CENTRAL EUROPEAN UNIVERSITY

**CAPSTONE PROJECT SUMMARY**

# Equity Valuation of Royal Dutch Shell Business Segments Using Discounted Cash Flow (DCF), Dividend Discount, and Relative Valuation Models with Multiple Scenarios for Oil Prices

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**[30 June 2021]**

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## EXECUTIVE SUMMARY

The aim of this capstone project summary is to present an equity valuation of Royal Dutch Shell´s business segments using different methods to find a target price and give a final recommendation about the security RDSA.AS.

The main objectives of this study were to read and familiarize with the market, historic trends of demands for certain refined products, do a relative valuation by comparing Royal Dutch Shell with European peers, elaborate on the pace of expansion of electric vehicles in the EU and how it can impact the oil demand in the EU, and estimate the impact of the COVID-19 on the industry and integrate it into the model. To have a better understanding in how different oil prices could affect the valuation, three scenarios for crude oil, natural gas, LNG, and oil products prices were built. Moreover, this project allowed for thorough analysis, in which several scenarios for capital structure were created. For instance, different Beta for the business, debt, equity, tax-rate, cost of equity, cost of debt, and cash flow scenarios were projected. However, a standard scenario was taken into consideration to give the final recommendation. The final share price will be a combination of share prices from each business segment such as Upstream, Integrated Gas, Downstream oil products and chemicals, and corporate. There are many macroeconomic trends that should be taken into consideration when analyzing equity valuation for oil companies such as oil price, proved reserves, OPEC + Agreement, climate change, ascension of electric vehicles, and recent impact of Covid-19.

After conducting the analysis, the target price for Royal Dutch Shell was estimated by using Discounted Cash flow model, which indicated a 32.6% upside from the last closing price as of July 17 2020 and 7.2% upside from the price on 31 March 2020. Based on both forecast for the Standard Scenario, a **HOLD** recommendation is issued for Royal Dutch Shell stock.

# INTRODUCTION

The Royal Dutch Shell plc is a company headquartered in the Netherlands that explores for crude oil and natural gas worldwide, both onshore and offshore fields. Shell segments include Upstream, Integrated Gas, Downstream, and Corporate. The Upstream segment is engaged in the exploration for and extraction of crude oil, natural gas, natural gas liquids, bitumen from mined oil sands and its conversion into synthetic crude oil, as well as in the transport of oil and gas. The Integrated Gas segment is engaged in the liquefaction of natural gas (LNG) and in the conversion of natural gas into gas-to-liquids (GTL) fuels and other products. The Downstream segment is engaged in oil products and chemicals manufacturing, by refining crude oil and other feedstock in order to produce products such as gasoline, diesel, heating oil, aviation fuel, marine fuel, biofuel, lubricants, bitumen, Sulphur, and petrochemicals. Royal Dutch Shell operates in more than 70 countries. Most of its revenues comes are generated in the Downstream segment, which represents around (76%), followed by Upstream (12%), and Integrated Gas (11.79%). In 2019, regarding geographic location, its revenue is coming from the following regions and/or countries, Singapore (24.44%), USA (24.13%), Europe excluding UK (16.63%), Asia excluding Singapore (16.13%), UK (11.92%), and other Americas (6.75%). Regarding the source of revenue, Shell has two sources: Third parties and Inter-segment. Third parties revenue is the revenue obtained by selling to external clients, whereas inter-segment is the revenue related to internal sales, in order to provide the production to Shell`s subsidiaries. Considering a 3-Year average (2017-2019), the majority of the upstream revenue comes from the inter-segment, which represents 79.5% of its upstream revenue. However, for Integrated Gas, Downstream, and Corporate, the big chunk of revenue comes from Third parties, which accounts for 89.7%, 99.6%, and 100%, respectively.

## INDUSTRY OVERVIEW AND COMPANY ANALYSIS

### Company Structure

The calculations for WACC were based on information provided on Annual Report 2019, Quarterly Report Q1 2020, Capital IQ database, Damodaran dataset. For the WACC, several scenarios were calculated in order to give the freedom of choice for the user. In addition, a standard scenario was provided. The valuation was as of 31st March 2020. For the Valuation, several scenarios were calculated apart of a standard scenario. For the market value of debt, which included short-term and long-term debt and leases, the value of $95,065 million was taken as of 31st March 2020. For market value of equity $140,521.8 million, by multiplying the number of total outstanding shares with the share price. The cost of debt was based on the 10-year average of U.S. Treasury bond, considered as risk free rate, plus the default spread for Shell, based on its credit rating. The result was a pre-tax cost of debt of 3.10%. The tax rate was obtained from the annual report. For the cost of equity, first the levered beta was calculated based on revenue of each business segment. Enterprise value based on each sector was extracted from Damodaran`s website. With all calculations, the final unlevered beta was obtained and it resulted in **0.867**. Afterwards, levered betas were calculated, varying the Debt to Equity ratio as well as the Tax Rates. After obtaining the levered beta for Shell, a weighted country risk premium was incorporated in the cost of equity, giving a cost of equity of 11.44%. Finally, the weighted cost of capital (WACC) was calculated, which accounted for 7.84% for the Standard Scenario

### Free Cash Flows

The Free Cash Flow estimation was based on the Revenue, Earnings Before-Interest-After-Tax (EBIAT), Net Capex, and Change in Non-Cash Working Capital. The model was divided by

each segment, and in order to calculate the Free Cash Flow for each business segment, some assumptions were needed. Moreover, 8 different Free Cash Flows were estimated, varying the accordingly to 3-Year Average, 5-Year Average, and with and without adjustments for EBIAT (EBIT(1-T)), just for comparison. Moreover, the free cash flows were adjusted by Operating Leases, Operating Income, Net Capex, Net Working Capital, and Earnings before Interest after Tax.

**Revenue Forecast**

For the Integrated Gas segment, the assumption of 25% of total production was applied and LNG production was included. For Downstream, the assumption was based on the feedstock provided by the Upstream and Integrated Gas, meaning that the Downstream segment depends on the total production of both segments. Even though lower oil and gas commodity prices can adversely impact the valuation of Upstream companies, the valuation of refineries can benefit from lower prices of commodity feedstock. This is due to the crack spread, which indicates the spread between the crude oil price and the price of products obtained from the extraction. In the near term, refineries may increase their valuations from higher crack spreads. The Downstream segment was estimated in two different scenarios, the first one considering the Oil Products and Chemicals categories separated and the second one considering them together.



**Valuation – Discounted Cash Flow**

For the Discount Cash Flow method, many scenarios were estimated by varying WACC, Total Debt, Total Equity, and Tax Rate, and After-Tax Cost of Debt. Considering the Standard Scenario, Equity Share Prices were estimated for each business segment and the total share price with and without the corporate segment, just to show how much operating segments were worth. In addition, the total share price was calculated in two ways, one by taking the downstream separated by the two categories, Oil Products and Chemicals, and the second one

by taking the two categories together. Three scenarios for price forecast of crude oil, synthetic oil, natural gas, and LNG were estimated for Covid-19 impact, high demand of oil and natural gas, and average production. Two scenarios for demand of forecasted crude oil, synthetic oil, natural gas, LNG, and Chemicals were estimated (Covid-19 impact, average production demand).

Scenario 1 consists of the assumption with low oil prices and quantity. The prices of a barrel of oil equivalent are, on average, $36, $47, and $54, in 2020, 2021, and 2022-2025, respectively. For Scenario 2, $102, $112, and $117, in 2020, 2021, and 2022-2025, respectively. For Scenario 3, $68, $75, and $78, in 2020, 2021, and 2022-2025, respectively. In addition for Crude oil and natural gas liquids price forecast, scenarios for natural gas, LNG, synthetic oil, oil products, and chemicals, either for prices or quantity, were also estimated. For the Standard Scenario, the Scenario 1 – COVID-19 impact consists of $19.26 for the total share price, with 7% higher than the price as of March 31 2020.

**Dividend Discount Model**

For the first time since World War II, Shell cuts dividends due to the collapse of global oil demand for the coronavirus pandemic. Not only Shell cut its dividends but also suspended its buyback programme. For this valuation calculation, Dividend Discount Model was included, taking into consideration the COVID-19 impact. The growth rate was derived from the combination of growth rates of each segment, by averaging the rates. For the Standard Scenario, which is the 3-Year Average with the COVID-19 impact, the expected long-term growth rate is -1.37%, which was applied for the period after 2025, as a calculation for the Terminal Value. For the Dividend Discount Model, two separated calculations were done, one

for the whole company and one for the downstream segment, as it has a great economic importance for Shell. The refineries produce 76% of the total revenue. For the Whole Company, The final value via Dividend Discount Model was $9.9.

**Relative Valuation**

In order to use the Relative Valuation method, Royal Dutch Shell was compared to peers that operate in Europe such as British Petroleum, Eni Spa, Polski Koncern, Turkiye Petrol, Hellenic Petroleum, Moto Oil Hellas, Grupa Lotos, OMV Petrom, and OMV AG. The Relative Calculation was divided in three categories: To calculate the Multiple Analysis, it was used the following methods: Enterprise Value/Revenue, Enterprise Value/EBITDA, Enterprise Value/EBIT, Price/Earnings, Price/Book Value, and Price/Sales. Royal Dutch Shell was benchmarked with European players and for the valuation, each valuation method was calculated separated and together, by averaging all to come up with a target price. Combining the three valuation methods (DCF, DDM, Multiples) and considering the Standard Scenario, according to the assumptions and calculations, Royal Dutch Shell will have a **target price of $17.37**, which is 3.3% lower than the price as of March 31 2020. The following weights were considered: Discount Cash Flow (70%), Relative Valuation (25%), and Dividend Discount Model (5%). The reason for such weights is that the main focus of valuation was DCF; Relative Valuation may have some distortions in the results because of the selected peer group; and the Dividend Discount Model received the lower weight due to the cut of dividends announced by Shell this year for the first time since the World War II.

## CONCLUSION

Based on the DCF model, the target price for Royal Dutch Shell is USD 19.26, which is 32.6% upside from the last closing price and 7.2% upside from the price on 31 March 2020. Based on the mix of DDM, FCFF and multiple analysis (table 2), the target price estimated is USD 17.37. Based on both forecast for the Standard Scenario, a **HOLD** recommendation is issued for Royal Dutch Shell stock. The recommendation is based on the below key drivers:

1) **Uncertainties related to COVID-19 impact** in the long-term can be either beneficial or prejudicial for investors who already hold the stock or for the ones who would like to buy it.

2) **A gradual economic normalisation** is expected starting from 2021.

3) Shell is expected to cut its **dividends** for the first time since World War II.

4) **Better cost management is expected from Royal Dutch Shell**, which will bring a constant improvement on EBITDA margins.

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