

Lab 05

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BSE Sensex 30 and NSE Nifty 50 index values from Jan 1st 2019 to Dec 31st 2023 (5 yr period) is treated as the data from market index.

10 stocks in BSE Sensex 30 with tickers in brackets: Sun Pharmaceutical (**SUNPHARMA.BO**), Titan (**TITAN.BO**), Wipro (**WIPRO.BO**), SBI (**SBIN.BO**), UltraTech Cement (**ULTRACEMCO.BO**), Reliance Industries (**RELIANCE.BO**), Maruti Suzuki (**MARUTI.BO**), Larsen & Toubro (**LT.BO**), NTPC (**NTPC.BO**), Hindustan Unilever (**HINDUNILVR.BO**)

10 stocks in NSE Nifty 50 with tickers in brackets: Adani Enterprises (**ADANIENT.NS**), Asian Paints (**ASIANPAINT.NS**), Axis Bank (**AXISBANK.NS**), Bajaj Auto (**BAJAJ-AUTO.NS**), Bharat Petroleum (**BPCL.NS**), Bharti Airtel (**BHARTIARTL.NS**), Britannia Industries (**BRITANNIA.NS**), Cipla (**CIPLA.NS**), HCL Technologies (**HCLTECH.NS**), Tata Steel (**TATASTEEL.NS**)

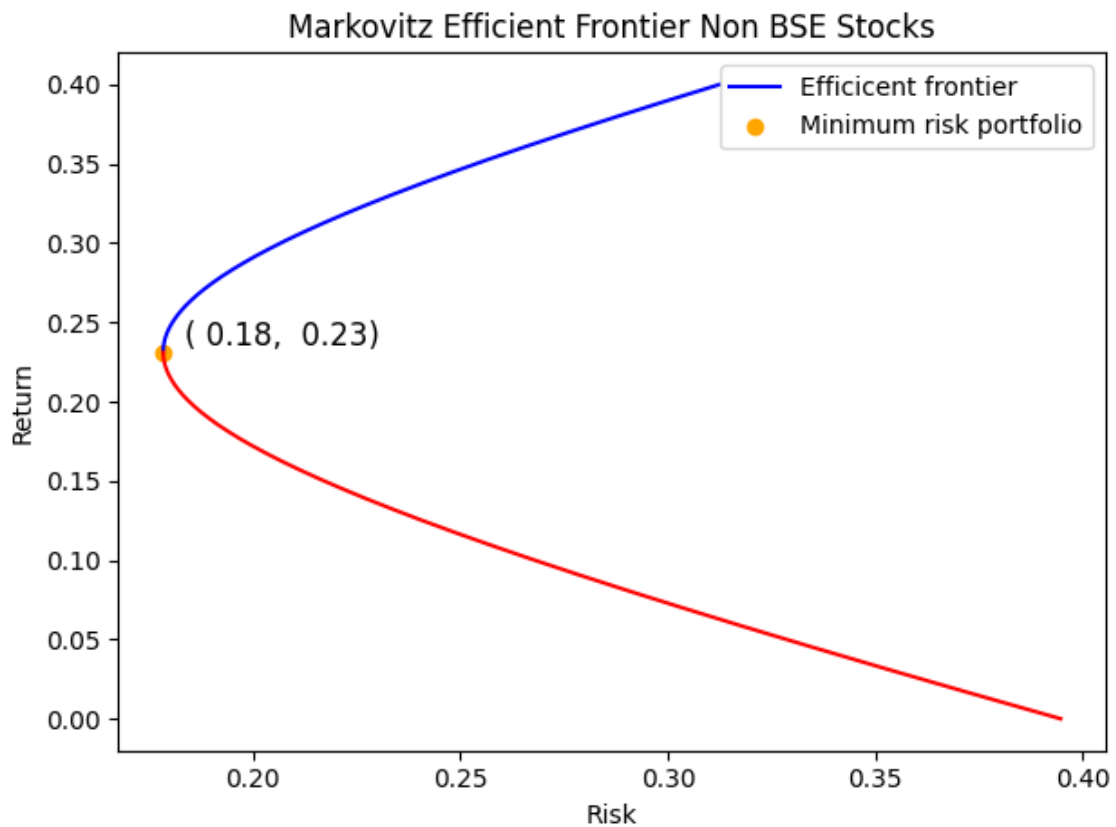
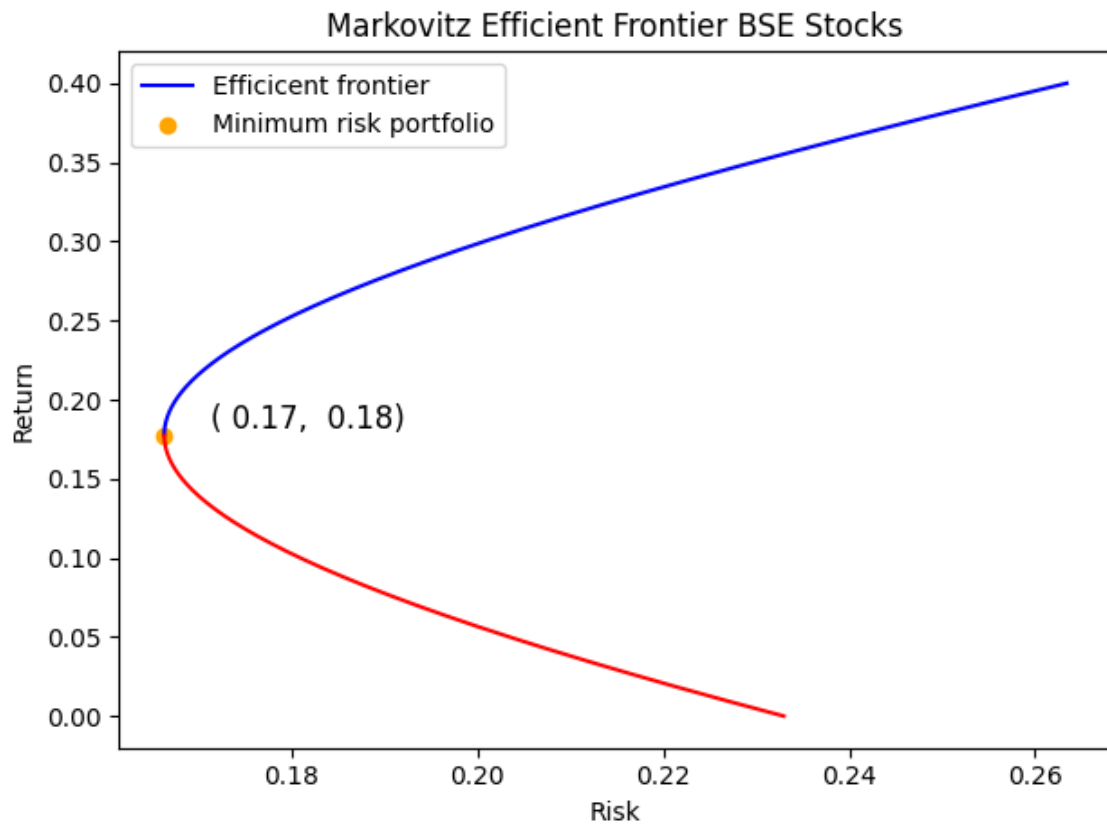
10 stocks not in BSE Sensex 30 with tickers in brackets: Zomato (**ZOMATO.BO**), Zee Entertainment (**ZEEL.BO**), TVS (**TVSMOTOR.BO**), Pidlite Industries (**PIDILITIND.BO**), Info Edge (**NAUKRI.BO**), IRCTC (**IRCTC.BO**), DLF (**DLF.BO**), Bank of Baroda (**BANKBARODA.BO**), Max Life Insurance (**MFSL.BO**), Colgate India (**COLPAL.BO**)

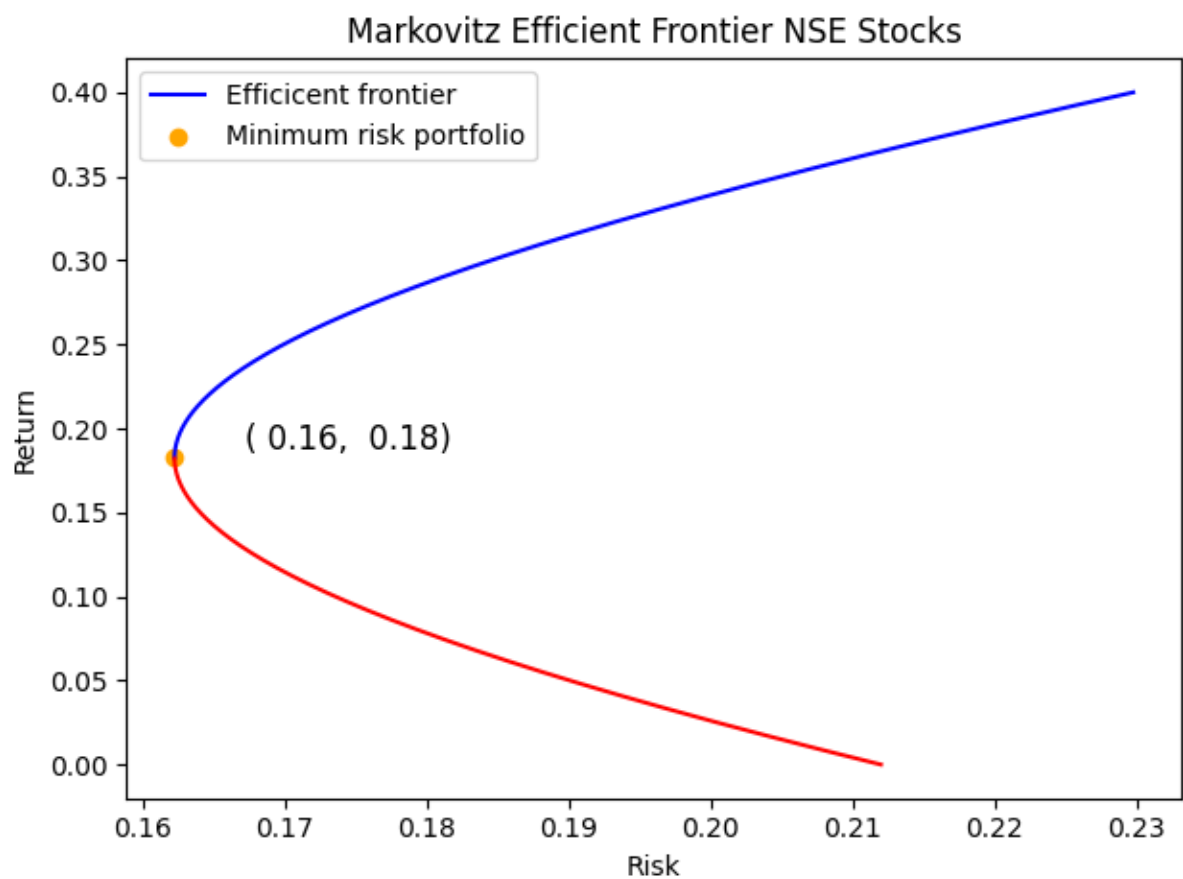
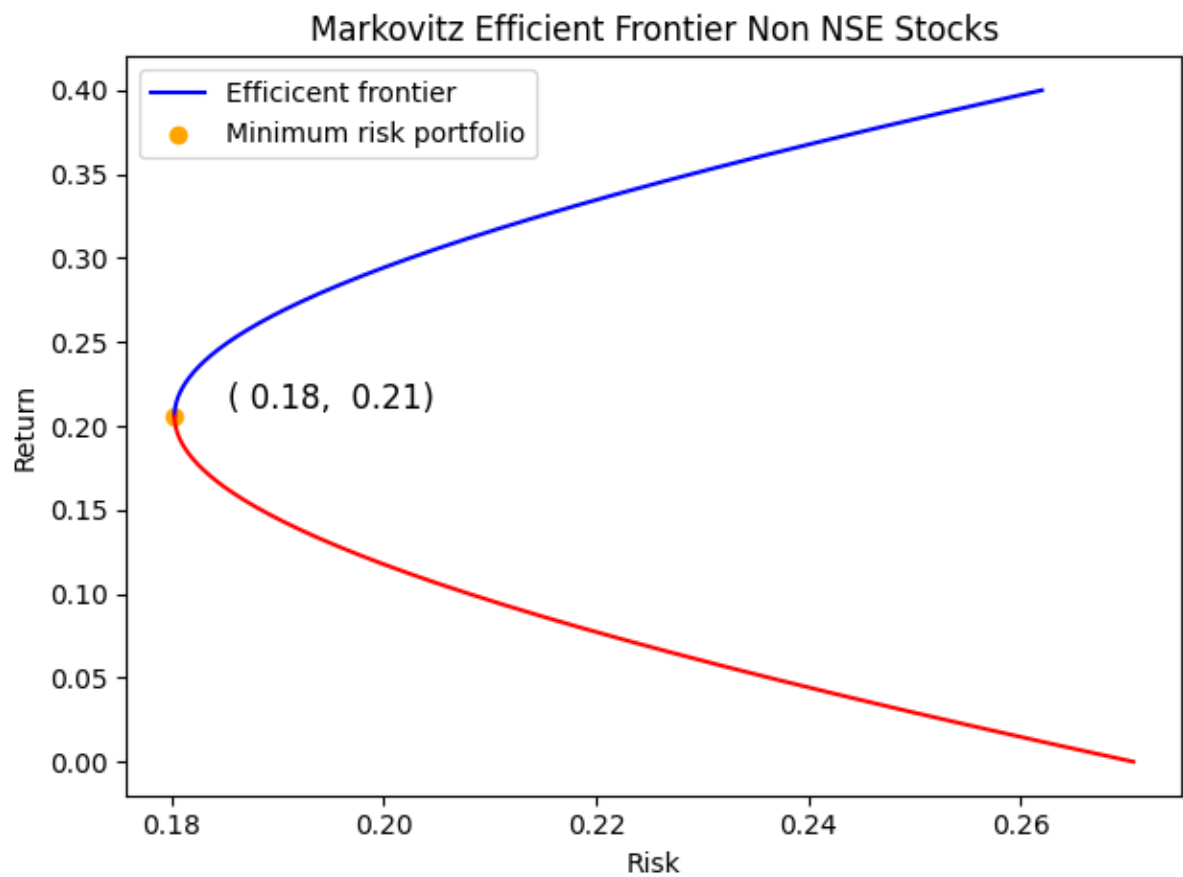
10 stocks not in NSE Nifty 50 with tickers in brackets: Piramal Enterprises (**PEL.NS**), Jubilant Foodworks (**JUBLFOOD.NS**), United Breweries (**UBL.NS**), MRF (**MRF.NS**), Berger Paints India (**BERGERPAINT.NS**), Siemens (**SIEMENS.NS**), Hindustan Petroleum Corporation (**HINDPETRO.NS**), Havells India (**HAVELLS.NS**), Interglobe Aviation (**INDIGO.NS**), Dabur India (**DABUR.NS**).

Market	Return	Risk
NSE Nifty 50	0.1559	0.1889
BSE Sensex 30	0.1583	0.1908

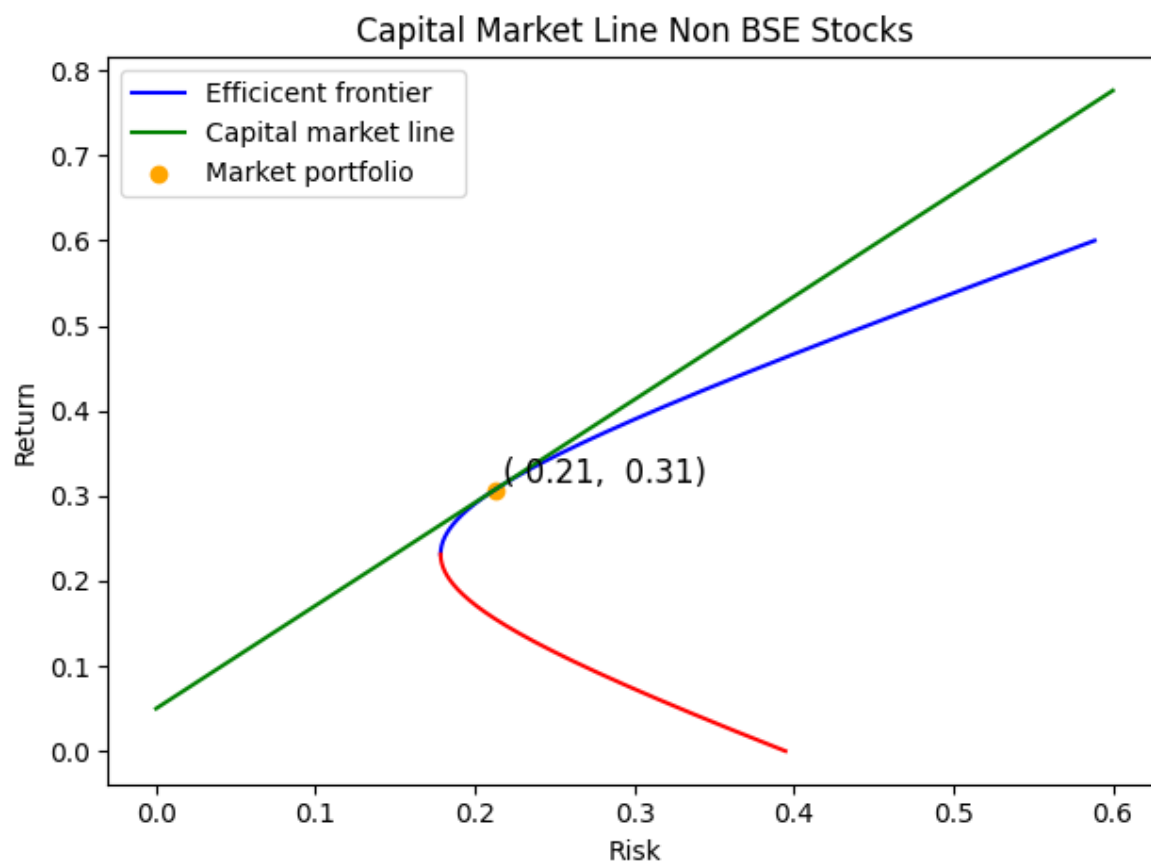
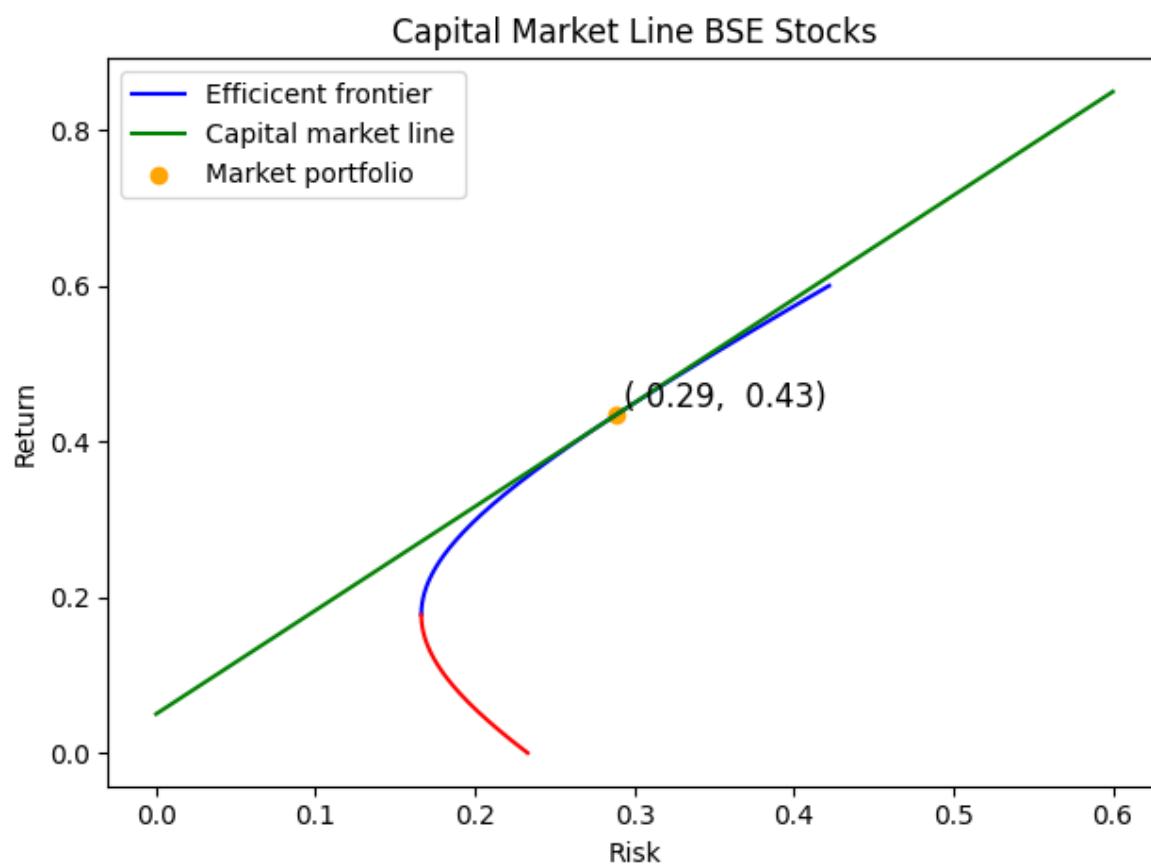
Risk-free rate: 5%.

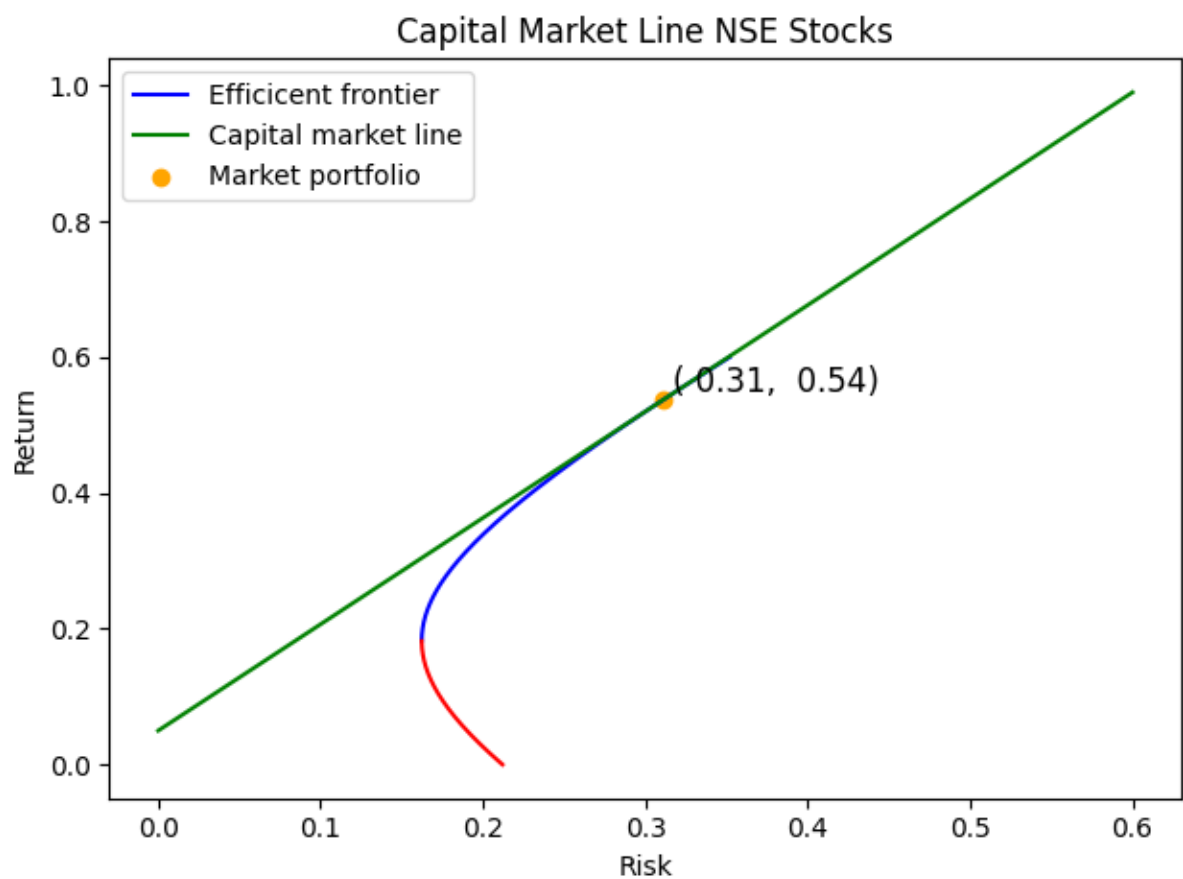
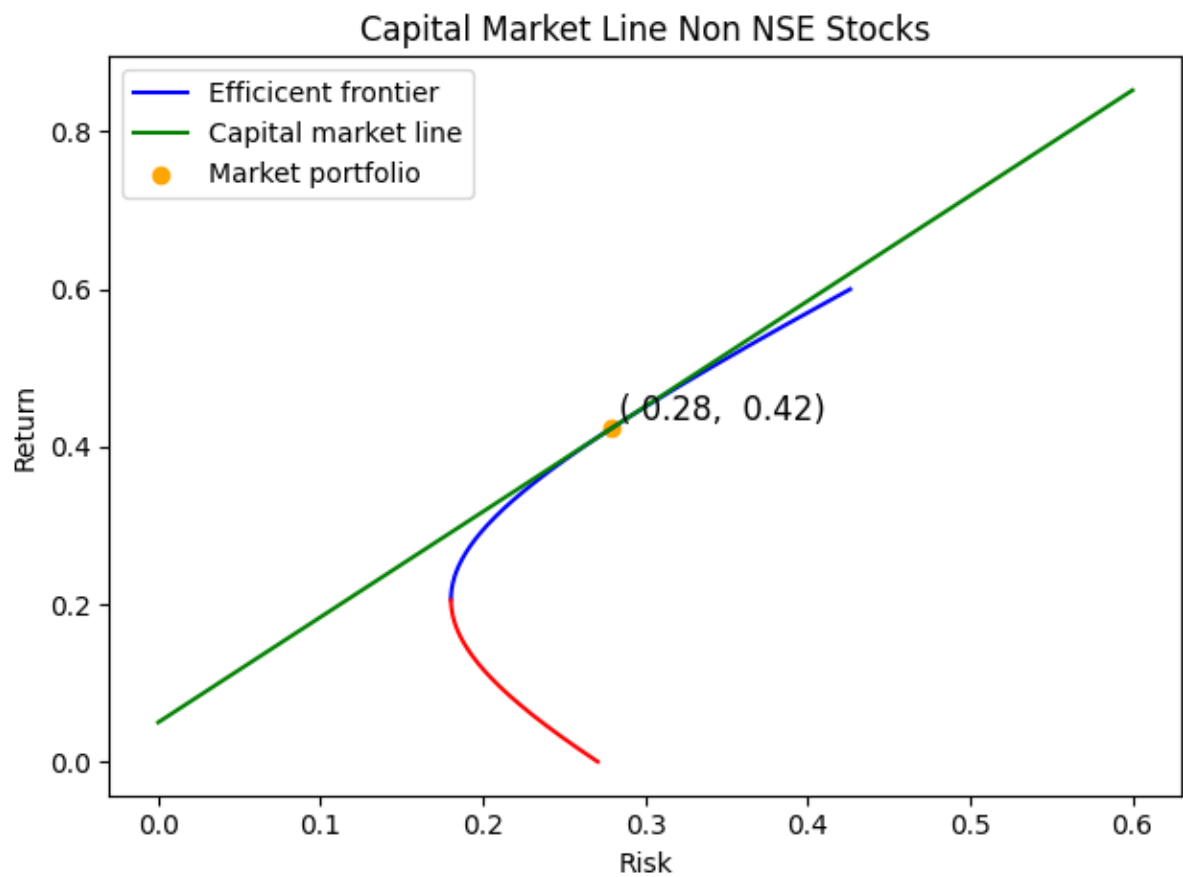
1. Markovitz Efficient frontier for all kinds of stocks.



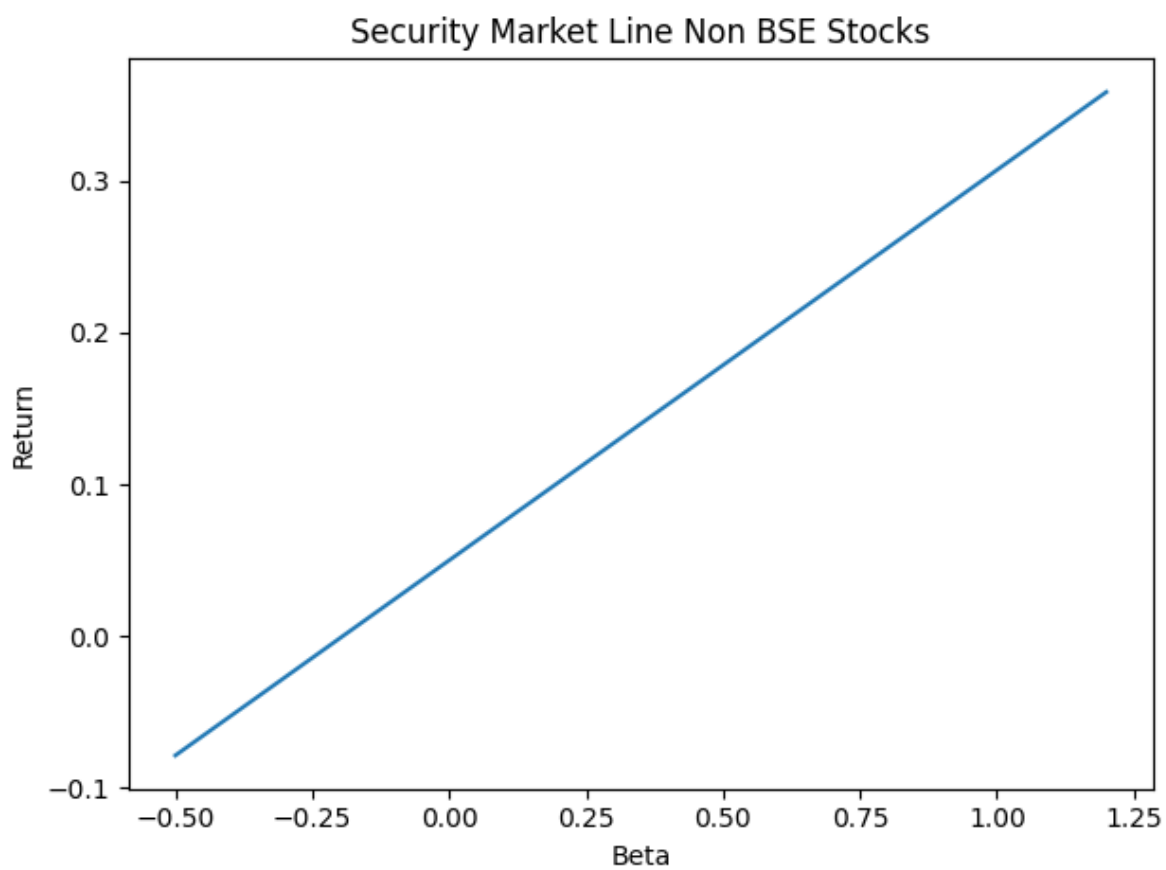
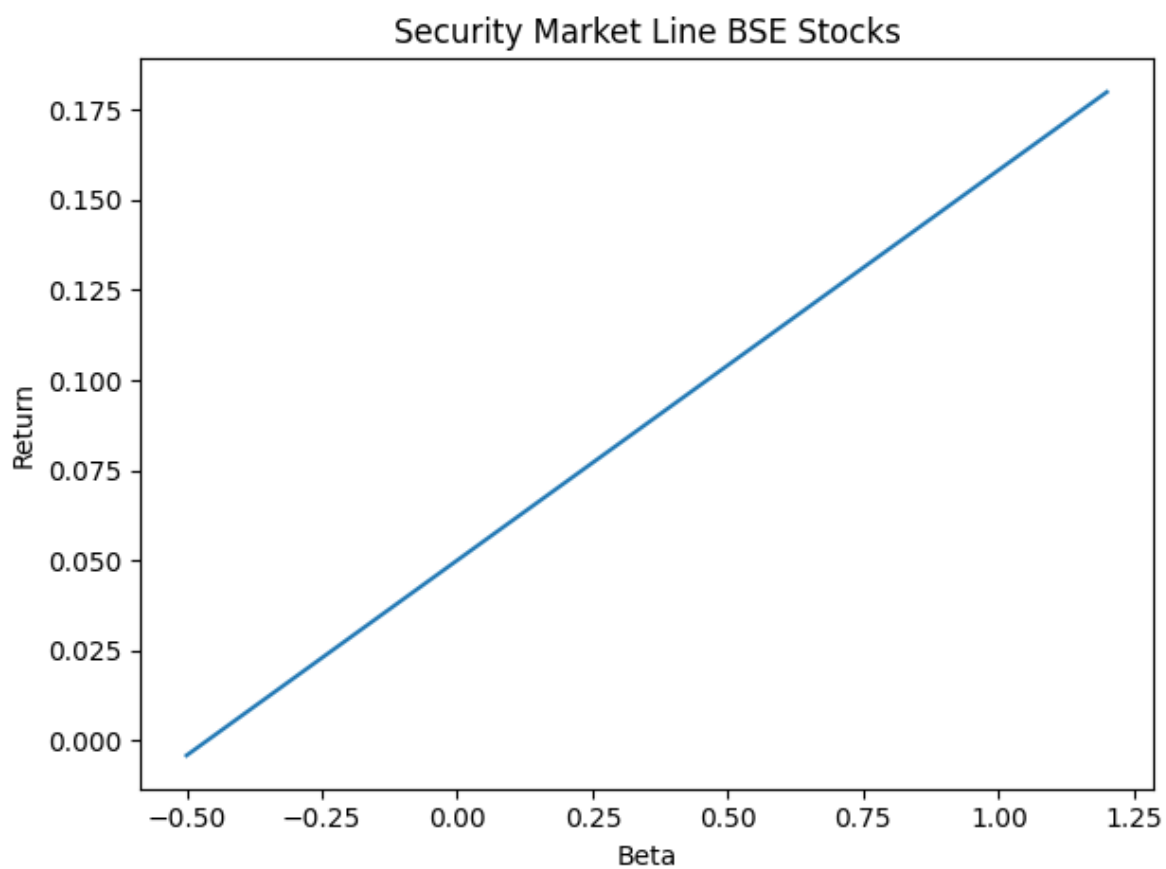


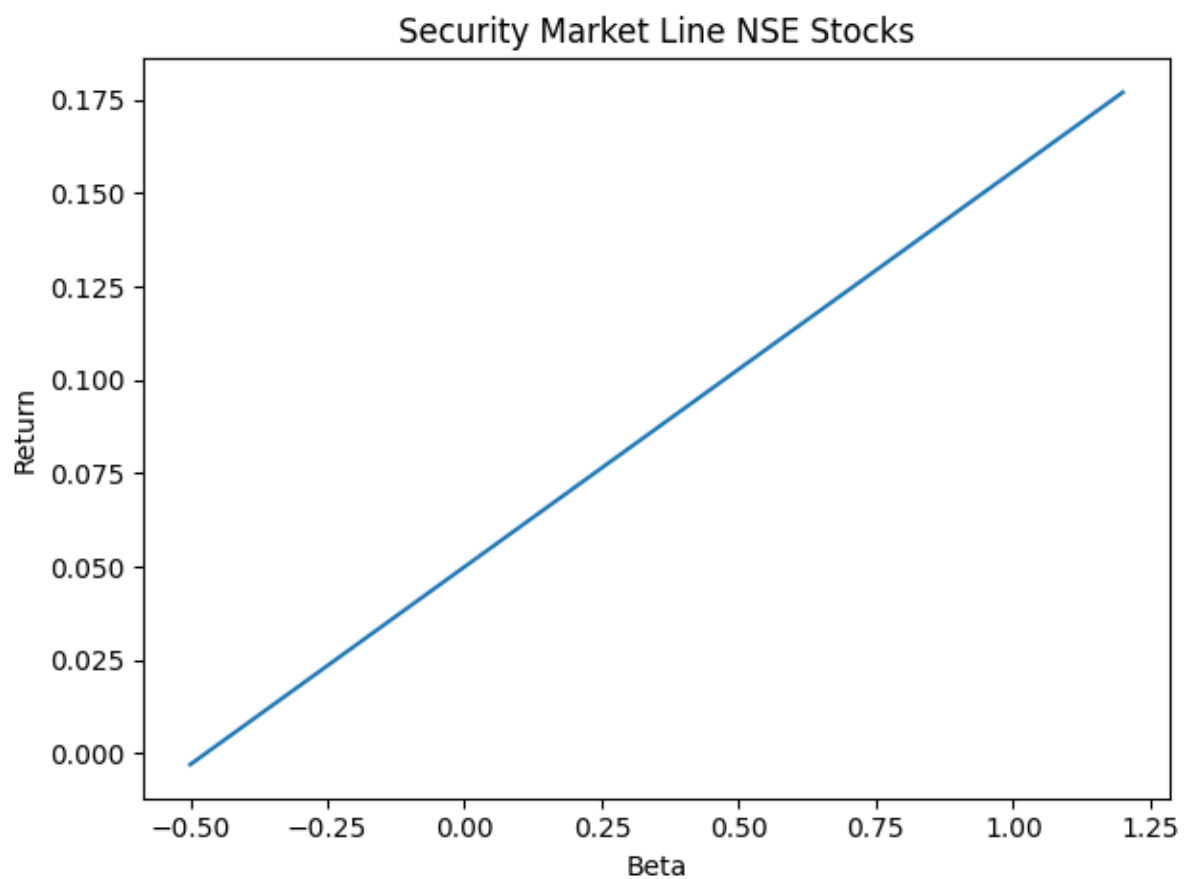
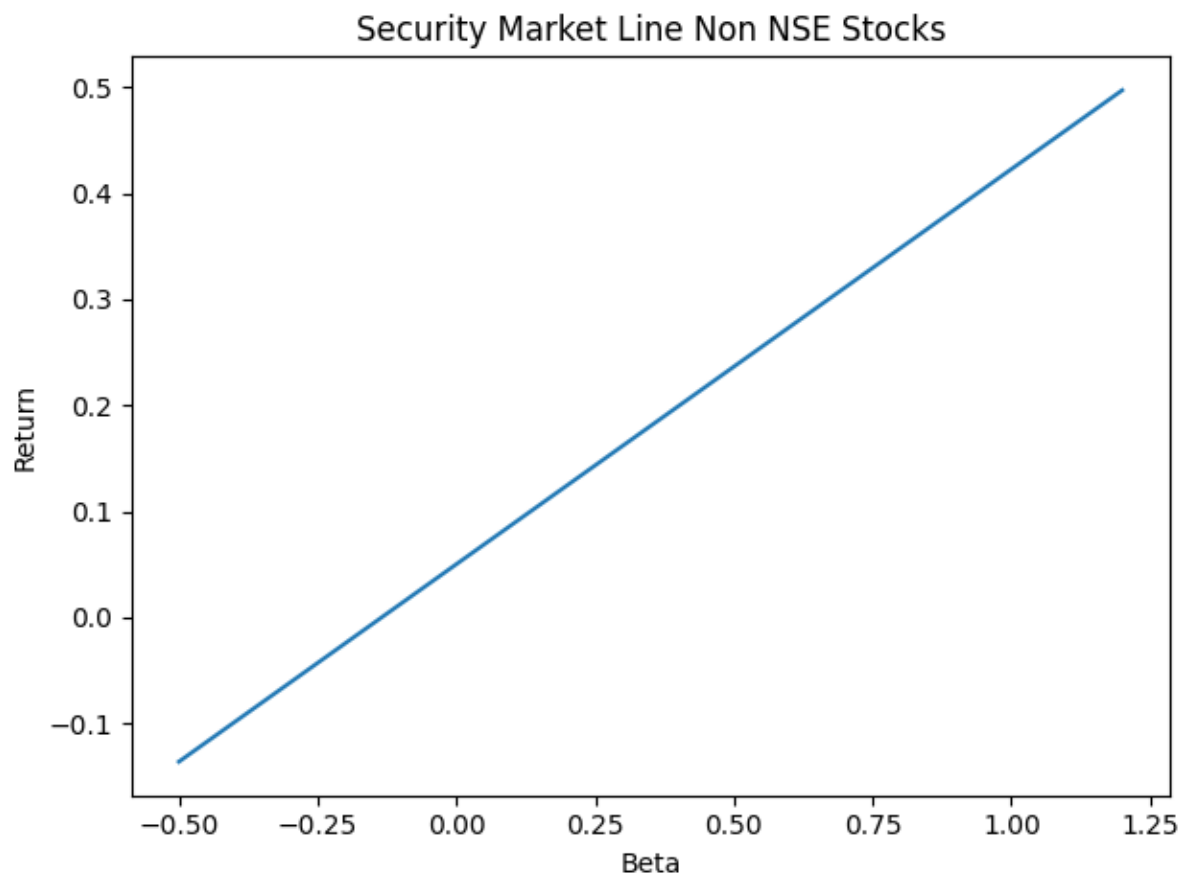
Capital Market Line for all kinds of stocks:





Security Market Line for all kinds of stocks:





2. Compare actual and expected return for all kinds of stocks.

Stocks in BSE Sensex 30:

	Stock	Expected return	Actual return
0	SUNPHARMA.BO	0.175999	0.220044
1	TITAN.BO	0.096468	0.158561
2	WIPRO.BO	0.197553	0.367232
3	SBIN.BO	0.113945	0.107710
4	ULTRACEMCO.BO	0.128342	0.515491
5	RELIANCE.BO	0.158704	0.220204
6	MARUTI.BO	0.159333	0.112218
7	LT.BO	0.158152	0.232829
8	NTPC.BO	0.148943	0.336860
9	HINDUNILVR.BO	0.119904	0.233703

Stocks in NSE Nifty 50:

	Stock	Expected return	Actual return
0	ADANIENT.NS	0.193176	0.730607
1	ASIANPAINT.NS	0.125826	0.222885
2	AXISBANK.NS	0.197000	0.181482
3	BAJAJ-AUTO.NS	0.130306	0.257492
4	BPCL.NS	0.127750	0.198735
5	BHARTIARTL.NS	0.133966	0.300474
6	BRITANNIA.NS	0.152969	0.166277
7	CIPLA.NS	0.116892	0.157346
8	HCLTECH.NS	0.092978	0.215101
9	TATASTEEL.NS	0.109437	0.090123

Stocks not in BSE Sensex 30:

	Stock	Expected return	Actual return
0	ZOMATO.BO	0.121036	0.213307
1	ZEEL.BO	0.166214	0.213972
2	TVSMOTOR.BO	0.182711	0.213040
3	PIDILITIND.BO	0.115088	0.254012
4	NAUKRI.BO	0.147796	0.319849
5	IRCTC.BO	0.138946	0.311718
6	DLF.BO	0.151658	0.234777
7	BANKBARODA.BO	0.127846	0.169298
8	MFSL.BO	0.160367	0.057649
9	COLPAL.BO	0.136730	0.145719

Stocks not in NSE Nifty 50:

	Stock	Expected return	Actual return
0	PEL.NS	0.133159	0.186350
1	JUBLFOOD.NS	0.131350	0.288834
2	UBL.NS	0.147082	0.222501
3	MRF.NS	0.137950	0.259599
4	BERGEPAIN.NS	0.153127	0.230175
5	SIEMENS.NS	0.131012	0.168285
6	HINDPETRO.NS	0.174453	-0.031451
7	HAVELLS.NS	0.142459	0.312865
8	INDIGO.NS	0.180347	0.305852
9	DABUR.NS	0.119715	0.094457

3. Comparing beta of all kinds of securities.

Stocks in BSE Sensex 30:

	Stock	Beta
0	SUNPHARMA.BO	1.163184
1	TITAN.BO	0.428978
2	WIPRO.BO	1.362169
3	SBIN.BO	0.590322
4	ULTRACEMCO.BO	0.723232
5	RELIANCE.BO	1.003525
6	MARUTI.BO	1.009327
7	LT.BO	0.998424
8	NTPC.BO	0.913415
9	HINDUNILVR.BO	0.645330

Stocks in NSE Nifty 50:

	Stock	Beta
0	ADANIENL.NS	1.352434
1	ASIANPAINT.NS	0.716249
2	AXISBANK.NS	1.388561
3	BAJAJ-AUTO.NS	0.758568
4	BPCL.NS	0.734425
5	BHARTIARTL.NS	0.793143
6	BRITANNIA.NS	0.972646
7	CIPLA.NS	0.631860
8	HCLTECH.NS	0.405968
9	TATASTEEL.NS	0.561437

Stocks not in BSE Sensex 30:

	Stock	Beta
0	ZOMATO.BO	0.655782
1	ZEEL.BO	1.072856
2	TVSMOTOR.BO	1.225147
3	PIDILITIND.BO	0.600877
4	NAUKRI.BO	0.902823
5	IRCTC.BO	0.821125
6	DLF.BO	0.938480
7	BANKBARODA.BO	0.718647
8	MFSL.BO	1.018878
9	COLPAL.BO	0.800665

Stocks not in NSE Nifty 50:

	Stock	Beta
0	PEL.NS	0.785513
1	JUBLFOOD.NS	0.768432
2	UBL.NS	0.917038
3	MRF.NS	0.830777
4	BERGEPAIN.NS	0.974134
5	SIEMENS.NS	0.765237
6	HINDPETRO.NS	1.175581
7	HAVELLS.NS	0.873366
8	INDIGO.NS	1.231258
9	DABUR.NS	0.658525

There are two kinds of risks: systematic and diversifiable. Systematic risk is non-diversifiable. Beta is a measure of systematic risk which cannot be reduced by diversifying portfolio.

Beta value of 1 is considered market average and beta values more than one are considered riskier than market average. In this example, index stocks Sun Pharma, Wipro, Reliance, Maruti, Adani Enterprises and Axis Bank exhibit beta values greater than 1.