

Case: Fatima Fertilizer Company Limited: Valuation and sensitivity analysis

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Abstract This case concerns the valuation of a public listed company's stock in Pakistan, using the Free Cash Flow to Firm valuation model. The primary purpose of this case is to give students an opportunity to identify the best discounted cash flow model to value stock for a given company. It requires computation of relevant cash flows and terminal values and enhances understanding of the valuation risk involved due to fluctuation in the key assumed variables. The case can be used to teach undergraduate finance courses that cover valuation models.

Keywords Discounted cash flow valuation models · Fertilizer · Debt-free status · Dividend payout · Sensitivity analysis

1 Introduction

The impending doom of meeting the weekend's deadline and presenting the findings to the Board on Monday was on Nida Asghar's mind while driving her way back from her office situated at I.I.Chundrigar road. The usual heavy traffic of slow moving cars on Shahr-e-Faisal and the first downpour of the winter season created more chaos for daily commuters, but traffic was the least of Ms. Asghar's worries.

It was January 2016, her first month after graduating from IBA Karachi, a leading business school of the country. A finance major with a CGPA of 3.0; she had joined Abdul Rahim Fateh Dedhi (AFD) securities as an equity analyst. This was her very first assignment requiring her to determine the fair price of Fatima Fertilizer Company Limited using the most appropriate valuation model.

Somehow it felt very different from the simulated projects she had done at

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Disclaimer: This case has been prepared only for class discussion. The character in the case is fictional. The information used to write the case has been taken from public sources. All information contained in the case is not real; the author has changed the dates to make the case more relevant.

university, and the thought of formally presenting the results to her immediate boss Mr. Dedhi himself, made her queasy and anxious. As she made her way forward in the heavy traffic, the downpour slowed down and she saw a small rainbow, an unusual sight in Karachi; she smiled and thought that maybe she had hope.

2 Fatima Fertilizer

Fatima Fertilizer Company Limited, a fully integrated fertilizer complex, was incorporated in December 2003 as a joint venture between two major business groups of Pakistan: Fatima Group and Arif Habib Group. The company got listed on all stock exchanges of Pakistan, through a successful initial public offering (IPO) in February 2010 to fund the requirement of the project at the time of the listing.

The company, being the third largest producer of farming ingredients in Pakistan, produced a mix of well diversified fertilizer products including two intermediate products: Ammonia and Nitric Acid (NA) and three final products: Urea, Calcium Ammonium Nitrate (CAN) and Nitro Phosphate (NP). Figure 1 illustrates the production process of the firm. The firm sold its products under the umbrella brand name of Sarsabz fertilizers.

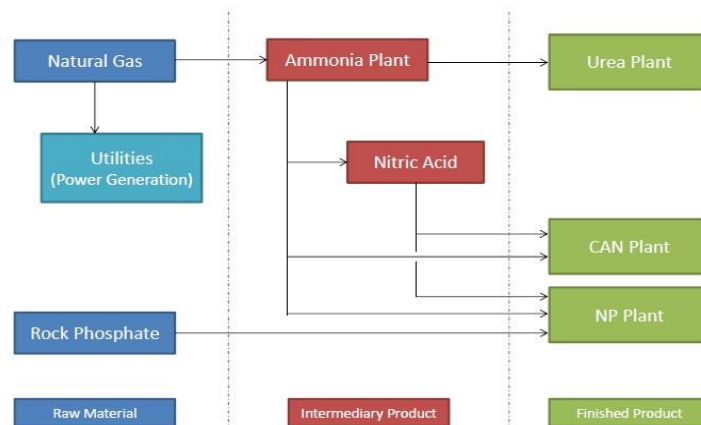


Fig1: Production process at Fatima Fertilizer Company Limited Source: Company annual report

The production facility of the firm was located at Sadiqabad, Rahim Yar Khan, which was geographically situated in the middle of the country’s agricultural belt. The complex had a cumulative capacity of 1.7 million metric tons per annum with 0.50 million tons allocated to Urea, 0.42 million tons to CAN and

0.36 million tons to NP. The mix of fertilizer products was the unique selling point of Fatima and made it the most diversified fertilizer player in the country.

In 2015, the company reported net sales of PKR14.8 billion with an operating income margin of 62 percent (see the balance sheet and income statement for the year 2015 in table 1). All three final products of Fatima enjoyed a strong local demand, making it possible for the firm to sell all of its products within a specific year.

Table 1: Fatima Fertilizer: Income Statement and Balance Sheet (figures in PKR millions)

Income statement	For the year-ended December 31, 2015
Net sales	14,833
EBITDA	8,404
Depreciation & amortization	746
EBIT	9,150
Financial charges	3,063
Pre-tax profit	6,088
Taxation	1,971
Net profit	4,117
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Balance sheet	As of December 31, 2015
Cash	3,839
Trade debt	196
Inventory	1,215
Other current assets	2,876
Total current assets	8,126
Net fixed assets	68,221
Total assets	76,347
Creditors & accruals	7,725
ST borrowings	0
Current portion: LT debt	3,033
Total current liabilities	10,758
LT debt	34,457
Deferred liabilities	3,077
Total liabilities	48,292
Paid-up	24,000
Share premium	790
Un-appropriated profit	3,265
Total equity	28,055

Source: Company Annual Report

3 Fertilizer Industry

Fertilizer was the most important and expensive agricultural input in Pakistan. Balanced fertilizer usage had contributed to a 30 to 60 percent increase in

yield in different crop production areas of the country. The consumption of fertilizers was inevitable in order to meet the nutritional requirements of a growing population, as all of the country's soil had been found to be lacking nitrogen; 80-90 percent was poor in phosphorous, while 30 percent was deficient in potassium. Nitrogen-based urea was the main fertilizer (68 percent) used in Pakistan, followed by phosphorous rich DAP (15 percent).

Pakistan's fertilizer industry had a total production capacity of 6.8 million tons of urea per annum while the local demand was approximately 5.7 million tons per annum. However, due to the natural gas curtailment to the fertilizer plants on the Sui network, fertilizer sector had been operating below capacity and produced 4.6 million tons of urea in the year 2015. The difference in supply and demand was fulfilled through imports of urea which were subsidized by the government. Year 2016 was expected to experience favorable agricultural conditions due to which the urea market in Pakistan was expected to grow by 20 percent in 2016.

3.1 Prominent players

The prominent players in the fertilizer sector of Pakistan included Fauji Fertilizer Company, Fauji Fertilizer Bin Qasim Limited, Engro Fertilizers Limited, Dawood Hercules Fertilizers Limited and Pak Arab Fertilizers Limited.

The greatest share of the fertilizer market was held by Fauji Fertilizer Company, which was the largest urea manufacturing company in the country, producing 39 percent of the country's total fertilizer and 53 percent of the total urea manufactured in the year 2015. Fauji Fertilizer Company held 50.88 percent ownership in Fauji Fertilizer Bin Qasim Limited which was the only plant producing DAP and Granular Urea in the country. In 2015, Fauji Fertilizer Bin Qasim Limited reported a market share of 66 percent for DAP and 7 percent in urea.

Engro had the world's largest single train urea ammonia plant, EnVen, which commenced operations in June 2015, enabling the company to maintain a market share in urea of 21 percent. Pak Arab Fertilizers Limited was acquired by the Fatima Group and Arif Habib Group in 2005 under the privatization policy of the Government of Pakistan, and hence was regarded a sister concern of Fatima Fertilizer Ltd.

3.2 The gas crisis

In recent past, the fertilizer sector had been without a feasible solution for the gas crisis; therefore, gas curtailment was expected to continue in future which would keep production below demand, resulting in the need for expensive imports by the government.

Fertilizer plants on the independent Mari network which included Fauji Fertilizer, Engro's old plant and Fatima, enjoyed gas supply with limited gas curtailment of 12 percent. Other plants on the Sui network including Engro-Enven,

Dawood Hercules, Fauji Fertilizer Bin Qasim and Pak Arab were facing a major setback in production due to variable gas curtailment and unscheduled gas suspensions. The suspension of gas resulted in conversion inefficiencies leading to higher production costs for these manufacturers.

4 Competitive advantage of Fatima Fertilizer

Fatima Fertilizer was the only player in Pakistan's fertilizer industry that received subsidized gas from the Mari field throughout the year enabling it to maintain efficient production. According to the Fertilizer Policy, the company would get the benefit of fixed feed gas tariff till 2022. The companies on the Sui gas network faced large unpredictable swings in gas supply leading to detrimental effects on their productivity.

Fatima Fertilizer also had the most diversified product portfolio in the market producing three products: Urea, CAN and NP which enabled it to sustain earnings and hedge itself against price volatility. Fatima Fertilizer maintained highest operating profit margins among its peers due to its diversified product portfolio (urea, CAN and NP) and consistent gas from the dedicated Mari gas field. Table 2 presents the key financials for the fertilizer firms for the most recent year.

Table 2: Selected financials of fertilizer firms for the year ended December 2015 (figures in PKR millions except for number of shares)

	DAWH	ENGRO	FATIMA	FFBL	FFC
Assets	31,966	183,004	76,347	40,176	94,391
Total liabilities	6,838	145,206	48,292	26,541	68,628
Book equity	25,128	37,798	28,055	13,636	25,763
Enterprise value	20,461	136,293	83,551	36,702	124,432
Sales	945	35,788	14,833	19,548	36,243
Operating profit	-152	5,420	9,151	3,597	16,299
Net profit	435	2,470	4,117	10,767	9,123
Price per share	40.2	71.5	22.92	42.4	100
Dividend per Share	1	1.5	1.5	3.5	5.3
Number of shares	481	511	2,100	934	1,272

Source: Bloomberg & Company Annual Report, Fatima Fertilizer

4.1 Debt-free status and high dividend payout in future

Fatima Fertilizer planned to achieve debt free status by 2022. Most of the cash generated from operations was planned to be used to pay off debts in the next five years. The company had longterm debt of PKR 34.5 billion outstanding at

a coupon rate same as the prevailing market interest rate. As the debt would go down gradually, the finance cost was expected to decrease from PKR 3.1 billion in 2015 to zero in 2022.

Arif Habib group had a history of paying strong dividends in all of its subsidiaries. The management of the company was also trying to reach a payout ratio of 75 percent as soon as possible, however, it seemed difficult to achieve that in the near future due to the planned accelerated debt repayments. Once the debt-free status would be achieved in 2022, Fatima Fertilizer was planning to shift to the desired payout ratio of 75 percent.

4.2 Capacity utilization

With the low capacity utilization for NP and NA plants (59 percent and 65 percent, respectively) in the year 2015, the company was focusing on promotional campaigns for the next two years targeting the selected farmer segment to increase brand awareness. The company had an intense marketing strategy under which the technical team reached out to the customers through farmer meetings, farm visits and group discussions to demonstrate that their brand Sarsabz fertilizer offered good quality balanced nutrient solutions suitable for all soils, all crops and at all stages. As a consequence of these campaigns, it was expected that the capacity utilization for each of the NP and NA plants would increase to 90 percent over the next two years.

Moreover, with an 80 percent capacity utilization of the urea plant in 2015, the company also aimed to increase the production of urea to benefit from the expansion of the local urea market in the coming year. The planned increase in the production of these three products (NA, NP and urea) along with an expected inflation of 12 percent was expected to give a heavy boost to the company's revenues in 2016.

4.3 Expansion plans

Given the unavailability of gas, the company was not expected to expand its production capacity; however, one of its plants was going through enhancement and hence a capital expenditure (CAPEX) of PKR 1.675 billion was expected next year. The company was also planning to incur maintenance capital expenditure of about PKR 0.50 billion each year starting from the year 2017. This was in line with the costs to its competitors according to their ammonia capacity.

The firm also had plans to enhance its production capacity in the future through debottlenecking of the ammonia plant at an expected cost of PKR 2 billion to PKR 2.50 billion. Furthermore, it also had a plan to expand to North Africa in the long term future with a total CAPEX of about USD 1.40 billion.

However, there was lack of information and uncertainty on the gas front, and hence the company was not sure whether these plans would be implemented or not. The management believed that if these plans would materialize, they would further add to the valuation of the company; however the company had not done any evaluation for its planned expansion as yet.

5 DCF valuation

Nida had been exposed to the discounted cash flow models of stock valuation during the finance courses at her university and she recalled the three variants of DCF models, dividend discount model, free cash flow model (free cash flow to firm and free cash flow to equity) and residual income model, which would be suitable under certain conditions.

Dividend discount model (DDM) is useful when the stock is dividend paying and the dividend policy bears an understandable and consistent relationship with the company's profitability. For non-dividend paying stocks or when the dividends do not have a consistent relationship with the dividend paying ability of the firm, free cash flow models are appropriate. For companies with changing capital structures, free cash flow to firm (FCFF) model should be preferred to free cash flow to equity (FCFE) model. Residual income model is suitable if the stock is not paying dividend and if the firm's free cash flows are negative.

5.1 Valuation parameters and assumptions

As Nida prepared her assignment, she studied the company's past annual reports, various industry reports and the market trends. She decided to make the forecasts for the next nine years and to consider the period after that as terminal value period. In making the forecasts for the next nine years, she assumed the following:

- (i) Considering the competitive advantage of the firm, expected increase in capacity utilization, expected inflationary trend in prices and an aggressive promotional strategy over the next two years, sales would be around PKR 29,995 million for 2016, PKR 35,844 million for 2017 and PKR 38,174 million for 2018.
- (ii) Growth in sales would be stable at 5 percent after 2018. The rate of 5 percent was quite conservative and was based on the ongoing gas crisis.
- (iii) The company would continue to achieve strong operating margins in future years. Operating margin was assumed to be 50 percent for the years 2016 till 2018 and 48 percent from years 2019 till 2022.
- (iv) Due to the end of feed gas subsidy in 2022, raw material cost was expected to jump up decreasing the operating margins to 36 percent for the years after 2022.
- (v) Accelerated depreciation expense (for tax purpose) would be PKR 3,411 million for 2016 and PKR 3,470 million for each of the next eight years.
- (vi) Capital expenditure would be PKR 1,675 million for 2016 and PKR 500 million for each of the next eight years.
- (vii) Change in working capital would be 20 percent of additional sales in 2016 and 10 percent of additional sales for each of the next eight years.

She had also derived the required valuation parameters (table 3). Using the share price data for the stock, she had estimated the historical stock beta of 1.15 for the firm. She believed that the risk-free rate and terminal growth were very important assumptions in the DCF as they are required to calculate the required return on equity and the terminal free cash flow, which constituted the

Table 3: Fatima Fertilizer: Valuation parameters

Tax rate	35%
Terminal growth rate	3%
Risk-free rate	11.50%
Market risk premium	8%
Historical beta	1.15
Interest rate on LT Debt	12%
Exchange rate (PKR/USD)	104.80*

Source: Author's estimates/assumptions

*Extracted from currency rates published by Morgan Stanley Capital Index

major portion of the overall fair value.

Based on the assumption that in the long run fertilizer demand in Pakistan would be limited by the availability of cultivable land, she decided to peg the terminal growth rate in cash flows to the GDP growth rate of 3%. She assumed the 10-year PIB rate of 11.5% as the risk-free rate and estimated the market risk premium at 8% based on the average historic riskfree rate and average market return. To simplify the valuation, she decided to use a constant cost of equity and a constant weighted average cost of capital throughout the valuation period. However, she believed that the valuation may be at risk due to the fluctuations in the GDP parameter and/or the risk free rate; thus, she planned to include a sensitivity analysis to analyze the impact of any change in these perimeters on the DCF valuation in her report and presentation.

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