max. :2019
[1] "Standard Deviation of Financial Service Revenue For 2020 = $ 181.167151376282 million"
```

## Appendix R R Console Output for NCC/NWC Projections

```
Revenue      Trial      Year
Min. : 461.1 Trial 1 2022: 0 Min. :2020
1st Qu.: 888.7 Trial 1 2021: 0 1st Qu.:2020
Median :1006.9 Trial 1 2020:15000 Median :2020
Mean :1014.7 Trial 1 2019: 0 Mean :2020
3rd Qu.:1133.2 Trial 1 2019:15000 3rd Qu.:2020
Max. :1857.8 Max. :2020
[1] "Standard Deviation of Financial Service Revenue For 2021 = $ 238.411560575118 million"
      Revenue      Trial      Year
Min. : 412.4 Trial 1 2022: 0 Min. :2021
1st Qu.: 913.8 Trial 1 2021:15000 1st Qu.:2021
Median :1087.9 Trial 1 2020: 0 Median :2021
Mean :1081.7 Trial 1 2019: 0 Mean :2021
3rd Qu.:1235.2 Trial 1 2019:15000 3rd Qu.:2021
Max. :2171.6 Max. :2021
[1] "Standard Deviation of Financial Service Revenue For 2022 = $ 299.799802878596 million"
      Revenue      Trial      Year
Min. : 368.5 Trial 1 2022:15000 Min. :2022
1st Qu.: 958.7 Trial 1 2021: 0 1st Qu.:2022
Median :1146.7 Trial 1 2020: 0 Median :2022
Mean :1174.0 Trial 1 2019: 0 Mean :2022
3rd Qu.:1358.3 Trial 1 2019:15000 3rd Qu.:2022
Max. :2693.0 Max. :2022
Warning messages:
1: The plyr::rename operation has created duplicates for the following name(s): ('colour')
2: Removed 160 rows containing non-finite values (stat_boxplot).
3: Removed 160 rows containing non-finite values (stat_summary).
4: Removed 160 rows containing non-finite values (stat_summary).
> source("NCC Model.R")
[1] "Standard Deviation of NCC For 2019 = $ 45.849640298632 million"
      NccChange      Trial      Year
Min. : 279.7 Trial 1 2022: 0 Min. :2019
1st Qu.:1445.5 Trial 1 2021: 0 1st Qu.:2019
Median :477.5 Trial 1 2020: 0 Median :2019
Mean :476.9 Trial 1 2019:15000 Mean :2019
3rd Qu.:508.3 Trial 1 2019:15000 3rd Qu.:2019
Max. :655.0 Max. :2019
[1] "Standard Deviation of NCC For 2020 = $ 94.8870284070296 million"
      NccChange      Trial      Year
Min. :193.2 Trial 1 2022: 0 Min. :2020
1st Qu.:438.5 Trial 1 2021: 0 1st Qu.:2020
Median :501.4 Trial 1 2020:15000 Median :2020
Mean :504.6 Trial 1 2019: 0 Mean :2020
3rd Qu.:566.7 Trial 1 2019:15000 3rd Qu.:2020
Max. :916.2 Max. :2020
[1] "Standard Deviation of NCC For 2021 = $ 152.12856112743 million"
      NccChange      Trial      Year
Min. :136.9 Trial 1 2022: 0 Min. :2021
1st Qu.:429.5 Trial 1 2021:15000 1st Qu.:2021
Median :522.9 Trial 1 2020: 0 Median :2021
Mean :537.5 Trial 1 2019: 0 Mean :2021
3rd Qu.:630.7 Trial 1 2019:15000 3rd Qu.:2021
Max. :1308.0 Max. :2021
[1] "Standard Deviation of NCC For 2022 = $ 220.08342199447 million"
      NccChange      Trial      Year
Min. : 66.01 Trial 1 2022:15000 Min. :2022
1st Qu.:419.20 Trial 1 2021: 0 1st Qu.:2022
Median :545.41 Trial 1 2020: 0 Median :2022
Mean :577.65 Trial 1 2019: 0 Mean :2022
3rd Qu.:702.08 Trial 1 2019:15000 3rd Qu.:2022
Max. :2356.27 Max. :2022
Warning messages:
1: The plyr::rename operation has created duplicates for the following name(s): ('colour')
2: Removed 769 rows containing non-finite values (stat_boxplot).
3: Removed 769 rows containing non-finite values (stat_summary).
4: Removed 769 rows containing non-finite values (stat_summary).
> source("NCC Model.R")
```

```
[1] "Standard Deviation of Change in NWC For 2019 = $ 58.6154759554883 million"
      NwcChange      Trial      Year
Min. : -894.8 Trial 1 2022: 0 Min. :2019
1st Qu.: -728.0 Trial 1 2021: 0 1st Qu.:2019
Median : -689.0 Trial 1 2020: 0 Median :2019
Mean : -689.1 Trial 1 2019:15000 Mean :2019
3rd Qu.: -649.3 Trial 1 2019:15000 3rd Qu.:2019
Max. : -448.4 Max. :2019
[1] "Standard Deviation of Change in NWC For 2020 = $ 97.065729347498 million"
      NwcChange      Trial      Year
Min. : -1229.5 Trial 1 2022: 0 Min. :2020
1st Qu.: -875.7 Trial 1 2021: 0 1st Qu.:2020
Median : -810.3 Trial 1 2020:15000 Median :2020
Mean : -812.8 Trial 1 2019: 0 Mean :2020
3rd Qu.: -745.2 Trial 1 2019:15000 3rd Qu.:2020
Max. : -492.6 Max. :2020
[1] "Standard Deviation of Change in NWC For 2021 = $ 141.043150220763 million"
      NwcChange      Trial      Year
Min. : -1377.0 Trial 1 2022: 0 Min. :2021
1st Qu.: -1048.8 Trial 1 2021:15000 1st Qu.:2021
Median : -951.8 Trial 1 2020: 0 Median :2021
Mean : -958.8 Trial 1 2019: 0 Mean :2021
3rd Qu.: -861.0 Trial 1 2019:15000 3rd Qu.:2021
Max. : -520.4 Max. :2021
[1] "Standard Deviation of Change in NWC For 2022 = $ 193.812457922193 million"
      NwcChange      Trial      Year
Min. : -2074.6 Trial 1 2022:15000 Min. :2022
1st Qu.: -1253.7 Trial 1 2021: 0 1st Qu.:2022
Median : -1120.6 Trial 1 2020: 0 Median :2022
Mean : -1131.9 Trial 1 2019: 0 Mean :2022
3rd Qu.: -996.9 Trial 1 2019:15000 3rd Qu.:2022
Max. : -537.9 Max. :2022
Warning messages:
1: The plyr::rename operation has created duplicates for the following name(s): ('colour')
2: Removed 6571 rows containing non-finite values (stat_boxplot).
3: Removed 6571 rows containing non-finite values (stat_summary).
4: Removed 6571 rows containing non-finite values (stat_summary).
```



## Appendix S R Console Output for EBIT Projections

```
> Gross.Margin.Matrix[1] = data.frame(LEN.HomeBuildRevData[1]+cumulative.Predicted.FinancialRevenue.Data[1])+
+ cumulative.Predicted.OtherRevenue.Data[1] + cumulative.Predicted.caAtlanticRevenue.Data[1] - LEN.HomeBuildingCOGS.Matrix[1]-Financing.COGS.Matrix[1]-
+ caAtlantic.COGS.Matrix[1] - MultiFamily.COGS.Matrix[1]
>
> #Imports static columns+
> Gross.Margin.Matrix[2:4] = data.frame(LEN.HomeBuildRevData[2:4])
> Gross.Margin.Matrix[5] = data.frame("LennarAggregate")
>
> #Percentage of sales method
> Operating.Expense.Matrix = LEN.HomeBuildRevData
> names(Operating.Expense.Matrix) = c("Operating.Expns","Trial","Year","Iteration","Segment")
> Operating.Expense.Matrix[1] = data.frame(LEN.HomeBuildRevData[1] * 0.1201) #past 4 year average % of home building sales
> Operating.Expense.Matrix[2] = data.frame(LEN.HomeBuildRevData[2])
> Operating.Expense.Matrix[3] = data.frame(LEN.HomeBuildRevData[3])
Error in perating.Expense.Matrix[3] = data.frame(LEN.HomeBuildRevData[3]) :
  object 'perating.Expense.Matrix' not found
>
> #caAtlantic.operating.Expense.Matrix = cumulative.Predicted.caAtlanticRevenue.Data
> #names(Operating.Expense.Matrix) = c("Operating.Expns","Trial","Year","Iteration","Segment")
> #caAtlantic.operating.Expense.Matrix[1] = data.frame(caAtlantic.operating.Expense.Matrix[1] * 0.1154) #past 4 year average % of home building sales
> #caAtlantic.operating.Expense.Matrix[2] = data.frame(caAtlantic.operating.Expense.Matrix[2])
> #caAtlantic.operating.Expense.Matrix[3] = data.frame(caAtlantic.operating.Expense.Matrix[3])
>
> Consolidated.OperatingExpense = cumulative.Predicted.caAtlanticRevenue.Data
> names(Operating.Expense.Matrix) = c("Operating.Expns","Trial","Year","Iteration","Segment")
> Consolidated.OperatingExpense[1] = data.frame(
+ (cumulative.Predicted.caAtlanticRevenue.Data[1]+LEN.HomeBuildRevData[1]
+ cumulative.Predicted.FinancialRevenue.Data[1]
+ cumulative.Predicted.OtherRevenue.Data[1]) * 0.0167)
> Consolidated.OperatingExpense[2] = data.frame(Consolidated.OperatingExpense[2])
> Consolidated.OperatingExpense[3] = data.frame(Consolidated.OperatingExpense[3])
>
>
>
>
> #EBIT####
>
> #shapes the ebit matrix the same way as homebuilding matrix, but we will overwrite column one for EBIT
> EBIT.Matrix = LEN.HomeBuildRevData
> names(EBIT.Matrix) = c("EBIT","Trial","Year","Iteration","Segment")
> EBIT.Matrix[1] = data.frame(Gross.Margin.Matrix[1] - Consolidated.OperatingExpense[1])
> EBIT.Matrix[2] = data.frame(Gross.Margin.Matrix[2] - Operating.Expense.Matrix[2]-caAtlantic.operating.Expense.Matrix[2]-Consolidated.OperatingExpense[2])
> EBIT.Matrix[3] = data.frame("LennarAggregate")
>
> ggplot(data=rbind(EBIT.Matrix), aes(x=Year, y=EBIT, color = Trial,alpha=0, varwidth = TRUE))+ylab("Consolidated EBIT (Millions)") +
+ geom_boxplot(show.legend = FALSE,outlier.stroke = 0, outlier.shape = NULL, notch = TRUE) + theme(text = element_text(size=25)) +
+ stat_summary(fun.y=mean,colour="black",linetype="dashed", geom="line", size=0.8, show.legend = FALSE)+ scale_x_continuous(breaks = seq(from=2013,to=endyear,by=1)) +
+ scale_y_continuous(breaks = seq(from=1700,to=5000,by=200),limits = c(1700, 5000)) + stat_summary(fun.y=mean,colour="darkred", color = "black", geom="point", shape = 18, size=4, show.legend = FALSE)
Warning messages:
1: The plyr::rename operation has created duplicates for the following name(s): 'colour'
2: Removed 372 rows containing non-finite values (stat_boxplot).
3: Removed 372 rows containing non-finite values (stat_summary).
4: Removed 372 rows containing non-finite values (stat_summary).
> ggsave(filename="EBIT.pdf",device = pdf, height = 6, width = 10)
Warning messages:
1: Removed 372 rows containing non-finite values (stat_boxplot).
2: Removed 372 rows containing non-finite values (stat_summary).
3: Removed 372 rows containing non-finite values (stat_summary).
>
> #EBIT SUMMARY STATISTICS###
> #beginning forecast year
> OutputYear = 2019
> while (OutputYear < endyear) {
+ print("#####")
+ print(paste(OutputYear, "Mean"))
+ }
```

## Appendix T R Console Output for EBIT Projections (cont'd)

```
+ #Aggregate(x, by, FUNCTION)
print(aggregate(EBIT.Matrix %>%select(EBIT,Trial,Year,Segment)%>%filter(Year == OutputYear)%>%select(EBIT), EBIT.Matrix %>%select(EBIT,Trial,Year,Segment)%>%filter(Year == OutputYear)%>%select(Segment), mean)
+ )
+ Sys.sleep(.25)
+ print("-----")
+ #Standard Deviation
+ print(paste(OutputYear, "Standard Deviation"))
+ print(aggregate(EBIT.Matrix %>%select(EBIT,Trial,Year,Segment)%>%filter(Year == OutputYear)%>%select(EBIT),EBIT.Matrix %>%select(EBIT,Trial,Year,Segment)%>%filter(Year == OutputYear)%>%select(Segment), sd))
+ Sys.sleep(.25)
+ print("-----")
+
+ #Summary
+ print(paste(OutputYear, "Statistics Summary"))
+ print(aggregate(EBIT.Matrix %>%select(EBIT,Trial,Year,Segment)%>%filter(Year == OutputYear)%>%select(EBIT),EBIT.Matrix %>%select(EBIT,Trial,Year,Segment)%>%filter(Year == OutputYear)%>%select(Segment), summary))
+ Sys.sleep(.25)
+ print("#####")
+ OutputYear=OutputYear+1
+ }
[1] "#####"
[1] "2019 Mean"
[1] "Segment EBIT"
1 LennarAggregate 2615.588
[1] "-----"
[1] "2019 standard deviation"
[1] "Segment EBIT"
1 LennarAggregate 270.1972
[1] "-----"
[1] "2019 Statistics Summary"
[1] "Segment EBIT.Min. EBIT.1st Qu. EBIT.Median EBIT.Mean EBIT.3rd Qu. EBIT.Max."
1 LennarAggregate 1512.361 2434.158 2613.726 2615.588 2796.209 3723.819
[1] "#####"
[1] "2020 Mean"
[1] "Segment EBIT"
1 LennarAggregate 2762.379
[1] "-----"
[1] "2020 standard deviation"
[1] "Segment EBIT"
1 LennarAggregate 412.7533
[1] "-----"
[1] "2020 Statistics Summary"
[1] "Segment EBIT.Min. EBIT.1st Qu. EBIT.Median EBIT.Mean EBIT.3rd Qu. EBIT.Max."
1 LennarAggregate 1472.409 2472.857 2728.225 2762.379 3020.364 5223.008
[1] "#####"
[1] "2021 Mean"
[1] "Segment EBIT"
1 LennarAggregate 2956.241
[1] "-----"
[1] "2021 standard deviation"
[1] "Segment EBIT"
1 LennarAggregate 548.2236
[1] "-----"
[1] "2021 Statistics Summary"
[1] "Segment EBIT.Min. EBIT.1st Qu. EBIT.Median EBIT.Mean EBIT.3rd Qu. EBIT.Max."
1 LennarAggregate 1501.129 2565.827 2890.032 2956.241 3269.144 6386.391
[1] "#####"
[1] "2022 Mean"
[1] "Segment EBIT"
1 LennarAggregate 3221.278
[1] "-----"
[1] "2022 standard deviation"
[1] "Segment EBIT"
1 LennarAggregate 691.6258
[1] "-----"
[1] "2022 Statistics Summary"
```

## Appendix U R Console Output for Segment Revenue Summary

```

Segment EBIT.Min. EBIT.1st Qu. EBIT.Median EBIT.Mean EBIT.3rd Qu. EBIT.Max.
1 LennarAggregate 1539.625 2736.727 3110.228 3221.276 3595.964 7305.723
[1] "#####"
>
>
> Historical.cf.Statement = data.frame(read.csv("LEN CF 14-17.csv"))
>
>
> #This section Aggregates all data#####
> #Creates the right size of matrix
> TotalRevenue = data.frame(matrix(nrow = nrow(cumulative.Predicted.FinancialRevenue.Data)*4, ncol = 5))
>
> #Aggregate Revenue
> names(TotalRevenue) = c("Revenue","Trial","Year","Iteration","Segment")
> TotalRevenue[1] = data.frame(rbind(Len.HomeBuildingRevData[1], cumulative.Predicted.FinancialRevenue.Data[1], cumulative.Predicted.OtherRevenue.Data[1], cumulative.Predicted.caAtlanticRevenue.Data[1]))
> TotalRevenue[2] = data.frame(rbind(Len.HomeBuildingRevData[2], cumulative.Predicted.FinancialRevenue.Data[2], cumulative.Predicted.OtherRevenue.Data[2], cumulative.Predicted.caAtlanticRevenue.Data[2]))
> TotalRevenue[3] = data.frame(rbind(Len.HomeBuildingRevData[3], cumulative.Predicted.FinancialRevenue.Data[3], cumulative.Predicted.OtherRevenue.Data[3], cumulative.Predicted.caAtlanticRevenue.Data[3]))
> TotalRevenue[4] = data.frame(rbind(Len.HomeBuildingRevData[4], cumulative.Predicted.FinancialRevenue.Data[4], cumulative.Predicted.OtherRevenue.Data[4], cumulative.Predicted.caAtlanticRevenue.Data[4]))
> TotalRevenue[5] = data.frame(rbind(Len.HomeBuildingRevData[5], cumulative.Predicted.FinancialRevenue.Data[5], cumulative.Predicted.OtherRevenue.Data[5], cumulative.Predicted.caAtlanticRevenue.Data[5]))
>
>
> #SEGMENT Revenue SUMMARY DATA#####
> #Year
> Yr= 2019
>
> #mean
> print(paste(Yr, "mean by segment"))
[1] "2019 mean by segment"
> #aggregate(x, by, FUN)
> aggregate(TotalRevenue %>%select(Revenue,Trial,Year,Segment)%>%filter(Year == Yr)%>%select(Revenue), TotalRevenue %>%select(Revenue,Trial,Year,Segment)%>%filter(Year == Yr)%>%select(Segment), mean)
  Segment Revenue
1 HomeBuilding 12631.2394
2 FinancialRevenue 964.5182
3 RialtoMultiFamily 496.5097
4 CalAtlantic 7437.1550
>
> #Standard Deviation
> print(paste(Yr, "Standard Deviation by segment"))
[1] "2019 standard deviation by segment"
> aggregate(TotalRevenue %>%select(Revenue,Trial,Year,Segment)%>%filter(Year == Yr)%>%select(Revenue), TotalRevenue %>%select(Revenue,Trial,Year,Segment)%>%filter(Year == Yr)%>%select(Segment), sd)
  Segment Revenue
1 HomeBuilding 915.50249
2 FinancialRevenue 119.01353
3 RialtoMultiFamily 84.48363
4 CalAtlantic 2108.17740
>
> #Summary
> print(paste(Yr, "Statistics summary by segment"))
[1] "2019 Statistics Summary by segment"
> aggregate(TotalRevenue %>%select(Revenue,Trial,Year,Segment)%>%filter(Year == Yr)%>%select(Revenue), TotalRevenue %>%select(Revenue,Trial,Year,Segment)%>%filter(Year == Yr)%>%select(Segment), summary)
  Segment Revenue.Min. Revenue.1st Qu. Revenue.Median Revenue.Mean Revenue.3rd Qu. Revenue.Max.
1 HomeBuilding 915.9942 12010.6329 12632.2549 12631.2394 13255.7949 16153.5749
2 FinancialRevenue 491.2555 884.1970 965.4675 964.5182 1045.0269 1594.7204
3 RialtoMultiFamily 175.8259 440.1669 496.5984 496.5097 552.1201 819.4400
4 CalAtlantic -603.7819 6021.9889 7429.0310 7437.1550 8846.8276 15757.2743
>
> SummaryData = TotalRevenue %>%
+ select(Revenue,Trial,Year,Segment) %>%
+ filter(Year == 2019)
> #Above Formulas broken down
> #TotalRevenue %>%select(Revenue,Trial,Year,Segment)%>%filter(Year == Yr)%>%select(Revenue)

```

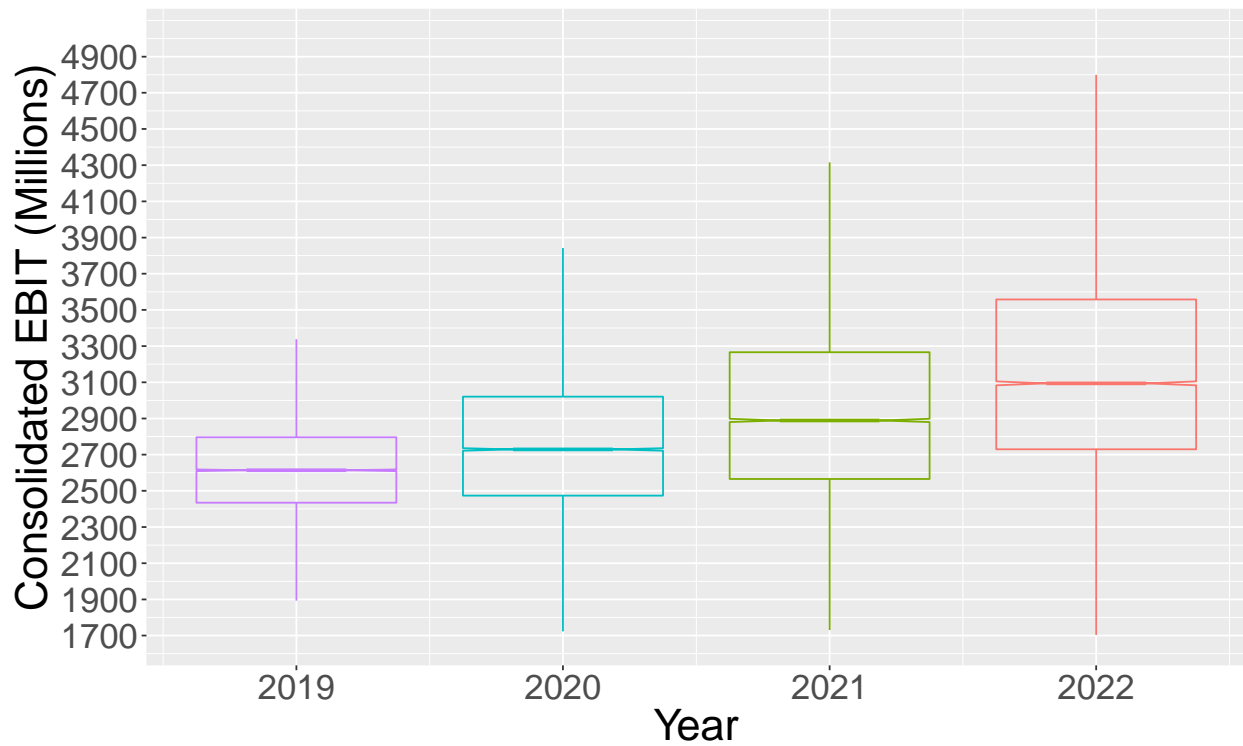
## Appendix V R Console Output for FCFF Projections

```

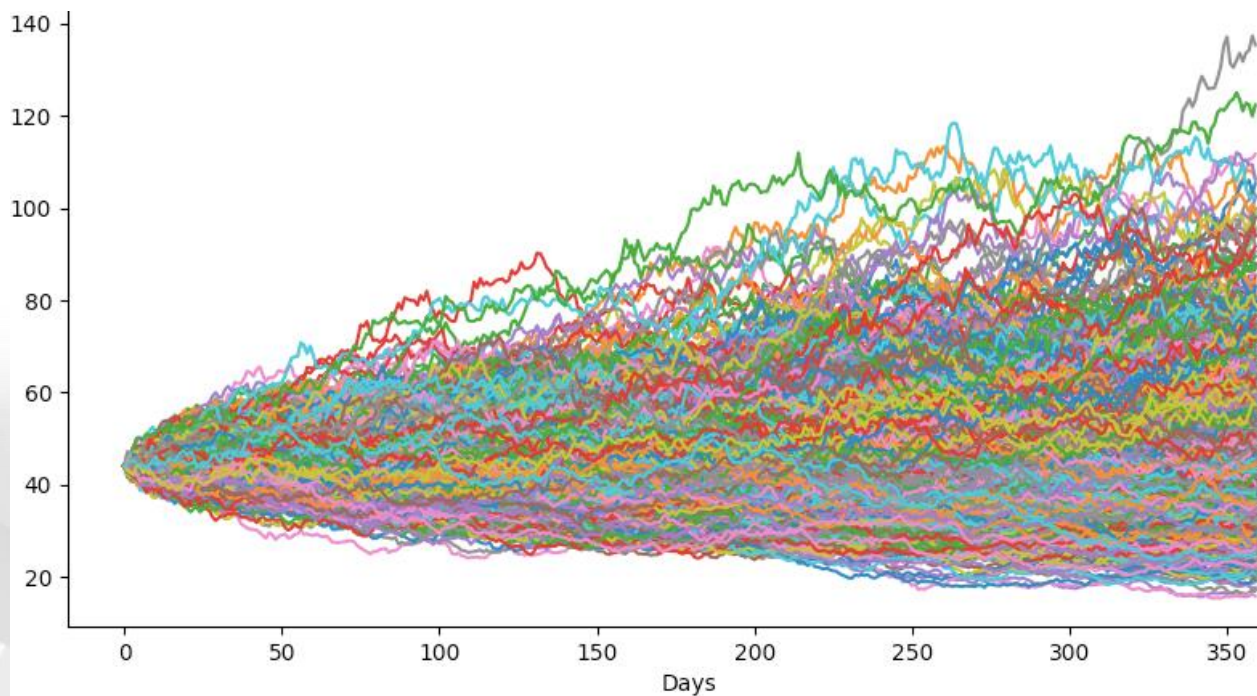
[1] "2019 Statistics Summary"
Segment FCFF.Min. FCFF.1st Qu. FCFF.Median FCFF.Mean FCFF.3rd Qu. FCFF.Max.
1 LennarAggregate 742.0588 1561.0808 1714.6088 1714.0657 1866.3372 2660.7885
[1] "#####"
[1] "2020 Mean"
1 LennarAggregate 1734.016
[1] "-----"
[1] "2020 Standard Deviation"
Segment FCFF
1 LennarAggregate 353.6549
[1] "-----"
[1] "2020 Statistics Summary"
Segment FCFF.Min. FCFF.1st Qu. FCFF.Median FCFF.Mean FCFF.3rd Qu. FCFF.Max.
1 LennarAggregate 526.5692 1489.0006 1714.2966 1734.0156 1956.3465 3902.0681
[1] "#####"
[1] "2021 Mean"
1 LennarAggregate 1774.102
[1] "-----"
[1] "2021 Standard Deviation"
Segment FCFF
1 LennarAggregate 481.2091
[1] "-----"
[1] "2021 Statistics Summary"
Segment FCFF.Min. FCFF.1st Qu. FCFF.Median FCFF.Mean FCFF.3rd Qu. FCFF.Max.
1 LennarAggregate 359.0114 1438.8364 1732.7353 1774.1017 2066.0839 4781.0969
[1] "#####"
[1] "2022 Mean"
1 LennarAggregate 1850.602
[1] "-----"
[1] "2022 Standard Deviation"
Segment FCFF
1 LennarAggregate 618.6723
[1] "-----"
[1] "2022 Statistics Summary"
Segment FCFF.Min. FCFF.1st Qu. FCFF.Median FCFF.Mean FCFF.3rd Qu. FCFF.Max.
1 LennarAggregate 27.90217 1423.61054 1766.33633 1850.60196 2199.90967 5564.72252
[1] "#####"
>
>
> #Discounted Cash Flow Model #####
> # of Forecast Years before terminal value is used. Must equal Previous inputs
> Forecast.years = 4
>
>
> Future.FCFF.Matrix = FCFF.Matrix %>%
+ select(FCFF,Trial,Year,Iteration,Segment)%>%
+ filter(Year > 2017)
>
> discount.rate = .0931 ##MATCH THE WACC#####
> DiscountedFuture.FCFF.Matrix = Future.FCFF.Matrix
> DiscountedFuture.FCFF.Matrix[1] = Future.FCFF.Matrix[1] / ((1+discount.rate)**(Future.FCFF.Matrix[,3]-2017))
>
>
> #This section assigns each datapoint to its corresponding iteration datapoint by year. This will help do NPV.
> L = 1

```

## Appendix W EBIT Projections



## Appendix X 1,000 Simulated Stock Price Trajectories



## Appendix Y Code for Simulated Stock Prices

```

ticker = "LEN"

data = web.DataReader(ticker, 'yahoo',
                      dt.datetime(2014,1,1), dt.date.today())[ 'Adj Close' ]

log_returns = np.log(1 + data.pct_change())
u = log_returns.mean()
var = log_returns.var()
drift = u - (0.5 * var ** 2)

simulations = 1000
t_intervals = 360

std = log_returns.std()
daily_r = np.exp(drift +
                 std * norm.ppf(np.random.rand(t_intervals,simulations)))

S0 = data.iloc[-1]
price_list = np.zeros_like(daily_r)
price_list[0] = S0

for t in range(1,t_intervals):
    price_list[t] = price_list[t - 1] * daily_r[t]

```

## Appendix Z Technical Analysis



In the near-term Lennar could see a sell off as the price struggles to maintain volume on this recent move upward. As noted in figure 35 the width or density of the candle represents the volume affiliated with each respective move. Below the price chart is a simple 3/10 moving average with a rate of change overlay which is derived from the moving average as opposed to price. There is a clear divergence between the oscillator and the underlying price which hints at an oversold condition which should cause price to move downward.



The main homebuilding SPDR index 'XHB' is approaching a key resistance level of 36.23 that was posted back in December 7, 2018. This price level saw large levels of volume and the underlying proceeded to sell off heavily last time it was approached. As of the recent, XHB is showing a gap up on the most recent weekly chart indicating that there was a sudden large interest in the homebuilding sector as the price began to climb.