Financial Modeling & Corporate Valuations

Presented by

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Presenter Profile

- Passed CA exams in December 2004
- Became Associate Member of ICAP in November 2005
- Completed Articles from Ernst & Young (FRSH) from August 2001 to October 2005.
- Served Ernst & Young as Assistant Manger Audit from November 2005 to April 2006
- Served KPMG as Assistant Manger Audit from July 2006 to November 2006
- Moved to Industry by joining Agritech Limited (Formerly Pak-American Fertilizers Ltd.) as Manager Corporate Finance in December 2006.
- Given additional Charge as CFO Hazara Phosphate after its acquisition by Agritech in November 2008.
- Achievements:
  - ✓ *Qualified during Articles*
  - ✓ *Seconded to EY Saudi Arabia and USA during articles*
  - ✓ *Due Diligence and acquisition of Hazara Phosphate*
  - ✓ *Project financing for the expansion project*
  - ✓ *Listing of Agritech*
  - ✓ *Restructuring of long term loans of more than PKR 20 Billion*
  - ✓ *Due diligence of Agritech and Hazara by local and international investors*
  - ✓ *Handling lender base of more than 70 investors including banks, financial institution, mutual funds, international investors, individuals.*

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Financial Modeling

Financial modeling

- Task of building an abstract representation of a financial decision making situation.
- A mathematical model designed to represent the performance of a financial asset or a portfolio, of a business, a project, or any other investment.

Possible Applications include:

- Business plan performance & valuation
- Scenario planning and management decision making, (expansions & strategic planning analysis),
- Project finance
- Equity Investment
- Portfolio & Risk Management
- Credit Analysis
- Fair Valuation

These models are generally built around

- financial statements,
- inputs (assumptions) impacting outputs
- external inputs / global variables (exchange rates, tax percentage, etc…)
- Internal inputs / company specific variables (wages, unit costs , etc…)
- Mathematical relationship
- Output

Financial Modeling – Forecasting Cash flow , Decision making and Risk

Every major decision a company makes is in one way or another derived from how much the outcome of the decision is financially worthwhile. It is widely recognized that financial modeling is the single financial analytical skill that managers must master to make better financial decision.

Risk analysis involves assessing

- Future cash flow levels, (cash flow is reality) and
- Risk in valuing those cash flows, whether it be the cash flow from assets, debt or equity (assessment of key variables & value drivers)

Critical Success Factor

Estimating cash flows & identifying risk effecting it

Use and Users of Financial Models

Top Management & Directors

- Future Business plan
- Business Analysis
- Sensitivity on critical variables (Value drivers)
- Analyzing the impact of changes in industry, local & international economy
- Analyzing Cash flow position

✓ If cash surplus scenario
- Short term Investments
- Repayment of existing debts
- Long term investments
  - Expansion project
  - New project
  - Acquisition & Mergers

✓ If cash deficit scenario
- Short term loans
- Long term financing
  - Restructuring of existing loans
  - Right issue
  - IPO
  - Equity Injection / investment
  - Discontinue / dispose non profitable business segments

Use and Users of Financial Models

Banks / Lenders

- Analyzing Business
- Analyzing business ability to service debt
- If business is not able to service debt then restructure debt or issue new loan
- Why to finance company for projects and acquisitions

Investment Managers, Fund Managers

- Identifying potential Investment opportunities
- Identify investments, which needs to be disposed off
- Research Department issuing research reports on various sector
- Risk management department managing risk and return of the portfolio

Equity Investors

- Analyzing Business
- Determining the entry price on the basis of future and historical performance
- Estimating IRR on the investment by changing exit value and timings

Use and Users of Financial Models

Listing, IPO, Offer for Sale, Right issues

- Purpose of the activity and its impact
- Determination of offer price and its justification for
  - ✓ Underwriters
  - ✓ Pre-IPO investors
  - ✓ Private Placements
  - ✓ IPO / right issue investors
  - ✓ SECP
  - ✓ KSE

Rating Agency

- Analyzing company's credit worthiness
- Analyzing company's ability to pay its debt
- Issuing instrument ratings
- Issuing entity's ratings

Accounting

- Fair Valuation of Investments
- Impairment testing of Investments

You as the Model Developer (Three HATS)

Finance Expert

You are the finance expert, working with the elements of the income statement, balance sheet and cash flow statement, using your knowledge of accounting to produce the correct presentation of the results.

Spreads Sheet Expert

You need to be good at excel, using it to optimum level as per your excel ability.

User Friendly

You are the visual designer and architect. The worksheet should be structured in such a way that it should be easy and fun to use as possible.

Critical Success Factor

Balancing all three HATS to prepare User friendly & interactive Financial Model

Financial Modeling Process

Generally following process is used for preparing Financial Model.

- Gather Historic Financial Statements and analyze it
- Compute Ratios from Historic Financial Statements to develop some of the mechanical assumptions about revenue, fixed & variable cost, Working capital
- Need detailed discussions with all the departments of the organization. i.e. Productions, sales, Commercial & Logistics, Finance
- Develop Revenue, Expense, working capital and Capital Expenditures by Working through Value Drivers
- Work through the Income Statement, then the Balance Sheet, then the Cash Flow Statement and Finalize Balance sheet to Check, for forecast years.
- Valuation, sensitivity analysis and presentation.

Modeling Issues for Profit & Loss and Balance Sheets items

Modeling Issues for Profit & Loss and Balance Sheet items

- Profit & Loss items
  - ✓ Revenue
  - ✓ Cost of Sales
  - ✓ Admin & Selling expenses
  - ✓ Financial Charges (Calculated in Debt sheet)
  - ✓ Other Income / Other expenses
  - ✓ Taxation
- Balance Sheet
  - ✓ Working Capital (Current assets & liabilities)
  - ✓ Fixed Assets
  - ✓ Debt
  - ✓ Cash & Bank Balances (Cash flow Statement)
  - ✓ Capital & Reserves (Statement of changes in Equity)
- Historical Radar
- Output

Revenue

- **Analysis of Revenue of Manufacturing companies**
  - ✓ Begin with capacity
  - ✓ Relate capacity with revenue
  - ✓ New capacity driven by corporate strategy
  - ✓ Drivers are Capacity, capacity utilization and price

- **Analysis of Revenue of Telecommunication company**
  - ✓ Begin with market size and market share
  - ✓ Revenue = Market size x Market share x Price
  - ✓ Drivers are market size, market share and price

- **Analysis of Revenue of Banks and Investment companies**
  - ✓ Begin with asset and liabilities
  - ✓ Use deposit growth and loan to deposit ratio
  - ✓ Investments (like capital expenditures) are increases in loan

- **Analysis of Historical Financial Statements**
- **Discussion with Sales team**
- **Creating sensitivity on Value Drivers**

Cost of Sales, Admin & Selling Expenses

- **Analysis of Historical Financial Statements**
- **Identifying Variable and Fixed Cost**
  Variable cost to be linked to production, demand, Volume drivers
- **Fixed cost to be linked to Historical financial statements**
  Analysis of Historical cost growth trends for both Variable and Fixed cost
- **Impact of Capacity expansion on Variable and Fixed cost**
- **Correlation of macro-economic variables may be useful for cost growth factors.**

Other Income / Other Expenses

- **Other Income**
  - ✓ Linked with Short term investments
  - ✓ Linked with Cash surplus generated in projections
  - ✓ Calculate income on average deposit rates

- **Other Expenses**
  - ✓ WPPF
  - ✓ WWF

- **Taxation**
  - ✓ Unabsorbed Business Losses
  - ✓ Unabsorbed Depreciation Losses
  - ✓ Initial Depreciation on addition in Property, plant and equipment
  - ✓ Difference between Tax depreciation and Accounting depreciation
  - ✓ Tax calculation under normal taxation
  - ✓ Turnover tax calculation for comparison
  - ✓ Timing of tax payment

Working Capital

- **Analysis of Historical Financial Statements**

- **Calculating historical turnover days for**
  - ✓ Debtors (Last year debtor **x** 365 / revenue)
  - ✓ Stocks (Last year stock x 365 / cost)
  - ✓ Creditors (Last year creditor x 365 / cost)

- **Use the turnover ratios from historical financial statements for projecting current assets and liabilities**

- **Cash flow impact – changes in working capital**

- **Impact of change in strategy**

- **In case of new project, need to analyze the working capital need of the project, which will be used in calculating the returns (IRR, NPV) of the project.**

Fixed Assets

- **Each Class of asset should show**
  - ✓ Opening Balance
  - ✓ Additions / Deletions
  - ✓ Depreciation
  - ✓ Closing Balance

- **Divide Additions in following**
  - ✓ Sustainability Capital Expenditure (CAPEX) – Historical analysis
  - ✓ Capacity expansion addition /Projects / BMR (CWIP)
  - ✓ Interest Capitalization of the project (CWIP)

- **In case of any Capacity expansion / Projects / BMR**
  - ✓ Identify cost of project
  - ✓ Add increase capacity because of project in Production & Revenue
  - ✓ Sources of Finance (Debt / Equity), adding it in Debt portion

- **Cash flow impact**
- **Tax benefits on Capital Expenditure**

Presentation gimmicks: We can add option on the project i.e. If management wants to view projections with or without expansion, they can easily do it.

Existing Debt

- **Identify current level of short term and long term debt**

- **Prepare following Schedules**
  - ✓ Summary of loans - Balance sheet
  - ✓ Summary of current maturity – Balance sheet
  - ✓ Summary of short term loan - Balance sheet
  - ✓ Summary of Interest – Profit & Loss

- **Each debt should show**
  - ✓ Opening Balance
  - ✓ Debt drawdown
  - ✓ Debt repayments
  - ✓ Closing Balance

- **Cash flow impact**
- **Creating option for sensitivity analysis on Base rate (KIBOR)**

New Debt

- Analyze short term debt requirement with reference to working capital requirements of the company.
- Possibility of long term loan requirement for expansion / project. (Separate working for new loan)
- Creating option for different debt structure for the expansion / project. i.e. by changing grace period, total tenor of loan
- Analyzing the impact of new loans on debt ratios, which are generally set by loan agreements

Cash & Bank Balance (Cash flow statement)

- **Auditing / Balancing tool / Cork Screw**
  - ✓ If Balance sheet is balanced after adding cash & bank balance calculated through cash flow statement then Financial Model is working.

- **Should be simple**

- **Divided into**
  - ✓ Operating Activities
  - ✓ Investing Activities
  - ✓ Financing Activities

Specimen Cash flow statement for Financial Model

Cash flow from Operating Activities

EBIT (Earning before interest & taxes)

\+ Depreciation / other non cash items

Operating profit before working capital changes

\+ Changes in working capital

\- Financial Charges paid

\- Taxes paid

Cash flow from Operating Activities

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Specimen Cash flow statement for Financial Model

Cash flow from Investing Activities

- Additions in Fixed assets
+ Disposal of Fixed Assets
+ Other Income

Cash flow from Investing Activities

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Cash flow from Financing Activities

+ Issuance of Equity
- Net borrowing / loans
- Dividend paid

Cash flow from Financing Activities

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Capital & Reserves (Statement of Changes in Equity)

Share Capital

- ✓ Opening Balance
- ✓ New Shares issued
- ✓ Other Adjustment
- ✓ Closing Balance

Accumulated Profits

- ✓ Accumulated Profits brought forward
- ✓ Profit / (loss) for the period
- ✓ Transfer to other reserves
- ✓ Dividend
- ✓ Accumulated Profit carried forward

Cash flow impact

Tips for Balance Sheet items

- **Prepare workings for Balance sheet items in following format except working capital**
  - ✓ Opening Balance
  - ✓ Additions
  - ✓ Payments
  - ✓ Closing Balance

- **Identify Balance sheet items with which Profit loss items to be linked and calculate those on same sheet** e.g Interest to be linked to Debt

- **Cash flow impact** – Calculate cash flow impact for each Balance sheet items

- **Use Balance sheet as starting and closing point**

- **Use Balance sheet as Auditing tool.**

Tips for Profit & Loss items

- **Identify value driver**
- **Link variable items with value drivers**
- **Link fixed items with cost growth factor**
- **Identify Balance sheet items with which Profit loss items to be linked and calculate those on same sheet** e.g Interest to be linked to Debt, Other income on short term investments

Historical Radar for Important Assumptions

Internal Variables

- Production
- Sales
- Selling Price
- Key Variable cost
- Key Fixed Cost
- Sustainability Capital Expenditure
- Turnover ratios of Debtors, Creditors, stocks

External Variables

- Borrowing rates, KIBOR, LIBOR
- PKR to Foreign Currency parities

- ✓ Company history on important assumptions
- ✓ Company assumptions consistent with industry & overall economy
- ✓ Set up sensitivity on important assumptions

Output

Executive Summary

- ✓ Profit & Loss, Balance Sheet, Cash flow
- ✓ Ratio analysis on the Projected Financial Statements
- ✓ Ratio analysis with lenders view
- ✓ Options

Company Valuation

- ✓ Free Cash flow to Firm (FCFF) to WACC (Enterprise Value)
- ✓ Free Cash flow to Equity (FCFE) to Equity Discount Factor (Equity Value)

Project

- ✓ IRR, NPV, Payback period (always use XIRR and XNPV)

Equity Investors

- ✓ IRR, NPV, Entry and Exit values

Executive Summary - Important Numbers / Ratios for Management & Lenders

Key Numbers / Ratios for Management

- Gross Profit
- Operating Profit
- Net Profit
- EBIT
- EBITDA
- Working Capital
- CAPEX
- Debt (current & proposed)

Key Ratios for Lenders

- Debt (current & proposed)
- Current ratio
- Gearing Ratio
- Debt Service Coverage ratio
- Impact of new debt on Coverage ratios

Corporate Valuation

Valuation Methods

- Discounted Cash Flow Based
- Market Based
- Others

Discounted Cash Flow Based Valuation Methods

- Free Cash Flow (FCF) to FIRM
- Free Cash Flow (FCF) to Equity

Free Cash Flow to FIRM (FCFF)

FCFF discounted on WACC (Enterprise Value)

	FCFF	(Discounted on WACC)
+	**Terminal Value**	(Discounted on WACC)

	Enterprise Value	
-	Current Debt	

	Equity Value	
	==========	

STEPS to Calculate

- ✓Calculate FCFF
- ✓Determine Discount Factor (WACC)
- ✓Calculate Terminal Value (TV)
- ✓Discount FCFF & TV
- ✓Deduct current debt

Free Cash Flow to EQUITY (FCFE)

FCFE discounted on Equity Discount Factor (Equity Value)

FCFE (Discounted on Equity discount factor)
\+ **Terminal Value** (Discounted on Equity discount factor)

Equity Value
==========

STEPS to Calculate

- ✓Calculate FCFE
- ✓Determine Discount Factor (EQUITY)
- ✓Calculate Terminal Value (TV)
- ✓Discount FCFF & TV

Free Cash Flow (FCF)

- Cash flow available for distribution among all the stake holders i.e.
  - ✓ Equity holders
  - ✓ Debt holders
  - ✓ Preference shares holders & so on

- Formula:

Earning Before interest & taxes (EBIT)
\+ Depreciation / Amortization
\- Changes in working capital
\- Capital Expenditure

Free Cash Flow (FCF)

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Free Cash Flow (FCF) – Used For Valuation

Free Cash Flow to Firm (FCFF)

FCF

\- Tax

(FCFF) Enterprise Value

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Free Cash Flow to Equity (FCFE)

FCF

\- Tax

\+ Net borrowing

– Net debt repayment

– Interest payment

FCFE (Equity Value)

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Why Calculate Terminal Value

- Cannot estimate cash flow forever
- Substitute for cash flow projections beyond several years
- Predicting
  - ✓ internal variables
  - ✓ industry
  - ✓ macro economic conditions

  beyond certain period is impractical and exposes to uncertainty

- Estimate Terminal Value to capture the value at the end of the period.
- Used in discounted cash flow (DCF) valuations

Terminal Value – Formula

Terminal Value is the present value at a future point in time of all future cash flows when we expect stable growth rate forever.

$$TV = \frac{\text{FCF of the Last year of projections X (1 + Growth rate)}}{\text{(Discount rate – Growth rate)}}$$

STEPS to Calculate

- ✓ Use last year FCF (FCFF or FCFE as per requirement)
- ✓ Multiply FCF with growth rate
- ✓ Growth rate used cannot be higher then growth rate of economy
- ✓ Assume that growth rate remains same
- ✓ Divide it by discount rate (Use WACC or Equity discount as per requirement)
- ✓ Use discount rate after deduction of growth rate

Equity Discount Factor

The cost of equity is the return (often expressed as a Equity discount factor) a Company theoretically pays to its equity investors.

Company obtain capital from two kinds of sources:

- Lenders (seek to be rewarded with interest)
- Equity investors (seek dividends or appreciation in value (capital gain) or both

While a Company's present cost of debt is relatively easy to determine from observation of interest rates in the capital markets, its current cost of equity is unobservable and must be estimated.

Finance theory and practice offers various models for estimating a particular firm's cost of equity such as the Capital Asset Pricing Model. Another method is derived from the Gordon Model.

CAPM Expected return = Rf + Beta(Rm – Rf) (beta = Cov(Ri, Rm) / Var (Rm))

Gordon Model Expected return = Dividend x (1 + growth) + growth

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Market Price

Weighted Average Cost of Capital (WACC)

Rate that a company is expected to pay on average to all its security holders to finance its assets.

Companies raise money from a number of sources: common equity, preferred equity, convertible debt, long term and short term debt and so on. Different securities, which represent different sources of finance, are expected to generate different returns. The WACC is calculated taking into account the relative weights of each component of the capital structure. The more complex the company's capital structure, the more laborious it is to calculate the WACC.

Companies can use WACC to see if the investment projects available to them are worthwhile to undertake.

The WACC is the minimum return that a company must earn on an existing asset base to satisfy its creditors, owners, and other providers of capital, or they will invest elsewhere.

WACC = Cost of capital (respective share) + Cost of debt x (1 – tax) (respective share)

Example of Discounted Cash Flow Valuations

Average WACC	13.16%
Cost of Equity	19.25%
Terminal Growth	3.00%

Cost of Equity	
Risk Free Rate	14.0%
Risk Premium	7.0%
Market Rate	21.0%
Equity Beta	0.75
Cost of Equity	19.25%

Average WACC	
Cost of Debt	14.0%
Cost of Equity	19.3%
Debt / Equity ratio	60.0%
Tax rate	35.0%
Average WACC	13.16%

DCF Valuation - Free Cashflow to Firm	2011	2012	2013	2014	2015	2016
	1	2	3	4	5	6
Earning Before Interest & taxes (EBIT)	4,560,937,065	6,391,920,520	7,173,779,568	7,521,671,181	7,882,609,446	8,237,736,112
Add: Depreciation	494,412,426	503,372,504	490,024,341	477,200,912	464,867,220	452,992,383
Less: Capital Expenditure	(67,450,000)	(67,450,000)	(67,450,000)	(67,450,000)	(67,450,000)	(67,450,000)
Changes in Working Capital	(137,177,100)	(274,354,199)	(196,048,218)	(119,090,938)	(129,139,362)	(138,421,802)
Free Cash Flow (FCF)	**4,850,722,391**	**6,553,488,825**	**7,400,305,691**	**7,812,331,155**	**8,150,887,304**	**8,484,856,693**
Less: Taxes Paid	(553,674,323)	(553,674,323)	(886,639,231)	(1,818,734,754)	(2,140,443,434)	(2,371,934,389)
Free Cash Flows to Firm	**4,297,048,068**	**5,999,814,502**	**6,513,666,460**	**5,993,596,401**	**6,010,443,869**	**6,112,922,304**
Terminal Value						**61,971,554,857**
PV of FCFF (based on WACC)	*3,797,320,668*	*4,685,456,884*	*4,495,175,995*	*3,655,238,671*	*3,239,230,491*	*2,911,328,710*
Present Value of Terminal Value (based on WACC)						*29,514,454,443*

Present Value of Future Cash Flows to Firm	22,783,751,419
Present Value of Terminal Value	29,514,454,443
Enterprise Value	52,298,205,862
Less: Net Debt	(20,000,000,000)
Value of Equity	32,298,205,862
No. of Shares Outstanding (No.)	500,000,000
Equity Value Per Share (PKR)	**64.60**

Example of Discounted Cash Flow Valuations

DCF Valuation - Free Cashflow to Equity	2011	2012	2013	2014	2015	2016
Free Cash Flows to Firm	4,297,048,068	5,999,814,502	6,513,666,460	5,993,596,401	6,010,443,869	6,112,922,304
Less: Interest payment	(1,749,556,791)	(1,894,360,306)	(1,390,491,712)	(1,091,633,293)	(771,732,226)	(451,222,899)
Less: Debt Repayments / New debt	(1,046,649,000)	(2,093,298,000)	(2,672,920,000)	(2,672,920,000)	(2,654,170,000)	(2,448,040,000)
Free Cash Flows to Equity	**1,500,842,277**	**2,012,156,197**	**2,450,254,747**	**2,229,043,108**	**2,584,541,643**	**3,213,659,405**
Terminal Value						**20,369,656,536**
PV of FCFE (based on cost of equity)	*1,258,567,947*	*1,414,962,451*	*1,444,894,295*	*1,102,262,206*	*1,071,745,319*	*1,117,505,117*
Present Value of Terminal Value (based on cost of equity)						*7,083,263,205*

Present Value of Future Cash Flows to Firm	7,409,937,335
Present Value of Terminal Value	7,083,263,205
Equity Value	14,493,200,540
No. of Shares Outstanding (No.)	500,000,000
Value per Share	28.99

Market Based Valuation Methods

- Price to Earning Multiples
- Price to Book Value Multiples
- Price to Sales Multiples
- EV (Enterprise Value) / EBITDA Multiples
- EV (Enterprise Value) / Sales Multiples
- PEG ratio

Market Based Valuation

Price to Earning Multiple = Market Price / EPS

Company EPS x Average Price to earning ratio of the industry (Market Price / EPS)

Price to Book Value Multiple = Market Price / Book value

Company Book Value x Average Price to book value ratio of the industry (Market price / Book Value)

Price to Sales Multiple = Market Price / Sales

Company Sales x Average Price to Sales ratio of the industry (Market price / Sales Value)

Market Based Valuation

EV / EBITDA Multiple

Company EBITDA x Average EV / EBITDA ratio of the industry

EV is based on market capitalization plus Debt less cash available.

Market Capitalization = Share price x Share outstanding of a listed company.

EV / Sales Multiple

Company Sales x Average EV / Sales ratio of the industry

EV is based on market capitalization plus Debt less cash available.

Market Capitalization = Share price x Share outstanding of a listed company.

PEG ratio (Price / Earning to Growth rate)

$$\frac{\text{Price / Earnings}}{\text{Annual EPS Growth}}$$

In general, the P/E ratio is higher for a company with a higher growth rate. Thus using just the P/E ratio would make high-growth companies appear overvalued relative to others. It is assumed that by dividing the P/E ratio by the earnings growth rate, the resulting ratio is better for comparing companies with different growth rates.

The P/E ratio used in the calculation may be projected or trailing or average, and the annual growth rate may be the expected growth rate for the next year or the next five years.

Example of Market Based Valuation

Price to Book Value Multiple		Valuation (PKR)
Company Book Value Per Share as of XXXXXX	20.00	
	P/BV(X)	
Company A	4.83	
Company B	2.06	
Company C	1.63	
Average	2.84	
Company Value per Share (PKR)		56.86

(Market price as of xxxxxxx, and Book Value as of xxxxxx)

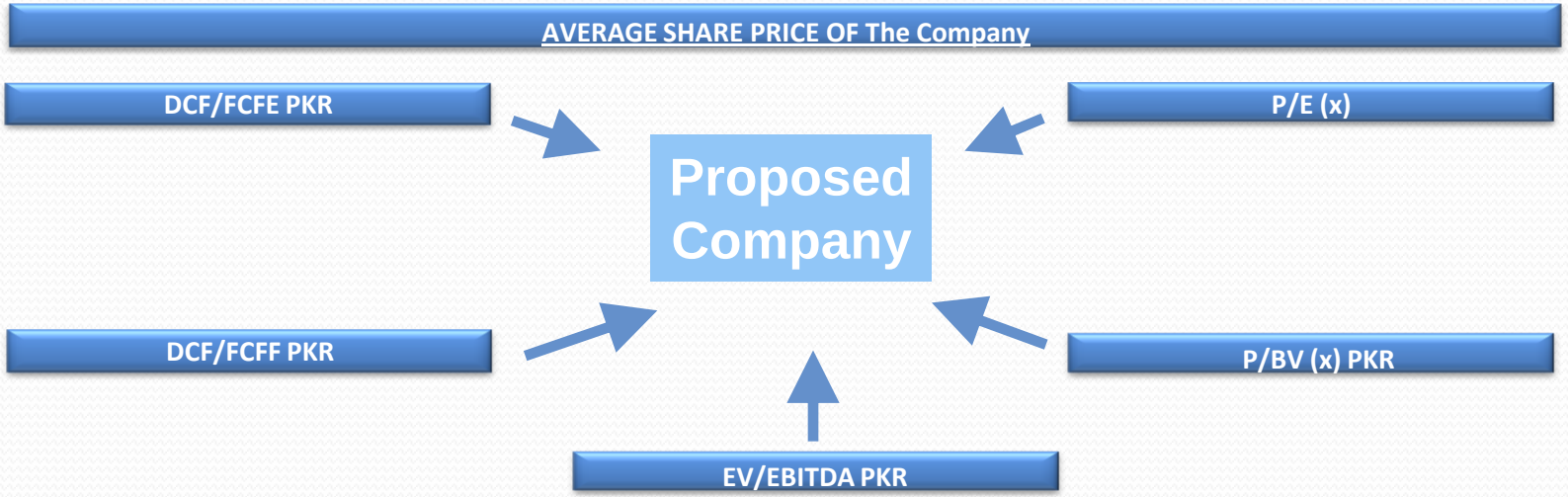
Price to Earnings Multiple		Valuation (PKR)
Company Earnings Per Share for the year ended XXXXXX	5.00	
	P/E(x)	
Company A	9.91	
Company B	5.90	
Company C	9.52	
Average	8.45	
Company Value per Share (PKR)		42.24

(Market price as of xxxxxxx, and Earnings as of xxxxxx)

EV/EBITDA Multiple		Valuation (PKR)
EBITDA for the year ended XXXXXX	4,600,000,000	
	EV/EBITDA (x)	
Company A	6.59	
Company B	4.71	
Company C	13.13	
Average	8.15	
Company Value per Share (PKR)		74.93

(Market price as of xxxxxxx, and EBITDA as of xxxxxx)

Valuation Matrix



Method (PKR)	FCFE	FCFF	PBV	PER	EV/EBITDA	AVERAGE
Valuation / Share	Xxx	Xxx	Xxx	Xxx	Xxx	Xxx
Offer Price	***Xxx***					
Discount to Valuation	**x%**	**x%**	**x%**	**x%**	**x%**	**x%**

Other Valuation Methods

- Book Value
- Market Value
- Replacement Value
- Comparison with Market transactions

Types of Financial Model

Types of Financial Model (Renowned)

Corporate model

Built for company, which has a history and it is assumed to last indefinitely (although they probably won't in reality.) this means that valuation of a corporation begins with historic analysis and the models must include some kind of terminal value assumption because the cash flow are not projected forever.

Project finance model

Built for new projects, which has no history (no matter how many times a similar new plant is built, you don't know how it will work until you switch it on). The project finance models focus on cash flows, IRR and payback of the project and generally cover the entire lifetime of the project.

Leveraged buyout model (Equity Investor)

The transaction is defined by an entry price, the holding period and exit price and the return earned by equity investors. The model is based on corporate model.

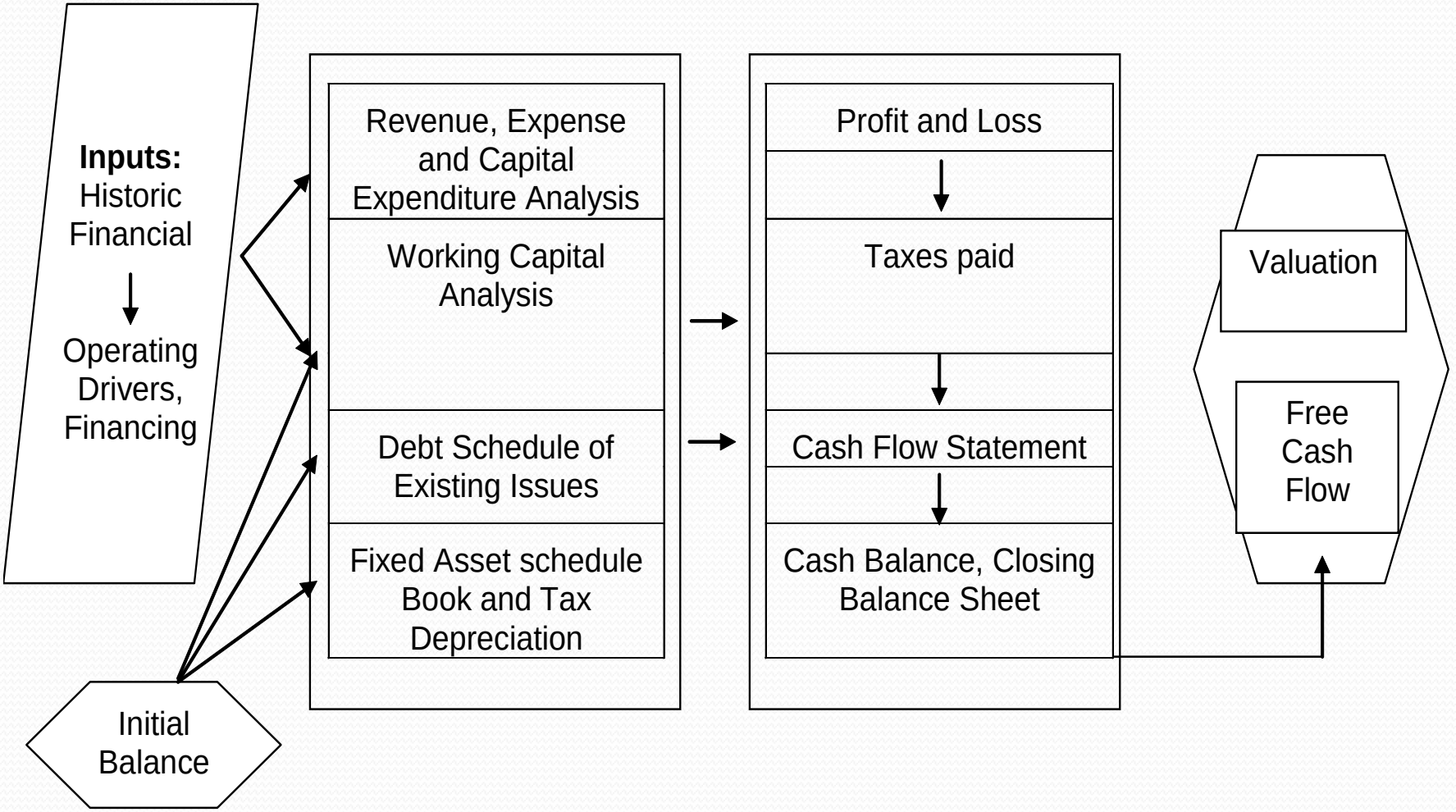
Acquisition & Merger model (Synergy impact)

This model is again based on corporate model. Then computes earnings per share and other financial ratios before and after an acquisition. This type of model considers the specific synergies and cost savings generated by the transaction.

Structure of Financial Models

	Corporate Model	Project Finance	LBO Model	M&A Model
Information Base	Historical financial statement: Analysis of value drivers	Contracts and analysis of Product & raw material Prices and other value drivers	Historical Financial statements: Analysis of value drivers: Transaction Terms	Historical financial statements: Analysis of value drivers: Transaction Terms
Starting Point	Historic Balance Sheet	Sources (Equity / debt) and Uses Analysis (create Balance sheet)	Sources and Uses and Pro-Forma Balance Sheet	Sources and Uses and Pro-Forma Balance Sheet
Cash Flow	Net Cash Flow for the equity holders	Cash Flow that ultimately measures dividends paid to equity	Cash flow that ends in dividends paid to equity	Cash flow changes that result in surplus cash after merger
Debt Analysis	New and Existing	New Debt issues from Transaction	New Debt issues from Transaction	Existing debt issues: Retired Debt Issues: New Debt Issue
Model Termination	Terminal period	End of Project Life	Transaction holding period	Profitability Analysis period
Model Output	DCF valuation, Profitability projection	Equity IRR, Project IRR & NPV, Payback period, DSCR	Equity IRR	Project EPS and other Ratios on Standalone vs. Combined Basis

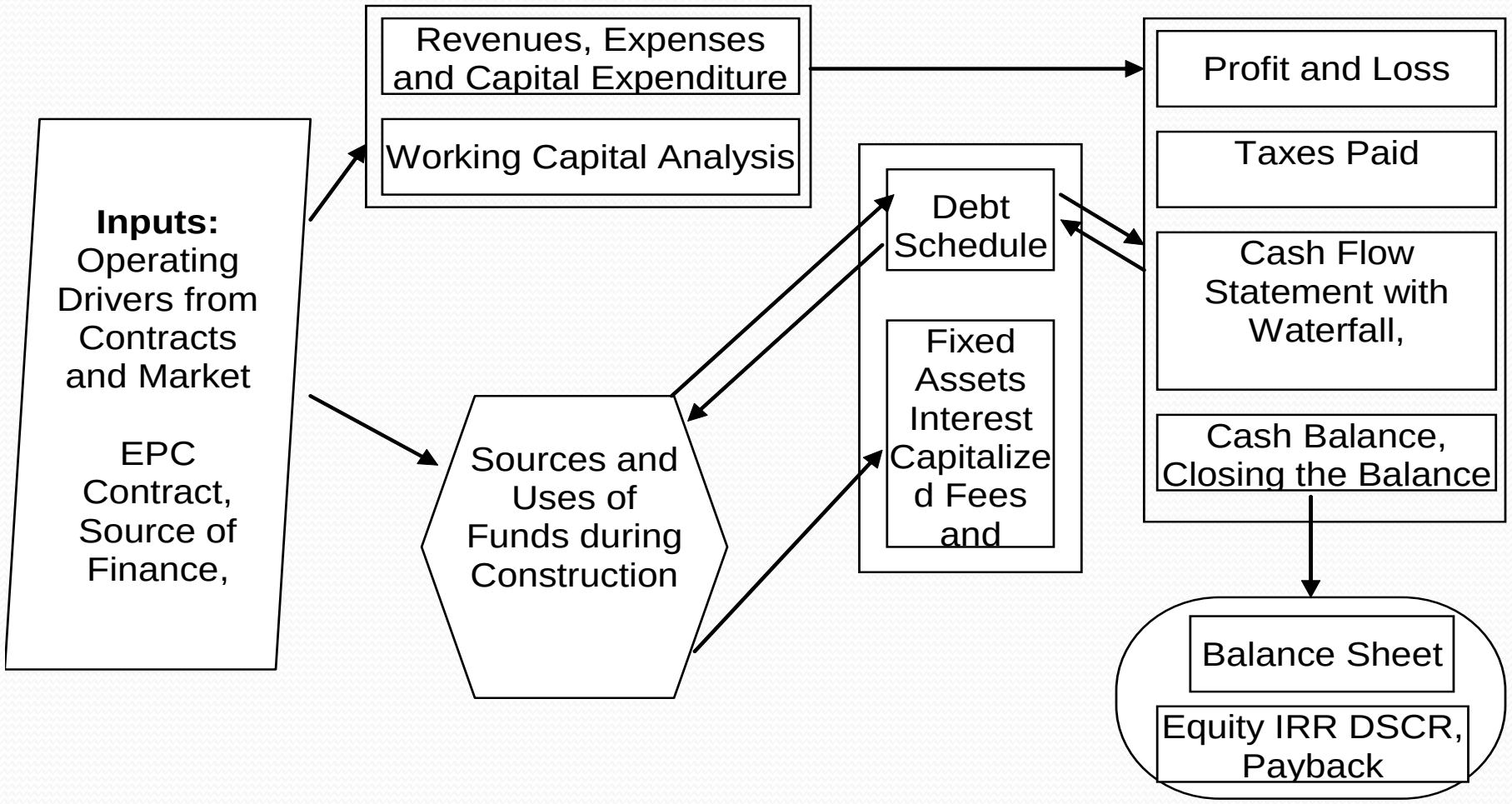
Structure of Corporate Model



Corporate Model – Ordering & Layout

- **Base Historic Financial Data**
  - Balance Sheet As Anchor
- **Input Sheets**
  - Different Colors
  - Arranging of Inputs
  - Set-up Sensitivity
- **Working Sheets**
  - Arrangement by revenues, expenses, capital expenditure and working capital
  - Arrangements by capacity, revenue, and cost structure
- **Working Capital Analysis**
- **Depreciation schedule (Books and Tax)**
  - Assets classes and tax depreciation
- **Debt Schedule**
  - Issue by issue and sum the totals
- **Financial Statements**
  - Income statement
  - Tax Calculation
  - Cash Flow
  - Balance Sheet
- **Output Sheets**
  - Valuation
  - Financial Ratios

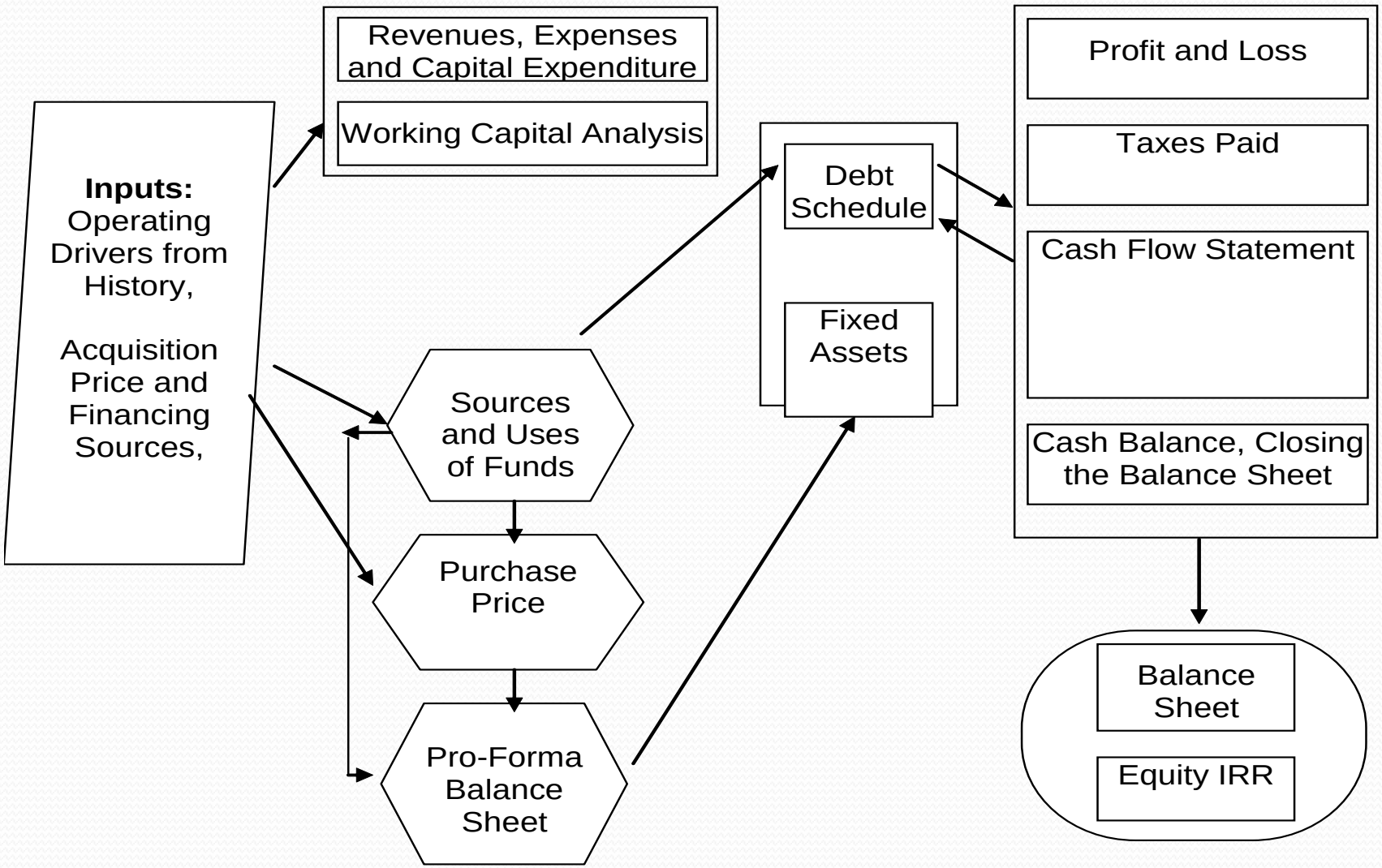
Structure of Project Finance Model



Project Finance Model – Ordering & Layout

- **Cost of project and Sources of Finance (Debt & Equity ratio)**
- **Input Sheets**
  - Different colors
  - Arranging of inputs
- **Working Sheets**
  - Arrangements by revenues, expenses and capital expenditures
  - Arrangements by capacity, demand, and cost structure
- **Debt Schedule**
- **Depreciation Schedule**
- **Financial Statements**
  - Sources and Uses of Funds
  - Income Statement
  - Balance Sheet
  - Cash Flow
- **Output Sheets**
  - Valuation –IRR
  - Payback period
  - Debt service Coverage Ratios

Structure of LBO Model



LBO Model – Ordering & Layout

- **Purchase price, operating cash flows, terminal value**

- **Input sheets**
  Different colors
  Arranging of inputs

- **Working sheets**
  Arrangement by revenues, expenses and capital expenditures
  Arrangement by capacity, demand and cost structure

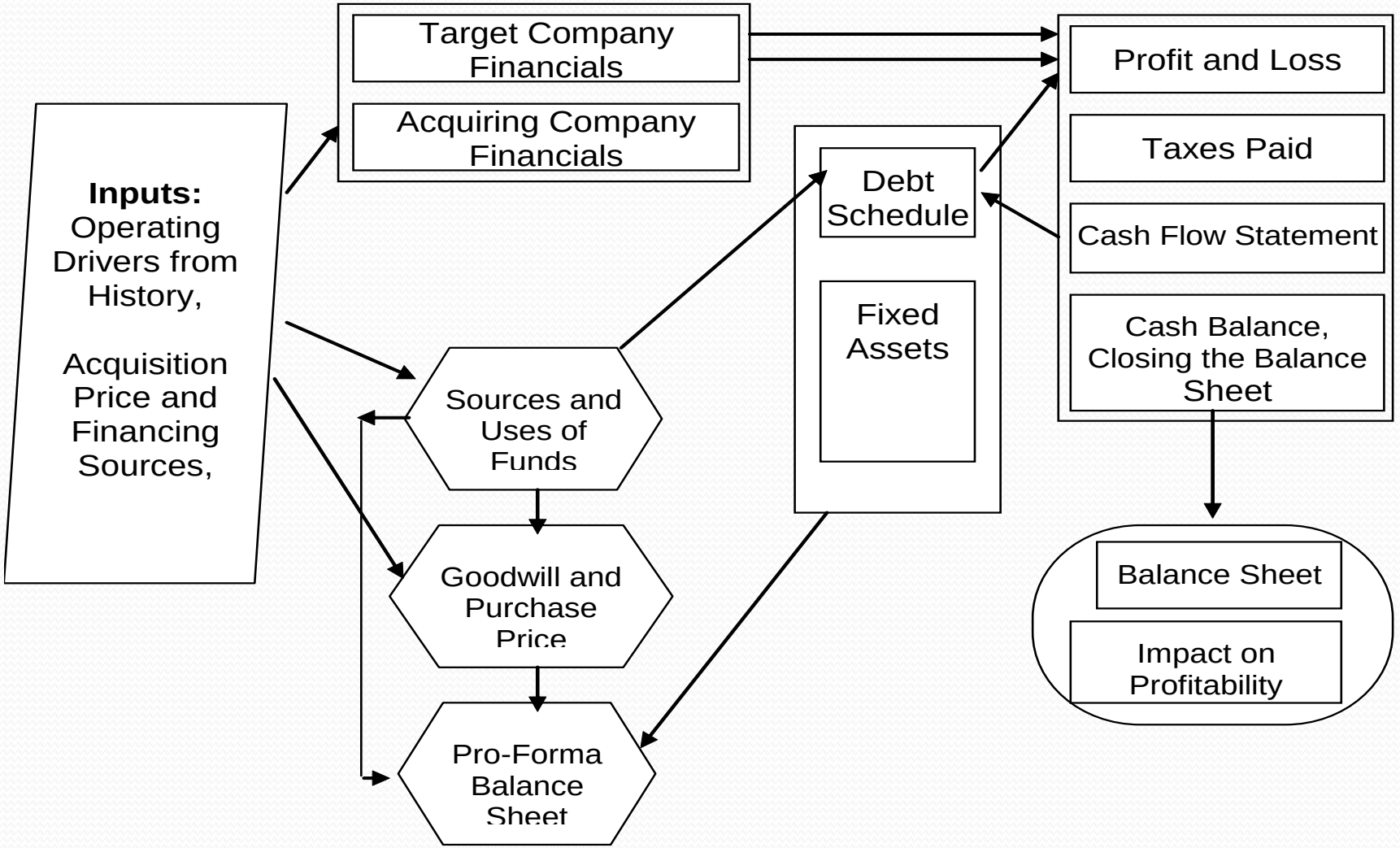
- **Uses and sources of funds**
  Debt and Equity ratio, Debt Schedule

- **Depreciation Schedule**

- **Financial Statements**
  Income Statement
  Balance Sheet
  Cash Flow

- **Output Sheets**
  Transaction Multiples
  Valuation –IRR

Structure of Merger & Acquisition Model



Merger & Acquisition Model – Ordering & Layout

- **Inputs for transaction**
- Consolidated tax rate, interest rate on new financing, dividend payout ratio, other financing parameters on consolidated basis
- Operational Synergies
- Transaction assumptions (transaction price, debt retirement, new debt financing)

- **Sources and Uses of Funds**

- **Goodwill**

- **Pro-forma Balance Sheet**
- Target Financials
- Buyer Financials

- **Depreciation and Tax Adjustments**

- **Consolidated Financials**

- **Outputs, Impact on profitability, EPS, other lender related ratios**

Good Modeling Practices

- Keep it simple. keep formulas in the model as simple as possible and clearly delineate how each formula is derived from the inputs
- Have a clear idea of what the model needs to do.
- Be clear about what the users want and expect.
- Maintain a logical arrangements of the parts.
- Make all calculations in the model visible.
- Save in progress versions under different names, and save them often.
- Working through every single balance sheet item showing the opening balance, changes and the closing balance for each the accounts. This analysis should be made for everything ranging from cash to equity.
- Use the balance sheet as an auditing tool and include a separate “integrity” page of model verification checks.
- assure that no formula in the output module of a model affect anything in any other section of the model.
- Make sure that spreadsheet columns are consistent throughout the model and that the formulas for each column are identical (at least for the forecast period).
- If possible, include a “dashboard” at the top of each page of the model to monitor the integrity and key outputs of the model.
- Test, test and test.

Presentation Gimmicks

Discussion

Options in the Financial model

- Create Options
  - Business segments
  - Expansion projects
  - Sensitivity on Key variables
- Conditional Formatting
- If Function
- Alternate to if function
- XIRR and XNPV

Thank you

In case of any question / feedback, feel free to contact.

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