

What Short Rate Model Should I use ?

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Outline

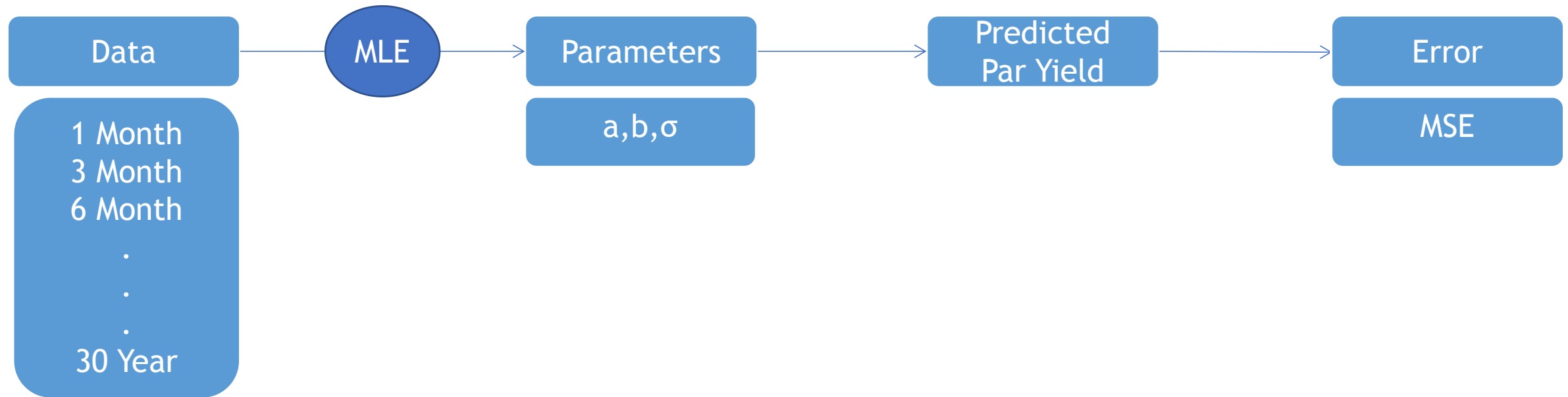
- Introduction
- Process
- Experiment
- Conclusion

Introduction

- CIR
 - $dr(t) = a(b - r(t))dt + \sigma\sqrt{r(t)}dW(t)$
- Vasicek
 - $dr(t) = a(b - r(t))dt + \sigma dW(t)$
- CIR
 - Includes the square root of the interest rate level $r(t)$, which makes the interest rate unable to take negative values, and at levels close to zero, the model responds more smoothly to changes in interest rates
- Compare to real par yield

Process

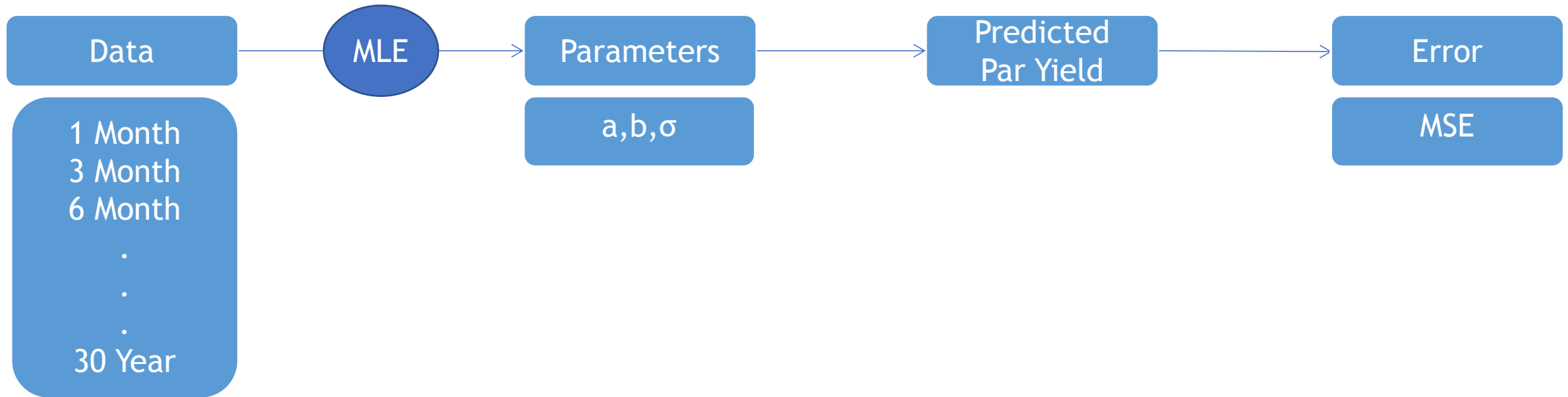
Process



- Not Rolling
- Rolling

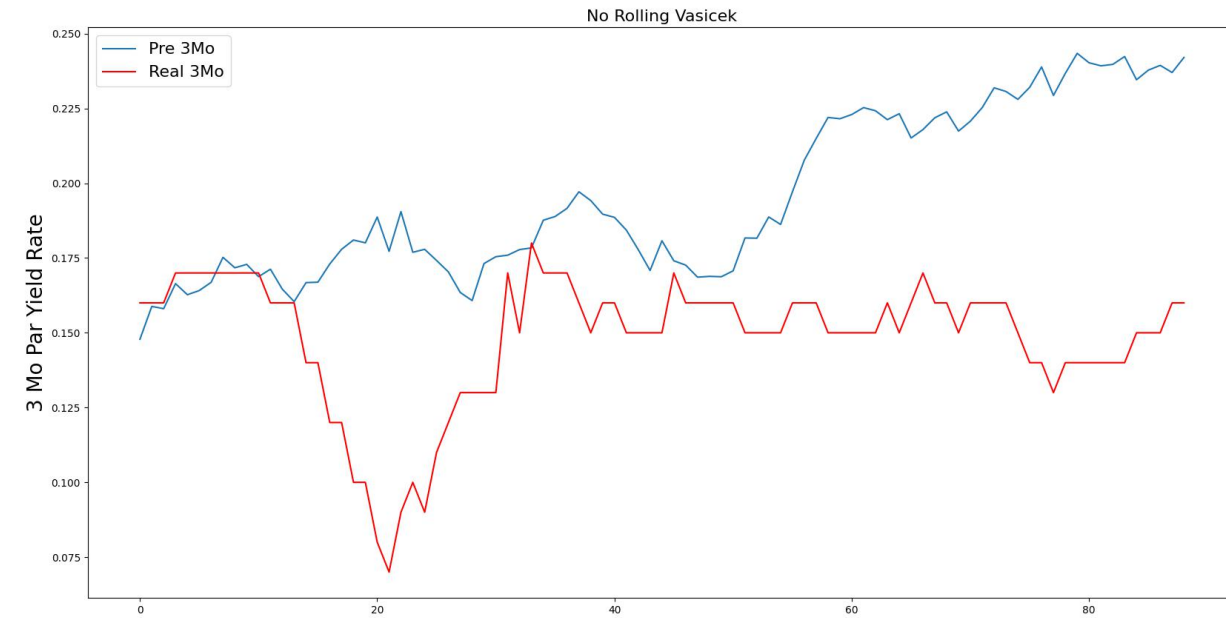
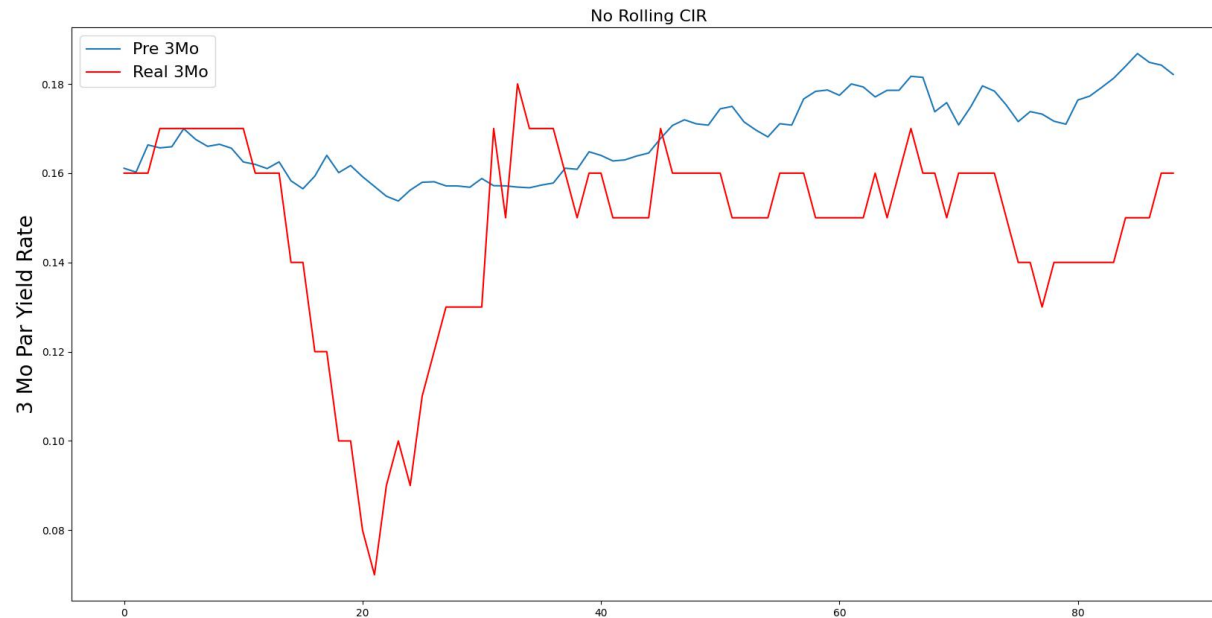
Experiments

Process



- Not Rolling
 - Training : 30 days
 - Testing : 90 days

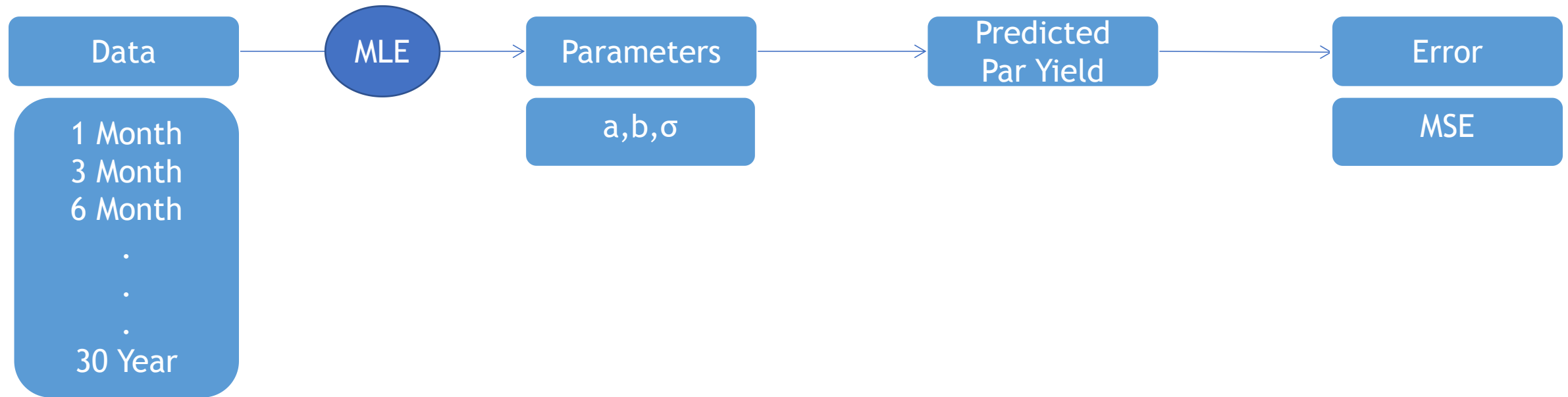
Experiment : No Rolling



- Start Time: 2010-05-13

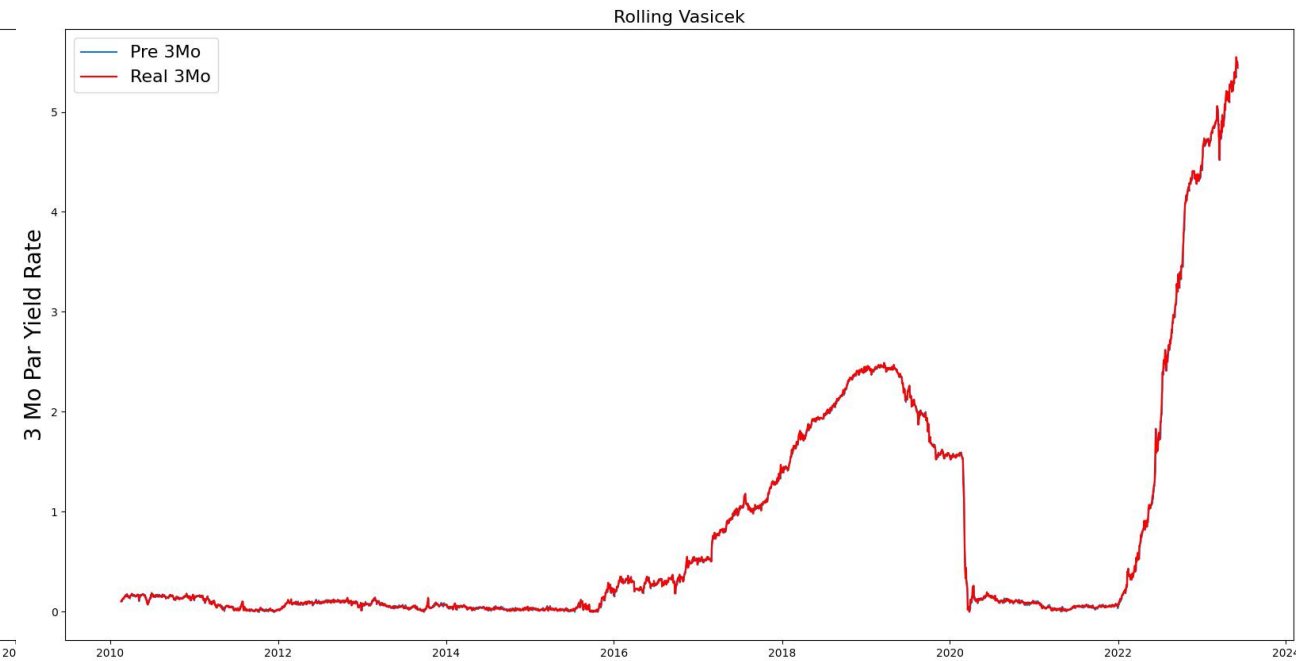
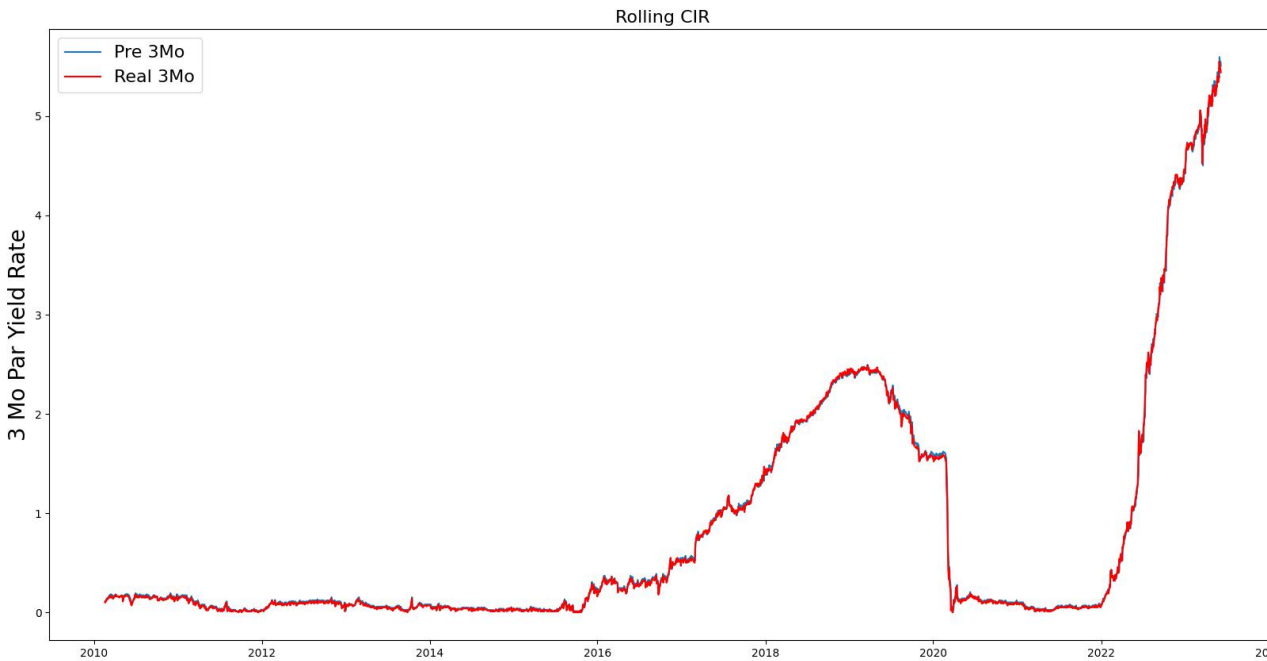
	CIR	Vasicek
MSE	0.1459	0.0034

Process



- Rolling
 - Training : 30 days
 - Rolling Testing : 1 days

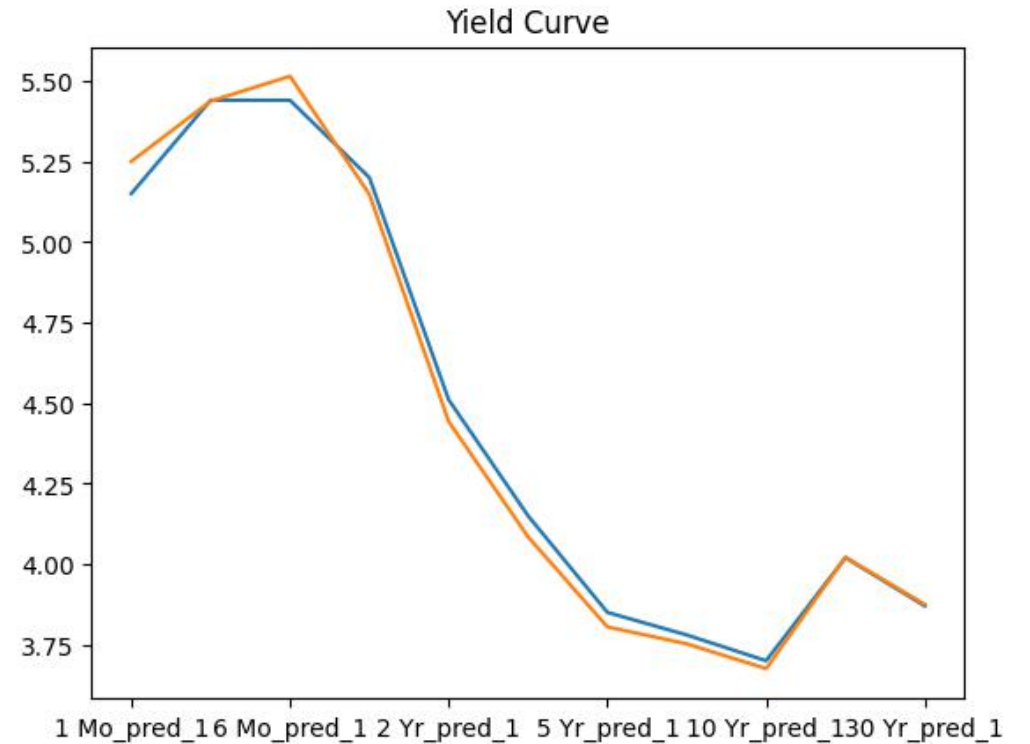
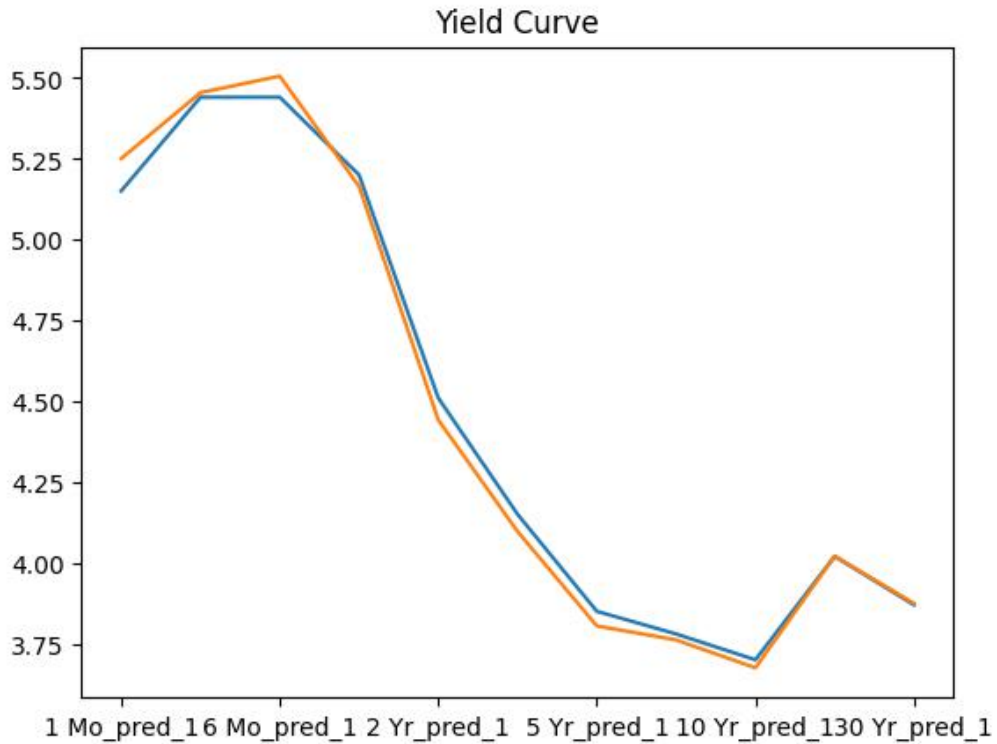
Experiment : Rolling



- Start Time: 2010-05-13

	CIR	Vasicek
MSE	0.0009	0.0007

Experiment : Yield Curve

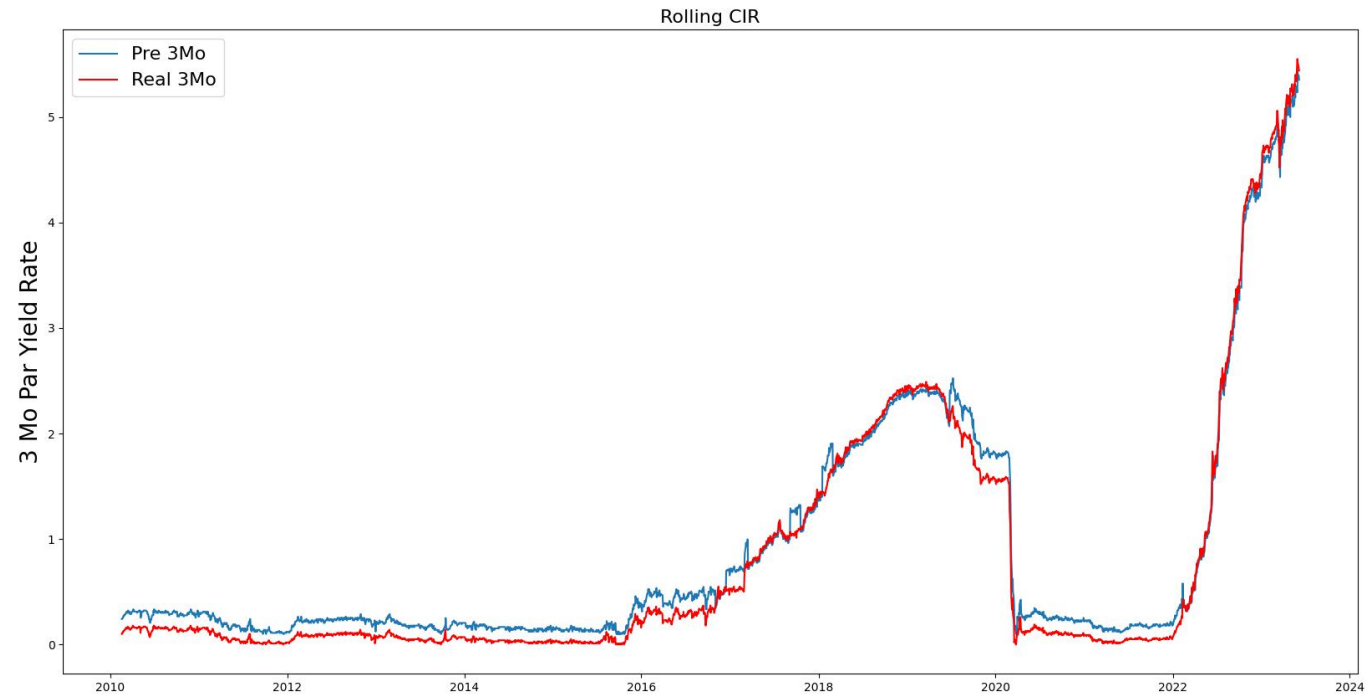


- Time: 2023-06-06

v	CIR	Vasicek
MSE	0.0244	0.0340

Conclusion

- Influenced by parameters' setting
- Sensitivity analysis
- Collect different countries' data
- Test different timeframe



Thanks!

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