

The slide features several decorative geometric elements. In the top-left corner, there is a cluster of 3D cubes in purple, blue, yellow, and orange. A large, light blue 3D pi symbol ( $\pi$ ) is positioned in the center-left. Below it, a purple 3D letter 'Q' with a hatched pattern is visible. The background is a light beige color with a large white curved shape on the left and a thin purple curved line on the right.

# QT Equity Portfolio Construction

## Group 6

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# 1. Problem Introduction

- Choose 10 stocks from the Indian stock market – Reliance, BPCL, Maruti, Kotak Bank, TCS, L&T, Godrej, Relaxo, Escorts, TataChem.
- Construct an equity portfolio of 6 stocks – BPCL, Maruti, Kotak Bank, TCS, L&T, Relaxo.
- 5 out of 6 stocks should be large cap and one should be mid cap
- Calculate 10 years return for each stock
- Find the average return and standard deviation of the return.



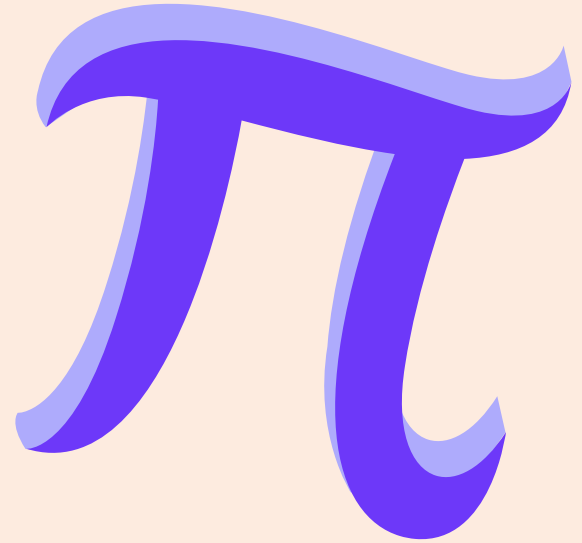


## 2. Methodology

- Download from yahoo finance the data for last 20 years with a monthly frequency
- Calculate 10 years return for each stock and find the average return and standard deviation of the return using descriptive statistics.
- Decide the BIN interval from minimum and maximum value obtained in earlier step.
- Generate histogram for respective data & calculate the monthly return and probability
- Generate a random number for monthly return for next 10 years i.e. 120 months

## 2. Methodology

- Invest 1L in each company individually and determine the total return value after 10 years
- Select 5 out of 6 from Large Cap stocks and similarly select 1 out of 4 From Mid cap stocks by applying linear programming model.
- Using the linear programming model based on the determined constraints to generate Optimal Investment Values for the selected companies



### 3. Simulation

Company name	Selection Variable	Initial Investment	Return after 10y
Reliance	0	0	0
BPCL	1	50000	338402.3925
Maruti	1	200000	12096657.77
KotakBank	1	200000	2342818.193
TCS	1	180000	1659877.412
LT	1	50000	255739.0375
GodrejIND	0	0	0
Escorts	0	0	0
Relaxo	1	120000	13455231.68
TataChem	0	0	0

	Val of Investment	Return
<b>Final</b>	800000	30148726.49
<b>Large Cap</b>	680000	16693494.81
<b>Mid Cap</b>	120000	13455231.68

## 4. Visualization

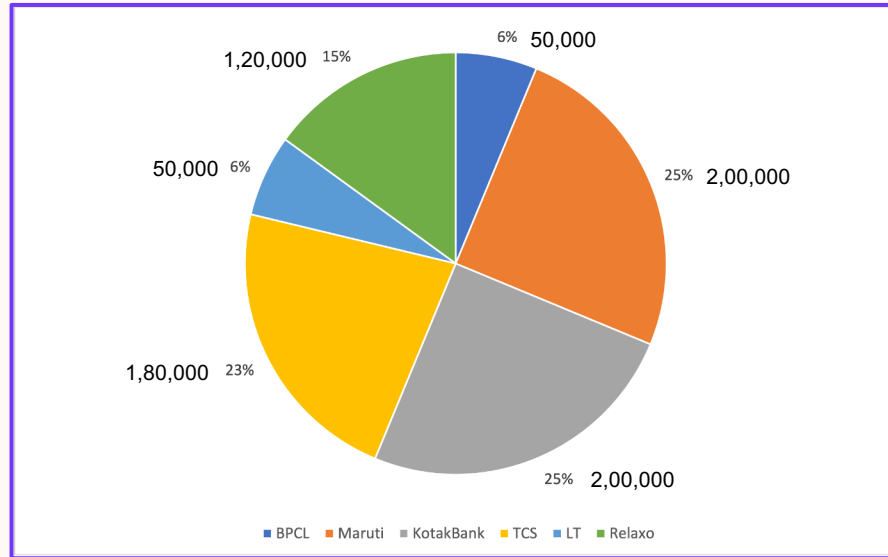


Chart 1: Initial Investment in %

## 4. Visualization

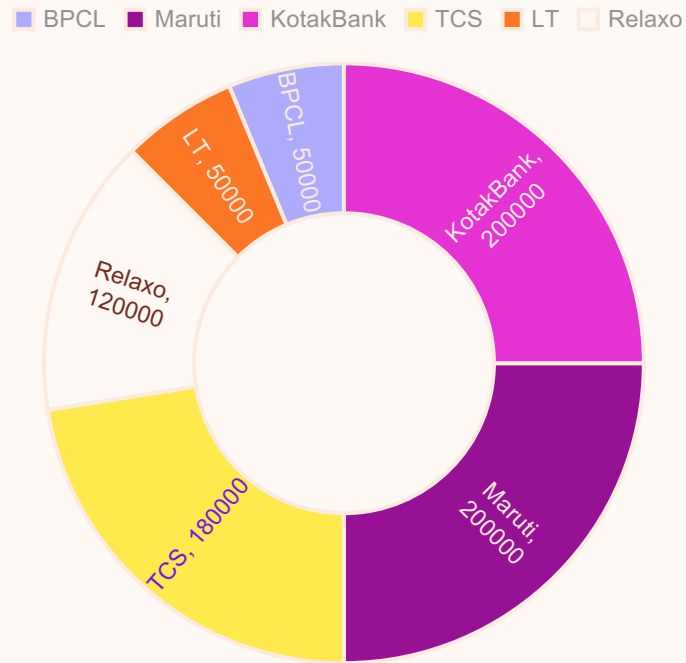


Chart 2: Initial Investment with Values



## 4. Visualization

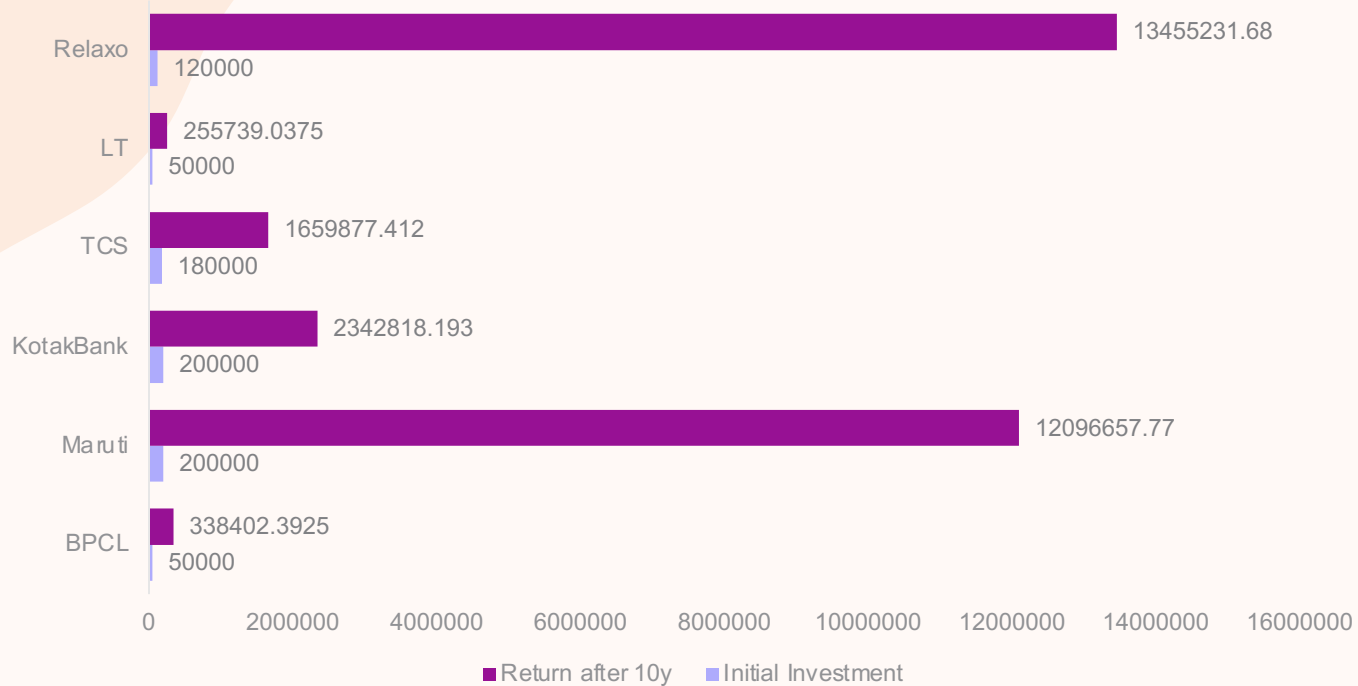
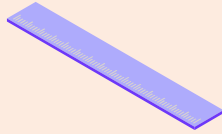


Chart 3: Return after 10 years vs Initial Investment

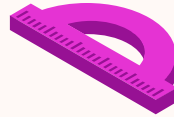
## 5. Assumptions

- Assumption of BIN Interval
- Initial investment of 1L for simulation model
- Generated random number for predicting monthly returns.
- The companies would be in business for the next 10 years
- Past performance of the companies is correlated to the future performance.

## 6. Limitation



This analysis is based on the data downloaded from the yahoo finance website.



10 companies out of which 6 were large cap companies while the remaining 4 companies were mid cap companies, were selected for the study.



No other criteria which could affect the stock price was considered, only the closing price of the stock was considered



# Thank You