Equity Research on Maruti Suzuki India Ltd.

Jyothi U
PGDM No. 13086
Student PGDM 2013-15, SDMIMD, Mysore
jyothi13086@sdmimd.ac.in

Abhijith Seetharam
Assistant Professor - Finance, SDMIMD, Mysore
abhijith@sdmimd.ac.in

Comment by the Faculty

Financial decisions, especially with respect to capital expenditures, have far reaching consequences for a company and the manager. Mistakes in capital allocations can break a company, or at the very least dent its prospects significantly to capitalize on potential market opportunities. Keeping this in mind, most managers are cautious about making capital allocation decision. Many managers would tend to evaluate, debate and ponder over the probable outcomes of their decision. They intuitively understand that future circumstances may change so as to boost or hamper their plans. While many would wish for a 'crystal ball' to peek into the future, proficient managers would settle for basing their decisions on a well-constructed Financial Model.

Most financial models are spreadsheet constructs that enumerate assumptions about the future. An important feature is that they take into account growth rates, costs, risks and the opportunity cost of capital to project future financial outcome of a decision. The more sophisticated ones also allow users to examine different outcomes and assess statistical risks. Financial models are a cost-effective way of examining probable outcomes of the today's decision and enable decision makers to visualize cash flows, plan budgets, estimate financial impact of operational bottlenecks, and benchmark returns with competing alternatives.

Companies with multi-country or even international operations must make use of financial models for providing a foundation for decision making. A financial model would help managers absorb and comprehend the complex interactions between volatile exchange rates, cash flows, needs of working capital, and changes in cost of funding and consequently provide a well-laid out 'barometer' to compare with the company's risk capacity.

Knowledge of financial modeling is a boon to business graduates and sound understanding of financial modeling can set them apart from the *hoi polloi* of managerial aspirants. Students interested in learning financial modeling must first embrace fundamental precepts of model building which include: user-friendly design, clear formulae and nomenclature, clarity on business model, reliability and robustness, logical flow between worksheets, clear and attractive formatting and a productive set-up. It is important that the model has clear demarcation between inputs, calculations and outputs. Model builders should avoid multiple or haphazard hard-coded inputs, circular referencing and devoid of redundant data. Models of professional standards also have an in-built error checking mechanism to guide the user in case wrong inputs are entered.

The above points and more regarding financial model building are addressed by U. Jyothi in an endeavour illustrate the various steps that go into consideration during financial modeling.

S Abhijith

Equity Research on Maruti Suzuki India Ltd.

Thesummer internship project in Austal group, Bangalore, involved doing an Equity research on Maruti Suzuki India Ltd with main focus on financial modelling. Starting from top down approach of analyzing auto industry the researcher could identify MSIL as the company to be researched because it generates most of its revenue from the sale of cars and majority of its operations is in India. It will be the best option to start with for beginner and for easy understanding of financial modelling without complications.

Overview

Financial modelling is a mathematical and fundamental way of looking at a company and its future prospects. Analysis or valuation of any company can be done in 2 ways i.e. Fundamental analysis and technical analysis. Fundamental analysis is analyzing the company with the help of financial statements of the company which will be published annually and quarterly. And technical analysis is analyzing the movement of stock price in the stock markets. Financial modelling is more of fundamental analysis whereby one tries to project the future earnings of the company by analyzing the past trends of growth of the company looking at the financial statements of the same.

When companies are expanding if they want to rise capital from the market, they should decide the price at which the shares should be offered to public which is determined with the help of financial modelling. And in case of mergers and acquisition, the price at which one company will be taken over will be decided with the help of modelling exercise. It is used to arrive at an optimal capital structure, investment in new projects, assets etc. Banks use financial model to estimate the repaying capacity of the borrower to take decisions about lending. Private equity firms, venture capital firms also use these models in their operations to determine fair value of the possible exit valuation. This way financial models is exclusively used in all areas because it helps us determine a possible outcome and helps us take a decision.

Financial modelling exercise starts with gathering together the historical financial data from the annual and quarterly reports of the company. The researcher gathered the revenue drivers of the company to check what drives the revenue and cost. After this some analysis as to how it is changing year on year (YOY) and gather data about the industry to find which stage of industry life cycle is it going through. We make some assumptions based on that to estimate a growth rate for various items. Once all this is done, we try to project the future earnings of the company. Then projects one the income statement and the balance sheet first and then the cash flow statement which is a subsidiary of income statement and balance sheet.

Designing and Formatting

Designing and formatting of excel sheets in a proper way is very critical. One should have predetermined styles, layout, user interface to make the model deliver proper results. Otherwise if one makes some correction in the model somewhere it might affect various cells in the model. And it becomes an uphill task to correct them, it is rather easier to build the model again from the scratch than finding and correcting where the mistake is.

Few tips for proper and easier modelling with respect to design and formatting are as follows:

- All statements should be entered in different sheets in Excel so that referencing becomes easy.

- Other than the historical financial data and growth rates, it is suggested not to enter anything manually. Referencing the cells should be done everywhere possible as it avoids the task of tracking which cells are affected if one cell in the statement is changed.

- Calculations should be broken down into smaller work groups so that it becomes easy to understand.

- Specific colors for inputs and outputs should be used to avoid confusion. (In my modelling exercise I have used blue color for numbers entered manually and black for numbers that are products of formulae.)

- We should take care of circular reference which might happen when same cell has been referred in many places otherwise the output of modelling will not be reliable.

- It is important to use same number format in the entire spreadsheet be it in terms of units (crores or millions) or decimals.

Collecting Data and Analyzing Performance

Data for the financial modelling is basically three fundamental financial statements of the company and the revenue drivers of the company. In addition to this, conference call and earnings call transcripts are used for the purpose of our analysis. All the financial data is fed into excel one statement in sheet. The entire modelling revolves around arriving at the revenue drivers and cost drivers. They are the major things that are required for the projection. Revenue drivers are as name itself says they are the ones that drive that revenue of the company. For example, number of units of cans of Pepsi sold is the revenue driver of Pepsi co., similarly number of models of Maruti cars sold is the revenue drivers of Maruti Suzuki ltd. In my project on MSIL, collection of data on revenue drivers took a lot of time. I had to collect monthly sales all 97 models of cars that are in India including Maruti. Why all models is that because it was used to calculate the total industry car sales in India and in turn market share of Maruti. The data so collected was sorted segment wise for each company. We can see this in the table from model (Table 1) given below. The first table shows that raw data that was collected for each segment and model on a monthly basis. Second table shows annual sales of each segment for all the models of the company.

Table1 : Raw Data of Revenue Drivers (taken from the model)

Category	Manufacturer	Model	Apr-13 A	May-13 A	Jun-13 A
A	Tata	Nano	1,680	1,626	1,336
A	Hyundai	Eon	948	1,014	2,003
A	Chevrolet	Chevrolet Spark	8,350	8,406	7,770
A	Maruti Suzuki	Alto	259	293	293
B1	Chevrolet	Chevrolet Beat	19,847	16,411	20,077
B1	Hyundai	Santro	1,986	1,506	2,081
B1	Maruti Suzuki	A Star	4,264	4,274	4,721
B1	Maruti Suzuki	Wagon R	606	438	506
B1	Maruti Suzuki	Estilo	12,794	12,952	9,395
B1	Tata	Indica	561	243	503
B2	Hyundai	I10	5,943	5,500	5,157
B2	Fiat	Grand Punto	8,194	8,469	8,174

Annual Unit Sales	Mar-13 A	Mar-14 E	Mar-15 E
Maruti Sales by Segments			
A	284,818	275,229	212,988
B1	156,230	167,085	150,784
B2	244,023	230,283	204,381
C1	169,571	200,293	131,720
C2	6,707	4,029	9,245
D1	-	-	-
D2	201	3	2
Utility	189,696	163,232	164,476
Total Domestic Sales	1,051,246	1,040,154	873,597
Maruti Exports	120,388	101,082	111,190
Total Sales	**1,171,634**	**1,141,236**	**984,787**

Revenue drivers can be collected from many authentic sources available on the internet. This data of sales segment wise is available in the company website as well. By summing up the sales of all the models for 12 months one gets the annual sales of industry per segment. Annual sales of Maruti is compared against the industry sales to calculate the market share of Maruti Suzuki. The entire process of modelling starts by projecting the revenue drivers for future years. Industry analysis and some more research is done to arrive at a growth rate for the sales of the company. Once this is done revenue per unit is calculated by dividing the sales of the company by number of units of sold. And based on some analysis taking into account inflation, income levels etc. growth rate for increase in sales price per unit is ascertained and it is multiplied with revenue drivers for the purpose of arriving at the figure of sales.

Analyzing the performance of the company will start from analyzing the annual reports of the company which will contain director's report, auditor's report, management discussion and analysis and the basic financial statements of the company etc. These are all great sources of information about the company. Another kind of analysis could be analyzing risks in the company.

The three main kinds of risk are:

- Operating risk – Operating cycle

- Performance risk – Profitability

- Financial risk - Financial structure

Operating risk: Cash is used to purchase raw materials, which moves through production process and gets converted into finished products. It has to be sold to customers which in turn will return the cash that has been used in the production process. It is the management's ability how fast it can turn the cycle. If the goods are not sold and kept in warehouse then it will have to be funded from the operating cycle, bank or new equity. More borrowings will cost high for the company and reduces the profit.

Performance risk: It is usually the profitability of the company which turns into cash flow in the long term. Companies need to generate profits in order to make investments, meet the needs of investors and grow in future. In the long term, if company is not making profit it means it will become uncompetitive, go bust or will be taken over by someone else. This can be measured by operating profit margin & net profit margin.

Financial risk: It is concerned with the structure of balance sheet together who provides the finance. We all know the 2 basic providers of finance for any company i.e. Debt & Equity. The ratio of these two determines the financial health of the company.

- **Operating efficiency**
- ➢ Inventory days,
- ➢ Trade receivables outstanding
- ➢ Creditors days
- ➢ Net operating cycle (inventory days + debtors days – payable days)

- **Financial structure**
  - ➢ Current ratio, quick ratio
  - ➢ Working capital
  - ➢ Debt to equity ratio
  - ➢ Times interest covered

After this analysis a quick ratio analysis should be done to know the overall performance and financial health of the company which includes,

- **Core ratios**
  - ➢ Return on sales
  - ➢ Asset turnover
  - ➢ Financial leverage
  - ➢ Return on equity
- **Profitability ratios**
  - ➢ Net profit margin,
  - ➢ Operating profit margin
  - ➢ Profit before tax
  - ➢ Return on assets
  - ➢ Return on capital employed

Another important analysis that should be done included Du-Pont analysis which arrives at return on equity from 3 other important ratios which show which has contributed the most to the profit.

Return on equity could be arrived at by multiplying return on sales (PAT/Sales), asset turnover (Sales/assets) and financial leverage (Assets/Equity). This analysis covers all the risk that have been explained as well.

A quick analysis has shown that Maruti's net operating cycle has been relatively low compared to peers which indicates a better efficiency. ROCE value has increased from 10.77% to 12.51% net increment of 16.16%, this implies that the company is making judicious use of the capital employed. ROE has increased from 11.2% to 14.2% for 2012-13. Gross Profit ratio has increased from 18.09% to 22.00%. Net profit ratio has also increased from 4.71 to 9.61%. All the major profitability ratios has increased Y-O-Y basis. This implies that the company is working efficiently to convert every rupee earned in revenue to profit. The company's solvency position more or less remained the same with current ratio being 1.6:1, Quick ratio being 1.167:1, Debt-equity ratio being 0.1. The Cash and Bank Balance reduced by 68%.

Given below is see a table of key ratios from Mar 2012 to Mar 2022(expected)

Table 2 showing key ratios that were calculated (taken from the model)

Table 2 : Key ratios that were calculated

Key Ratios	Mar -13 A	Mar-14 E	Mar-15 E	Mar -16 E
Market Capitalization	5,907,271			
Enterprise Value	5,240,531			
Earnings Per Share	81.76	117.97	97.50	116.10
Price Earnings	23.92	16.58	20.06	16.85
EV/Sales	1.21	1.19	1.26	1.16
Book Value	630.06	740.03	827.40	866.14
Price/Book Value	3.10	2.64	2.36	2.26
ROE	0.14	0.17	0.12	0.14
ROA	0.10	0.12	0.09	0.11

Forecasting Models

The type of forecasting method you select depends on the nature of your item. Are there seasonal trends? Is demand steady, cyclical or sporadic? Are trends strong or limited? Is the item new? Because each item you forecast has a different history (and future), you should select a method most appropriate to each item. A forecasting method that fits well for one data set might be inaccurate for another item. Deciding which forecasting method to select can be challenging, especially across a large product line and using only spreadsheets. Sophisticated forecasting software can test multiple methods for each item and determine which method will give you the most accurate results.

Few methods that could be used in different situations include moving averages (when no particular trend or pattern is observed in sales), weighted moving average (when we need to lay some emphasis on some data points than on others), exponential smoothing (when more stress is to laid on recent data and you want to capture some trend or pattern), adaptive filtering (when we want to rearrange the weights and make the data get closer

to reality). These are few of the different methods that could be used for the purpose of forecasting. All these methods unless backed up by proper research and analysis cannot give reliable answers.

Forecasting Financials

Forecasting of financials starts from forecasting of revenue drivers in the models. Forecast of revenue drivers is done based on the industry analysis, research as to what drives the growth of revenue drivers etc. For example, if we are forecasting revenue drivers of Maruti i.e. number of cars that will be sold, we have to do research on what drives increase in car sales i.e. it can be increase in per capita income of people, more discounts from the manufacturer etc. we also look at the conference call transcripts of the company which gives some indications as to what could be the growth rate of car sales in the country. Based on all this one sets a percentage growth rate for industry sales initially and then one calculates the market share of Maruti and set a growth rate for the market share of the company. Based on this revenue drivers are forecasted to future. Once the revenue drivers are forecasted, one calculates the sales price per unit of vehicle sold and cost per unit of vehicle sold. With the help of this one can arrive at the gross profit. Next the researcher tried to forecast the other operating expenses like staff costs, selling and administrative expenses etc. which helps in arriving at the net profit.

The method used in modelling of MSIL was "Percentage of sales method." This method takes all costs and line items as a percentage of sales, so that it becomes easy to track and project as well. In the modelling exercise all the costs were taken as percentage of sales which can be seen from the table (Table 3) below.

Table 3: Percentage of Sales Method in Modelling

As a percentage of revenue	Mar -11 A	Mar – 12 A	Mar -13 A	Mar – 14 E
Excise Duty % of Gross Sales	-10.6%	-10.1%	-11.4%	11.1%
Cost of Goods Sold % age of Revenue	79.8%	80.9%	76.4%	71.0%
Gross Profit % age of Revenue	20.2%	19.1%	23.6%	29.0%
Staff Costs % age of Revenue	2.0%	2.5%	2.6%	2.4%
Other Expenses % age of Revenue	10.8%	12.0%	13.5%	11.5%

Operating Costs % age of Revenue	92.5%	95.4%	92.5%	89.0%
EBITDA % age of Revenue	7.5%	4.6%	7.5%	11.0%
Depreciation % age of Revenue	2.8%	3.3%	4.4%	4.8%
EBIT Before Other Income % age of Revenue	4.7%	1.3%	3.1%	6.1%
Income From Services % age of Revenue	0.5%	2.5%	2.5%	0.0%
Other Income % age of Revenue	3.4%	2.4%	1.9%	0.0%
Other Income % age of Revenue	4.0%	4.9%	4.4%	4.2%
EBIT % age of Revenue	8.6%	6.3%	7.6%	10.3%
EBT % age of Revenue	8.6%	6.1%	0.5%	0.5%
PAT Before Minority Interest % age of Revenue	6.3%	4.6%	5.7%	8.1%
Minority Interest % age of Revenue	0.0%	0.0%	0.0%	0.0%
Equity in Affiliates % age of Revenue	0.0%	0.2%	0.1%	0.0%
PAT % age of Revenue	6.3%	4.8%	5.7%	8.1%
Taxes % of PBT	26.4%	23.8%	20.2%	23.0%
Dividend Yield	9.4%	12.9%	9.8%	6.8%

For further years, based on the historical average, inflation, GDP growth rate and various other parameters a growth rate will be fixed and cost items will be forecasted. For projecting accounts receivables and payables, we look at the historical trend and if we observe there is no much volatility we use the past year's days payables and receivables for forecasting into future. If we observe too much volatility and then we have to dig down and find out the reason why it is so and then fix a growth rate based on the observation. Capital expenditure has to be done by companies to grow their businesses. This could be in the form of new plant or new building. Capital expenditure projections for the 1st two three years can be done with the guidance of the management or we can even get planned capital expenditure from the conference call transcript

of the company and such announcements made by the company. Over the long term capital expenditure has to be in-line to maintain the revenue to gross assets ratio. Historical trend of the ratio has to be used to link projections for company.

Cash Flow

Forecasting the free cash flow for future years is very important output of modelling as it is the one which shows the future profitability of the company. Business have to generate free cash flow over long run in order to meet the financial needs of the organization. It can be paying of dividends to owners of the company (equity share holders), interest, meeting capital expenditure, paying dividend to preference shareholders. In essence of analysis and valuation, free cash flow is expressed as operating cash flow less, any capital expenditure essential to maintain the current growth rate.

Investors prefer using free cash flow instead of net income to measure a company's financial performance, because free cash flow is more difficult to manipulate than net income. Negative free cash flow is not always a bad thing, if there are huge investments in new capacities, which would enhance growth over the years it is good and creates value for shareholders.

Free cash flow is determined for the projected years, which could be five years or ten years. Companies continue to operate and generate cash flow after the projected period. This means companies live into perpetuity. To project cash flows after a few years is extremely difficult task and the present value of cash flows far into future will have little impact, to solve the problem we use terminal value.

Terminal value is the value of all the future cash flows of the company from the end of the projected period to perpetuity. Terminal value is a factor of free cash flow of the last year of the projected period, long term growth rate and weighted average cost of capital of the company. Terminal value is the product of free cash flow of one year forward at the end of the projected ($FCF_{n+1} = FCF_n \times (1+$long term growth rate) period and terminal multiple ($1/($Weighted Average Cost of Capital - Long term growth rate))

We can see the cash flows projected in MSIL financial modelling from the table (Table. 4) below:

Table 4: Calculation of Free Cash Flow of MSIL Ltd.

Valuation	Mar-14E	Mar-15E	Mar-16E	Mar-17E	Mar-18E	Mar-19E	Mar-20 E	Mar-21E	Mar-22E
Free Cash Flow									
Add: Profit After Taxes (PAT)	356,266	294,451	350,630	420,154	475,353	581,224	693,202	847,079	990,323
Add: Depreciation	212,353	237,350	264,841	277,525	287,311	295,684	298,853	307,201	328,333
Add: Interest Expenses	6,221	7,349	(12,316)	(17,138)	(18,651)	(20,560)	(22,786)	(25,237)	(28,001)
Less: Interest Income (Investment, cash and Bank Balance)	69,227	81,102	76,652	78,404	80,424	82,974	85,948	89,222	92,914
Less: Change in Working Capital	17,359	(17,978)	8,456	9,025	9,936	14,024	16,458	19,201	21,992
Less: Capital Expenditure	400,000	334,056	316,407	342,762	321,061	297,286	394,455	437,535	485,582
Cash Flow	**88,254**	**141,969**	**201,639**	**250,349**	**332,593**	**462,064**	**472,407**	**583,086**	**690,167**
Terminal Value									6,068,097
Free Cash Flow	**88,254**	**141,969**	**201,639**	**250,349**	**332,593**	**462,064**	**472,407**	**583,086**	6,758,264

Valuation

The process of determining the current worth of an asset or company. There are many techniques that can be used to determine value, some are subjective and others are objective. The whole objective of financial modelling exercise to find the value of the stock of the company. By finding this out we will be able to say whether the company is over-valued or under-valued. Valuation can be classified into absolute valuation and relative valuation. Absolute valuation is finding the present value of future cash flows of the company. The second method is relative valuation, where the stocks are priced in relation to their peers by various methods based on earnings, book value, enterprise value to sales etc. Absolute valuation is the present value of the cash flows that we calculate in the financial modelling exercise. Discount rate will be the cost of capital which can be found out using capital asset pricing model and we find out the present value, then we divide it by number of shares outstanding to find out the value of the share.

Free cash flow can be calculated in various ways. One way is to take profit after tax and as a first step add back depreciation and amortization expenses because they are non-cash expenditure and a positive cash flow for the company. Then second step is adjusting working capital changes. It includes all the items components that form part of the operating activities. The key is to follow a consistent approach on how the calculations is done, as long as the direction of cash flow is clear and applied it should not change the ultimate result. For the purpose of valuation we deduct interest income and income generated from investments adjusted for taxes (interest income x (1-tax rate)) from cash flow calculations.

Formula to calculate FCFF:

$$FCFF = NI + NCC + [Int * (1 - tax\ rate)] - FCInv - WCInv$$

Wherein,

NI = Net income,

NCC = Noncash expenses,

FCInv = capital expenditure

WCInv = changes in working capital

In the valuation process calculation of cost of capital & growth rate becomes important. Cost of capital can be calculated with the help of weighted average cost of capital. Companies raise capital from different sources like equity, debt, preference shares and retained earnings. The cost of capital is the minimum return that should be earned by the company to satisfy all the suppliers of capital. Dividend should be paid shareholders and interest should be paid to debt holders. So that minimum amount of profits that the company should earn is the cost of capital. Weighted average cost of capital is broadly a factor a cost of debt and cost of equity where as other forms of financing will cost fall in between the two poles. To determine the cost of debt, the easiest is to see the cost of debt on the company balance sheet. Cost of equity is calculated using typical capital asset pricing model (CAPM) method. Cost of equity is a factor of risk free rate, market premium and beta. Beta is the measure of volatility of the

stock in relation to the market. It can be calculated manually using regression analysis or another formula (covariance of asset/ variance of market). The third component of cost of equity is to determine the market premium which is the difference between expected market return and risk free rate.

Enterprise value is calculated as market capitalization plus debt, minority interest and preferred shares, minus total cash and cash equivalents. The reason for using enterprise value is in the event of a buyout; an acquirer would have to take on the company's debt, but will also get the cash. Enterprise value differs significantly from simple market capitalization in several ways, and many consider it to be a more accurate representation of a firm's value. The value of a firm's debt, for example, would need to be paid by the buyer when taking over a company, thus EV provides a much more accurate takeover valuation because it includes debt in its value calculation.

In this study, in financial modeling exercise all the cash flows projected are at the company level and this is used to calculate the enterprise value to arrive at a fair market price for the stock. Enterprise value for the financial modeling exercise is the net present value (NPV) of the projected cash flows and terminal value for the company. Enterprise value includes all forms of shareholders like debt, minority interest, preferred equity and equity holders.

The objective of modeling exercise is to identify the fair value for the stock, so from the enterprise value we deduct debt, minority interest, and add cash and investments to arrive at the fair market value of the company. Fair market value divided by the number of shares outstanding would give us the fair market value per share. This is how we calculate the intrinsic value of share using discounted cashflow. We perform relative valuation as well to compare the intrinsic value with peers on various metrics like price to book value, earnings per share, enterprise value to sales etc. in order to arrive at a fair band within which the share's intrinsic value lies. Based on this value we take a position in the stock.

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