MOMENTUM STRATEGY FOR S&P 500 STOCKS

Klay Cheng, Utsav Sejpal, Shunxiang Yan, Sirui Xu

Jai Chaudhari, Rinat Tasmagambetov,

GOAL

APPROACH

CONCLUSION

Our Goal

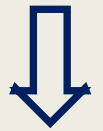
To test the momentum strategy on S&P 500 stock to identify trading opportunities.

The portfolio formed to test momentum strategy can be rebalanced using the following methods:

Fama French Method

Monthly Rebalancing

AQR Capital Method



Quarterly Rebalancing

Approach

Data Source

WRDS->CRSP->Annual Update->Stock/Security Files->Monthly Stock File
choose the data of companies in S&P500 from 2011 to 2021

```
In [2]: df1=pd.read_csv("dataset.csv",parse_dates=["date"])
        df1
```

Out[2]:

	PERMNO	date	TICKER	CUSIP	RET
0	10104	2011-01-31	ORCL	68389X10	0.024920
1	10104	2011-02-28	ORCL	68389X10	0.027162
2	10104	2011-03-31	ORCL	68389X10	0.016185
3	10104	2011-04-29	ORCL	68389X10	0.077395
4	10104	2011-05-31	ORCL	68389X10	-0.048387
...	...	...	...	...	...
65946	93436	2021-08-31	TSLA	88160R10	0.070605
65947	93436	2021-09-30	TSLA	88160R10	0.054042
65948	93436	2021-10-29	TSLA	88160R10	0.436530
65949	93436	2021-11-30	TSLA	88160R10	0.027612
65950	93436	2021-12-31	TSLA	88160R10	-0.076855

65951 rows × 5 columns

Approach

Methodology

Calculate ⟹ 11 month Rolling period return for all 500 stocks

From January 2011 - December 2021 [122 rows]

```
df3 = df2.groupby(['CUSIP']).rolling(11).mean().pivot_table(index = 'date', columns = 'CUSIP')
df3
```

CUSIP	00130H10	00206R10	00287Y10	00507V10	00724F10	00751Y10	00846U10	00971T10	01741R10	02079K10	...	G7997R10	G7S00T10	G8473T10	G8994
date															
2011-11-30	0.001847	0.004796	NaN	0.002773	-0.006401	0.006347	-0.003341	-0.032264	0.002060	NaN	...	0.032650	NaN	-0.014635	-0.026
2011-12-30	-0.001601	0.013173	NaN	0.010445	-0.010287	0.010002	-0.010449	-0.024120	-0.018486	NaN	...	0.035158	NaN	-0.011302	-0.033
2012-01-31	0.005683	0.009160	NaN	0.011961	-0.005658	0.020945	0.008631	-0.003961	-0.025705	NaN	...	0.069875	NaN	-0.008368	-0.016
2012-02-29	0.006753	0.005664	NaN	0.008965	0.003572	0.026950	0.005260	0.005534	-0.029861	NaN	...	0.080763	NaN	-0.005779	-0.009
2012-03-30	0.001789	0.004774	NaN	0.013556	0.006428	0.030643	-0.003092	0.015843	-0.040829	NaN	...	0.061743	NaN	-0.009032	-0.010

Approach

Methodology

Shift 2 to match the correct month

											1-11 mean	2-12 mean
2011	1	2	3	4	5	6	7	8	9	10	11	12
	3-1 mean	4-2 mean	5-3 mean	6-4 mean								
2012	1	2	3	4	5	6	7	8	9	10	11	12

	RET	
	00130H10	00206R10
date		
2011-11-30	5	5
2011-12-30	4	7
2012-01-31	6	6
2012-02-29	5	5

	RET	
	00130H10	00206R10
date		
2011-11-30	NaN	NaN
2011-12-30	NaN	NaN
2012-01-31	5.0	5.0
2012-02-29	4.0	7.0

Approach

Methodology

- Based on their 11 month rolling returns calculated previously

(Month T-12 to Month T–2) [To avoid reversal in trend]

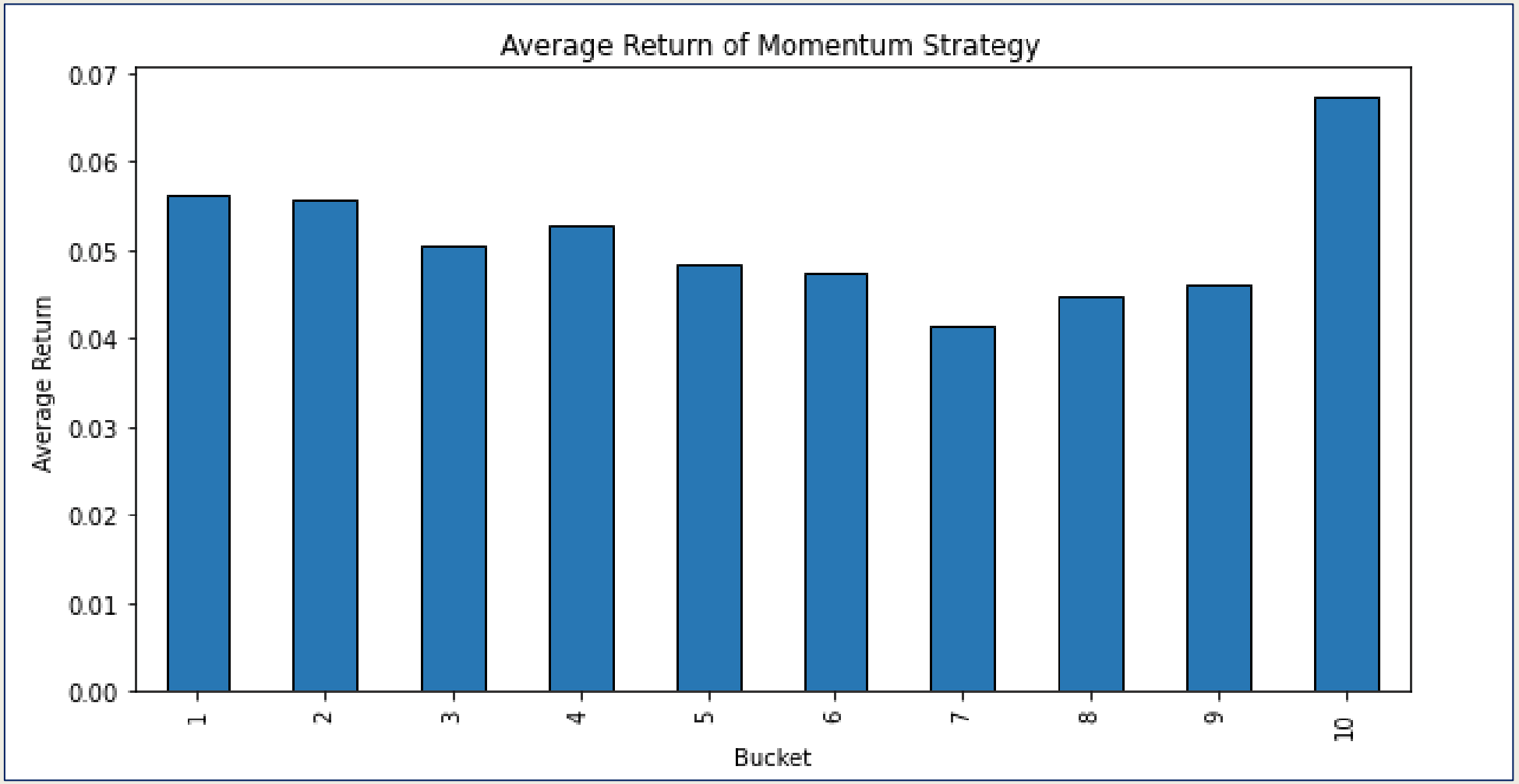
- Divide the 500 stocks into 10 buckets based on 11 month rolling returns

- Hold the portfolios for one quarter

- Rebalance the portfolio composition quarterly according to the rolling 11 month return

Conclusion

Quarterly Mean Return of each Bucket



Conclusion

BUT is it statistically significant?

Summary statistic for all the buckets

```
F_onewayResult(statistic=0.2904149328301101, pvalue=0.9772308458203334)
```

Summary statistic for lowest and highest bucket

```
F_onewayResult(statistic=1.6966997957602246, pvalue=0.19655297505085076)
```

The 10 buckets' returns, and lowest & highest buckets' returns are not statistically significant.

The hypothesis does not hold for S&P 500 stocks.
We can also test this hypothesis on small cap stocks!

Thank You!