DEFENSIVE PORTFOLIO

How did we select the defensive portfolio

1. Defensive investor prioritizes low risk over return.
2. We sorted the funds on the basis of lower 2 step average of std dev. (average all the std devs and select the one's with std devs lower than this average. Again take the average of these std devs and repeat).
3. Step 2 ensures low volatility. Now, to minimise the downside risk of the the selected low volatility funds, we again selected some funds on the basis of lower 2 step average of sharpe/sortino ratio.
4. Step 3 gives us low volatile funds with minimum negative risk.
5. Then we compared the beta of these selected funds, and chose the ones with the lowest beta. This is to consider the bearish market scenario presently.
6. To ensure the high quality of mutual funds, we decided to take in account alpha, as it signifies the fundhouse quality.
7. Because, the prime objective of any investment is a good return, we also took into account the return of the funds, alongwith the alpha.
8. Now we took into account, the fund structure. We observed the asset allocation of the funds.
9. From a defensive point of view, we selected those funds whose max asset allocation is in large caps (bluechip funds). We also considered the form of asset holdings, and preferred the funds in which the max assets were allocated in form of debentures, treasury bills, bonds etc.
10. <SHOW CODE>
11. <EFFICIENT FRONTIER>
12. <Target return, regions suitable for defensive investors>
13. Weights corresponding to returns.

Sundaram Regular Savings Fund

- The expense ratio is 0.76% which is fairly good for a defensive portfolio.
- Assets – 49 cr. INR
- Index return – 6.82%
- Most of the asset is allocated in form of debt fundings – bonds, debentures with average credit rating of AAA.
- Has assets invested in large cap companies like Aditya Birla Finance (10.65%), Power Finance Corp. (10.28%) , L&T Housing Corp (10.27%) etc.
- The percentage of assests in Equity holdings is low – Kotak Mahindra Bank (0.44%), Hindustan Unilever (0.37%) etc.
- As the %age assets in the debt holdings is high, the investment in this mutual fund is secure.

Reliance Liquidity Fund

- Asset size is 1130.38 cr.
- Asset Allocation: Most of the assets are allocated in form of certificates of deposits, treasury bills, commercial papers all with a credit rating of A1+.
- Assets mostly invested in large cap companies like HDFC bank, HPCL, National fertilizers etc.
- This kind of asset allocation is favourable for defensive investors.
- Index return (Crisil Liquid Index) – 7.12%
- Expense – 0.16% (very low expense ratio)

BNP Paribas Overnight Fund

- Expense ratio – 0.15% (very low)
- Asset size is 1970 cr.
- Asset Allocation: Most of the assets are allocated in form of certificates of deposits, treasury bills, commercial papers, debentures all with a credit rating of A1+.
- Assets are invested in large companies like Axis bank, Godrej properties, Smartchem Tech. Etc.
- This kind of asset allocation is favourable for defensive investors.
- Index return (Crisil Liquid Index) – 7.12%

FINAL PORTFOLIO (DEFENSIVE)

Name	**Expense**	**Benchmark Idx Return**	**Exp+BIR**
Sundaram RSF	0.76	6.82	7.58
Reliance LF	0.16	7.12	7.28
BNP Paribas OF	0.15	7.12	7.27
Average	0.356	7.02	**7.377**

Since the average of expense + benchmark index return is 7.377 we need a portfolio which gives us atleast this return (otherwise we could invest in the index only, not the portfolio).

So, on comparing the outputs:

We get that the minimum risk for return >7.37 is : 0.0041 and the corresponding portfolio is:

Name	**Weight**
Reliance	0.7
Sundaram	0.15
BNP	0.15

AGGRESSIVE PORTFOLIO

How did we select the aggressive portfolio

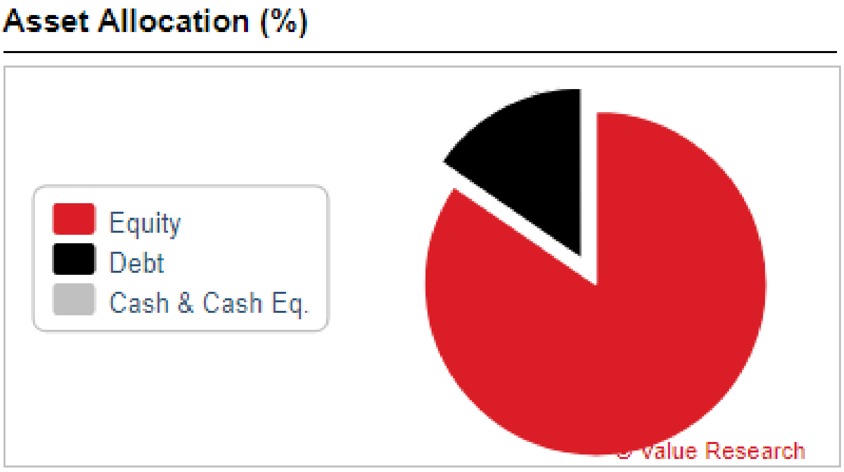
1. Aggressive investor prioritizes return over risk involved.
2. We sorted the funds on the basis of higher 2 step average return. We also considered 2 step average alpha simulatneously.
3. Step 2 ensures high return. Since we have an aggressive take, we choose the funds which had a very high std dev and simultaneously low sharpe/ sortino ratio. A low sharpe/ sortino ensures that the enormous amount of risk the investor is willing to take is actually worth taking.
4. Then, from the selected funds, we choose the ones which have a higher beta. A higher beta ensures that the investor gets maximum profits from even a slight boom in the market.
5. Further we selected the funds on the basis of their asset allocation. For an agressive investor, mid cap asset allocation is favourable because midcaps companies provide a lot of growth scope with a fair amount of security (which is not in case of small caps) and also ensures a fair liquidity.
6. We also gave priority to equity funds – as they bring a good return as compared to bonds and debt funds (with a fair amount of risk involved)

Mirae Asset Emerging Bluechip fund

- Asset size 5131 crores
- Expense – 1.68% (fairly low for a risky investor)
- Assets allocation is mainly in mid cap companies.
- The asset allocation suits a risky investor because midcaps have a lot of growth scope. Hence, an investor can expect high profits, in case of growth spurts.
- Benchmark: Nifty Large Midcap 250 (11.51%)
- Open ended fund – suits a risky invsetor.

ICICI Prudential Banking and Financial Services Fund

- Asset size 2638 crores
- Expense -1.02% (fairly low for risky investors)
- Mid caps and small caps comprise of 33% of the asset allocation.
- Equity fund – suitable for aggressive investor. High chances of good returns as compared to bonds, debt funds.



- Beta = 0.91 implies it is less volatile than the benchmark index (Nifty Financial services TRI). It shouldn't suit an aggressive investor. But the index itself is not performing well. Moreover, it manages to make a position in our portfolio due to its outstanding alpha (8.46) and return (~18%)

Kotak Emerging Equity Scheme

- Expense = 1.09% (fairly low)
- Assets : 3027 cr

- Benchmark Index: S&P BSE Mid SmallCap Index
- Category: Equity Mid Cap – Assets are allocated in Mid Cap companies (~65%)
- Equity Asset Allocation: 98.25% which suits an aggressive investor, because equities usually fetch good returns.

FINAL PORTFOLIO (AGGRESSIVE)

Name	**Expense**	**Benchmark Idx Return**	**Exp+BIR**
Mirae	1.68	11.62	13.30
Kotak	1.09	15.29	16.38
ICICI	1.02	12.63	13.65
Average	1.263	13.18	**14.443**

Since the average of expense + benchmark index return is 14.443. All the possible combination of weights will give a return greater than this. So, we observe the slope of the plot and find the point after which risk starts increasing faster than returns. This point is at return 18.55.

So, on comparing the outputs:

We get that the return is :18.55 and the corresponding portfolio is:

Name	**Weight**
Mirae	0.5
Kotak	0.45
ICICI	0.05

<u>Moderate Investor Portfolio</u>

How we selected our funds?

So, considering moderate investor investment should have a moderate risk and fair amount of growth potential that yields a fairly moderate return.

<u>Steps we followed:</u>

1. We selected those funds whose return, alpha, standard deviation was greater than the average return, alpha, standard deviation of all the funds.
2. Secondly, we selected those funds from above selected funds whose sharpe/sortino ratio was less than the average sharpe/sortino ratio.
3. So by doing this we actually ensured that our selected funds have a good return and alpha, moreover some risk was taken considering the fact that our selected funds had standard deviation greater than the average standard deviation, but simultaneously we also make sure that the risk that we have taken does not involve much of downside risk(sharpe/sortino).
4. Selected funds should also have a moderate beta value ranging from (0.8 to 1.3).
5. We further did our selection from the above selected funds by considering the asset allocation of particular fund.
6. For a fund making a place in a moderate risky portfolio, it should have a good amount asset allocated in large caps ensuring its liquidity. And at the same time fair amount of asset should also be seen in mid cap companies.
7. Funds debt holdings and equity holdings should be nearly same (50-50) ensuring security of money and growth at the same time.
8. We will be focusing on hybrid equity oriented funds.

HDFC Equity Savings Fund –

Asset Allocation – 7242 crores

Expense – 0.5 %

Benchmark – NIFTY 50 arbitrage (40%)

NIFTY 50 (30%)

Crisil Short term Bond (30%)

Fund mainly contains Large cap companies.

Debt holding – 31.89%

Cash & Cash eq. – 36.6%

Equity holding – 31.54%

HDFC Balanced Funds –

Asset Allocation – 20191 crores

Expense – 0.82 %

Benchmark – NIFTY 50 Hybrid Composite Debt 65:35

Benchmark Return – 23.61%

Type - Open-Ended

Fund mainly contains Large cap companies like HDFC (6.57%), Infosys (3.97%), ITC (3.3%), Larsen & Toubro (3.15%), etc.

Aditya Birla Sun life India Opportunities Funds –

Asset Allocation – 154 crores

Expense – 1.86 %

Benchmark – NIFTY 500

Benchmark Return – 15.98%

Type - Open-Ended

Fund mainly contains Large cap companies like Honeywell Automation (7.22%), Infosys (6.85%), Tech Mahindra (6.52%), Persistence Systems (5.55%), etc.

FINAL PORTFOLIO (MODERATE)

Name	**Expense**	**Benchmark Idx Return**	**Exp+BIR**
Aditya Birla IO	1.86	9.11	10.97
HDFC Balanced	0.82	6.27	7.09
HDFC Equity Sav	0.5	6.27	6.77
Average	1.06	7.38	**8.27**

Since the average of expense + benchmark index return is 8.27 All the possible combination of weights will give a return greater than this. So, we observe the slope of the plot and find the point after which risk starts increasing faster than returns. This point is at return 12.156.

So, on comparing the outputs:

We get that the return is :12.156 and the corresponding portfolio is:

Name	**Weight**
Aditya Birla IO	0.3
HDFC Balanced	0.1
HDFC Equity Sav	0.6