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The Home Depot, Inc.

Equity Valuation

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Dissertation written under the supervision of
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The Home Depot, Inc. (HD.N)

Buy recommendation: This study establishes a 12-month target price of \$269.3, exposing the investor to a potential positive return of 22% compared to the current price. The target price was achieved using the DCF-method (WACC approach) supported by an in-depth analysis of the sector, macroeconomic perspectives and the company's financial reality.

Profile: Headquartered in United States, Home Depot is the world's largest home improvement retailer and the fourth-largest US retailer. The company operates also in Canada and Mexico. The company offers three major product lines: Building Materials (37%), Décor (33%) and Hardline (30%). The company's main customers can be divided in two types, DIY and professional customers.

Market Leadership: Home Depot is a market leader (51% market share) with Lowe's as its main rival (35% market share). The company has been able to obtain returns on invested capital above the industry average, which has allowed it to maintain its market position. Looking forward, HD prioritizes the expansion of its online platform and retention rate on its stores since the US home improvement market is nearly saturated.

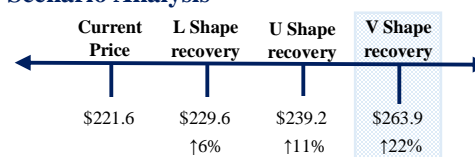
Macroeconomic Environment: The overall economy and the metrics specific to the housing market were in good shape until the COVID-19 pandemic reached the US in mid-March. Since Home Depot has a fairly established market share and the home improvement retail industry (consumer cyclical category) is especially reliant on the economic cycle it urges to understand the impact that a recession would have on the company's sales. Given the uncertainty brought by the current panorama, different scenarios were modeled (see page 53).

Buy Recommendation

NYSE: HD; USD 221.6

Price Target USD 263.9 ↑ 22%

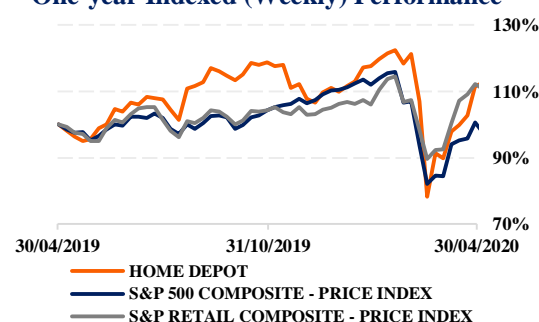
Scenario Analysis



Key Data

Market Cap:	\$238.02 billion
52-week high:	\$247.02 (20/02/2020)
52-week low:	\$152.15 (20/03/2020)
# Shares Outstanding:	1.07 billion
Free Float:	99.87%

One-year Indexed (Weekly) Performance



Operating Metrics (2019)

Cash Conversion Cycle*:	20 days
Asset Turnover:	2.31
Inventory Turnover:	5.11
# Stores:	2,291
Average Sales per square foot:	\$462.2

*Accrued Liabilities included.

Summary of Financials

(\$ million)	2017	2018	2019	2020F	2021F	2022F	2023F	2024F	2025F
Revenue	100,904	108,203	110,225	97,024	100,778	112,076	116,756	120,439	123,008
EBITDA	16,492	17,400	17,832	15,057	16,098	18,405	19,328	20,096	20,686
in % of Sales	16.3%	16.1%	16.2%	15.5%	16.0%	16.4%	16.6%	16.7%	16.8%
Net-Earnings	8,630	11,121	11,242	8,706	9,605	11,302	11,986	12,610	13,141
in % of Sales	8.6%	10.3%	10.2%	9.0%	9.5%	10.1%	10.3%	10.5%	10.7%
FCFF	8,731	13,049	5,196	9,977	10,405	11,897	13,086	13,708	14,196
Cash and Cash Equivalents	3,595	1,778	2,133	2,328	2,418	2,690	2,802	2,890	2,952
Financial Debt	27,028	29,202	37,377	34,741	36,352	37,000	35,817	33,225	29,249
DPS (\$)	3.56	4.12	5.44	6.00	6.48	6.87	7.20	7.46	7.67
ROIC %	33.2%	41.7%	44.4%	28.9%	31.3%	36.1%	37.5%	39.1%	40.4%



Title: The Home Depot Inc., Equity Valuation

Author: Manuel Nora

Abstract

The main objective of this study is to determine the target share price for *The Home Depot, Inc.* the leading company in the home remodeling industry in North America, thus issuing a recommendation whether to buy, hold or sell a stock position in the company. Initially, one started by scrutinizing the company's strategic position, the market in which it operates, and the key drivers influencing the industry, ending with an analysis of the current crisis that is plaguing the United States and its possible outcomes. Moreover, the company's financial reality was addressed and the prospect assumptions for the company were discussed and modeled using the DCF-method through WACC reaching a 12-month target share price of \$263.9. A Relative Valuation was computed to complement and compare with the price reached from the previous method, concluding that this price is in the range of what the market is paying for the company's peers (comparables). Afterward, comparing the target price to the market value on the 30th of April 2020 (\$221.6), the investor would be exposed to a +22 percent return, thus a buy recommendation is issued. Finally, these results when compared to the equity research issued by Credit Suisse on the 1st of April 2020 make clear that the investment bank takes a more conservative position concerning the target price for the company (hold position).

Keywords: Home Depot; Home Improvement Stores Industry; United States; COVID-19; DCF; Intrinsic Value.

Resumo

O objetivo principal deste estudo é determinar o preço por ação que reflete o valor intrínseco da *The Home Depot Inc.*, empresa líder no sector de remodelação de casas na América do Norte, emitindo uma recomendação de compra, neutra ou de venda da posição na empresa aos investidores. Ora, começou-se por examinar a posição estratégica da empresa, o mercado em que opera e os principais fatores que influenciam o sector, terminando, com uma análise sobre a atual crise e os seus efeitos na economia Estado-Unidense. Além disso, a realidade financeira da empresa foi abordada, fazendo-se uma análise ao histórico financeiro da empresa que depois veio a servir de base às projeções e modelagem financeira da empresa seguindo o método de DCF-WACC, chegando a um preço por ação esperado de \$263.9. Uma avaliação através de múltiplos foi ainda elaborada de forma a testar a solidez dos resultados do método anterior, concluindo que este se encontra na extensão dos resultados chegados através dos valores de mercado das empresas comparáveis com o Home Depot. Assim, comparando o preço-alvo com o valor de mercado a 30 de Abril de 2020 (\$ 221.6), o investidor estaria exposto a um retorno de +22%, emitindo-se uma recomendação de compra. Finalmente, estes resultados quando comparados com os resultados publicados pelo Credit Suisse a 1 de Abril de 2020, percebe-se que o banco assume uma visão mais conservadora em relação à empresa e à atual situação (posição neutra).

Palavras-Chave: Home Depot; Retalho de Remodelação de Casas; EUA; COVID-19; DCF; Valor Intrínseco.



Acknowledgments

This is an important milestone in my life, it is the point that officially ends my journey as a student (for now). This dissertation ends an adventure that I am honored to have experienced, full of enriching moments, sometimes with passages in other countries, which provided me with experiences of a lifetime.

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List of Abbreviations

APV	Adjusted Present Value
ASC	Accounting Standard Codification
ASR	Accelerated Share Repurchases Plan
CAGR	Compound Annual Growth Rate
CAPEX	Capital Expenditures
CAPM	Capital Asset Pricing Model
CCC	Cash Conversion Cycle
CFO	Cash from Operations
COGS	Costs of Goods Sold
CPI	Consumer Price Index
CS	Credit Suisse Investment Bank
D&A	Depreciation and Amortization
DCF	Discounted Cash Flow Model
DDM	Dividend Discount Model
DIO	Days of Inventory Outstanding
DIY	Do-It-Yourself
DPO	Days Payables Outstanding
DSO	Days Sales Outstanding
EBITDA	Earnings before Interests, taxes, Depreciation and Amortization
EBIT	Earnings before Interests and Taxes
EMH	Efficient Markets Hypothesis
EqV	Equity Value
EPS	Earnings per Share
EV	Enterprise Value
FASB	Financial Accounting Standards Board
FED	Federal Reserve (US Central Bank)
FCF	Free Cash Flow
FCFE	Free Cash Flow to the Equity
FCFF	Free Cash Flow to the Firm
GDP	Gross Domestic Product
GGM	Gordon Growth Model
HD	Home Depot
HI	Home Improvement
NYSE	New York Stock Exchange
PP&E	Property Plant and Equipment
ROIC	Return on Invested Capital
ROU	Right-of-Use Assets
SG&A	Selling, General and Administrative Expenses
TR	Thomson Reuters
TV	Terminal Value
US	United States
WACC	Weighted Average Cost of Capital



1. Introduction

Damodaran (2006) refers to Valuation as the “heart of finance”, especially due to the relevance it has today from the corporate finance panorama to the asset management world. Valuing a company is nowadays crucial not only for current/potential shareholders but also for top stakeholders, especially during decision-making practices.

If the main goal of corporate finance is the maximization of shareholders' value, the relationship between financial choices, the company's strategy, and firm value must be delineated (Damodaran, 2012). Managers have been performing valuations to assess the value proposition offered and consequently, to decide which business lines to discontinue or not (Fernandez, 2007). By understanding what catalyzes the value of a business, management teams have been able to make the right resource-allocation, achieving better performance (Luehrman, 1997).

Furthermore, portfolio managers, as well as common stock-pickers, have also been engaging in valuation techniques. Damodaran (2012) distinguishes the importance of the valuation process for active investors, specifically those performing fundamental analysis which uses the business financials and public information to reach the intrinsic value of a security. Fundamental analysis assumes that markets might misprice a stock in the short term but will end up “adjusting” it through time.

However, the idea that investors could profit from mispriced stocks argues against the Efficient Market Hypothesis. EMH assumes that all information, public as well as private is reflected in market prices. Based on this theory there would not exist any undervalued stocks and no group of investors should be able to consistently beat the market henceforth equity valuation would bring no benefits. Fama (1970) reviewed the EMH and categorized empirical tests of efficiency into three forms: weak form, semi-strong¹, and strong form tests². These three versions are varying measures of strength of the EMH. The weak form is important for our analysis since it only suggests that past prices, historical values, and trends cannot predict prices, thus implying the potential for fundamental analysis to effectively work when it is based on information advantage.

¹ Semi-strong efficient market reflects all available information including historical price information.

² In a strong form, the stock prices reflect public and private information.



Additionally, several researchers argue against the EMH and the overall empirical evidence has generally not supported this theory due mostly to market anomalies and behavioral bias that simply rule out this theory. For this study, it is assumed that the markets can misprice stocks in the short term.

The following content uses fundamental analysis approach to reach the fair value per share of The Home Depot, the major US player in the Home Improvement Stores industry, as of the 30th of April (2020) and compare it to the share price currently priced by the stock market, therefore, recommending whether to sell, buy or hold a position in the company.

The structure of the dissertation begins by debating the existing literature on the various valuation methods and choosing the models that best suit the company. Following, a detailed analysis of the company, industry, and the current macroeconomic context. On this basis, the financial reality of the company is discussed, and future assumptions are attributed in view of reaching the final share-price and investment recommendation. Finally, it is consulted the divergences with the CS report published around the same date of this study.



2. *Literature Review*

2.1. **Introduction and Valuation Models**

Valuation should be looked at as a process and Pinto, Henry, and Robinson (2010) defend that, to value a business, some steps should be followed independently on the valuation method selected. Firstly, the authors refer that one should try to understand the business. Here the annual report plays an important role as it provides not only the financial information of the company but also contains information about the future. Beyond that, one should study the industry in which the company operates, what is its outlook, what are the main drivers, and how it is expected for the industry to develop in the future. After understanding the operating reality of the company, the next step is to forecast the expected future performance. With the information of the first two steps, one should be able to model the forecasts of the company's financial position, which typically are the base inputs for most valuation models. Due to its inherent subjectivity, one should bear in mind that this is the step that might generate problems therefore extra care should be applied when deciding what assumptions to rely on. Fernandez (2007) defends that assumptions that are inconsistent with the macroeconomic environment or competitive analysis are one of the most common errors committed. After studying this information, a valuation model should be selected based on the characteristics of the firm.

Considering the classification made by Damodaran (2012), the different methods of valuation can be categorized into three main approaches:

- Discounted Cash Flow Valuation
- Relative Valuation
- Contingent Claim Valuation³

³ Contingent Claim Valuation is not going to be address because the company presents no potential investments with option-like characteristics thus no relevance would be added.



2.2. Discounted Cash Flow Methods

The DCF-method is perceived for being the “foundation on which all the other valuation approaches are built” (Damodaran, 2012). This affirmation derives from the fact that to perform a discounted cash flow valuation, one needs to understand the value drivers of a business and its complexities. Thus, anyone who truly comprehends its fundamentals will be capable to derive the other approaches.

The different cash-flow discounting-based methods start with the following expression:

$$\text{Equation-1: } V = \frac{CF_1}{1+k} + \frac{CF_2}{(1+k)^2} + \frac{CF_3}{(1+k)^3} + \dots + \frac{TV_n}{(1+k)^n}$$

Where:

CF_i = Cash Flow generated by the Company in Year i

TV= Terminal Value of the Company in Perpetuity

k= Discount Rate corresponding to the Cash Flows' risk

There are three subdivisions that an investor can choose when making a valuation through DCF. Firstly, depending on the specifics of the company, it may be preferable to assess the value of the entire firm, which includes the cash flow available to all the company's suppliers of capital (Free Cash Flow to the Firm). Secondly, one can value just the equity stake which determines the cash flow available to the company's holders of common stocks (Free Cash Flow to the Equity). Lastly, at times it is preferred to value a company by separating its operational part from its financing part henceforth start by evaluating its operations and, separately, add the debt effects to the valuation (Adjusted Present Value).

Free Cash Flows

In general, when assessing the capacity of a company's core business of generating cash flow regularly, one can simply take the firm's cash flows from operations and subtract the capital expenditures (CFO-CAPEX).



However, it is important to understand the value of cash flow available to all claim holders in the firm including stockholders, bondholders, and preferred stockholders. To do this, one calculates the FCFF which is used to value the entire business – the Enterprise Value. Additionally, one can use the FCFE, which is like the above-mentioned FCF but subtracts the mandatory debt repayments as well. The FCFE gives a somewhat better estimate of how much cash flow is available only for equity holders and is used directly to calculate the equity investor’s stake on the company – the Equity Value.

Pinto (2010) states that FCFF and FCFE approaches for valuing the equity should theoretically reach the same estimates if consistent assumptions are made. Note that there is a relation between FCFF and FCFE:

Equation-2:

$$\text{FCFF} = \text{FCFE} + \text{Interest Expense}(1 - \text{tax rate}) + \text{Principal Repayments} - \text{New Debt Issues} + \text{Preferred Dividends}$$

Firm Valuation

Discounted Free Cash Flow to the Firm at WACC

Damodaran (2012) states that the simplest way to get to FCFF is to calculate the cash flows before any claim from the debt holders and preferred shareholders. As a result, we reach the FCFF by adjusting the EBIT net of taxes and reinvestment needs, as follows:

$$\text{Equation-3: FCFF} = \text{EBIT} * (1 - \text{tax rate}) + \text{Depreciation} - \text{CAPEX} - \Delta \text{ Non-cash Working Capital}$$

Note that the FCFF does not include any tax benefits from interest payments. This is because the tax shield and the potential additional risks associated with extra debt are already embedded in the weighted average cost of capital that is used to discount the FCFF to the present. Therefore, assuming that a firm reaches a stable growth after n years, the EV is calculated using the following formula:

$$\text{Equation-4: Enterprise Value} = \sum_{t=1}^n \binom{n}{t} \frac{\text{FCFF}_t}{(1 + \text{WACC})^t} + \frac{\text{TV}_n}{(1 + \text{WACC})^n}$$



Where:

$FCFF_t$ = Expected Free Cash Flow to the Firm at Time t

WACC = Weighted average cost of capital

TV = Terminal Value of the Company in Perpetuity

Adjusted Present Value

Luehrman (1997) argues that the APV approach is gaining significance among general managers. He believes that this happens because the method helps managers to analyze not only the value of an asset but also to understand where that value comes from. The author prefers APV to the WACC method as the APV breaks the components of value and evaluates each one separately rather than simply allocate the financing effect to the discount rate.

The great advantage of using the APV approach is the separation of the effects of debt onto different components allowing the discount of each of the components using different discount rates.

Regarding the mechanics of the APV model, the first step to use this approach is to estimate the value of the firm assuming it is only equity financed. Subsequently, one adds the debt component, and with it comes the benefits and costs that arise from it. As shown in Equation-5:

$$\text{Equation-5: Value of Levered Firm} = \text{PV (Unlevered Firm)} + \text{PV (ITS)} + \text{BC}$$

Where:

PV = Present Value

ITS = Interest Tax Shield

BC = Expected Bankruptcy Costs

First, the calculation of the unlevered firm is made by discounting the unlevered free cash flows by the unlevered cost of equity. Next, while in the WACC approach the effects of leverage are embedded in the cost of capital in the case of the APV, these effects are calculated separately by



discounting the debt benefits (tax shield) at the cost of the debt, reflecting the risk of that cash flow (Damodaran, 2006) as showed in equation-6 - Present Value of Interest Tax Shield:

$$\text{Equation-6: } PV(\text{ITS}) = \frac{T_x * D * k_d}{(1+k_d)^t}$$

Where:

T_x= Tax Rate

D= Debt

k_d= Cost of Debt

Moreover, when a company engages in higher amounts of debt this also brings some risks that have to be taken into account when valuing it. These risks are divided into two factors: the company's probability of default and its expected bankruptcy (Equation-7). The only disadvantage of the APV approach is the fact that the two factors above cannot be calculated directly which requires some assumptions to be made.

$$\text{Equation-7: } BC = \text{Probability of Default} * \text{Bankruptcy Costs}$$

Equity Valuation

Discounted Free Cash Flows to Equity

Along with the previous models, a company's Equity Value can be calculated by discounting FCFE to the present. As suggested, one can compute the FCFE by subtracting to the FCFE the net interest expense (after-tax) and net borrowing effects (Fernandez, 2007). Thus, and following Equation-2 formula, Free Cash Flow to Equity measures how much cash flow is available to just the equity holders of a company after all expenses, reinvestment and debt are paid as follows:

Equation-8:

$$\text{FCFE} = \text{Net Income} - \text{Depreciation} - \text{CAPEX} - \Delta \text{ Non-cash Working Capital} + (\text{New Debt Issued} - \text{Debt Repayments})$$



Following the same rationale used to calculate the EV, by discounting the forecasted free cash flows to the equity at the firm's cost of equity one reaches the company's EqV – Equation-9. Damodaran, (2006) confirms that the discount rate that matches the equity holders' cash flow risk is the cost of equity⁴.

$$\text{Equation-9: Equity Value} = \sum_{t=1}^n \frac{FCFE_t}{(1+Ke)^t} + \frac{TV_n}{(1+Ke)^n}$$

Where:

$FCFE_t$ = Expected Free Cash Flow to the Equity at Time t

Ke = Cost of Equity

TV = Terminal Value in Perpetuity

This model is based on the principle that free cash flows to equity correspond to the value of cash flows paid to investors in the form of dividends. However, because the FCFE corresponds to the cash available to the equity holders that does not mean that companies pay this value through dividends. Damodaran (2012) shows empirical evidence that firms tend to pay less to stockholders than the amount available of free cash flow to equity. The main justifications for this are related to the fact that firms prefer a stable dividend policy meaning that there is higher variability in earnings than in dividends paid (Brav, Graham, 2005). Another reason to hold extra cash might be to meet future capital expenditures (Damodaran, 2012).

In a sense, the only cash flow an investor receives from holding a publicly-traded stock is the dividend (Damodaran, 2012). For that reason, a common dividend stock-picker might prefer to value a stock's value strictly based on the future dividends it expects to receive from his position (Pinto et al., 2010) which leads to the next method.

⁴ For further details relative to cost of equity please refer to the section -“Discount Rate”.



Dividend Discount Model

When an investor buys a stock, the cash flow he expects to receive consists of dividends paid (if any) and the market price of the share when he decides to sell his position (Pinto et al., 2010). Because the expected end price is determined by the dividends paid during the holding period, as a result, the stocks' value can be calculated by discounting the expected dividends through perpetuity, following a formula:

$$\text{Equation-10: Value of Company's Stock} = \sum_{t=1}^n \frac{E(DPS)_t}{(1+K_e)^t}$$

Where:

$E(DPS)_t$ = Expected Dividends per Share

K_e = Cost of Equity

Damodaran (2012) argue that the correct way to project future dividends is to factorize these to the company's future growth rates in earnings and payout ratios. Since dividend projections cannot be made infinitely, some models based on the above equation have emerged in which dividends growth rates were adopted to arrive at the company's stock value.

Building on the Equation-10, Gordon (1963) presented a special case of the general model, entitled the Gordon Growth Model (Equation-11). The author developed this model on the premise that the price of a share is equal to the discounted value of expected future dividends which rise at a constant rate.

$$\text{Equation-11: Value of Company's Stock} = \frac{DPS_1}{K_e - g}$$

Where:

DPS_1 = Expected Dividends per Share one year from now

K_e = Cost of Equity

g = Growth Rate in Dividends in Perpetuity



This model despite solving the problem of Equation-10 has some drawbacks. The main issue is the difficulty of predicting a dividend growth rate for companies that do not have a stable-earnings growth yet. Besides that, the model is extremely sensitive to the dividend growth rate choice increases the chances of miscalculating the company's value (Damodaran 2012).

To overcome the above, models that address some of these problems were developed. For example, the Two-stage DDM (Equation-12) allows for two levels of dividend growth, an initial phase, in which the company presents a growth that is not stable and a future phase in which the company moves towards long-term stability (Damodaran, 2006). Even though, the two-stage model can be adapted for companies that expect different growth trends in which more stages are added (Rappaport, 1986).

Equation-12:

$$\text{Value of Company's Stock} = \sum_{t=1}^n \binom{n}{t} \frac{DPSt}{(1+Ke)^t} + \frac{Pn}{(1+Ke,hg)^n} \text{ where } Pn = \frac{E(DPSn + 1)}{(Ke, st - gn)}$$

Where:

DPS_t = Expected Dividends per Share in year T

ke = Cost of Equity (hg: High-Growth Period; st: Stable-Growth Period)

pn = Price (Terminal Value) at the end of year n

g = Extraordinary Growth Rate for the first n years

gn = Steady-State Growth Rate after year n

Terminal Value and Growth Rates

Damodaran (2012) defends that the growth rate of a company's earnings should depend on how much the company reinvests for future growth and the quality of those reinvestments. Therefore, in fundamental approach firms that reinvest a higher amount of cash and that can get higher returns from that investment, should ultimately have higher growth rates. However, it is normal for companies over the years, and as they reach their mature-phase to lose their ability to sustain high



growth rates and move towards a stable-growth phase (Fernandez, 2007). It is when the company reaches a stable-growth stage that the transition from the calculation of the explicit period to the Terminal Value occurs.

The Terminal Value allows calculating the value of all cash flows to perpetuity. Pinto et al. (2010) state that the Terminal Value calculation is done in two ways, either by applying a multiple or using the Gordon Growth Model which as indicated above solves the problem of indefinite maturities. Therefore, by the GGM methodology the Terminal Value can be calculated as follows:

$$\text{Equation-13: Terminal Value} = \frac{\text{Cash Flow } t+1}{r-g}$$

Where:

Cash Flow t+1= Expected Cash Flow in period t+1

r= Discount Rate

g= Stable Growth Rate

Damodaran (2012) points out that one of the problems in using multiples for the calculation of TV is that the valuation loses the properties of the DCF.

Of all inputs in a valuation, stable-growth rate (g) has the most impact on it. Young et al. (1999) showed empirical data that on average the Terminal Value corresponds to 80% of a company's value, after five-year projections. Small changes in the stable growth can lead to significant changes in the Terminal Value making it difficult to estimate it with accuracy. Therefore, because the assumptions for the Terminal Value are highly sensible, it is indispensable to compute a sensitivity analysis of the two parameters – discount rate and stable-growth – to have an idea of how it impacts a firm's value. Lastly, despite the difficulty of defining the stable-growth, Damodaran (2012) restricts that this rate should not be higher than the growth rate of the country's economy in which the business operates.



Discount Rates

After forecasting the expected future cash flows for the explicit period, the next step is to discount these forecasts to the present value at a discount rate that reflects the riskiness of those cash flows. Selecting a discount rate is complex since a publicly-traded stock is exposed to many investors with completely different risk perceptions. Damodaran (2016) states that to overcome this complexity, one should assume that the risk of a business is perceived by an investor with a diversified portfolio (marginal investor).

Weighted Average Cost of Capital

As mentioned before, to arrive at a firm's value using the Discounted Cash Flow, the forecasted free cash flows must be discounted at the WACC. Because the FCFE is the cash flows available to the equity investors and lenders, the discount rate must also include the required return for each claimholder. Therefore, the correct discount rate is the weighted average of the costs of the different components of financing (Koller et al., 2015):

$$\text{Equation-14: } WACC = \frac{D}{V} * kd * (1 - Tx) + \frac{E}{V} * ke$$

Where:

$\frac{D}{V}$ = Target Level of Debt to Enterprise Value using Market-Based Values

$\frac{E}{V}$ = Target Level of Equity to Enterprise Value using Market-Based Values

kd = Cost of Debt

ke = Cost of Equity

Tx = Tax Rate

For the above formula, three components must be estimated separately, the after-tax cost of debt, the cost of equity and the company's capital structure. The cost of debt and cost of equity are more



difficult to estimate since they are not directly observable thus some assumptions need to be employed (Damodaran, 2016).

The advantage of WACC is that it simplifies the changes in the company's financial mix by assuming a constant capital structure for the future when discounting the future cash flows (Damodaran, 2006). However, this comes with a price, because it is only suitable for firms that preserve a stable capital structure (Luehrman, 1997). If a change is expected, instead of using the company's current capital structure it should be used the target one (Pinto et al., 2010).

Cost of Equity

The cost of equity is the rate of return required on an equity investment in a firm (Damodaran, 2016). The cost of equity can be computed in multiple ways, but the literature seems to accept the Capital Asset Pricing Model as the most valid.

The CAPM was developed by Treynor (1962), Sharpe (1964) and Lintner (1965) and built on the bases of Markowitz's modern portfolio theory. It was initially created with the intent of pricing an individual stock or portfolio using the relationship between expected return and systematic risk (beta). However, when computed, it also indicates the required return for equity investors, leading it to be widely used in valuation as the cost of equity (Pinto et al., 2010).

$$\text{Equation-15: } K_e = r_f + \beta * \text{MRP}$$

Where:

K_e = Cost of Equity

β = Security's Beta

MRP = Market Risk Premium

Risk-Free Rate

The risk-free rate reflects the time value of money (Damodaran, 2012). To be suitable as a risk-free rate, an asset should be default-free and cannot have a risk of reinvestment, that is, one must



be able to calculate the return today of this asset with certainty. Hereupon, Koller et al. (1990) consider that for a developed economy a highly liquid, long-term default-free government securities should be used. Damodaran (2012) even refers that the only securities possible of being risk-free are government securities of countries that control the printing of their currency.

Beta (β)

According to the CAPM, a stock's expected return is driven by beta, which is a measure of the sensitivity of a stock's return to the returns of the market (its systematic risk).

The most common way to estimate the beta is through a regression of a stock's historical returns in the stock market which is based on the CAPM formula. To compute the regression, decisions must be made regarding the chosen index, estimation period, and return interval (Damodaran, 2012). First, for defining the index it is usually selected the market index in which the stock trades. Regarding the data period length, Peare (2001) found support for five years of monthly data since it is proven that using more frequent periods leads to systematic biases (Pinto et al., 2010). This regression results in the "raw" historical beta.

$$\text{Equation-16: } \beta = \frac{\text{Cov}(R_i, R_m)}{\text{Var}(R_m)}$$

Where:

Cov(R_i, R_m): Covariance between the Return of the Security(i) and the Return of the Market.

Var(r_m): Variance of the Market Returns.

However, some evidence points out that, on average, and especially for firms that are not highly traded, regression betas include high levels of standard errors that unfeasible the use of the company's true beta (Damodaran, 2012). Koller et al. (1990) state that it is possible to improve its results by using industry comparable information and smoothing techniques. For that, one should derive the unlevered median industry beta and then reveler it with the firm's target capital



structure⁵. The author defends that the industry average has lower mean squared errors than the company's raw historical beta which enhances the precision of beta estimation.

Also, Blume (1975) demonstrated that raw betas tend to revert towards their mean over time. The author created an adjustment formula⁶ that smoothes out the raw beta for its tendency to revert to the market mean. Pinto et al. (2010) defend that this adjustment is more robust and closer to the expected beta in the future.

Market Risk Premium

The Market Risk Premium reflects the average extra premium the equity investors require to invest in a market portfolio relative to the risk-free assets. This premium allows investors to have a better idea of the relative returns to bonds and cash.

The common approach to estimate this premium is by looking at the historical premium of stock's returns over risk-free securities (Damodaran, 2012). Depending on different methods, Zenner et al. (2008) published that a range of 5-7% would be the expected value for the equity risk premium. As a more updated figure, KPMG in March 2020 recommends using 6.5%.

After-Tax Cost of Debt

The cost of debt reflects the return that a company provides to its debtholders. Thus, the cost of debt reflects not only the default risk of the company (spread) but also the level of interest rates in the market (risk-free rate).

$$\text{Equation-15: } K_d = r_f + \text{Default Spread}$$

Where:

K_d = Cost of Debt

r_f = Risk Free

⁵ Unlevered and levered relation - following formula: $\beta_u = \beta_l / (1 + (D/E))$

⁶ Blume's adjustment formula: $\text{Adjusted } \beta = (2/3) * \text{Raw } \beta + (1/3) * 1$



Pinto et al. (2010) and Damodaran (2012) state that yields to maturity on a company's debt is the correct way to estimate the cost of debt since it is directly observable and uses market values. However, Koller et al. (2015) argue that the yield to maturity of a company's debt is just a promised rate of the return for the debtholders of the company which can differ from the actual expected return. He defines that this inconsistency is immaterial for companies that possess investment-grade bonds however for companies with higher probabilities of default the author recommends using the APV approach because it is less sensitive to high-leverage companies.

Because interest expenses are tax-deductible to the firm, one must choose the correct tax rate used to incorporate the interest tax shield into the cost of debt. Graham's (1996) research showed that the simulated tax rate used by Shevlin (1990) and Graham (1996), although difficult to measure, is the best proxy for the correct marginal tax rate. The author states that even though the statutory marginal tax rates might overestimate the future marginal tax rate given that does not consider tax loss carryforwards⁷, it can still be correctly used when applied to investment-grade companies in which future profit is sure.

$$\text{Equation-16: After - Tax Cost of Debt} = k_d * (1 - T_x)$$

Where,

k_d = Cost of Debt (Pre-Tax)

T_x = Tax Rate

⁷ Loss Carry-forwards are used to spread a current net operating loss over subsequent years' net operating income in order to reduce future tax liability. Thus, by using marginal tax rate we can be overestimating the value in relatively to the effective tax rate.



2.3. Relative Valuation

Relative valuation has gained relevance in performing as a complementary model to the DCF analysis as a relative valuation can help understand what drives value in a specific industry (Koller et al., 2015).

In the DCF-method, the perspective is to arrive at the intrinsic value of a firm based upon its capacity to generate future cash flow. In the case of Relative Valuation, the ideology is to arrive at the value of an asset based on what the market is paying for comparable assets (Damodaran, 2012).

To compute this method the financial fundamentals of a company must be converted into multiples to compare these across firms defined as peers⁸. Although there are different types of multiples the most used are the Price and Enterprise-multiples (Fernandez, 2001). While Price multiples involve examining ratios between a company's share price and an element of the underlying company's performance, the Enterprise multiples entail ratios of a peer's firm total value to a fundamental (Pinto et al., 2010). Furthermore, Ritter (1999) and Liu (2002) published empirical evidence that using forward-looking multiples perform more accurate results in predicting a firm's value than historical multiples.

The acceptance of this model comes from the fact that the value of a firm can be calculated by employing fewer assumptions and more quickly than through a DCF (Damodaran, 2012). However, the fact that multiples reproduce the state of the market can lead to errors. If the market, in general, is not correctly priced, that is, overvalued or undervalued, this would imply that the estimated value of the underlying company would deviate from its fair value. Therefore, relative valuations must not be used in isolation to arrive at a firm's value.

⁸ A peer group is a set of companies which are designated for being sufficiently comparable to the firm being valued.



3. *Chosen Models*

After analyzing the different valuation methods, one must choose the ones that best suit the characteristics of the company being value.

As scrutinized in the previous section, the DCF allows questioning the sanity of the stock market by assessing the company's price through assumptions and drivers defined by the analyst. Also, it was mentioned that the choice of the type of DCF to use turns out to be irrelevant since if the assumptions are consistent, the models end up reaching the same fair value. Furthermore, because Home Depot presents stable capital structure prospects the APV method was discarded due to the extra difficulties carried. Hereupon, the DCF through WACC ended up being chosen as the ideal intrinsic valuation method.

Also, a Relative Valuation is going to be computed as a complement to the intrinsic-value method. The method through comparables helps to assess how the market is currently perceiving the company thus drawing important deductions from the comparison between methods.



4. Corporate Overview

The Home Depot, Inc., founded in 1978, is considered the world's largest Home Improvement retailer and the fourth-largest retailer in the United States considering the \$110.2 billion of revenues presented in the fiscal year of 2019. At the end of the last fiscal year, the company operated in 2,291 Home Depot locations across North America (including Canada and Mexico) and employed more than 415,000 employees. The company stores' have an average size of 104,000 square feet of walled space with an extra 24,000 square feet of an outside garden center counting with 30,000-40,000 products per store.

The company classifies its consumers in two different groups: Do-It-Yourself customers and professional customers. DIY customers consist of typical homeowners who choose to complete the projects on their own after buying the products. Professional contractors tend to buy the products, which require specific knowledge to properly install and operate the products (e.g. electrical, plumbing, and flooring installations). The professional contractors' market can be divided into professionals working on large-scale projects (such as commercial construction sites) and those contracted by homeowners for working on home-based projects named "Do-It-For-Me" market.

4.1. Business Segments

The way the company conducts its retail operations can be divided into three different operating segments. These segments reflect how the company reports financial information internally to make decisions on their resource allocation.

First, because HD operates in the US, Canada, and Mexico the company's revenue is divided into the US and Outside US operations. US stores have the largest representative role with 1,981 stores and 92% of the company's revenues (\$101.3 billion). This percentage has been stable over the last years and is not expected to change soon since the company's current strategy is to increase consumer retention by enhancing the quality of current stores over opening new stores. Therefore, during 2019 the company opened only three net stores in the US and one net store in Mexico.



Geography Segment Revenue 2019

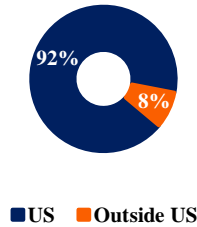


Exhibit-1: HD's US vs Outside-US Revenue (HD-AR, 2019)

Also, the company not only offers a wide range of products but also provides several services, including home improvement installation services and equipment rental targeted to DIY consumers. These services account for 5% of the total business revenues which has been constant throughout the years.

Products vs Services Revenue 2019

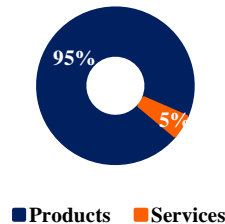


Exhibit-2: HD's Products vs Services Revenue (HD-AR, 2019)

Furthermore, the retailer also presents its revenues by major type of product and related services. The company's different merchandising departments can be assigned to three major product lines as follows:

Major Product Line	Merchandising Departments
Building Materials	Building Materials, Electrical/Lighting, Lumber, Millwork, and Plumbing.
Décor	Appliances, Décor/Storage, Flooring, Kitchen, Bath and Paint.
Hardline	Hardware, Indoor Garden, Outdoor Garden, and Tools.

Exhibit-3: 3 Main Products' Segments (Source: HD-AR)

Products Segment Revenue 2019

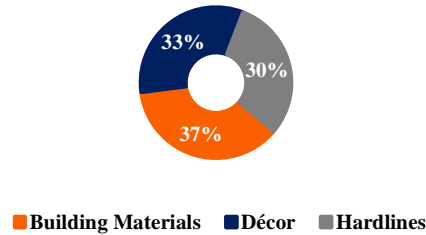


Exhibit-4: 3 Main Segments Revenue (HD-AR, 2019)

Finally, due to the increasing sales the company has been presenting in its e-commerce platforms, one can divide the company's sales between the online and offline. During 2019, Home Depot's online sales grew by 26.2%, accounting for 9.3% of the company's revenue (\$10.3 billion). In each of the last 6 years, the firm's online sales have grown by around \$1 billion making the retailer the fifth largest e-commerce platform in the US and the largest in its niche.

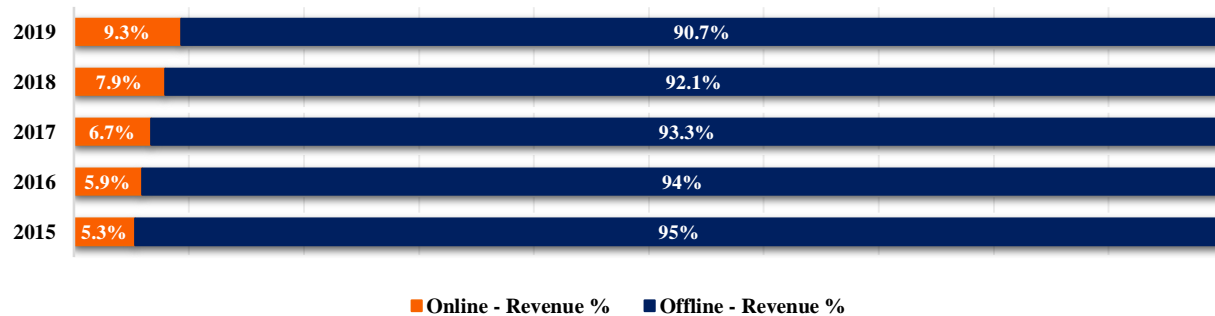


Exhibit-5: Evolution of Online Sales Proportion (HD-AR, 2019)

4.2. Stock Price – Performance

Home Depot's common stock, trading under the ticker "HD", has been listed on the NYSE since 1984. The stock joined the S&P-500 in 1988 and currently occupies the fourteenth position in the index with a market capitalization of \$238.02 billion and the stock priced at \$221.6. HD is a dividend stock that paid its first dividend in June 1987 and has maintained a cash dividend during each quarter after that.



On the 30th of April, shares on a free-float consisted of 99.87% of the share capital while the 0.13% was held by strategic entities including insider investors. Home Depot’s 71.6% of institutional ownership makes this company the highest publicly traded Home Improvement retailer position controlled by institutional investors.

Shares Outstanding Structure

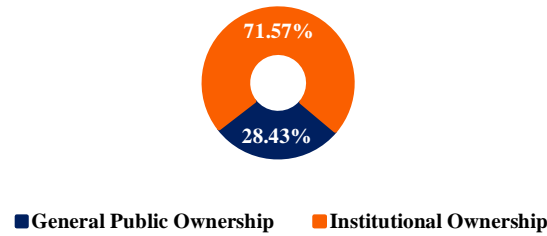


Exhibit-6: Free-float Shares Structure (Reuters, 2020)

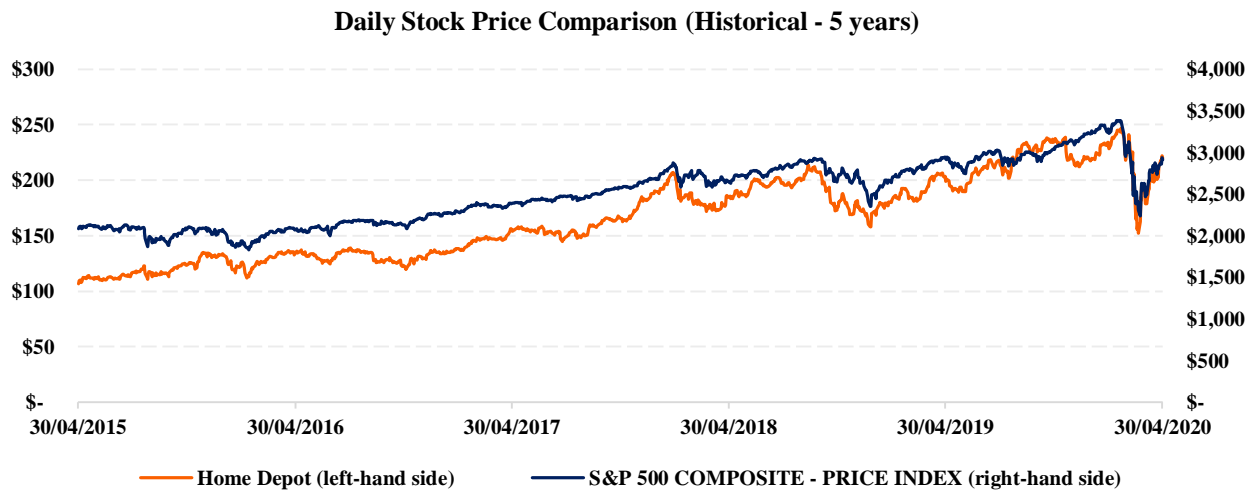


Exhibit-7: Stock Price Comparison (Datastream, 2020)

To comprehend how the HD stock has performed in the last years the Exhibit-8 and 9⁹ compare the stock development relative to the performance of the S&P-Retail Composite and the S&P-500 index for the last five years and the last 52-weeks, respectively.

⁹To make this comparison clearer the index and the stock price were both indexed at 31/03/2015 for Exhibit-8 and 31/03/2019 for Exhibit-9.

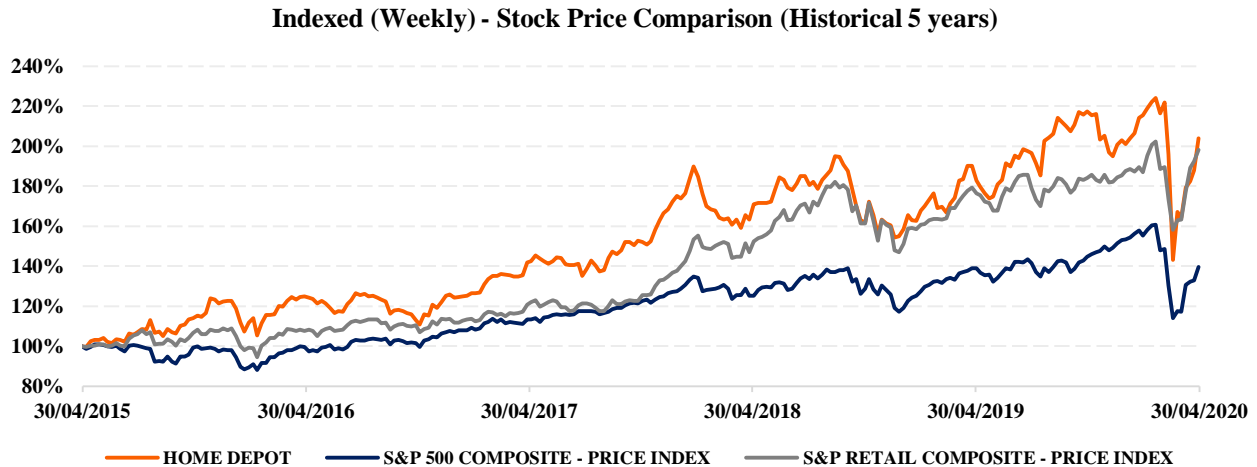


Exhibit-8: HD's Stock Price vs Benchmarks 5-year (Datastream, 2020)

As can be seen from Exhibit-8, the stock has followed the movements of the two indexes however HD has shown a clear tendency to outperform the indexes in most of the last 5 years.

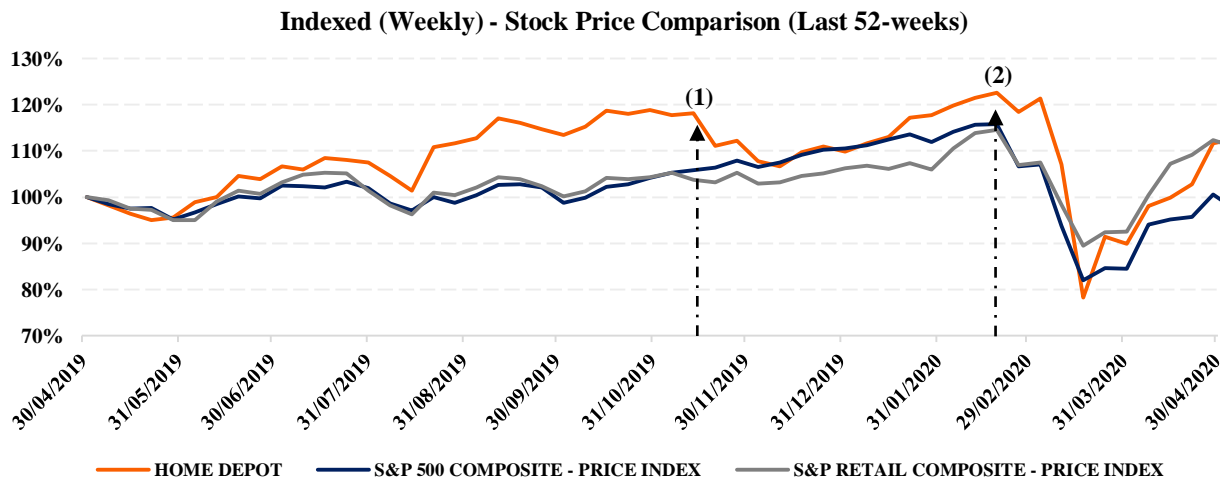


Exhibit-9: HD's Stock Price vs Benchmarks 52-weeks (Datastream, 2020)

The start of the last 52-week outlook was encouraging for the company, as it showed a 20% growth of its price, outperforming both benchmarks. However, an event on the 18th of November of 2019 (1) negatively impacted the stock price. On this date, the home improvement retailer announced its third-quarter results in which the same-stores sales target was missed, and the prior 2019 forecast sales were cut. After this event, the price of the stock dropped and converged to the benchmark



nevertheless it ended uprising and on the 20th of February of 2020, it reached 247\$ per share, the highest traded price on the company's history. Although the company reported better results than expected on its fourth-quarter report presented on February 25th (2), this event coincided with the 2020 stock-market crash thus the HD stock price ended up declining after its all-time highs. This crash occurred mainly in response to the instability regarding the several countries' shutdowns provoked by the COVID-19¹⁰ pandemic and the investor's concerns that consumer spending could be highly affected as a result. Since event (2) the HD share price has dropped 35% (from \$237 to \$152) until the 18th of March being outperformed by the two benchmarks on the chart for the first time in 52-weeks period. Since that dip, the HD's stock price started to go up as investors started to respond to the FED's stimulus packages. In the end, HD stock price unfilled a 12% return during the last 52-weeks being only nearly outperformed by the S&P500-Retail Composite.

4.3. Company's Strategy

The company is now at a period of transition, after several years of continued expansion the company is now confronting a saturated domestic market. At the end of 2017, the company started a new 3 year-strategy in which it intends to blend the company's different segments into *ONE-HOME-DEPOT*¹¹. The strategy is aimed at providing an interconnected shopping experience between the digital and the physical spaces.

Firstly, the strategy pretends to connect the company's associates to customers and some efforts have already been made for this. It is important to remember that the US has a strong DIY-culture and to connect with these clients, the retailer has been offering free workshops for consumer sharing that aims not only to raise sales but to retain the consumer. Moreover, part of this investment is assigned to enhance the professional community experience by keep investing in *The Home Depot Pro*, allowing them to be part of HD's network and still have access to discounts/credit-lines.

Besides, the company has started to implement in its stores the FIRST phone system which allows the associates to locate store products and their availability rapidly boosting stores' inventory

¹⁰ More details further on "COVID-19" section.

¹¹ Parts of the \$11B are invested thorough the years (2018-2020).



management efficiency. Also, part of the last years' CAPEX has been directed to refresh stores' designs and add intuitive way-finding signs.

Finally, to reinforce its competitive advantages and to beat any competition that might be emerging in the online home improvement retail, Home Depot decided to invest \$1.2 billion of the overall program to develop the *One-Supply-Chain*. This 5-year strategy aims to place the company's distribution centers at maximum efficiency to boost their delivery speed in line with the company's current goal of reaching 90% of the US population with the same/next-day delivery. The company is investing in approximately new 150 facilities to create cost advantages by optimizing its network.

2018-2020: Approximatey \$11B Investment

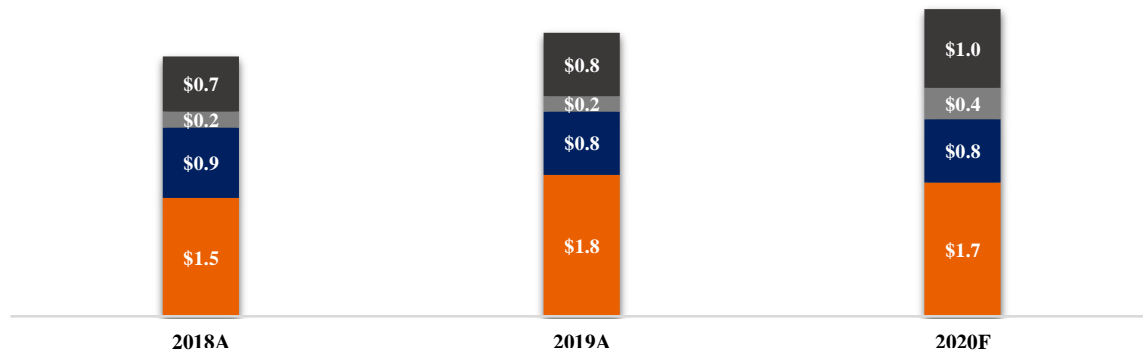


Exhibit-10: ONE-HOME-DEPOT (HD-Investor's Conference, 2019)



5. Macroeconomic and Home Improvement Stores¹² Industry Overview

This section aims to analyze the characteristics of the company's industry and the key macroeconomic indicators to support future cash flow forecasts. HD is part of the Home Improvement Stores Industry and because 92% of the company's revenues are from the US market, a detailed analysis of this market is conducted.

5.1. United-States (US)

The Home Improvement Stores industry in the US is characterized by a high degree of market concentration and homogeneous product lines. These characteristics force companies to operate within high levels of price competition, especially the two major players in the industry, Home Depot and Lowe's.

The products sold in this industry are in the consumer cyclical category which implies that the industry is reliant on the economic cycle. Exhibit-11 shows a clear correlation¹³ between changes in US-GDP and industry revenues over the last 15 years. The construction market in the US is also preponderant for the state of this industry. However, in recent years companies in this industry have been diversifying their product line which has helped to protect the industry from the high volatility of the housing market. Also, this diversification has been keeping a stable demand over the last years even when the consumer sentiment or disposable income have fluctuated, thus mitigating part of the revenues' volatility in the industry.

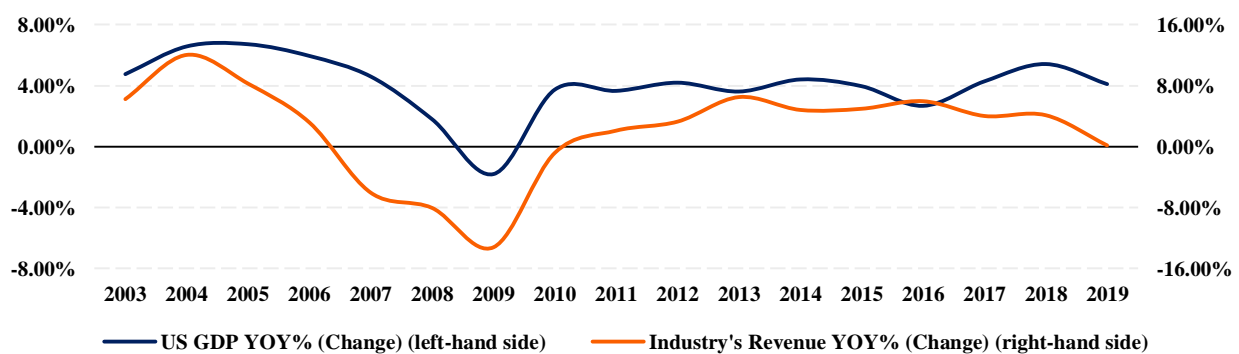


Exhibit-11: US-GDP vs Industry's Revenues, Constant prices 2012 (IBISWorld & FRED, 2019)

¹² HI stores sell a range of home repair and maintenance goods, such as hardware, tools, electrical goods, lumber and structural material for construction and renovations (Sub-industry of Home Improvement Retail).

¹³ 80% correlation.



As shown in Exhibit-11, the US economy was able to recover after the 2008 financial crisis showing a sustainable increase in its GDP. Also, the unemployment rate has been decreasing which has contributed to rising consumer confidence, which has favored the past trend of the industry’s key drivers discussed below.

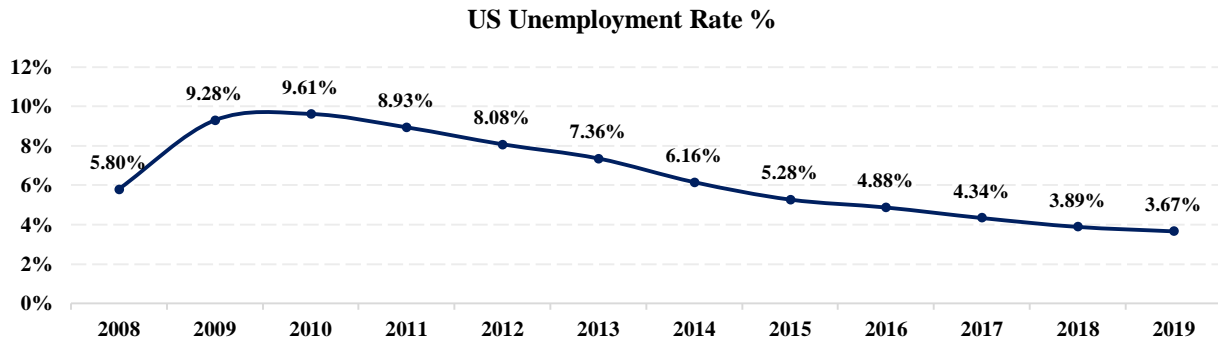


Exhibit-12: Historical US-unemployment rate (FRED, 2019)

The overall housing market trend in the US has been optimistic after the 2008 financial-crisis, as can be seen in Exhibit-13. The S&P/Case-Shiller¹⁴ Index has been increasing demonstrating that the housing prices are rising which caused an increase in the HI stores industry’s sales as individuals tend to invest in their homes when their market value increases. Also, the industry’s sales are correlated with Private Residential Investing which has been solid despite some slowdown recently.

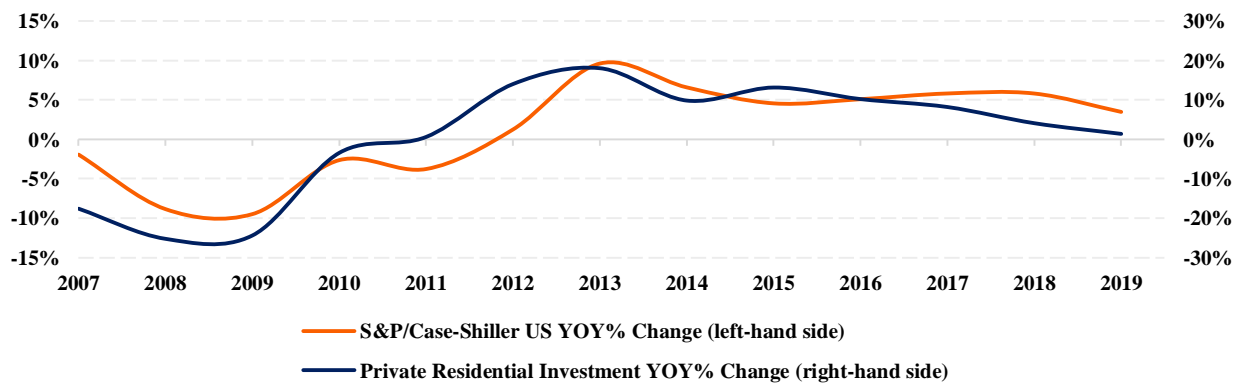


Exhibit-13: Correlation between Home Prices and PRI, current prices (FRED, 2019)

¹⁴ S&P/Case-Shiller US Index is a composite of single-family home prices index.



5.1.1. Industry's Key Drivers:

Real Disposable Income:

Home Improvement Stores' sales are reliant on real disposable income which is a key factor for homeownership rates and home improvement activity. Individuals with higher disposable income are more prone to buy new homes or remodeling their property moving the industry demand. The forecasted¹⁵ periods show that the disposable income for individuals will drop in 2020 and will return to its growth trend in 2021.

Consumer Spending:

This is a key driver for any retail business since contrary to the disposable income it stipulates the consumer sentiment on a period. During 2020 is expected to decline by 5% following the current effects from the COVID-19 pandemic. It is interesting to comprehend that consumer spending is expected to be more affected than the disposable income of individuals displaying that the current situation is expected to primarily hurt consumer confidence and its autonomous consumption (consumption that is not affected by the level of income).

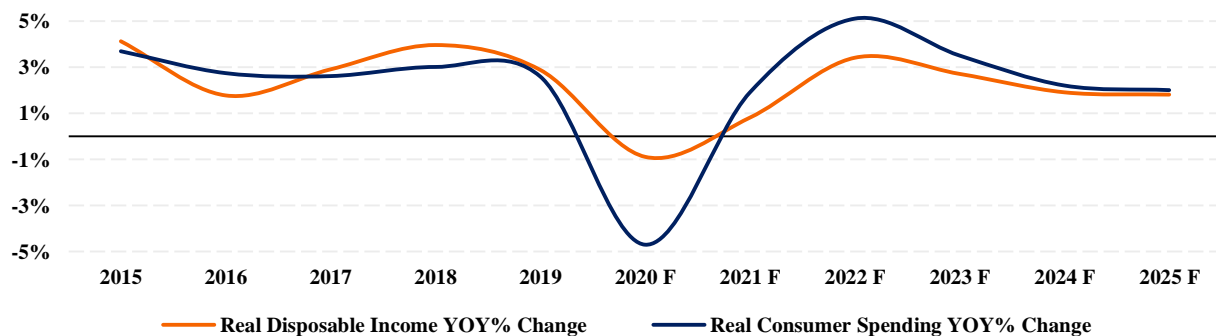


Exhibit-14: Key Drivers Change, constant prices 2012 (FRED & Deloitte, 2020)

¹⁵ United-States Economic Forecast Report by Deloitte, 2020 – was used for all economic indicator's projections, as it already considers the COVID-19 pandemic effects (Appendix-2).



Housing Starts:

The number of new houses being constructed in a year influences the demand for products and services provided by the agents in this industry. As stated, the construction activity was showing some growth during the past 5 years after the Great-Recession hit (Exhibit-15). With the current situation, the housing starts are expected to fall in 2020/21 but immediately resurging in 2022 (assuming a US economic recovery in late 2020).

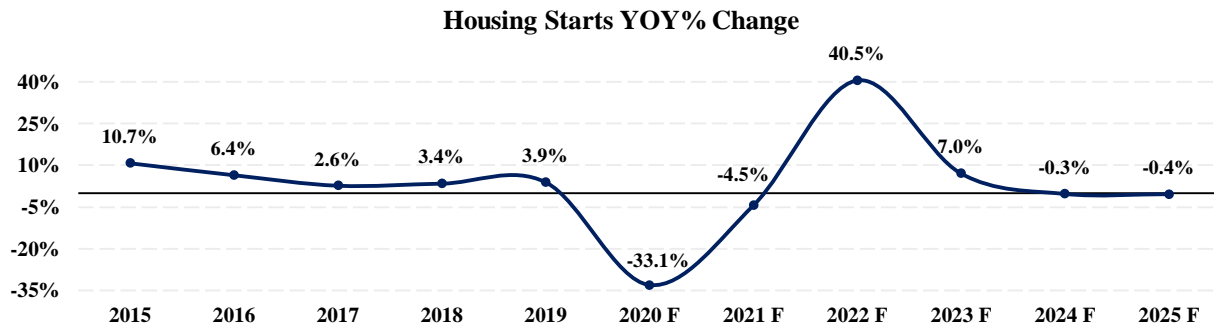


Exhibit-15: Housing Starts Development (FRED & Deloitte, 2020)

5.1.2. Industry Performance:

With higher disposable income and increasing housing units, consumers and professionals have undertaken more home improvement projects over recent years which led to a rise in industry revenues to all-time highs. Over the last six years to 2019, the industry revenue increased by a CAGR of 3.8% reaching \$184.3 billion. IBISWorld expects the industry to grow at a CAGR of 1.3% in the next 6 years (pre-COVID-19 estimate).

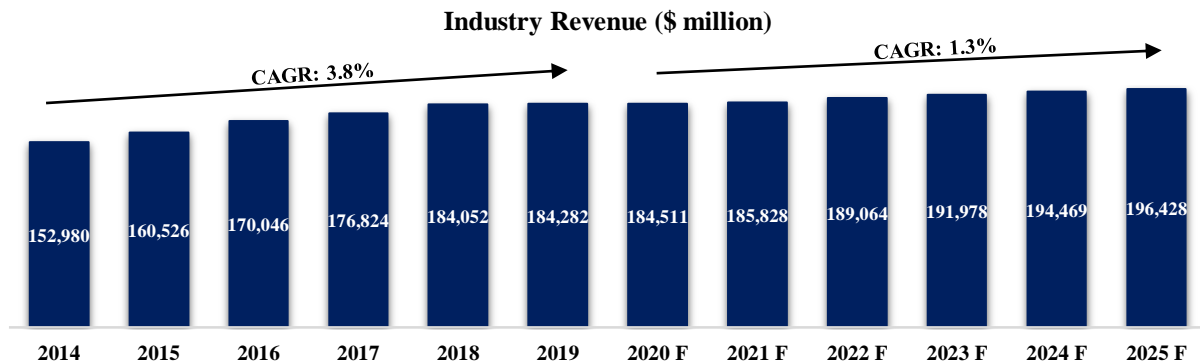


Exhibit-16: US HI Stores Industry's Revenue (IBISWorld, 2019)

5.1.3. Five Forces - Porter's Analysis

To analyze this industry, its competitive landscape, and trends, Porter's 5 forces were designed.

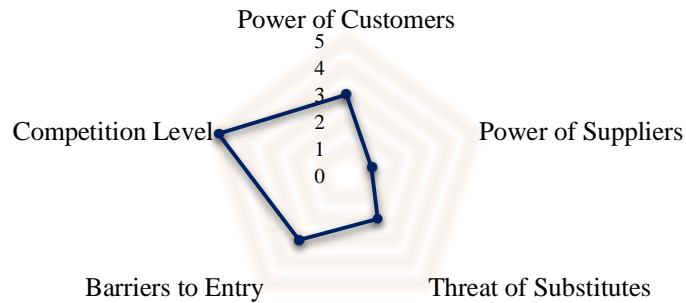


Exhibit-17: 5-Porter Analysis

Power of customers: Level of Risk – Moderate

This industry is mostly comprised of small-scale consumers (single contractors/homeowners) who cannot make pressure on prices as they lack financial strength. However, this industry has a very homogeneous product range in which operators end up competing for the product's price, making it possible for consumers to change where they buy at no cost. Therefore, the low switching costs offset weak buyer power.

Power of suppliers: Level of Risk - Very Low

Home Depot and Lowes due to their market share domination can establish favorable contracts with suppliers consolidating their purchasing power. Given the highly price competitive nature of this industry, retailers create a huge pressure on suppliers which end up absorbing the impact of rising raw material costs (e.g. fuel, lumber), as manufactures' revenue is highly dependent on these retailers.



Exhibit-18: HI Stores Industry Major Players in 2019 (IBISWorld, 2019)



The threat of substitutes: Level of Risk – Low

Nowadays, Amazon is the main threat to the current market share of the two largest HI players in US. Although home improvement products are now available on Amazon's platform this does not seem to be an industry that will suffer from the disruption that e-commerce has been presenting in other retail segments. The main reason seems to be that a lot of home improvement projects are the type of purchases that need to be done in person, people need to see/touch the products which can only be accomplished at a brick and mortar location. However, there are products such as hardware, tools, and household appliances that may face competition from Amazon as they are easier to buy remotely. Hereupon, to protect their market share, the industry's two largest retailers have also capitalized on their online platform, being now both ranked in the top 10 US e-commerce retailers by revenue according to *eMarketer*.

Barriers to entry: Level of Risk – Moderate

Consumers tend to present low brand loyalty which means that it is relatively easy for a new player to enter this market and be able to steal some market share from the existing players. However, because this industry has a high degree of market concentration given the strong dominance of the two top operators, potential retailers may find it difficult to penetrate the market. The pre-existent distribution network between operators and suppliers may discourage some operators from entering the industry since larger players benefit from economies of scale allowing them to negotiate better margins with suppliers and be more price competitive.

Competition Level: Level of Risk – Very High

The two largest industry companies, Home Depot and Lowe's generated 85% of the market revenue in 2019 making the HI industry extremely concentrated. These two companies end up competing for the strength of their brand names since the product line is practically the same among retailers. The price competitive nature of this industry leads retailers to regularly offer promotional deals to increase their consumer market. This has induced companies to offer proprietary credit and to adopt the ideology of applying advertised prices of other players.

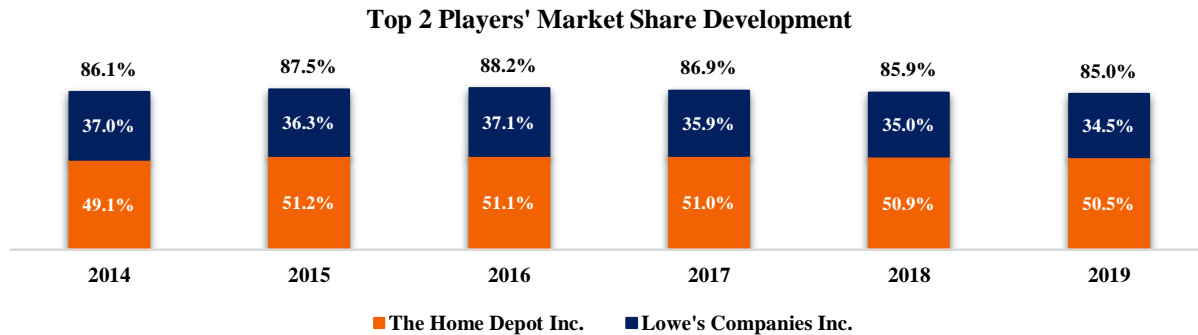


Exhibit-19: Evolution of Major Industry Players' Market Share (IBISWorld, 2019)

5.2. Outside US

The characteristics of the industry in Canada are very similar to those of the US market since the key drivers end up being the same as well as its lifecycle and concentration level. The Canadian industry's revenues in 2019 were \$17.6 billion with the largest companies, Home Depot and Lowe's, controlling about 52% of the industry. Overall, the industry increased at a CAGR of 4.1% from the five years to 2019.

Mexican home improvement market growth will remain strong, but it is not expected to be as strong as in previous years as the residential construction sector declined during the last years. During last year Lowe's ended its venture in Mexico closing all its stores in the country. While HD does not expect to grow the number of stores by much it has a history of opening, on average, four new stores in Mexico per year for the last ten years.

5.3. Current Situation: COVID-19 Pandemic

The world is going through a delicate moment due to the recent pandemic that has been forcing several countries to lockdown. The effects of this pandemic on the economy are already visible with the unemployment rate in the US rising rapidly during April (Exhibit-20). This situation brings uncertainty and the duration of this downturn, even though unknown, is critical to understand the impact that this context will have on the overall economy. Therefore, the Home Improvement sector is expected to get hurt as the housing market is certainly going to decelerate.

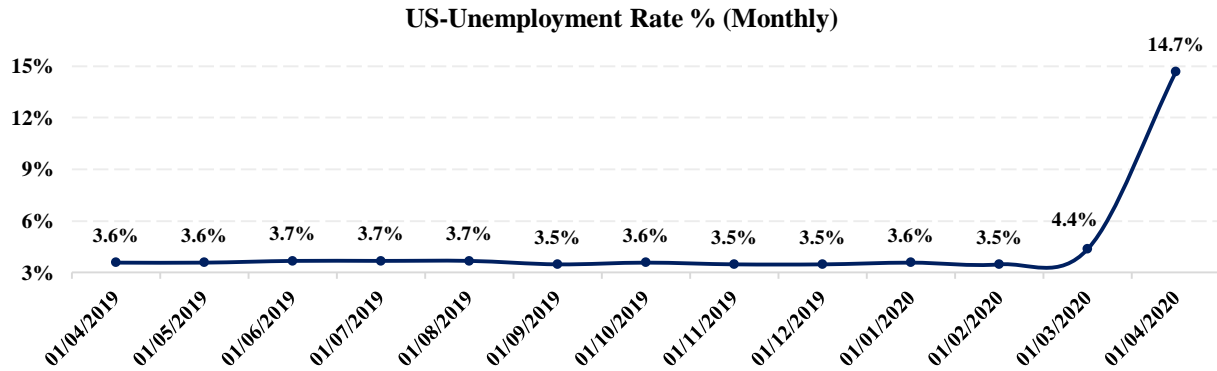


Exhibit-20: US-Unemployment Rate (FRED, 2020)

To picture a prospect from the current recession, it is important to look to the 08/09 crisis context and discuss the differences between them. First, the epicenter of the last crisis in 2008 was the depreciation in subprime mortgages hence the housing market was highly affected during those years. Additionally, today, the interest rates are low which supports both home buying and financing home improvements; also, the mortgage metrics are in better form. The FED responded immediately this time announcing in March new monetary stimulus actions to counteract the disruption provoked by the COVID-19 and increase liquidity into the markets. As part of this stimulus package, the FED drove interest rates to near-zero (Exhibit-21) and incurred in Quantitative Easing measures expanding its balance sheet by purchasing treasury and mortgage-backed securities (balance-sheet expansion verified in Exhibit-22). All these actions are entitled to keep lending rates, including mortgage rates at a low level.

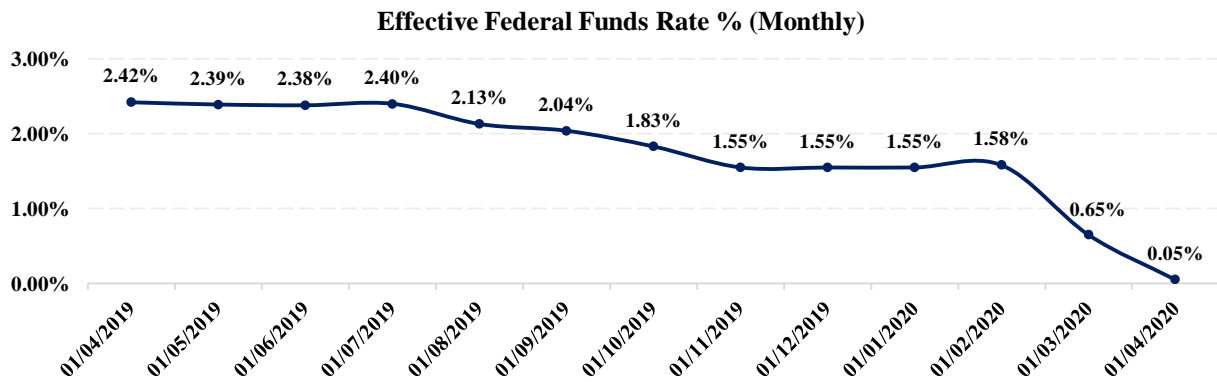


Exhibit-21: Federal Interest Rates (FRED, 2020)

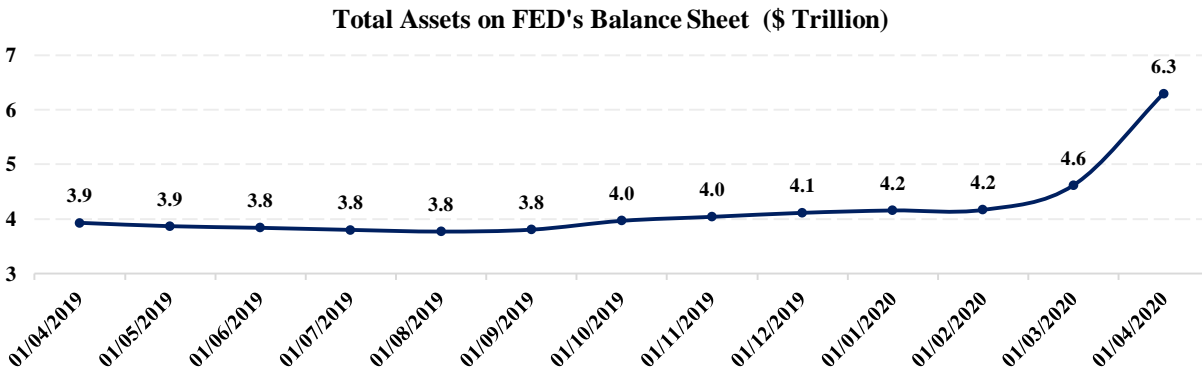


Exhibit-22: FED's Assets (FRED, 2020)

As expected, HD is sensible to an economic downturn, in fact during the 2008 financial crisis, the company showed negative comparable sales for three years straight (2007-2009) (Exhibit-23). However, the situation today has a completely distinct source and the current interest rates seem to support the housing market as well as home-related investments. Moreover, HD is a far better company than it was in 2008, partakes more market-share and it diversified its range of products becoming competitive in many key categories (e.g. house appliances) thus becoming less dependent on the housing market volatility. Thus, it is expected for the US-economy to suffer a great impact but to resurge at the end of the year as the pandemic gets controlled and the effects of the current liquidity injections materialize. Although the analysis does not predict an impact on HD's sales as strong as in the last downturn, due to the existing uncertainty, different scenarios are going to be projected in the valuation.

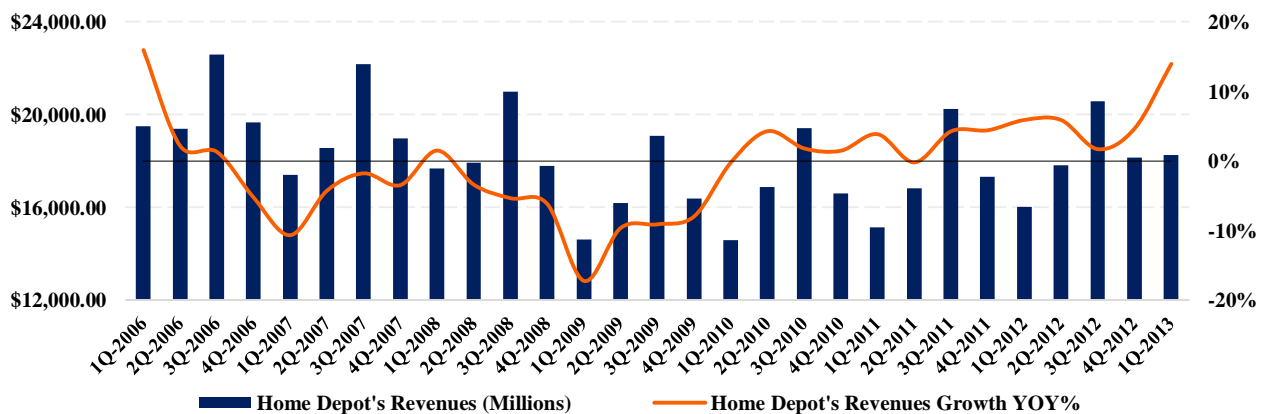


Exhibit-23: HD Revenues 2006-2013 (Reuters, 2020)



6. Home Depot – Valuation

6.1.DCF Valuation

In this section, Home Depot’s historical financial performance is analyzed followed by a discussion of the financial item’s drivers considered pertinent for the company’s valuation.

It is estimated that Home Depot reaches its steady-state stage by 2025. This assumption is based on the fact that this is a well-established company that is part of an industry in an advancing lifecycle that has shown growth trends like those of the US-economy. After the 6-year explicit-period, the growth rate of sales is estimated to stabilize as the company is anticipated to consolidate its market share in the industry and the online sales growth rates are expected to settle, therefore, with the market share solidified, an increase in the online sector would start to depict cannibalism to in-store sales. Apart from reaching the long-term sales growth, at the end of the explicit period, the company reaches a constant capital structure and CAPEX level.

6.1.1. Revenue Analysis

6.1.1.1.Historical Performance

Home Depot presented a solid growth in its revenues with a CAGR of 5.6% during the last 6 years reaching net sales of \$110.2 billion in fiscal-year 2019. This past sales trend makes evident not only a favorable macroeconomic plan but also that the company's strategic efforts have been captivating consumers. The total sales in 2019 showed a slowing rate on its growth due to a deceleration on key economic indicators for the industry.

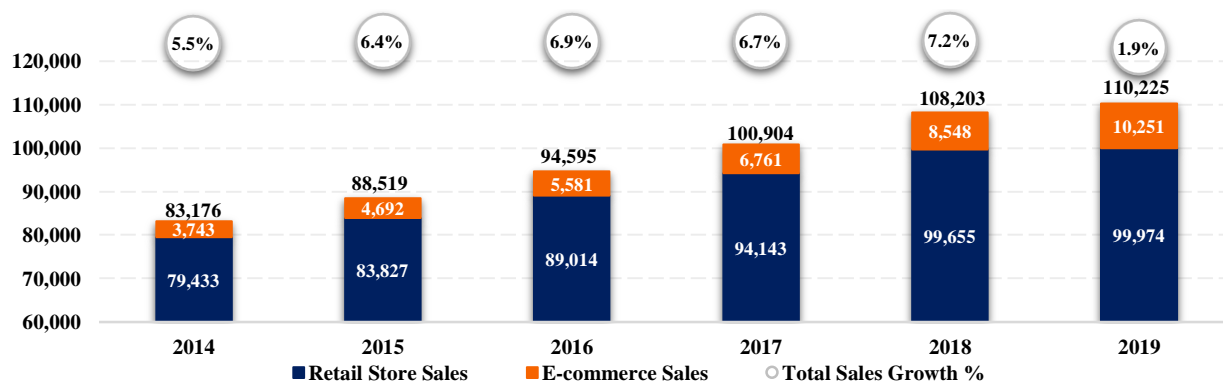


Exhibit-24: Evolution of HD’s Sales (HD-AR, 2020)



E-commerce sales are expected to keep driving total sales growth as the platform has shown a boom in users, increasing by 20% during 2019. As indicated in Exhibit-25, the sales in stores have grown just by 0.3% revealing a natural tendency for online sales to start being cannibalistic to in-store sales.

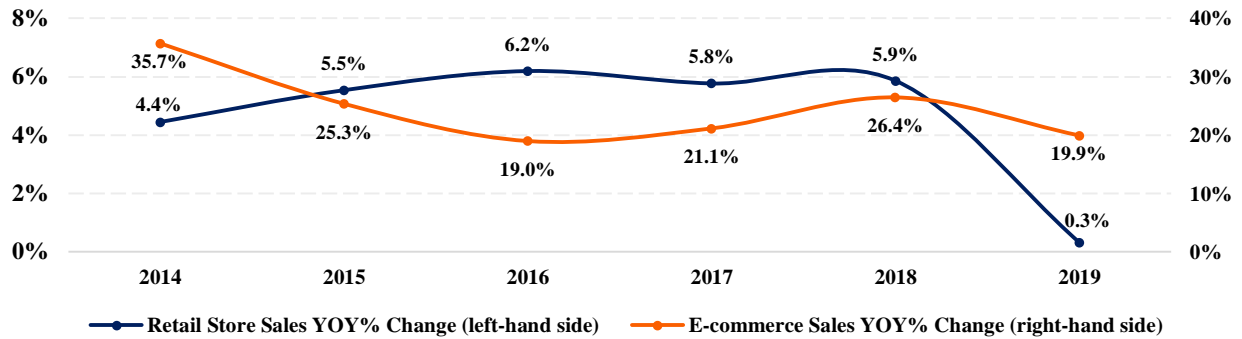


Exhibit-25: Growth Rate of HD's Sales (HD-AR, 2020)

Although HD also presents its sales by geography the sales outside the US account for only 8% of total sales (\$8.8 Billion). This proportion should be maintained since the company, despite currently opening stores in Mexico the number of new stores expected is residual. Regarding revenue forecasting, the sales are treated as a whole because the company does not differentiate the sales amount between Canada and Mexico (only Outside US) thus making the forecast by region susceptible to mistakes.

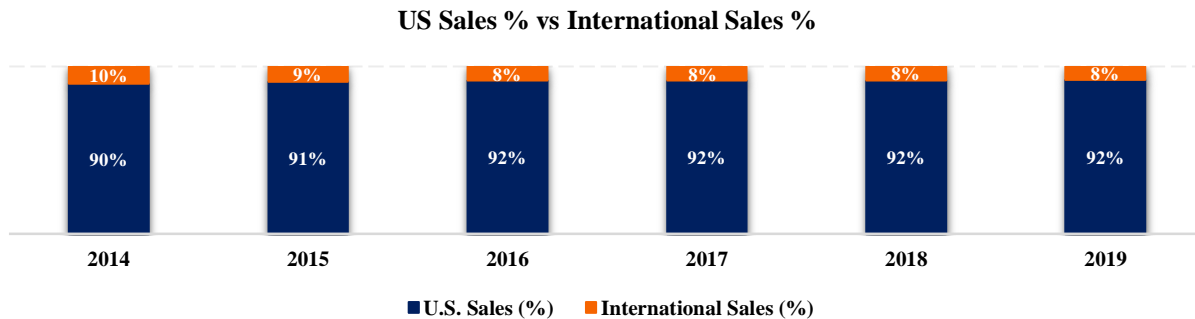


Exhibit-26: HD's Sales by Geography (HD-AR, 2020)

6.1.1.2. Forecast Methodology

The sales of HD depend considerably on the state of the housing markets and home improvement sector, which are, reliant on the general economic conditions of the US-economy. As



abovementioned, the current novel COVID-19 is expected to impact the HD's business, bringing extra thought to its sales forecast.

Due to the difficulty of forecasting the company's online/offline sales brought by the current situation, since it is normal for individuals to start buying online in a greater proportion, in the forecast of sales it was decided to analyze the number of stores that the company expects to open in the future compared to sales by square foot, considering the total sales in this step (regardless if they are online or in-store). Historically, the number of open stores has been stable with the company opening an average of 4 stores per year in the past, on the other hand, sales per square foot have been increasing, reaching their peak in the last fiscal year (Exhibit-27).

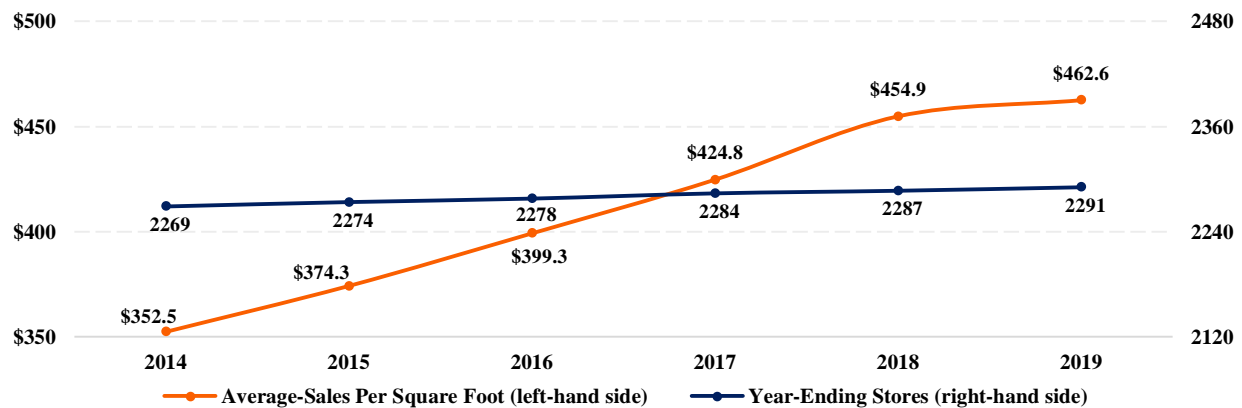


Exhibit-27: Evolution of HD's Average Sales-per-square-foot (current prices) and Stores Count

To predict HD's future sales per square foot two forecasting techniques were used: regression and qualitative analysis. The first focuses entirely on historical patterns of sales with macroeconomic indicators while the second contemplates the analyst's reasoning on how the sales might change in the future.

6.1.1.2.1. Regression Analysis

The HD's financial performance relies on the state of the economy thus the patterns between the company's sales and relevant key economic indicators were measured through linear regressions. After the discussion on the "COVID-19" section, the base-case scenario¹⁶ assumes that the virus

¹⁶ Two other scenarios were computed. Please refer to "Scenario Analysis" Section.



outbreak is going to provoke an enormous hit in the economy but it will recover in late 2020 as the pandemic is taken under control (“V” type of recession).

When analyzing the past patterns (2003-2019) between several economic indicators and HD’s performance it was proved that Real GDP growth, Housing Starts growth, Unemployment-rate growth, and Real Consumer Spending growth were the main drivers for HD’s sales per square foot growth-rate in the past. Afterward, the relationship between these four indicators and past sales per square foot was regressed in real terms (inflation-adjusted) leading to four different linear regressions proven to be statistically significant at a 10% significance-level (Appendix-1).

Deloitte-US Economic Forecast (2020) Report was used to access the projections of economic indicators for the future (Appendix-2) thus allowing to define the sales per square foot growth rate forecasts for the company based on the relationships regressed. The final growth was computed by averaging the four outcomes computed in Appendix-3. The prospects for the real growth rate of sales per square foot based on this process are shown in Exhibit-28.

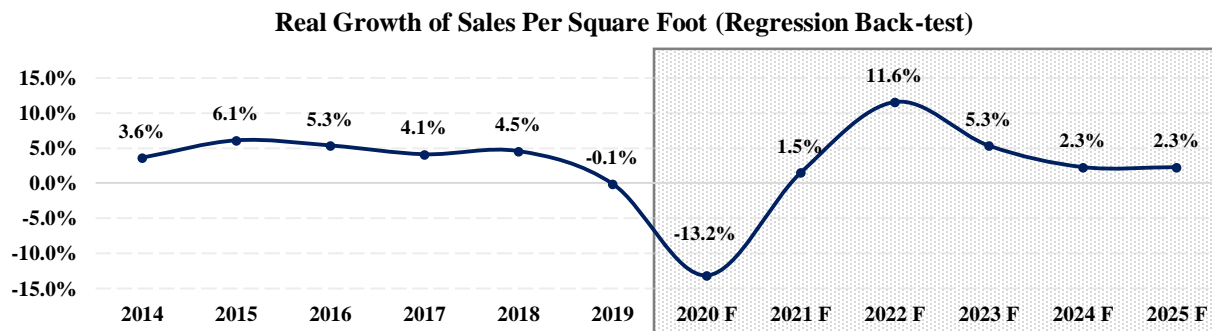


Exhibit-28: Back-test Real growth of HD’s Sales-per-square-foot, constant prices 2012

6.1.1.2.2. Qualitative Analysis

The future growth rates of square foot sales estimated by the statistical models described serve as a “starting point” for the projection of sales. It would be naïve to use these exact numbers as they assume a “future like the past”, which is not ideal for a company that has been growing its market-share through the years, thus, it is not expected that it is as dependent on economic indicators as in the past. Since the company is in a mature life-cycle industry, sales are not expected to grow as past growth rates, nevertheless, the company still expects to present some organic growth on its sales as it hopes to attract more market share from the current strategic efforts on its online platform. Taking this into account, the values calculated in the statistical model have been smoothed out



(Exhibit-29). To compute the sales per square foot for the future the growth rates on Exhibit-29 were yet adjusted by adding the expected inflation rates present in Appendix-2 (CPI development).

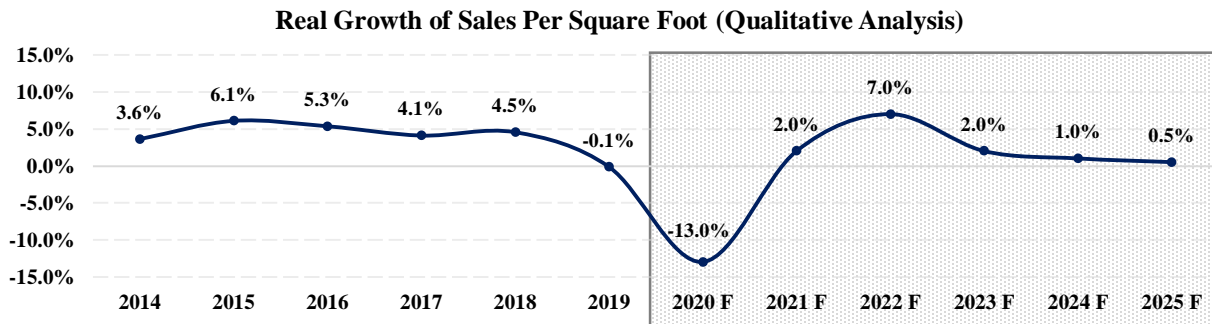


Exhibit-29: Qualitative-Analysis Real growth of HD's Sales-per-square-foot, constant prices 2012

HD is increasing the number of stores in Mexico, therefore, when analyzing the past trend of new stores, it is safe to estimate HD to open 3 stores per year during the explicit period which will also be an important driver in the company's total sales. Having the two drivers estimated the Revenue development is represented in Exhibit-31.

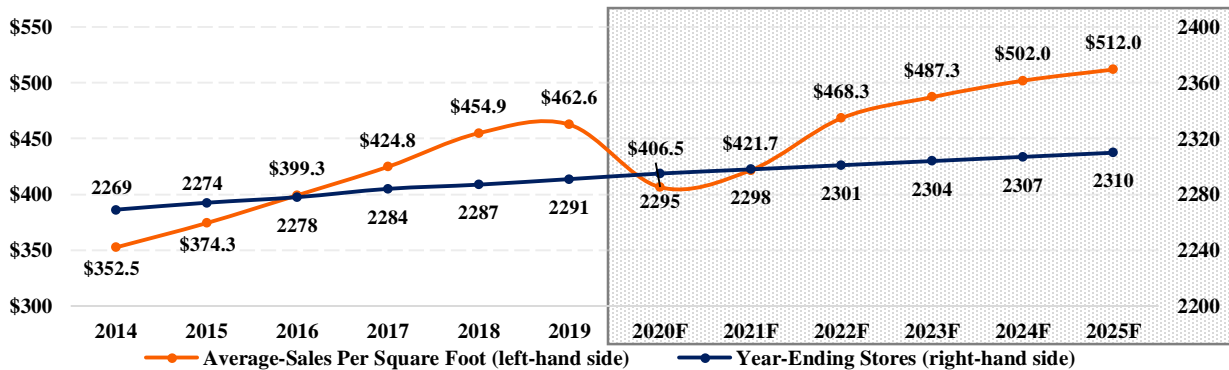


Exhibit-30: Development of HD's Average Sales-per-square-foot (current prices) & Stores Count

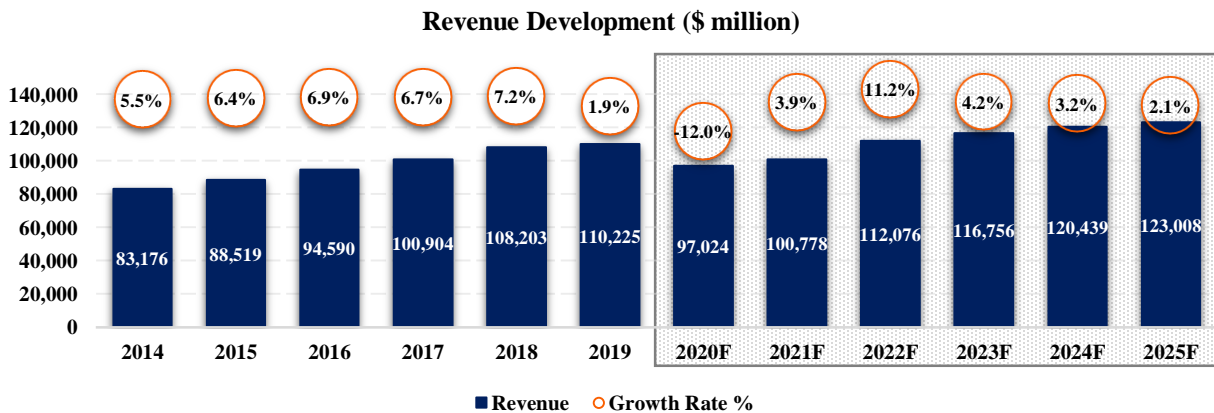


Exhibit-31: HD's Revenue Development

6.1.2. Operating Expenses: COGS and SG&A

To forecast HD's COGS and SG&A, the historic of these items as a percentage of sales was examined and projected for the future. COGS are mainly recognized from the cost of products and raw materials purchased from different suppliers and the cost of installation and shipping services the company makes available. During the last fiscal year, the COGS accounted for around 66% of sales representing a gross margin of 34% being this percentage consistent in the past. COGS as a percentage of revenues are expected to increase (growth-factor added) in 2020 as the company expects some pressure driven by increasing its product mix and from shrinking¹⁷ which is expected to be dilutive for gross margins in the next year (information on HD Investor's Conference of 2019). Although that pressure is estimated to dissipate with COGS moving towards the historical average through the forecasted period. SG&A costs are projected to continue the same decreasing path after 2020's peak investment-year according to the HD's management, stabilizing on 2022 onwards.

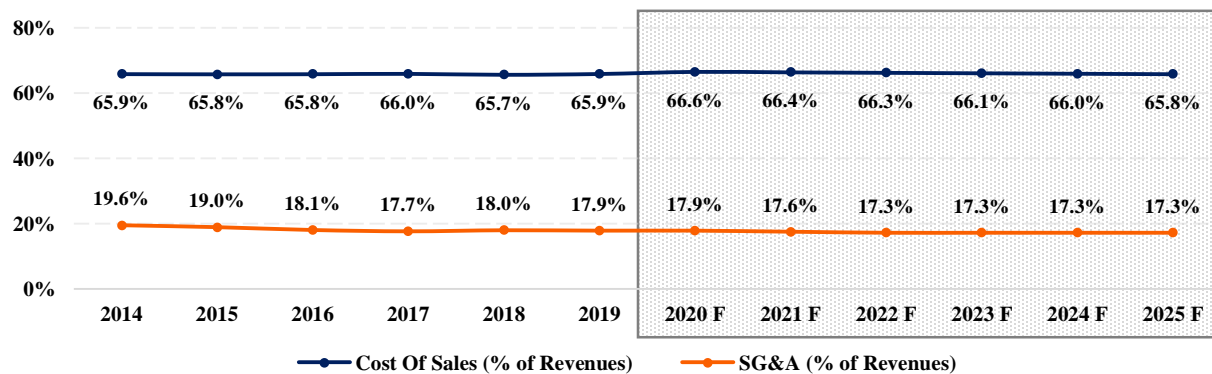


Exhibit-32: Projection of COGS and SG&A expenses

6.1.3. Profitability Analysis

HD's EBITDA has grown at a CAGR of 7.3% over the last 6 years, which is higher than its gross-profit annual growth indicating the company's tendency to reduce its SG&A as a percentage of sales. The HD's Annual-Report states that the firm is sustaining expenses control on the effort of creating the lowest cost platform in home improvement which explains this decline on SG&A. Hereupon, HD managed to improve its EBITDA-margin from 14.6% to 16.2% (Exhibit-33).

¹⁷ Organized Crime (product-theft) costs the HI industry \$777,877 per 1 Billion in sales (Source: National-Retail-Federation).

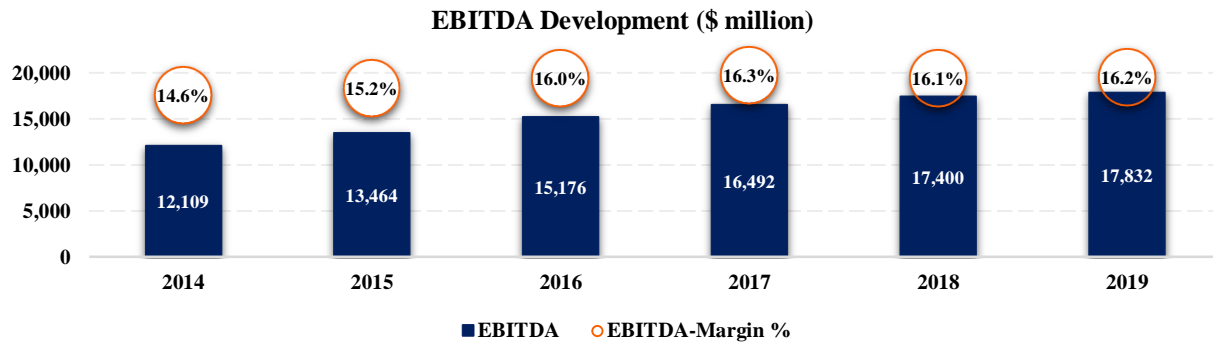


Exhibit-33: Historical EBITDA-Margin

Over the last years, the profitability margin remained stable at around 16%, which proves the company's ability to earn superior margins than its main competitor and the average of its TIER-I¹⁸ peers.

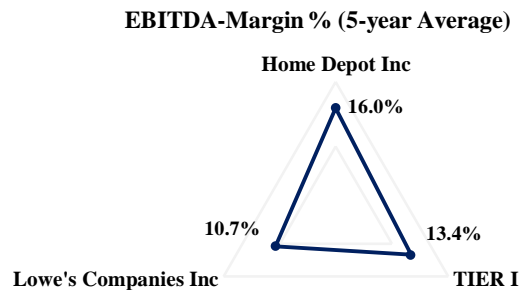


Exhibit-34: EBITDA-Margin Comparison (Datastream, 2020)

According to HD's investor's conference (2019), the company assumes the EBITDA-margin to be pressured in 2020 as it represents the peak investment year from the \$11 billion program (*ONE-HOME-DEPOT*) that is expected to be dilutive to margins rate. After 2020, this level of investment is expected to decrease as the benefits of this investment materialize. Thereby, the EBITDA-margin is anticipated to upsurge mainly due to the abovementioned reduction of SG&A as a percentage of revenues, following a similar CAGR of the last 6 years (Exhibit-35).

¹⁸ For TIER-I explanation refer to "Relative Valuation" section.

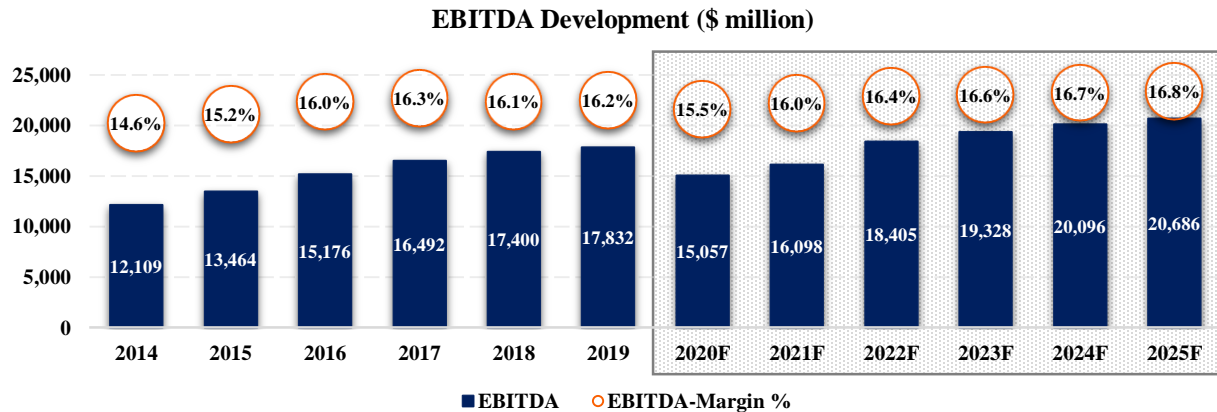


Exhibit-35: HD's EBITDA-Margin Development

6.1.4. Net-Earnings

To the operating income, interest expenses, interest taxes shield, and income taxes were added to reach Net-Earnings. The forecasted interest expenses were estimated as a percentage of the previous year's financial debt, while tax shields were calculated by multiplying the selected tax rate by the planned debt interest.

Concerning the choice of the tax rate for the future, income taxes were divided between recurrent and non-recurrent taxes paid in the past. In this division, it was noted that the company repeatedly pays an additional percentage related to extra state income taxes and for that reason the Effective Recurrent Operations Tax Rate (discarding the non-recurrent amount) was calculated and used, which equals 23.5%¹⁹ (Appendix-4).

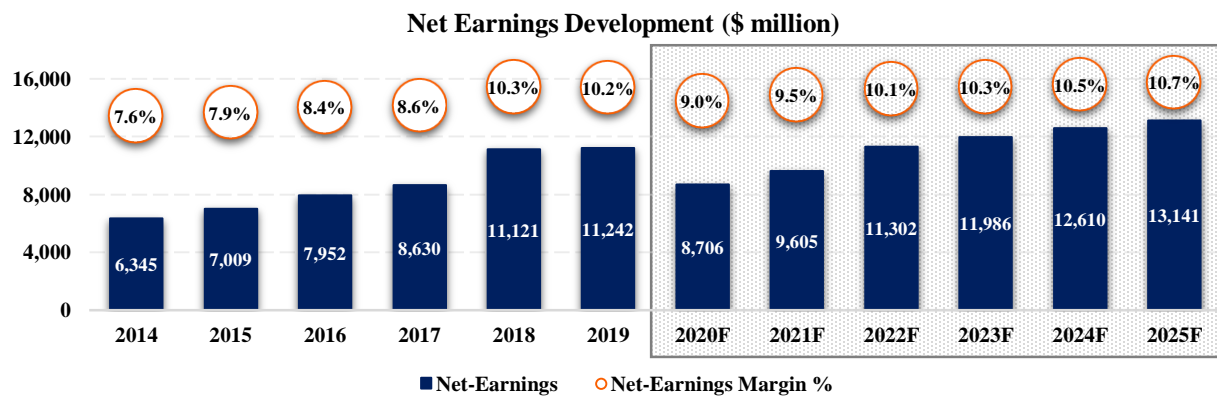


Exhibit-36: HD's Net-Earnings-Margin Development

¹⁹ US Statutory Tax-Rate being 21%.

6.1.5. Net Property Plant and Equipment, D&A and CAPEX

In the fiscal year 2019, Net PP&E²⁰ consisted of 44.5% of the company's total assets, with this value remaining constant over the past 6 years. As the PP&E of HD is associated with the number of stores owned by the company, the value of Net PP&E per square foot was measured for the past. Exhibit-37 shows that the value of Net PP&E per square foot has been increasing as at the end of 2016 the company started to invest in 150 new distribution centers to boost the deliveries' pace, and thereby, sustaining deliveries on the same/next day practiced by the company (*ONE-SUPPLY-CHAIN* 5-year investment-plan). This growth factor corresponds to the CAGR from 2017 to 2019 and it is expected to last until 2022, the year when the investment-plan is completed. The Net PP&E's future value was then estimated according to new stores opened in the future.

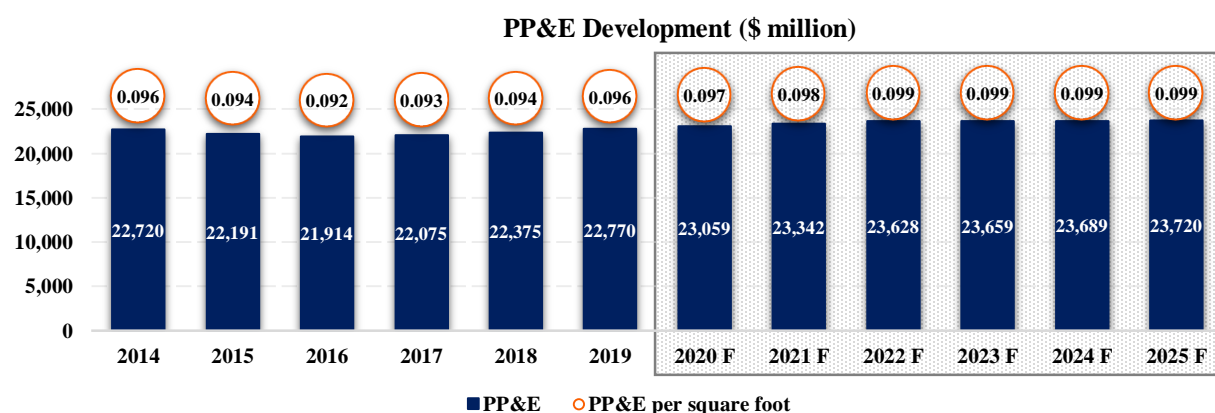


Exhibit-37: HD's Net PP&E Development

During the fiscal year 2019, the company adopted the transition to ASC-842²¹ which requires all leases to be recognized on the balance sheet. For operating leases specifically, ASC-842 requires recognition of Right-of-use assets and a corresponding lease liability upon lease commencement. For the forecast of ROU assets, a similar approach to Net PP&E was conducted (Appendix-5).

For the amount of depreciation for the future, depreciation as a percentage of Net PP&E was computed. As indicated in Exhibit-38, this percentage has been increasing and because there is no information regarding future changes in depreciation, the percentage of 2019 was kept constant

²⁰ Property under capital leases embedded in this value.

²¹ ASC-842 – New Lease Standards adopted by US-GAAP published by FASB (similar to IFRS 16).



over the projected period. The total D&A for the future also includes amortizations related to ROU assets – ASC-842 (Appendix-5).

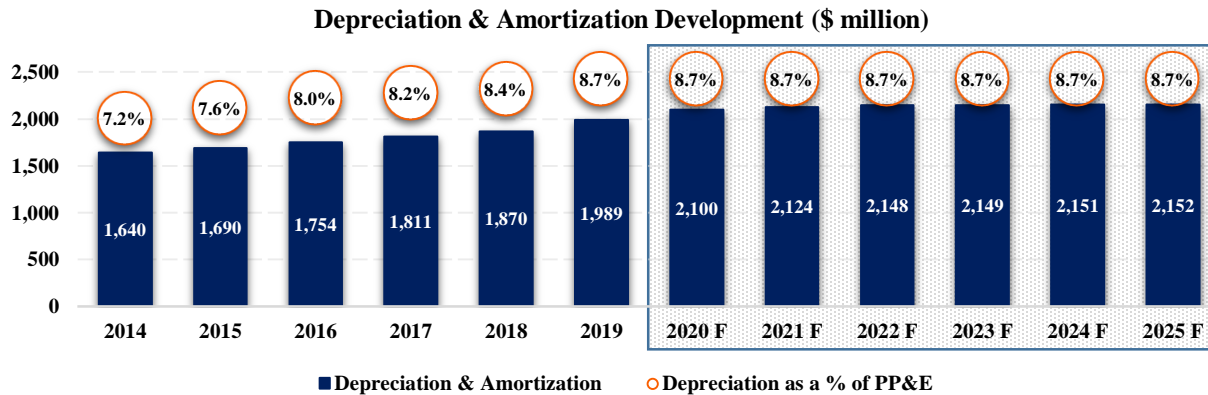


Exhibit-38: HD's D&A Development

Regarding HD's Capital Expenditures, the company in the last three periods has presented, on average, a Maintenance-CAPEX that corresponds to 87% of the total Capital Expenditures, indicating that the company, as it is already in a mature stage, seems to prioritize returns to shareholders rather than invest in expanding its business. This is in line with the (lower) number of new stores that the company has been opening explained by a nearly saturated US home improvement market. For the future, the Expansion-CAPEX corresponds to the new stores that the company intends to open and to the investments it expects to continue to make in its supply chain to place the company's distribution centers at maximum efficiency contributing to reach 90% of US population with the same/next-day delivery. At the end of the explicit period, the CAPEX/Depreciation ratio starts to stabilize at a value closer to 1, which highlights that the company is approaching steady state.

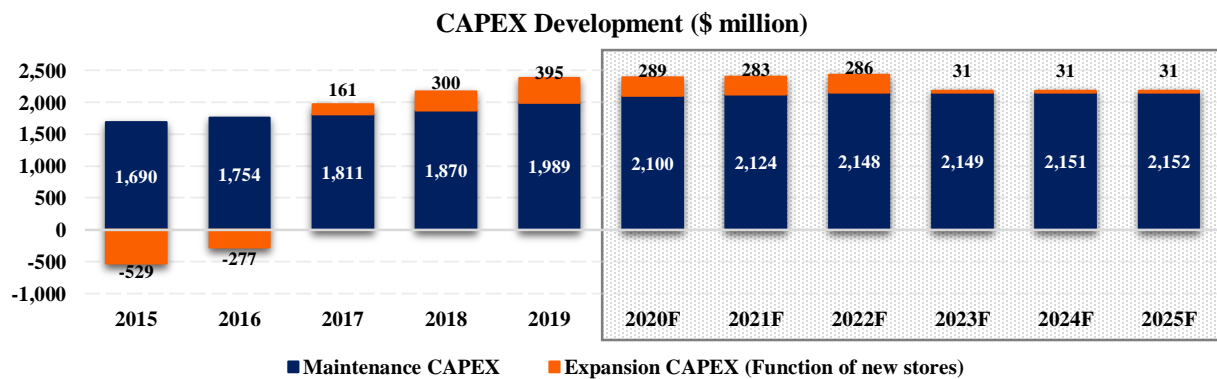


Exhibit-39: HD's CAPEX Development



6.1.6. Net Working Capital

Home Depot is reliant on its inventory management efficiency since it sells a wide range of products to different types of customers and so it has a high amount of capital tied to its inventories. The company's operating efficiency can be evaluated by its Cash Conversion Cycle (CCC²²). The CCC indicates the amount of time between the firm spending cash on inventory and receiving cashback from the sale of inventory. First, DIO measures the average number of days it takes for the company to sell its inventory. The DSO indicates the number of days it takes for the company to obtain cash from account receivables after a sale. Finally, DPO²³ measures the number of days that the company takes to pay to its suppliers.

From Exhibit-40, one notices that the company has been presenting a high amount of DIO, spending about 73 days to turn its inventory. However, Home Depot can convert its expenses back into cash in 20 days (2019) which is a decent value when considering its inventory levels. Moreover, the HD's top competitor, Lowe's presented in 2019 a higher CCC of 24 days which reinforces the HD's solid working capital management.

The DIO is forecasted to decrease as the returns from the company's investments in new technology regarding inventory management systems (*FIRST* phones) and the current *ONE-SUPPLY-CHAIN* are expected to materialize improving the company's inventory turnover during the explicit period. Regarding DIO and DPO, future values were kept constant since they have been quite stable, concluding that values are at maximum efficiency already, hence some extra pressure on suppliers would be unlikely.

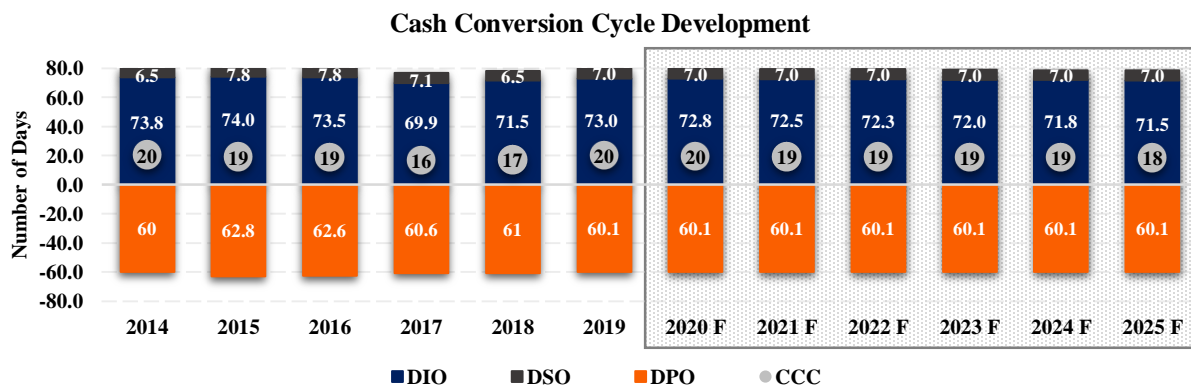


Exhibit-40: HD's CCC Development

²² CCC = Days Inventory Outstanding (DIO) + Days Sales Outstanding (DSO) – Days Payable Outstanding (DPO).

²³ Accrued Liabilities were added to Accounts Payables due to their similarity.



The future levels of Inventory, Accounts Receivables and Accounts Payable (plus accrued liabilities) were calculated based on the Exhibit-40 information and the already estimated future Sales and COGS. Regarding the other components²⁴ of net operating working capital, their projection was made as a percentage of sales.

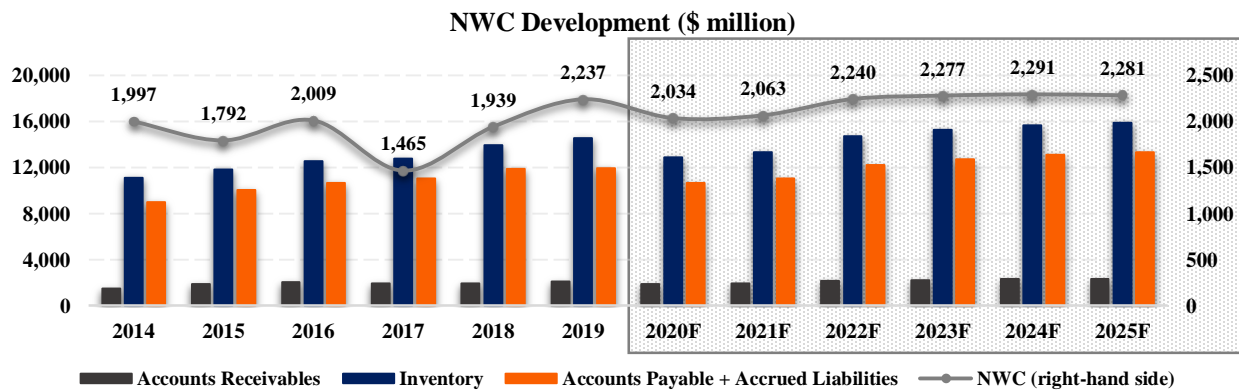


Exhibit-41: HD's NWC Development

6.1.7. Dividend Analysis

First, it is important to analyze the HD's ability to generate value since it coincides with the sustainability of the company's future dividend growth. Exhibit-42 shows that HD has been more effective in its investments compared to its benchmark (top-competitor). *ONE-HOME-DEPOT* (multi-year strategy implemented during 2018), led to impressive progress in the company's ROIC, which ended up distancing itself from Lowe's.

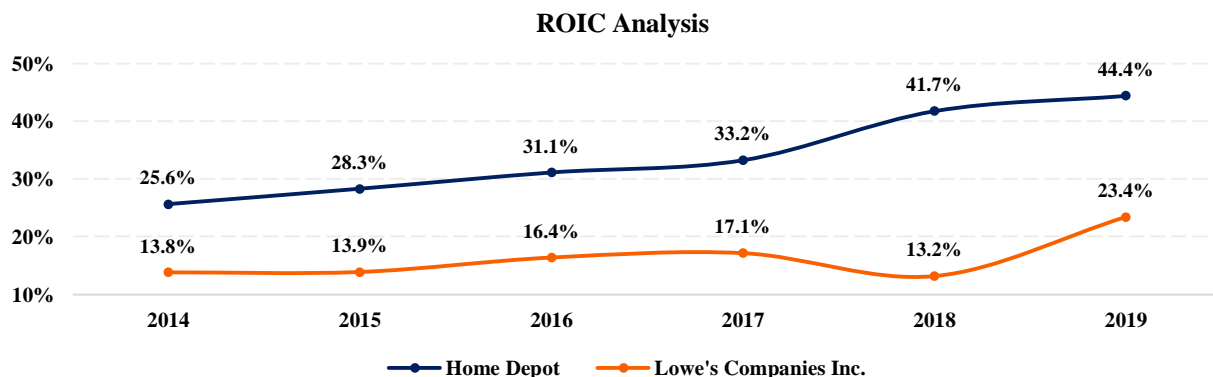


Exhibit-42: HD vs Lowe's ROIC (HD-AR, 2019)

²⁴ Other Current Assets, Deferred Taxes & Income Taxes Payable and Deferred Revenue.

HD's cash-flow generation and ROIC have shown a clear rising path, as a result, the company has been able to consistently return a higher percentage of earnings to shareholders either through cash dividends or share buybacks. In the past, HD's EPS have shown solid growth which allowed to sustain the growth of cash dividends. Dividends per share have increased at a CAGR of 25% over the past 5 years asserting itself as a dividend-stock in the retail industry. In 2019, HD reached a dividend-payout-ratio of 52% (established dividend-stocks standard ratio) signaling that DPS growth for the future should slow-down.

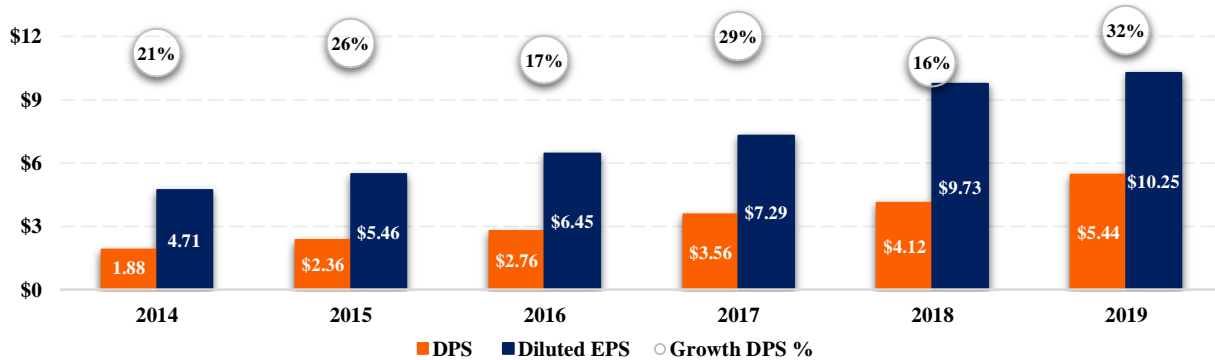


Exhibit-43: Historical EPS vs DPS (HD-AR, 2019)

HD for 2020 has already set a DPS of \$6 while stated it would stop its accelerated share repurchases (ASR) plan for the year indicating that even in a recession the company has as a priority to increase its dividends in the future. Therefore, the dividend growth rate is forecasted to converge to a sustainable growth-rate equal to the perpetual growth rate. Apart from the dividend payout ratio, the forecasted cash-dividends conform to the future cash-flow generation of the company and its Net-Debt-to-EBITDA maximum amount level²⁵ (company's policy).

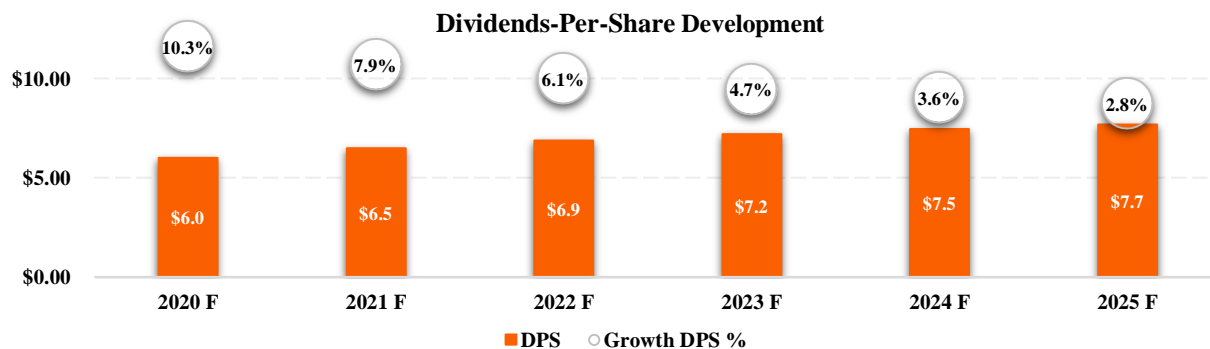


Exhibit-44: DPS Development (HD-AR, 2019)

²⁵ HD's policy ensures that Net-Debt-to-EBITDA should not surpass 2.



6.1.8. FCFF

With the previous estimates, the FCFF was computed. In 2019, the value decreased sharply mainly due to a one-off event related to the impact of ASC-842 which ends up not impacting the valuation. In 2020, FCFF is affected by the low sales expected by the economic impact on the company. Finally, during the explicit period, the FCFF as a percentage of sales is expected to reach a stable value in the final years as a result of the decrease in expansion CAPEX and the slight improvements of the company's cash conversion cycle.

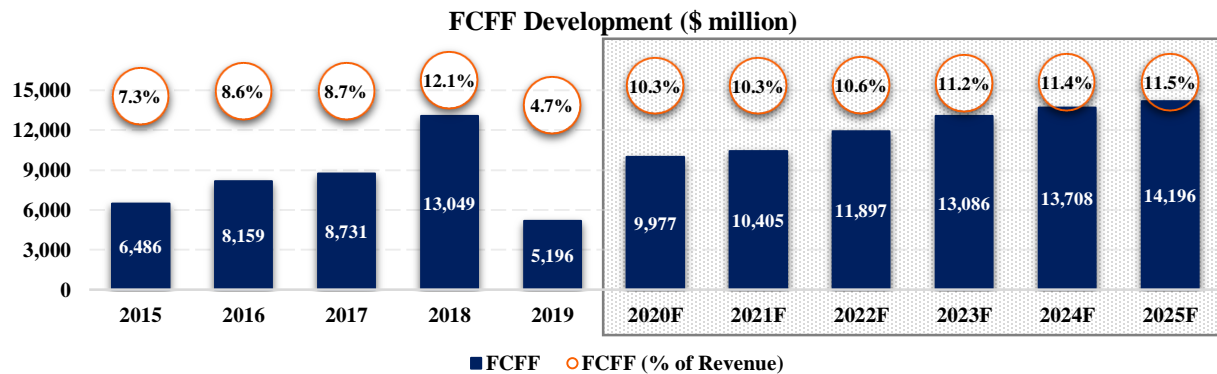


Exhibit-45: HD's FCFF Development

6.2. Discount Rate

As mentioned, the correct discount rate that incorporates the riskiness of each of the company's claimholders is the WACC, therefore, the cost of capital is going to be used to discount the FCFF of the company.

6.2.1. Cost of Equity

The CAPM was used to calculate the company's cost of capital considering the following components: risk-free rate, market risk premium, and beta.

Firstly, for the risk-free rate, the 10-year government bond of US (0.73%) was considered the best proxy since it is a highly liquid and, in theory, default-free (since FED controls the printing of US-currency).



As a result of the current recession, the FED decided to cut interest rates to near zero, consequently, the risk-free rates dropped creating a downward effect on the discount rate used. However, given the current uncertainty brought by COVID-19, it is known that today, the market investors require higher returns for the risk taken by investing in stocks. Therefore, to adjust for today's market perceptions the MRP of 6.5% was used (value published on 31/03/2020 by KPMG).

For the final variable, the levered beta (1.03) was retrieved from Eikon-TR²⁶. Using the true beta in this case (without starting from the unlevered beta of the industry) is accurate since HD's stock is highly traded, therefore the regressed beta ends up showing low levels of standard errors. Still, the value of the unlevered beta of HD's peers (1.03) was compared with its unlevered beta (0.94) proving that HD presents a lower operational risk than its peers. Finally, to smooth out the beta for its tendency to revert to the market-mean the Blume's drift adjustment was applied to the raw beta, resulting in an adjusted-beta of 1.02.

6.2.2. After-Tax Cost of Debt

Since HD has bonds outstanding, it is possible to calculate the effective rate that the company pays for its debt directly using market values. Thus, the weighted average of the yields to maturity on these bonds was computed (2.2%) in Appendix-6. The fact that HD holds investment-grade bonds reinforces that this rate corresponds to the promised rate of return to debtholders on the company. To incorporate the interest tax shield the Effective Recurrent Tax Rate was used.

6.2.3. Capital Structure

The weights used on WACC should be based on market values since this discount rate measures the cost of issuing debt/equity at market values.

For the Market Value of Equity, the market capitalization (\$ 238.02 billion) for HD stock was calculated at 30/04/2020.

²⁶ Eikon-TR beta levered: regressed the company's trailing 5-year stock prices, on a monthly basis, relative to the S&P500.



The company's debt structure consists of bank debt, bonds, and lease obligations. Concerning the market debt value, HD does not present any long-term bank debt, only a revolving line, and other three facilities with a duration of less than one year. For this debt as well as for any obligation with less than one year the market value coincides with the book value. For the long-term debt, the market value of the company's bonds outstanding trading in the market was retrieved from Eikon-TR while the market value of operational and capital leases liabilities was assumed to be the same as book value²⁷. In the end, a debt market value of \$48.06 billion was reached. Since the company's capital structure has been stable and there is no information about any change near in the future, the current debt-to-total-capitalization of 16.8% was used.

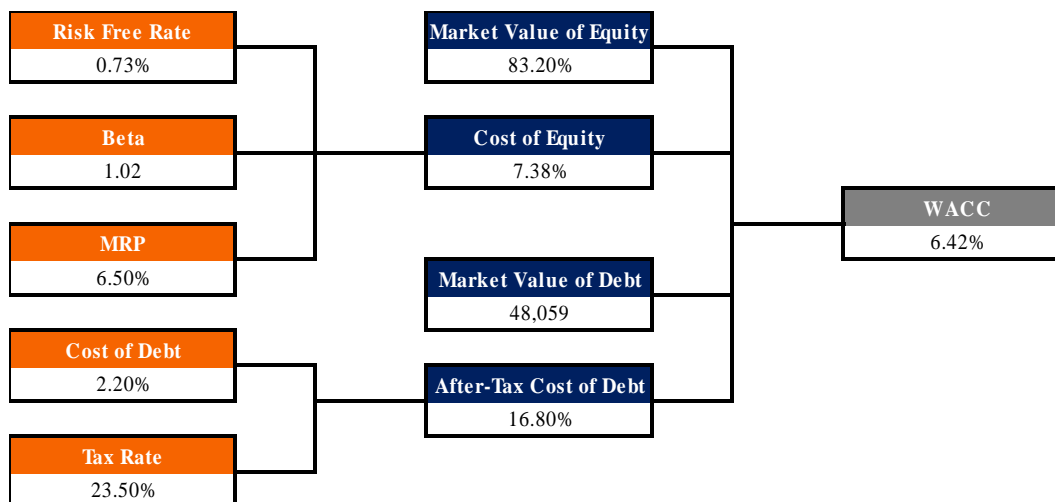


Exhibit-46: WACC Inputs

²⁷ Since following the ASC-842 the company is obliged to compute the present value of Leases based on market figures.



6.3. Perpetual-Growth Rate

Finished the explicit period (2025), the model reaches a steady-state Operational Cash Flow growth rate of 2.8% considered as the perpetuity growth. This rate is above the long-term inflation rate for the US (2%) indicating that overall the company is expected to show a positive real long-term growth. This assumption goes in line with the value creation metrics of the company during the explicit period. The company presented a ROIC higher than its WACC over the explicit period which reinforces the HD's capability of continuing to generate value to its shareholders in the future. Also, the perpetual growth rate should be less than the nominal growth rate of the economy since the industry growth has been slower than the GDP in the past years and the same trend is expected in the future. The assumption for the perpetual growth-rate is tested in the sensitivity analysis section.

6.4. Target Price

Home Depot's Equity Value, as of December of 2020, was computed at \$283.51 billion based on the company's net financial debt subtracted from the Enterprise Value. With 1.07 billion shares outstanding, HD's target price is forecasted at \$263.9. Considering that HD already announced a cash dividend of \$6.0 for 2020 (after 30/04), the final year shareholder return is expected at 22% leading to a BUY-Recommendation.

<i>(\$ million)</i>	
Enterprise Value 2020	315,923
(-) Net Debt 2020	-32,413
Equity 2020	283,510
#Shares Outstanding	1,074
Evaluated Share Price	263.9
Current Share Price (30/04)	\$ 221.6
Cash Dividend Per Share 2020	\$ 6.0
Estimated Return	22%

Exhibit-47: HD's Target Price

6.5.Sensitivity Analysis

The terminal value consists of 80% of the Enterprise Value thus the two most important drivers of the company's share price valuation end up being the rate that the company will grow in perpetuity and the discount rate used for the company's cash flows (WACC). Thus, to validate the reliability of the DCF model assumptions, a sensitivity analysis on these two inputs was performed.

The company's target share-price was estimated under variations of ± 20 p.p. of terminal growth and ± 10 p.p. of WACC. Finally, Exhibit-48 shows that the target share price is in a range (solid line square) under the current investment recommendation.

		Terminal Growth						
		2.20%	2.40%	2.60%	2.80%	3.00%	3.20%	3.40%
WACC	6.12%	248.1	260.4	274.0	289.3	306.6	326.2	348.7
	6.22%	241.5	253.1	266.0	280.4	296.6	314.9	335.8
	6.32%	235.2	246.2	258.4	271.9	287.1	304.2	323.7
	6.42%	229.2	239.6	251.2	263.9	278.2	294.3	312.5
	6.52%	223.5	233.4	244.3	256.4	269.8	284.9	301.9
	6.62%	218.0	227.4	237.8	249.2	261.9	276.1	292.0
	6.72%	212.8	221.8	231.6	242.4	254.4	267.8	282.7

Exhibit-48: Target Share-Price (\$) Sensitivity Analysis

6.6.Scenario Analysis

This analysis was structured to measure the impact of different recession shapes on Home Depot's target share price.

In the "COVID-19" section, the analyst's optimistic view of the recent recession was explicated and, therefore, the base-case scenario (most likely to occur) considered in the model was a V-shape recession²⁸ indicating that the US economy will fall sharply but will be able to start recovering at the end of 2020 as soon as the pandemic is controlled and in light of all the monetary and fiscal policies adopted. However, as also explained in that section, all this uncertainty should be tested through different scenarios. To analyze the impact of different economic scenarios, two hypothetical cases were considered, the U-type and the L-type recession. For the scrutiny of these

²⁸ Economic indicators' forecast for "V", "U" and "L" type of recession presented in Appendix-2, Appendix-7 and Appendix-8, respectively.



two extra scenarios in the company, the same methodology presented in the "Revenue Analysis" section was used. As for the base-case scenarios, the economic indicators' forecast of the two different were retrieved from the *United-States Economic Forecast Report* (Deloitte) - Appendix-7 and Appendix-8.

If COVID-19 incites a longer, U-shaped recovery, this would mean that the economy will only start to improve by mid-2021 while 2022 sees a strong recovery. This could happen if it takes longer to control the pandemic which would cause a greater challenge to the solvency of US companies and consequently greater unemployment. This scenario yields a target share-price of \$239.2, therefore no change in the current investment recommendation occurs (BUY).

The worst-case scenario will be for the pandemic outbreak to turn into an L-shape recession. Although less likely, it is possible that not able to control the virus or discover a vaccine brings year-long shutdowns causing a recession that will last until 2022 or more. The worst-case scenario results in an expected target share-price of \$229.6, resulting in an expected return of 6% thus changing the investment recommendation to HOLD.

Recession Shapes - Home Depot's Average Sales per Square feet Scenarios

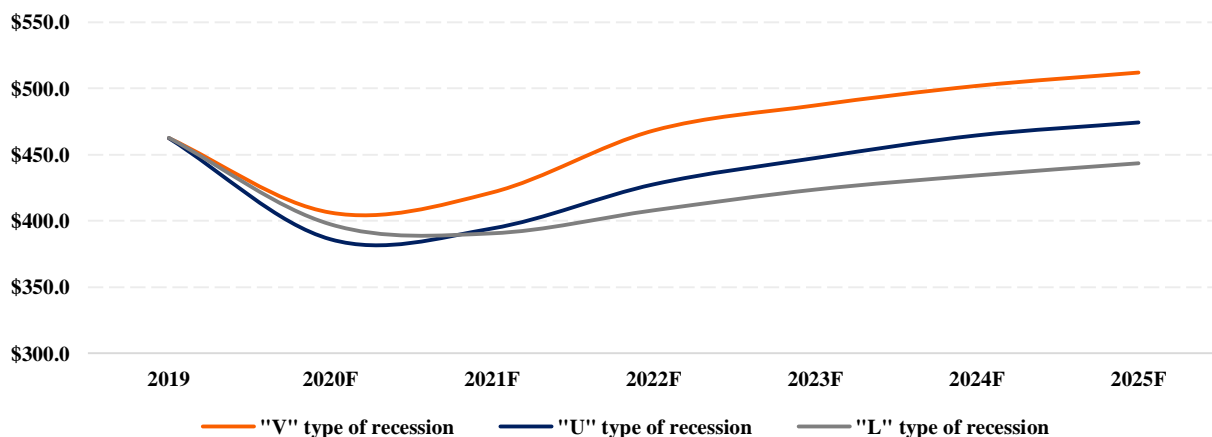


Exhibit-49: Economic Scenarios on HD's Sales per square feet outcome



7. Relative Valuation

A relative valuation was performed to triangulate the outcome from the intrinsic-valuation method approach (DCF) permitting to infer how the market is perceiving the comparable companies to Home Depot.

7.1.PEER-Group

First, to identify the company's PEER-Group, one started by retrieving from Eikon-TR all the companies belonging to the same sub-industry of HD (Specialty-Retail) since companies in this industry end up being influenced by similar drivers, as well as presenting a similar sensitivity to the economic cycle. Also, the geographic factor was considered, since HD only operates in North America, only companies operating in this geographical area were considered as those end up having the same operational risks.

As a next step, the clustering method (Appendix-9) was performed to restrict the analysis to companies that presented an average 5-year revenue growth and average 5-year ROIC similar to the Home Depot standards. Revenue growth supports the idea that we are comparing companies in the same growth-phase (lifecycle) while a similar ROIC level ensures that companies have a similar capacity of value creation, therefore, an equivalent prospect on preserving its revenue growth further. These two factors are based on the conviction that investors recognize (and pay accordingly) previous returns but also if those are sustained in the future. After this process, the PEER-Group ended up with 8 companies.

Lastly, the 8 selected companies were divided into two TIERS. TIER-I restrains for companies with operational metrics similar to HD, thus specificities as the number of stores, inventory turnover, sales per employee, and sales per square foot were taken into consideration (Appendix-10).

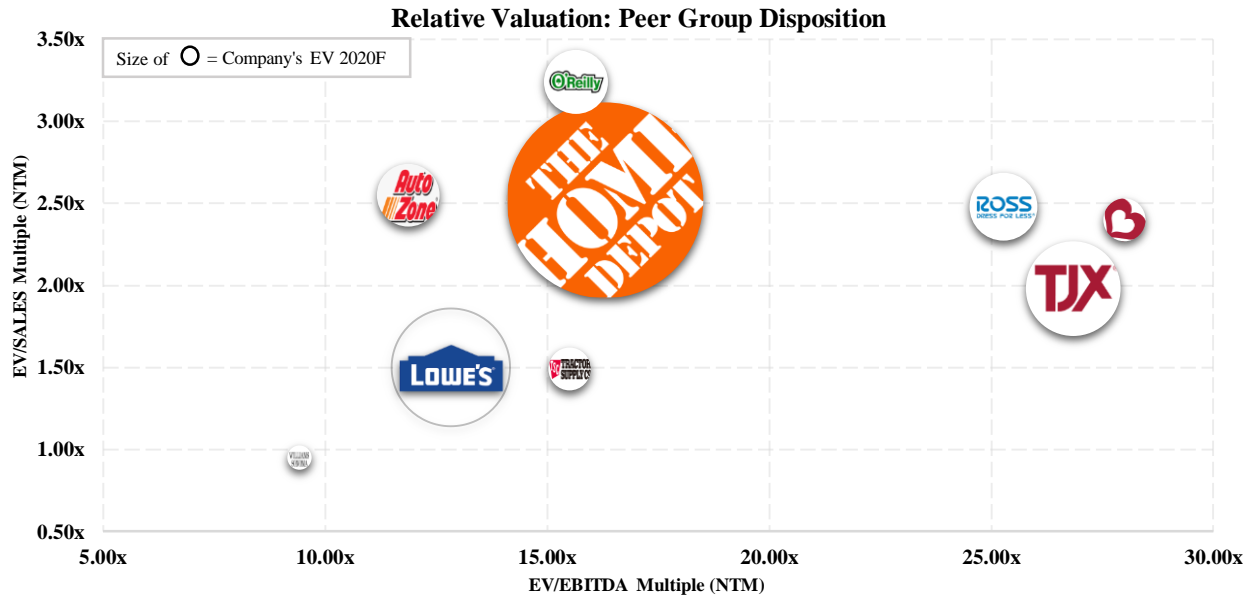


Exhibit-50: Forward-looking EV Multiples Disposition

7.2.Multiples

The relative valuation was computed using the EV/Sales; EV/EBITDA and Price/Earnings-ratio multiples. The EV multiples are considered more accurate as the P/E ratio can be distorted by the company's capital structure as well as other non-operating factors.

It is usually recommended to use forward-looking multiples however in this case both historical (2019) and forward multiples were calculated. This is because a change is expected as a result of the current economic situation, and some of the estimates²⁹ for forward-multiple might not be fully adjusted for the COVID-19 impacts. Also, the elements of the HD's underlying performance metrics are forecasted to decrease in 2020 which causes a natural decrease in the share price reached under the forward-looking multiples.

²⁹ Forward estimates were retrieved from Eikon-TR.



	Metric Period	EV/EBITDA		EV/Sales		Price/Earnings	
		LTM (2019A)	NTM (2020F)	LTM (2019A)	NTM (2020F)	LTM (2019A)	NTM (2020F)
Tier I	Mean	15.94x	20.15x	2.24x	2.30x	25.30x	32.17x
	Median	16.41x	20.46x	2.00x	2.23x	25.66x	35.21x
Tier II	Mean	13.86x	15.49x	1.85x	1.80x	23.93x	28.57x
	Median	13.54x	12.53x	1.87x	1.86x	20.94x	20.39x
Overall	Mean	14.72x	17.65x	2.04x	2.10x	24.61x	29.65x
	Median	14.42x	15.65x	1.92x	2.22x	23.68x	22.93x

Exhibit-51: Computed multiples for TIERS

	Metric Period	EV/EBITDA		EV/Sales		Price/Earnings	
		LTM (2019A)	NTM (2020F)	LTM (2019A)	NTM (2020F)	LTM (2019A)	NTM (2020F)
Tier I	Mean	\$264.6	\$282.5	\$229.4	\$207.8	\$264.8	\$260.8
	Median	\$272.4	\$286.8	\$205.3	\$201.5	\$268.5	\$285.5
Tier II	Mean	\$230.1	\$217.1	\$189.4	\$162.8	\$250.4	\$231.6
	Median	\$224.8	\$175.6	\$191.4	\$167.6	\$219.2	\$165.3
Overall	Mean	\$244.3	\$247.4	\$209.4	\$190.0	\$257.6	\$240.4
	Median	\$239.4	\$219.4	\$196.5	\$200.6	\$247.8	\$185.9
Range	Min	\$224.8	\$175.6	\$189.4	\$162.8	\$219.2	\$165.3
	Max	\$272.4	\$286.8	\$229.4	\$207.8	\$268.5	\$285.5

Exhibit-52: Share Price – Relative Valuation

From Exhibit-51, it is noticed that the forward multiples are mostly higher, demonstrating a clear expected deterioration in the 2020 performance metrics of the companies (sales, profitability, and earnings) in relation to the numerator. Also, TIER-I multiples valuation seems more representative thus presenting a range similar to the DCF-valuation (\$207.8-\$282.5). On the other hand, TIER-II presents lower multiples considering its minor operational dimension compared to HD.

Overall, the limitations of this approach discussed in the initial section added to the current market fluctuations that affect the forward multiples request some reservations regarding this analysis, however, this method comes to corroborate the price reached by the DCF-method.

8. Comparison with IB Report

To endorse the share price reached in this dissertation a comparison with the price of the report published on the 1st of April 2020 by Credit Suisse is performed.

In February, in light of a strong fourth-quarter for the company added to the macroeconomic indicators being in good shape, CS changed its recommendation from neutral to outperform³⁰. In April 2020, after accessing the consequences of COVID-19, the company decided to decrease its stock price target from 255\$ to 215\$ resulting in a HOLD-Recommendation.

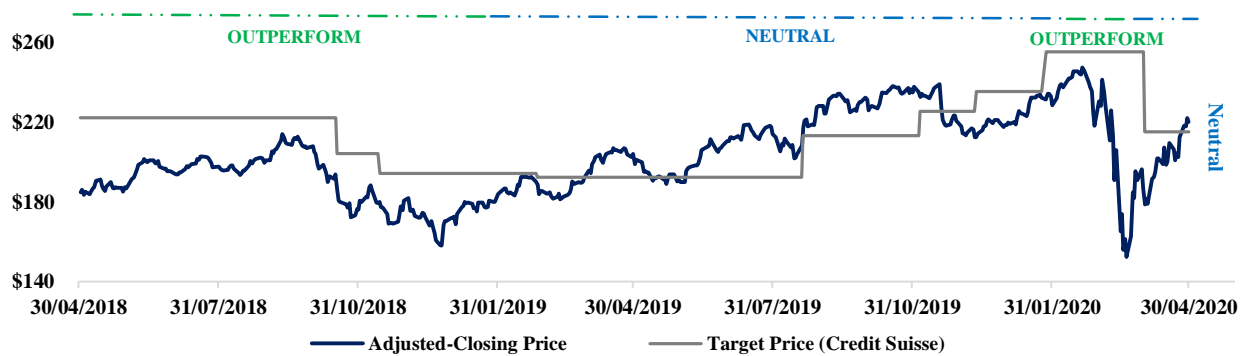


Exhibit-53: HD's Share-price vs Credit Suisse Recommendations

The bank uses a hybrid method between relative and intrinsic valuation, in which it forecasts the normalized EPS for 2021 and multiplies it by the expected Price-Earnings ratio. This method presents limitations since it only incorporates the financial reality of the company in the next two years and, still, by using the P/E ratio, the price reached ends up being affected by the current fluctuation in the market which explains the lower target share-price compared to the thesis.

Although there are points that can be discussed as the analysts' view on the consequences of the current recession. CS does not expect the company's sales to be affected in the first quarter due to the favorable industry outlook before COVID-19. Nonetheless, the bank forecasts that Home Depot business will start to be hit by the second quarter. Also, CS agrees that the current crisis will not have an impact on the company as in the 08/09 financial crisis therefore bullish in a "V" recovery. Finally, by comparing the next two-year financials one concludes that this thesis expects the current recession to bring a higher swing in the business in the next couple of years.

³⁰ Analogous to a BUY-Recommendation.



9. Conclusion

For the main purpose of this study, valuing the share price of Home Depot, intrinsic and relative valuation methods were used.

First, given the current uncertainty, the assumptions of the intrinsic-valuation model feature three possible recession curves for the future being the most optimistic chosen as the base-case. Therefore, the DCF-method resulted in a share price of \$263.9, and after analyzing the sensitivity of its key assumptions a range of \$244.3-\$287.1 is adequate. When using comparable company analysis through the TIER-I group result in a share price range of \$229.4-\$264.8 for the last twelve-month data and \$207.8-\$286.8 concerning the forward twelve-month estimates.

With a target share price of \$263.9 (DCF-method), compared to the current share price of \$221.6 (30/04/2020), the investor has an upside potential of 22% leading to an ultimate BUY-Recommendation.

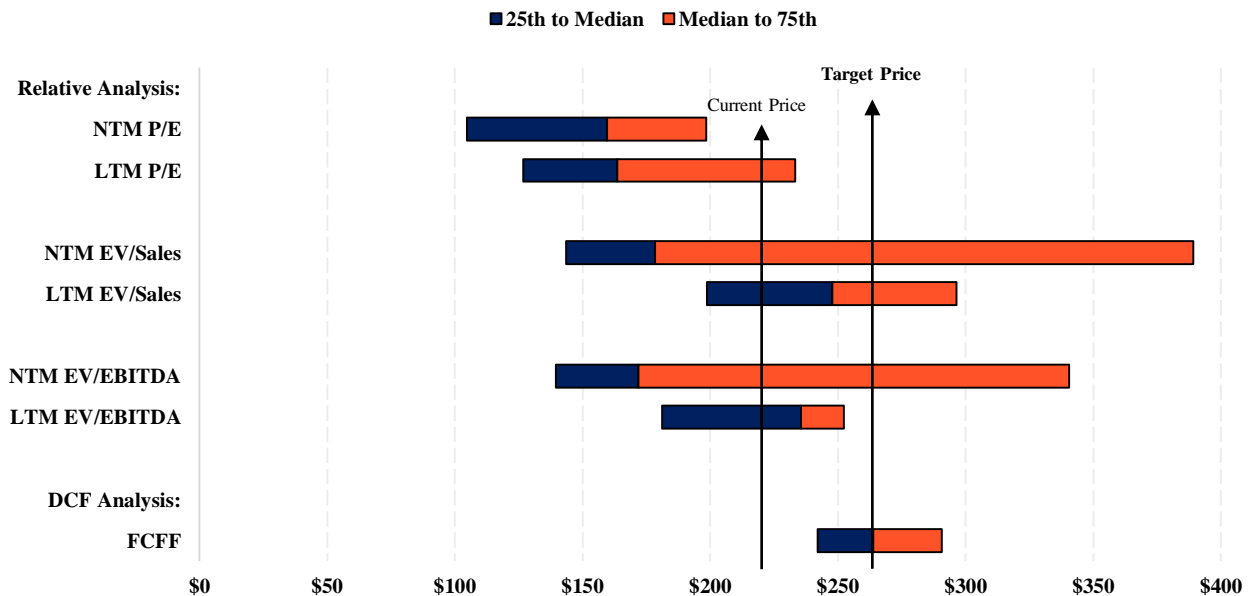
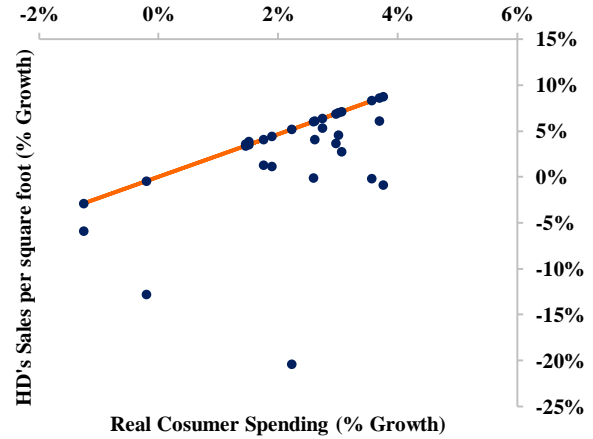
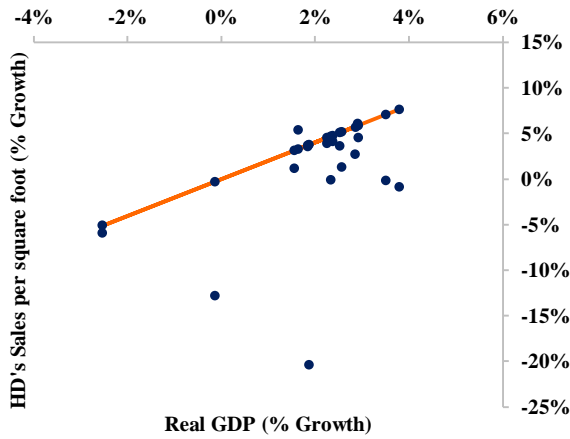
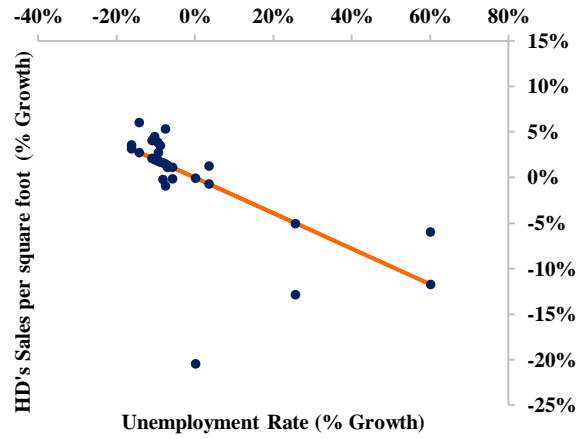
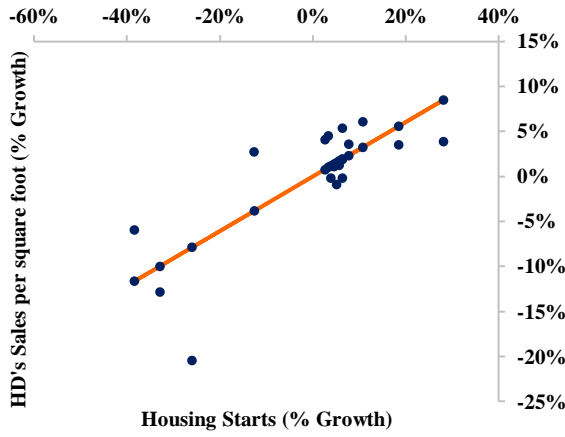


Exhibit-54: Valuation Methods' Range



10. Appendix

Appendix-1: Relationship between four key economic drivers and sales per square foot



Appendix-2: V-shape recession - Economic indicators forecast. (Deloitte, 2020)

The COVID-19 recession

	History						Forecast					
	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
% change, year over year, unless noted otherwise												
GDP and components												
Real GDP	2.5	2.9	1.6	2.4	2.9	2.3	-8.3	2.9	7.6	3.3	1.5	1.7
Real consumer spending	3.0	3.7	2.7	2.6	3.0	2.6	-4.7	1.9	5.1	3.5	2.2	2.0
Real consumer spending, durable goods	7.2	7.5	6.1	6.9	6.3	4.7	-21.0	-3.8	6.0	3.6	2.3	2.6
Real consumer spending, nondurable goods	2.6	3.4	2.4	2.5	3.0	3.3	-2.7	3.5	5.2	3.0	1.8	1.8
Real consumer spending, services	2.4	3.2	2.3	2.0	2.5	2.1	1.3	1.7	1.8	2.0	2.1	2.1
Real investment in private housing	3.8	10.2	6.5	3.5	-1.5	-1.5	-33.7	0.4	43.2	8.6	0.6	0.8
Real fixed business investment	7.2	1.8	0.7	4.4	6.4	2.1	-24.6	5.9	19.4	7.4	2.0	2.3
Real inventory accumulation	86	132	23	32	48	65	-207	-10	150	95	32	23
Real exports of goods and services	4.2	0.5	0.0	3.5	3.0	0.0	-3.7	3.5	3.4	3.0	3.2	3.1
Real imports of goods and services	5.0	5.3	2.0	4.7	4.4	1.0	-5.1	4.3	4.5	3.9	3.6	3.3
Real government consumption and investment	-0.9	1.9	1.8	0.7	1.7	2.3	1.7	-0.1	0.2	0.4	0.4	0.4
Real federal government consumption and investment	-2.6	-0.1	0.4	0.8	2.9	3.5	2.5	-1.0	-0.4	-0.4	-0.3	-0.3
Real state and local government consumption and investment	0.2	3.2	2.6	0.6	1.0	1.6	1.2	0.4	0.6	0.8	0.8	0.8
Prices												
Consumer price index	1.6	0.1	1.3	2.1	2.4	1.8	1.0	1.7	3.8	2.0	2.2	2.3
Chained price index for personal consumption expenditures	1.5	0.2	1.0	1.8	2.1	1.4	0.7	1.5	3.7	2.0	2.2	2.2
Chained GDP price index	1.8	1.0	1.0	1.9	2.4	1.8	1.4	1.8	4.4	2.0	2.0	2.3
Employment cost index	2.1	2.1	2.2	2.5	2.8	2.8	0.9	0.2	5.5	4.3	3.2	3.0
Labor markets												
Average monthly change in employment (thousands)	214	240	210	188	192	170	-212	-88	382	207	73	78
Unemployment rate (percent)	6.2	5.3	4.9	4.3	3.9	3.7	6.5	7.5	4.9	3.8	3.6	3.4
Employment to population (percent)	59.0	59.3	59.7	60.1	60.4	60.8	59.3	58.3	59.7	60.2	60.1	60.0
Income and wealth												
Real disposable personal income	4.1	4.1	1.8	2.9	4.0	3.0	-0.9	0.8	3.4	2.7	1.9	1.8
Net household wealth (US\$ trillions)	88	91	97	105	106	119	92	101	110	101	97	96
Personal saving rate (percent of disposable income)	7.3	7.6	6.8	7.0	7.7	8.0	11.2	10.3	9.1	8.6	8.4	8.3
After-tax corporate profits with corporate profits with inventory valuation and capital consumption adjustments	5.4	-2.8	-2.4	-0.3	3.4	-0.2	-42.4	10.6	48.6	3.1	-6.1	-1.5
Housing												
Housing starts (thousands)	1,000	1,107	1,178	1,209	1,250	1,298	868	829	1,165	1,247	1,243	1,238
Stock of owner-occupied homes (millions)	134	135	136	137	138	140	141	141	142	143	144	146
Interest rate on 30-year fixed-rate mortgages (percent)	4.17	3.85	3.65	3.99	4.54	3.94	3.59	3.40	3.45	4.22	5.25	5.45
Foreign trade												
Current account balance, share of GDP (percent)	-2.1	-2.2	-2.3	-2.3	-2.4	-2.3	-1.8	-1.5	-1.9	-2.2	-2.4	-2.7
Merchandise trade balance (US\$ billions)	-727	-737	-735	-797	-878	-862	-791	-885	-1,034	-1,131	-1,228	-1,347
Relative unit labor costs (index, 2008=100)	89.3	100.4	102.7	104.2	102.6	106.2	115.1	107.7	102.6	103.5	103.2	100.4
Financial												
Federal funds rate (percent)	0.13	0.14	0.39	0.97	1.78	2.16	0.42	0.13	0.13	0.75	1.56	1.63
Yield on 10-year Treasury note (percent)	2.54	2.14	1.84	2.33	2.91	2.14	1.22	1.56	1.99	2.50	3.39	3.59
Government												
Federal budget balance, unified basis (share of GDP, percent)	-2.9	-2.6	-2.9	-3.5	-3.9	-4.5	-6.2	-7.8	-6.5	-5.6	-5.6	-5.7

Sources: Historical data: US government agencies and Oxford Economics. Forecast: Deloitte, using the Oxford Global Economic Model.



Appendix-3: Average of Linear Regression's outcomes on real terms.

<i>Regression - Sales per Square Foot Growth</i>						
Backtest - Square Foot Sales (Base-Case Scenario)	2020	2021	2022	2023	2024	2025
Housing Starts Driver Growth	-10.0%	-1.4%	12.3%	2.1%	-0.1%	-0.1%
Unemployment Change Driver Growth	-15.1%	-3.0%	6.8%	4.4%	1.0%	1.1%
Real GDP Driver Growth	-16.7%	5.8%	15.3%	6.7%	3.0%	3.4%
Real Consumer Spending Driver Growth	-10.9%	4.4%	11.9%	8.1%	5.1%	4.7%
<i>Average Growth of Sales Per Square Foot</i>	<i>-13.2%</i>	<i>1.5%</i>	<i>11.6%</i>	<i>5.3%</i>	<i>2.3%</i>	<i>2.3%</i>

Appendix-4: Home Depot's Tax Breakdown – Effective Recurrent Tax Rate

<i>Tax Breakdown (\$ million)</i>	2014	2015	2016	2017	2018	2019
Reconciliation Taxes Table						
Combined Federal, State and Foreign Statutory Rate	35.0%	35.0%	35.0%	33.9%	21.0%	21.0%
Increase (decrease) resulting from the period from:						
State income taxes, net of federal income tax benefit	2.36%	2.80%	2.47%	2.69%	3.04%	2.68%
Tax on mandatory deemed repatriation	0%	0%	0%	3%	0%	0%
Other, net	-1%	-1%	-1%	-3%	0%	0%
Effective Tax Rate	36.4%	36.4%	36.3%	37.0%	23.6%	23.6%
Reconciliation Taxes Table						
Combined Federal, State and Foreign Income Tax based on Statutory Rate	3,492	3,857	4,372	4,648	3,057	3,090
Increase (decrease) resulting from the period from:						
State income taxes, net of federal income tax benefit	235	309	309	369	443	395
Tax on mandatory deemed repatriation	0	0	0	400	-62	0
Other, net	-96	-154	-147	-349	-3	-12
Total Federal Rates	3,631	4,012	4,534	5,068	3,435	3,473
Marginal Tax Rate	35.0%	35.0%	35.0%	33.9%	21.0%	21.0%
EBIT	10,469	11,774	13,427	14,681	15,530	15,843
Marginal Taxes on EBIT	3,664	4,121	4,699	4,982	3,261	3,327
Other Operating Taxes (Taxes Payments of different state operation)	235	309	309	369	443	395
Recurrent Taxes	3,899	4,430	5,008	5,351	3,704	3,722
Effective Recurrent Operations Tax Rate	37.2%	37.6%	37.3%	36.4%	23.9%	23.5%
Tax Shield	-173	-264	-328	-334	-205	-237
Non Recurrent Taxes	-96	-154	-147	51	-65	-12



Appendix-5: ASC-842 implications on future amortizations and ROU assets (Operating Leases).

<i>\$ million</i>	2019	2020 F	2021 F	2022 F	2023 F	2024 F	2025 F
Right-of-use-assets	5,595	5,519	5,441	5,364	5,289	5,215	5,142
# stores	2,291	2,295	2,298	2,301	2,304	2,307	2,310
square foot per store	104	104	104	104	104	104	104
ROU per square foot	0.023	0.023	0.023	0.023	0.023	0.023	0.023
Rate of Amortization	1.54%	1.54%	1.54%	1.54%	1.54%	1.54%	1.54%
Amortization of ROU Assets	86	86	85	84	83	81	80
<i>Notes</i>							
1 - Amortization Value = ROU assets (t) * rate of amortization (t)							
2 - ROU assets (t) = ROU assets (t-1) + (# of stores (t) - # of stores (t-1) * Sqr foot per store * ROU pers square foot) - Amortization Value (t)							
3 - Rate of Amortization calculation based on amortization expense on 2019's ROU assets of 86m on ROU assets at the beginning of the period (5509m) = 1.54%							



Appendix-6: Cost of Debt - Weighted Average of Outstanding Bonds' YTM of Home Depot.

<i>Cost Of Debt - Weighted Average of Outstanding Bonds' YTM (Source: Eikon TR)</i>								
Issue Date	Maturity Date	Coupon	Amount Outstanding	Coupon Class	Currency	Yield	Weight	YTM
05-Jun-2017	05-Jun-2020	1.5%	500,000,000	Floating	USD	1.71%	1.45%	0.63%
05-Jun-2017	05-Jun-2020	1.8%	750,000,000	Fixed	USD	2.06%	2.17%	1.14%
10-Sep-2010	15-Sep-2020	4.0%	500,000,000	Fixed	USD	3.19%	1.45%	0.68%
31-Mar-2011	01-Apr-2021	4.4%	1,000,000,000	Fixed	USD	2.12%	2.90%	0.75%
12-Feb-2016	01-Apr-2021	2.0%	1,350,000,000	Fixed	USD	0.80%	3.91%	0.83%
06-Dec-2018	01-Mar-2022	1.9%	300,000,000	Floating	USD	2.85%	0.87%	2.23%
06-Dec-2018	01-Mar-2022	3.3%	700,000,000	Fixed	USD	1.16%	2.03%	0.54%
02-Jun-2015	01-Jun-2022	2.6%	1,250,000,000	Fixed	USD	0.73%	3.62%	0.42%
05-Apr-2013	01-Apr-2023	2.7%	1,000,000,000	Fixed	USD	0.68%	2.90%	0.60%
10-Sep-2013	15-Feb-2024	3.8%	1,100,000,000	Fixed	USD	1.40%	3.19%	0.97%
15-Sep-2015	15-Sep-2025	3.4%	1,000,000,000	Fixed	USD	1.56%	2.90%	1.05%
12-Feb-2016	01-Apr-2026	3.0%	1,300,000,000	Fixed	USD	1.66%	3.77%	1.12%
15-Sep-2016	15-Sep-2026	2.1%	1,000,000,000	Fixed	USD	1.50%	2.90%	1.26%
30-Mar-2020	15-Apr-2027	2.5%	750,000,000	Fixed	USD	1.67%	2.17%	1.64%
14-Sep-2017	14-Sep-2027	2.8%	1,000,000,000	Fixed	USD	2.00%	2.90%	1.57%
06-Dec-2018	06-Dec-2028	3.9%	1,000,000,000	Fixed	USD	2.08%	2.90%	1.80%
17-Jun-2019	15-Jun-2029	3.0%	1,750,000,000	Fixed	USD	1.80%	5.07%	1.90%
30-Mar-2020	15-Apr-2030	2.7%	1,500,000,000	Fixed	USD	2.05%	4.35%	1.93%
19-Dec-2006	16-Dec-2036	5.9%	3,000,000,000	Fixed	USD	2.68%	8.70%	2.59%
30-Mar-2020	15-Apr-2040	3.3%	1,250,000,000	Fixed	USD	2.78%	3.62%	2.72%
10-Sep-2010	15-Sep-2040	5.4%	500,000,000	Fixed	USD	2.88%	1.45%	2.87%
31-Mar-2011	01-Apr-2041	6.0%	1,000,000,000	Fixed	USD	2.91%	2.90%	2.83%
05-Apr-2013	01-Apr-2043	4.2%	1,000,000,000	Fixed	USD	2.94%	2.90%	2.96%
10-Sep-2013	15-Feb-2044	4.9%	1,000,000,000	Fixed	USD	3.07%	2.90%	3.03%
12-Jun-2014	15-Mar-2045	4.4%	1,000,000,000	Fixed	USD	2.89%	2.90%	2.88%
02-Jun-2015	01-Apr-2046	4.3%	1,600,000,000	Fixed	USD	2.90%	4.64%	2.91%
05-Jun-2017	15-Jun-2047	3.9%	1,150,000,000	Fixed	USD	2.76%	3.33%	2.93%
06-Dec-2018	06-Dec-2048	4.5%	1,500,000,000	Fixed	USD	2.81%	4.35%	2.93%
13-Jan-2020	15-Dec-2049	3.1%	1,250,000,000	Fixed	USD	2.75%	3.62%	2.83%
30-Mar-2020	15-Apr-2050	3.4%	1,500,000,000	Fixed	USD	2.71%	4.35%	2.84%
15-Sep-2016	15-Sep-2056	3.5%	1,000,000,000	Fixed	USD	2.88%	2.90%	2.93%
TOTAL			34,500,000,000				100.00%	2.20%

Appendix-7: U-shape recession - Economic indicators forecast. (Deloitte, 2020)

Financial crisis and deep recession

% change, year over year, unless noted otherwise	History						Forecast					
	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
GDP and components												
Real GDP	2.5	2.9	1.6	2.4	2.9	2.3	-15.6	5.2	12.5	4.6	1.3	1.6
Real consumer spending	3.0	3.7	2.7	2.6	3.0	2.6	-12.3	3.5	10.3	5.5	2.2	2.0
Real consumer spending, durable goods	7.2	7.5	6.1	6.9	6.3	4.7	-28.2	-8.0	6.0	3.6	2.3	2.6
Real consumer spending, nondurable goods	2.6	3.4	2.4	2.5	3.0	3.3	-3.2	3.3	5.2	3.0	1.8	1.8
Real consumer spending, services	2.4	3.2	2.3	2.0	2.5	2.1	0.7	1.5	1.8	2.0	2.1	2.1
Real investment in private housing	3.8	10.2	6.5	3.5	-1.5	-1.5	-44.1	-5.5	67.2	13.4	0.6	0.9
Real fixed business investment	7.2	1.8	0.7	4.4	6.4	2.1	-30.1	7.0	25.1	7.8	2.1	2.3
Real inventory accumulation	86	132	23	32	48	65	-379	-10	243	152	30	24
Real exports of goods and services	4.2	0.5	0.0	3.5	3.0	0.0	-5.3	3.6	3.5	3.1	3.2	3.1
Real imports of goods and services	5.0	5.3	2.0	4.7	4.4	1.0	-6.5	4.4	5.1	3.9	3.4	3.4
Real government consumption and investment	-0.9	1.9	1.8	0.7	1.7	2.3	1.7	-0.1	0.3	0.4	0.4	0.4
Real federal government consumption and investment	-2.6	-0.1	0.4	0.8	2.9	3.5	2.5	-1.0	-0.4	-0.4	-0.4	-0.3
Real state and local government consumption and investment	0.2	3.2	2.6	0.6	1.0	1.6	1.2	0.4	0.6	0.8	0.8	0.8
Prices												
Consumer price index	1.6	0.1	1.3	2.1	2.4	1.8	1.8	1.1	3.3	2.6	2.8	2.1
Chained price index for personal consumption expenditures	1.5	0.2	1.0	1.8	2.1	1.4	1.5	0.9	3.3	2.5	2.8	2.1
Chained GDP price index	1.8	1.0	1.0	1.9	2.4	1.8	3.7	0.5	3.4	2.5	2.7	2.1
Employment cost index	2.1	2.1	2.2	2.5	2.8	2.8	0.9	-1.2	5.5	5.5	4.3	3.1
Labor markets												
Average monthly change in employment	214	240	210	188	192	170	-258	-486	442	451	206	82
Unemployment rate (percent)	6.2	5.3	4.9	4.3	3.9	3.7	6.9	11.1	7.9	4.9	3.7	3.4
Employment to population (percent)	59.0	59.3	59.7	60.1	60.4	60.8	59.0	56.1	57.8	59.5	60.1	60.0
Income and wealth												
Real disposable personal income	4.1	4.1	1.8	2.9	4.0	3.0	-1.8	-0.7	4.7	3.9	1.8	1.9
Net household wealth (US\$ trillions)	88	91	97	105	106	119	74	94	103	89	81	80
Personal saving rate (percent of disposable income)	7.3	7.6	6.8	7.0	7.7	8.0	17.4	13.9	9.7	8.6	8.3	8.3
After-tax corporate profits with corporate profits with inventory valuation and capital consumption adjustments	5.4	-2.8	-2.4	-0.3	3.4	-0.2	-46.2	-4.0	77.0	-0.7	0.0	-2.0
Housing												
Housing starts (thousands)	1,000	1,107	1,178	1,209	1,250	1,298	736	658	1,079	1,206	1,203	1,199
Stock of owner-occupied homes (millions)	134	135	136	137	138	140	141	141	142	143	144	145
Interest rate on 30-year fixed-rate mortgages (percent)	4.17	3.85	3.65	3.99	4.54	3.94	3.86	3.51	3.41	4.27	5.03	5.11
Foreign trade												
Current account balance, share of GDP (percent)	-2.1	-2.2	-2.3	-2.3	-2.4	-2.3	-1.9	-1.4	-1.9	-2.1	-2.3	-2.5
Merchandise trade balance (US\$ billions)	-727	-737	-735	-797	-878	-862	-801	-871	-1,020	-1,129	-1,237	-1,351
Relative unit labor costs (index, 2008=100)	89.3	100.4	102.7	104.2	102.6	106.2	125.8	107.7	99.3	102.9	103.2	100.6
Financial												
Federal funds rate (percent)	0.13	0.14	0.39	0.97	1.78	2.16	0.42	0.13	0.13	0.75	1.13	1.13
Yield on 10-year Treasury note (percent)	2.54	2.14	1.84	2.33	2.91	2.14	1.19	1.57	2.04	2.54	3.06	3.11
Government												
Federal budget balance, unified basis (share of GDP, percent)	-2.9	-2.6	-2.9	-3.5	-3.9	-4.5	-6.5	-9.2	-7.7	-6.2	-5.7	-5.7

Sources: Historical data: US government agencies and Oxford Economics. Forecast: Deloitte, using the Oxford Global Economic Model.

Appendix-8: L-shape recession - Economic indicators forecast. (Deloitte, 2020)

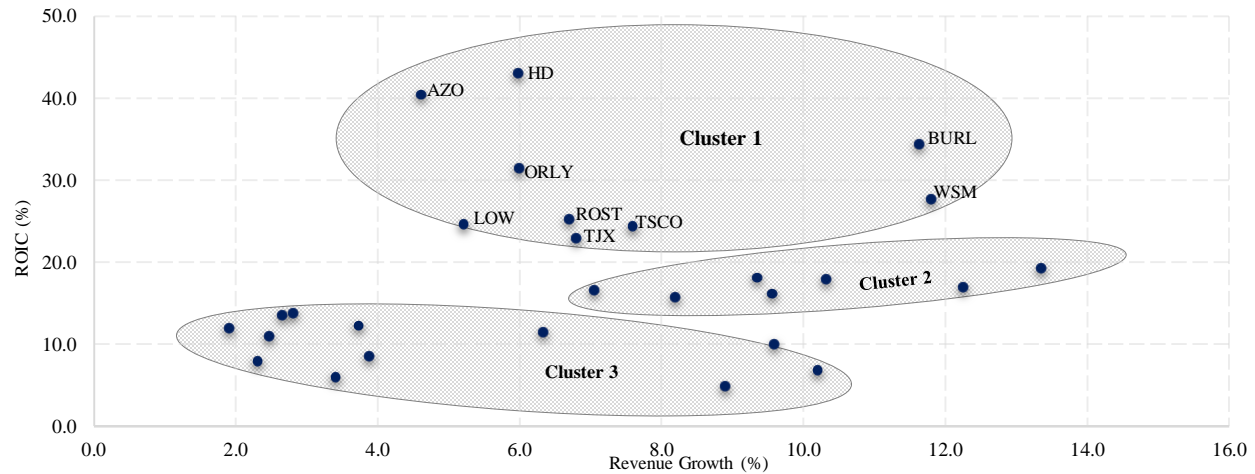
Long, hard trek to recovery

	History						Forecast					
	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
% change, year over year, unless noted otherwise												
GDP and components												
Real GDP	2.5	2.9	1.6	2.4	2.9	2.3	-11.0	-0.4	5.3	2.5	1.0	1.2
Real consumer spending	3.0	3.7	2.7	2.6	3.0	2.6	-7.6	-2.1	2.8	2.7	1.8	1.6
Real consumer spending, durable goods	7.2	7.5	6.1	6.9	6.3	4.7	-24.5	-6.6	4.9	3.1	2.1	2.0
Real consumer spending, nondurable goods	2.6	3.4	2.4	2.5	3.0	3.3	-3.1	1.6	3.8	2.2	1.3	1.3
Real consumer spending, services	2.4	3.2	2.3	2.0	2.5	2.1	0.9	1.1	1.3	1.6	1.7	1.6
Real investment in private housing	3.8	10.2	6.5	3.5	-1.5	-1.5	-36.7	-7.0	36.9	7.3	0.3	0.5
Real fixed business investment	7.2	1.8	0.7	4.4	6.4	2.1	-27.0	1.6	15.4	5.6	1.2	1.7
Real inventory accumulation	86	132	23	32	48	65	-266	-85	78	58	14	8
Real exports of goods and services	4.2	0.5	0.0	3.5	3.0	0.0	-4.2	3.0	3.1	2.6	2.8	3.0
Real imports of goods and services	5.0	5.3	2.0	4.7	4.4	1.0	-5.9	2.1	3.5	3.6	3.6	3.4
Real government consumption and investment	-0.9	1.9	1.8	0.7	1.7	2.3	1.7	-0.1	0.3	0.4	0.4	0.4
Real federal government consumption and investment	-2.6	-0.1	0.4	0.8	2.9	3.5	2.5	-1.0	-0.4	-0.4	-0.4	-0.3
Real state and local government consumption and investment	0.2	3.2	2.6	0.6	1.0	1.6	1.2	0.4	0.6	0.8	0.8	0.8
Prices												
Consumer price index	1.6	0.1	1.3	2.1	2.4	1.8	1.1	0.3	3.4	0.8	1.5	2.1
Chained price index for personal consumption expenditures	1.5	0.2	1.0	1.8	2.1	1.4	0.8	0.1	3.4	0.7	1.5	2.1
Chained GDP price index	1.8	1.0	1.0	1.9	2.4	1.8	1.5	-0.3	3.5	0.6	1.3	2.0
Employment cost index	2.1	2.1	2.2	2.5	2.8	2.8	0.7	-0.8	3.6	2.8	1.9	2.3
Labor markets												
Average monthly change in employment	214	240	210	188	192	170	-264	-171	340	244	89	78
Unemployment rate (percent)	6.2	5.3	4.9	4.3	3.9	3.7	6.9	8.6	6.3	4.9	4.6	4.4
Employment to population (percent)	59.0	59.3	59.7	60.1	60.4	60.8	59.0	57.6	58.8	59.5	59.5	59.4
Income and wealth												
Real disposable personal income	4.1	4.1	1.8	2.9	4.0	3.0	-2.5	-2.0	2.2	2.0	0.7	0.2
Net household wealth (US\$ trillions)	88	91	97	105	106	119	83	85	89	82	80	77
Personal saving rate (percent of disposable income)	7.3	7.6	6.8	7.0	7.7	8.0	12.5	12.4	12.1	11.6	10.8	9.9
After-tax corporate profits with corporate profits with inventory valuation and capital consumption adjustments	5.4	-2.8	-2.4	-0.3	3.4	-0.2	-43.3	-1.7	37.6	4.3	4.9	4.2
Housing												
Housing starts (thousands)	1,000	1,107	1,178	1,209	1,250	1,298	830	734	986	1,042	1,036	1,029
Stock of owner-occupied homes (millions)	134	135	136	137	138	140	141	141	142	143	144	145
Interest rate on 30-year fixed-rate mortgages (percent)	4.17	3.85	3.65	3.99	4.54	3.94	3.71	3.61	3.56	3.75	3.83	3.92
Foreign trade												
Current account balance, share of GDP (percent)	-2.1	-2.2	-2.3	-2.3	-2.4	-2.3	-1.7	-1.2	-1.7	-2.0	-2.2	-2.4
Merchandise trade balance (US\$ billions)	-727	-737	-735	-797	-878	-862	-782	-814	-929	-1,015	-1,114	-1,217
Relative unit labor costs (index, 2008=100)	89.3	100.4	102.7	104.2	102.6	106.2	118.2	108.3	102.6	101.3	98.8	94.7
Financial												
Federal funds rate (percent)	0.13	0.14	0.39	0.97	1.78	2.16	0.42	0.13	0.13	0.13	0.13	0.13
Yield on 10-year Treasury note (percent)	2.54	2.14	1.84	2.33	2.91	2.14	1.22	1.53	1.95	1.97	1.98	2.04
Government												
Federal budget balance, unified basis (share of GDP, percent)	-2.9	-2.6	-2.9	-3.5	-3.9	-4.5	-6.4	-9.0	-8.4	-7.8	-7.9	-8.2

Sources: Historical data: US government agencies and Oxford Economics. Forecast: Deloitte, using the Oxford Global Economic Model.



Appendix-9: Cluster Analysis - ROIC and Revenue Growth were used as connectivity points to differentiate the companies by “clusters”. In the end, the cluster 1 shaped was used as the PEER-Group.



Appendix-10: Operational Metrics of PEER-Group and TIER’s division.

Ticker	Company Name	TIER	Sales per employee	Comparable Store Sales	Number of Stores	Sales (\$million)	Sales per Square foot	Inventory Turnover	Asset Turnover
HD	The Home Depot Inc.	×	265	3.5%	2,291	110,225	455	5.1	2.3
LOW.N	Lowe's Companies Inc	I	225	2.6%	1,977	72,148	348	3.8	2.0
ROST.OQ	Ross Stores Inc	I	173	3.0%	1,805	16,039	432	6.4	2.1
ORLY.OQ	O'Reilly Automotive Inc	I	124	4.0%	5,460	10,150	255	1.4	1.1
BBY.N	TJX Companies Inc	I	143	4.4%	16,278	41,717	×	5.7	2.2
AZO.N	Autozone Inc	II	124	×	6,411	11,864	279	1.3	1.2
WSM.N	Williams-Sonoma Inc	II	218	×	614	5,898	160	3.4	1.7
TSCO.OQ	Tractor Supply Co.	II	261	2.7%	2,024	8,352	217	3.4	2.0
BURL.N	Burlington Stores	II	155	2.7%	727	7,286	155	4.9	1.7

Appendix-11: Financial Statements

Income Statement

<i>Operational (\$ million)</i>	2014	2015	2016	2017	2018	2019	2020F	2021F	2022F	2023F	2024F	2025F
Net Sales	83,176	88,519	94,590	100,904	108,203	110,225	97,024	100,778	112,076	116,756	120,439	123,008
Cost of Sales	-54,787	-58,254	-62,282	-66,548	-71,043	-72,653	-64,591	-66,957	-74,316	-77,265	-79,544	-81,078
Gross Profit	28,389	30,265	32,308	34,356	37,160	37,572	32,433	33,821	37,761	39,491	40,895	41,929
SG&A	-16,280	-16,801	-17,132	-17,864	-19,513	-19,740	-17,376	-17,723	-19,356	-20,164	-20,800	-21,243
Asset Impairment	0	0	0	0	-247	0	0	0	0	0	0	0
EBITDA	12,109	13,464	15,176	16,492	17,400	17,832	15,057	16,098	18,405	19,328	20,096	20,686
D&A	-1,640	-1,690	-1,754	-1,811	-1,870	-1,989	-2,100	-2,124	-2,148	-2,149	-2,151	-2,152
EBIT = Operating Income	10,469	11,774	13,422	14,681	15,530	15,843	12,956	13,974	16,258	17,178	17,945	18,534
Recurrent Operational Taxes	-3,899	-4,430	-5,008	-5,351	-3,704	-3,722	-3,044	-3,283	-3,819	-4,036	-4,216	-4,354
Non-Recurrent Operational Taxes	96	154	147	-51	65	12	0	0	0	0	0	0
NOPLAT	6,666	7,498	8,561	9,279	11,891	12,133	9,913	10,691	12,438	13,143	13,729	14,179
Net-Earnings	6,345	7,009	7,952	8,630	11,121	11,242	8,706	9,605	11,302	11,986	12,610	13,141
<i>Financial (\$ million)</i>												
Debt Interest	-493	-753	-936	-983	-974	-1,128	-1,527	-1,419	-1,485	-1,511	-1,463	-1,357
Interest Tax Shield	173	264	328	334	205	237	321	333	349	355	344	319
Currency Translations and Derivative Instruments	-498	-446	31	301	-206	64	-126	-126	-126	-126	-126	-126
Financial Result	-818	-935	-577	-348	-975	-827	-1,332	-1,211	-1,262	-1,282	-1,245	-1,164
Total Comprehensive Income	5,847	6,563	7,983	8,931	10,915	11,306	8,581	9,480	11,176	11,861	12,484	13,016

Statement of Stockholders' Equity

<i>(\$ million)</i>	2015	2016	2017	2018	2019	2020F	2021F	2022F	2023F	2024F	2025F
Equity at the beginning of the period attributable to HD's shareholders	9,323	6,316	4,333	1,454	-1,878	-3,116	-545	-1,870	-1,977	-738	1,876
Total Comprehensive Income (Result of the period)	6,563	7,983	8,931	10,915	11,306	8,581	9,480	11,176	11,861	12,484	13,016
Cash Dividends	-3,031	-3,404	-4,212	-4,704	-5,958	-6,445	-	-	-	-	-
Share Buybacks	-7,000	-7,000	-8,002	-10,000	-7,000	0	-	-	-	-	-
Future Share Cash Dividends	-	-	-	-	-	-	-11,239	-11,718	-11,056	-10,306	-9,491
Other transactions with shareholders	461	438	404	457	414	435	435	435	435	435	435
Payout Ratio	128%	116%	127%	120%	103%	61%	109%	98%	87%	78%	70%
Equity at the end of the period attributable to HD's shareholders	6,316	4,333	1,454	-1,878	-3,116	-545	-1,870	-1,977	-738	1,876	5,835
Home Depot Shareholders Equity (BS)	6,316	4,333	1,454	-1,878	-3,116	-545	-1,870	-1,977	-738	1,876	5,835

Balance Sheet

<i>Operational (\$ million)</i>	2014	2015	2016	2017	2018	2019	2020F	2021F	2022F	2023F	2024F	2025F
Operating Assets												
Cash & Cash Equivalents	1,723	2,216	2,538	3,595	1,778	2,133	2,328	2,418	2,690	2,802	2,890	2,952
Accounts Receivables	1,484	1,890	2,029	1,952	1,936	2,106	1,854	1,926	2,141	2,231	2,301	2,350
Inventory	11,079	11,809	12,549	12,748	13,925	14,531	12,875	13,302	14,714	15,247	15,644	15,892
Other Current Assets	1,016	569	608	638	890	1,040	715	743	826	860	887	906
PP&E (and Property under Capital Leases)	22,720	22,191	21,914	22,075	22,375	22,770	23,059	23,342	23,628	23,659	23,689	23,720
Operating Lease Assets	0	0	0	0	0	5,595	5,519	5,441	5,364	5,289	5,215	5,142
Goodwill	1,353	2,102	2,093	2,275	2,252	2,254	2,254	2,254	2,254	2,254	2,254	2,254
Other Assets	571	1,196	1,235	1,246	847	807	889	924	1,027	1,070	1,104	1,127
Total Operating Assets	39,946	41,973	42,966	44,529	44,003	51,236	49,493	50,349	52,645	53,412	53,985	54,344
Operating Liabilities												
Accounts Payable + Accrued Liabilities	9,003	10,021	10,679	11,054	11,872	11,958	10,631	11,021	12,232	12,717	13,092	13,345
Tax Liabilities	1,111	889	829	1,014	1,158	1,366	1,056	1,097	1,220	1,271	1,311	1,339
Deferred Revenue	1,468	1,566	1,669	1,805	1,782	2,116	1,723	1,789	1,990	2,073	2,139	2,184
Other Long-Term Liabilities	1,844	1,965	1,855	2,174	1,867	1,535	1,887	1,960	2,180	2,271	2,343	2,393
Total Operating Liabilities	13,426	14,441	15,032	16,047	16,679	16,975	15,297	15,867	17,622	18,332	18,884	19,260
Total Invested Capital	26,520	27,532	27,934	28,482	27,324	34,261	34,196	34,482	35,023	35,080	35,101	35,084
Financial (\$ million)												
Financial Debt	17,197	21,216	23,601	27,028	29,202	37,377	34,741	36,352	37,000	35,817	33,225	29,249
Net Financial Assets	-17,197	-21,216	-23,601	-27,028	-29,202	-37,377	-34,741	-36,352	-37,000	-35,817	-33,225	-29,249
HD Shareholder's Equity (as Reported)	9,323	6,316	4,333	1,454	(1,878)	(3,116)	(545)	(1,870)	(1,977)	(738)	1,876	5,835
HD Shareholder's Equity (SCE)		6,316	4,333	1,454	(1,878)	(3,116)	(545)	(1,870)	(1,977)	(738)	1,876	5,835

Cash Flow Maps

<i>Operational (\$ million)</i>	2015	2016	2017	2018	2019	2020F	2021F	2022F	2023F	2024F	2025F
EBIT	11,774	13,422	14,681	15,530	15,843	12,956	13,974	16,258	17,178	17,945	18,534
Recurrent Taxes	-4,430	-5,008	-5,351	-3,704	-3,722	-3,044	-3,283	-3,819	-4,036	-4,216	-4,354
Non Recurrent Taxes	154	147	-51	65	12	0	0	0	0	0	0
NOPLAT	7,498	8,561	9,279	11,891	12,133	9,913	10,691	12,438	13,143	13,729	14,179
D&A	1,690	1,754	1,811	1,870	1,989	2,100	2,124	2,148	2,149	2,151	2,152
Operational Cash Flow	9,188	10,315	11,090	13,761	14,122	12,013	12,815	14,586	15,292	15,880	16,332
<i>growth rate</i>	<i>10.6%</i>	<i>12.3%</i>	<i>7.5%</i>	<i>24.1%</i>	<i>2.6%</i>	<i>-14.9%</i>	<i>6.7%</i>	<i>13.8%</i>	<i>4.8%</i>	<i>3.8%</i>	<i>2.8%</i>
Invested Capital - Fixed Assets	22,191	21,914	22,075	22,375	22,770	23,059	23,342	23,628	23,659	23,689	23,720
Expansion CAPEX Investment (Function of new stores)	529	277	-161	-300	-395	-289	-283	-286	-31	-31	-31
Maintenance CAPEX	-1,690	-1,754	-1,811	-1,870	-1,989	-2,100	-2,124	-2,148	-2,149	-2,151	-2,152
Total Capex (Maintenance CAPEX + Expansion Capex)	-1,161	-1,477	-1,972	-2,170	-2,384	-2,390	-2,407	-2,434	-2,180	-2,182	-2,183
CF from Δ NWC	205	-217	544	-474	-298	203	-29	-177	-37	-14	10
CF from Δ Other Operating Assets	-1,867	-352	-1,250	2,239	-5,912	-201	-47	-298	-80	-48	-12
CF from Δ Other Operating Liabilities	121	-110	319	-307	-332	352	73	220	91	72	50
Investment Cash Flow	-2,702	-2,156	-2,359	-712	-8,926	-2,036	-2,410	-2,689	-2,206	-2,172	-2,135
Unlevered Operational FCF (FCFF)	6,486	8,159	8,731	13,049	5,196	9,977	10,405	11,897	13,086	13,708	14,196

<i>Financial (\$ million)</i>	2015	2016	2017	2018	2019	2020F	2021F	2022F	2023F	2024F	2025F
Financing Result	-935	-577	-348	-975	-827	-1,332	-1,211	-1,262	-1,282	-1,245	-1,164
Net Financial Assets	-21,216	-23,601	-27,028	-29,202	-37,377	-34,741	-36,352	-37,000	-35,817	-33,225	-29,249
Investment in Net Financial Assets	4,019	2,385	3,427	2,174	8,175	-2,636	1,611	648	-1,183	-2,592	-3,976
Net Cash Transaction with Shareholders	-9,570	-9,967	-11,810	-14,247	-12,544	-6,010	-10,805	-11,284	-10,621	-9,871	-9,056
Financial Free Cash Flow	-6,486	-8,159	-8,731	-13,049	-5,196	-9,977	-10,405	-11,897	-13,086	-13,708	-14,196



Discounted Cash Flows

(\$ million)	2020 F	2021 F	2022 F	2023 F	2024 F	2025 F
Operational Cash Flow	12,013	12,815	14,586	15,292	15,880	16,332
Investment Cash Flow	-2,036	-2,410	-2,689	-2,206	-2,172	-2,135
Invested Capital	34,196	36,606	39,295	41,501	43,672	45,808
Unlevered Operational FCF (FCFF)	9,977	10,405	11,897	13,086	13,708	14,196
Terminal Value						346,386
<i>Timing Factor</i>	0	1	2	3	4	5
<i>Discount Factor</i>	1.00	0.94	0.88	0.83	0.78	0.73
Discounted FCFF	9,977	9,777	10,504	10,856	10,686	264,122
<i>RONIC</i>	-23.6%	39.4%	73.5%	26.3%	26.7%	18.0%
<i>ROIC</i>	28.9%	31.3%	36.1%	37.5%	39.1%	40.4%
<i>RR</i>	20.5%	22.5%	21.6%	16.8%	15.8%	15.1%
<i>g</i>	-17.4%	8.1%	16.6%	5.7%	4.5%	2.8%



Appendix-12: Extra Financial Statement Assumptions

- Income Statement

Debt Interest: The debt interest was computed as a percentage of the previous year's debt. The historic percentage was analyzed and the average of the past 5 years was used for the future percentage.

Currency Translation and Derivative Instruments: These accounts are unrelated to operations thus they were straight-lined through the forecasted period.

- Balance Sheet

Financial Debt: It was assumed that the amount of debt for the future would amount to the difference between the Total Invested Capital in each year (on Balance Sheet) and the amount of Home Depot's Shareholder's Equity for the year (on Statement of Stockholder's Equity).

Goodwill: Since there is no information regarding future impairments or acquisitions the amount of this account was straight-line through the explicit period.

All other items (not referred to in the DCF section): Because these items are mainly tied to operations they were calculated as a percentage of Home Depot's Revenue. This percentage holds constant through the explicit period, as an average of the past six years (2014-2020).



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