AIG

2023 STOCK PRICE PREDICTION

A TIME SERIES PROJECT BY TEAM 4

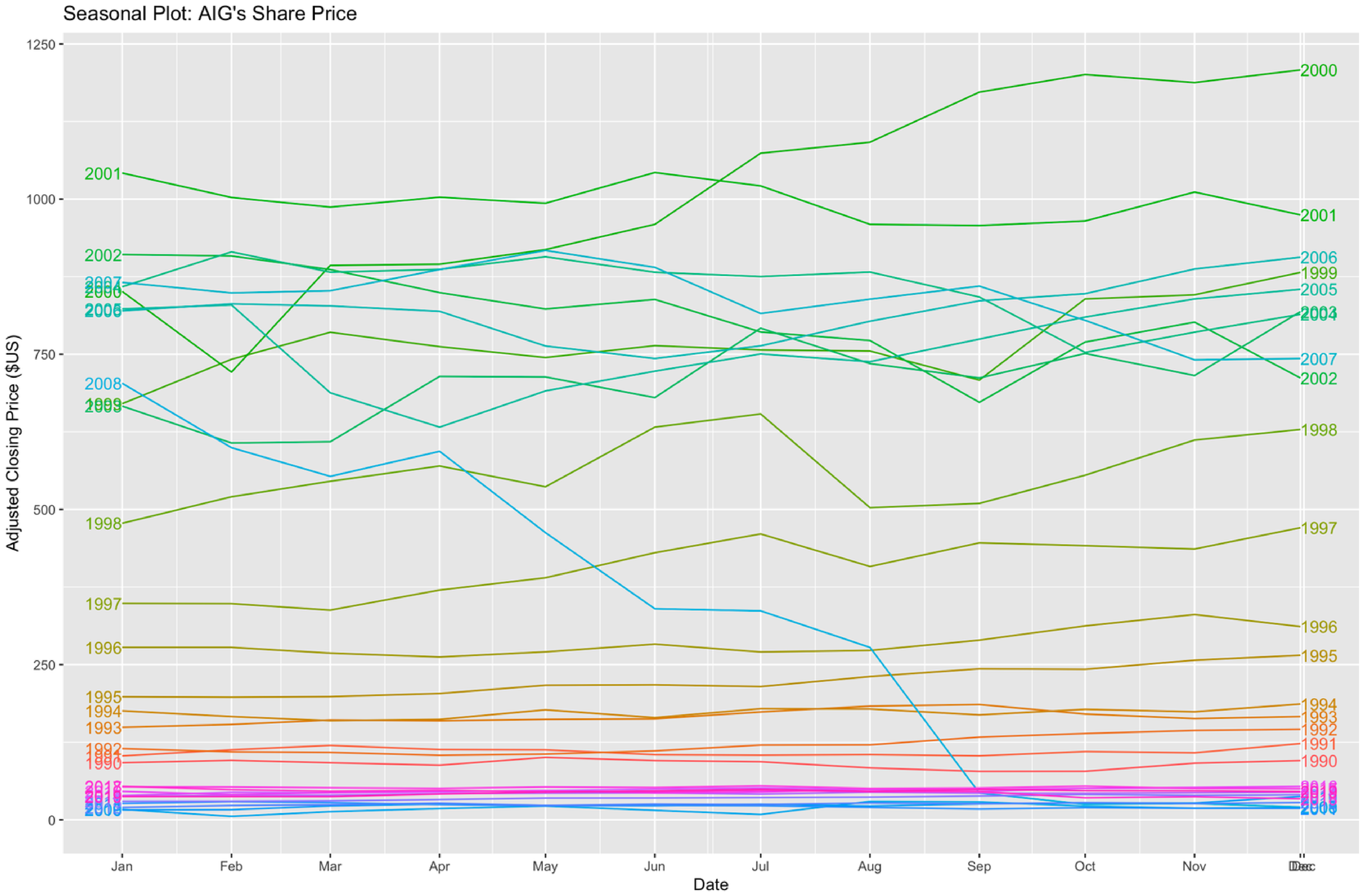
American International Group, Inc. is an American multinational finance and insurance corporation

INITIAL TIME SERIES SHOWS
NO TREND

FURTHER ANALYSIS NEEDED TO FIND SEASONALITY

UNDERSTANDING THE DATA

For our analysis: **Train data (90%) - Years 1990-2020** **Test Data (10%) Years 2020-2022**



The 90's - constant patterns with some visible increases towards EOY.

Early 2000's - changes in patterns, market crash on September '08

Post 2009: similar patterns to those in the 90's

UNDERSTANDING THE DATA

BREAKING IT DOWN AND LOOKING FOR SEASONALITY

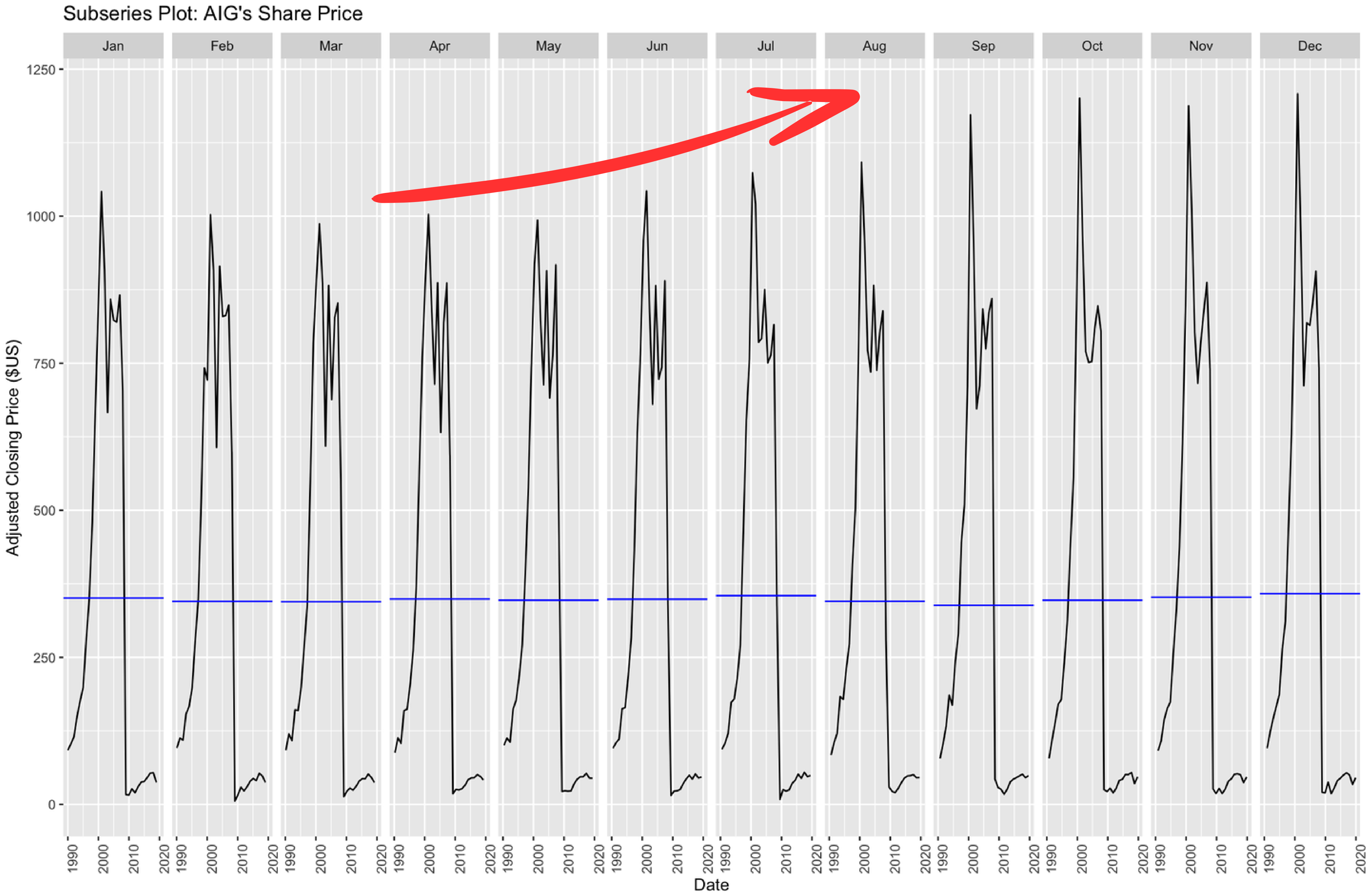
FALL/WINTER MONTHS:

Positive Consumer Sentiment

SPRING/SUMMER MONTHS:

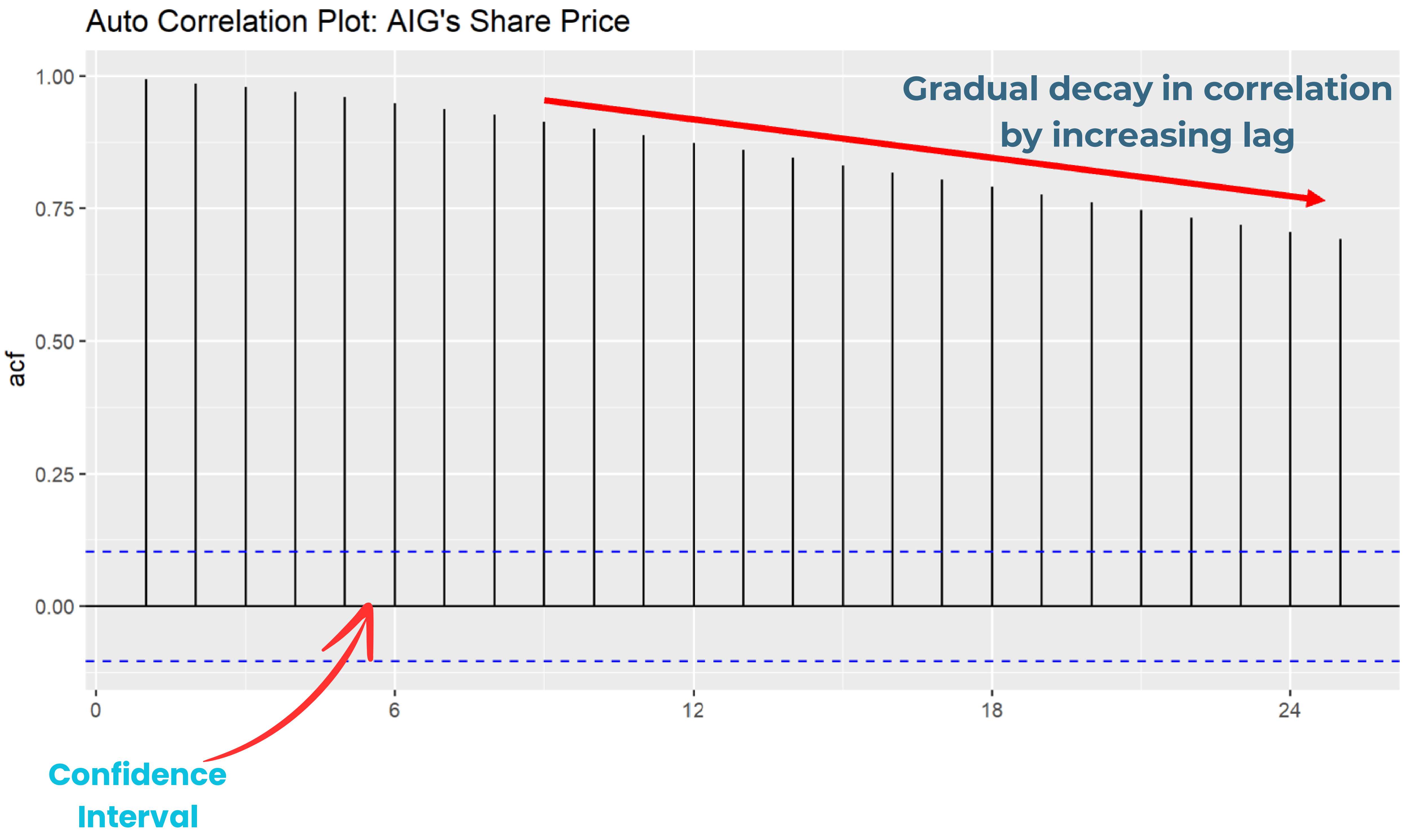
“Sell in May and go away“

SEASONALITY IS PRESENT



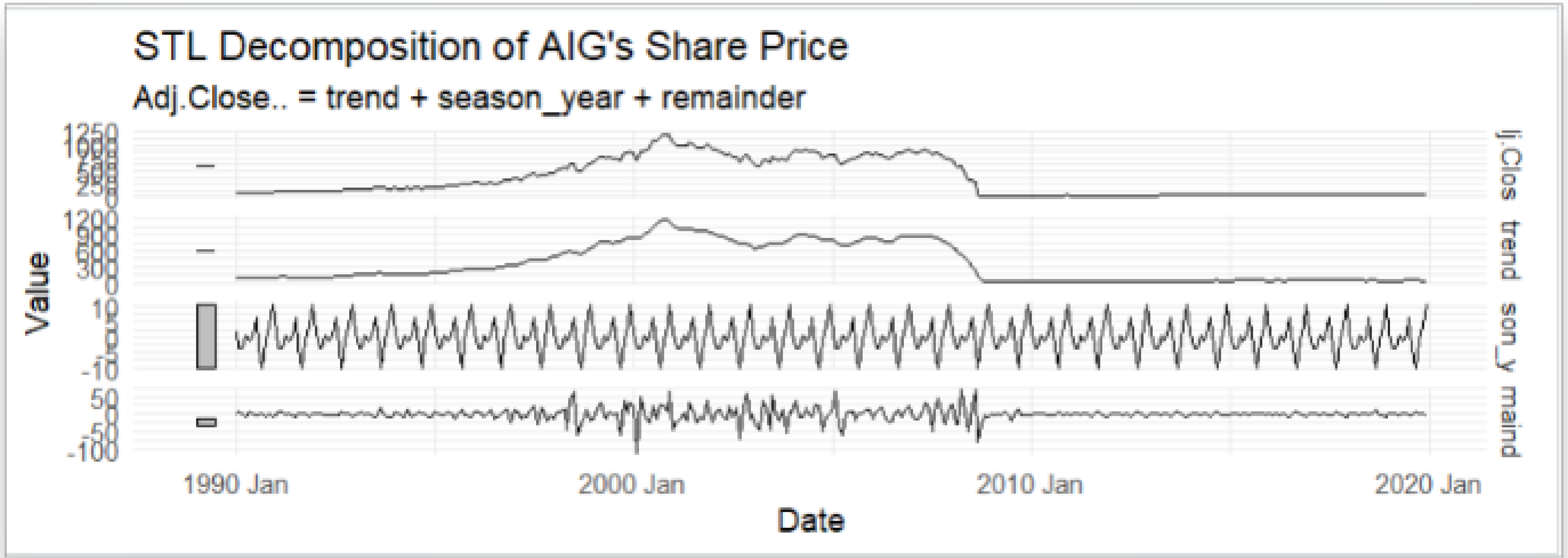
Autocorrelation Function of AIG Closing Price

Does the data fall within the 95% confidence interval?



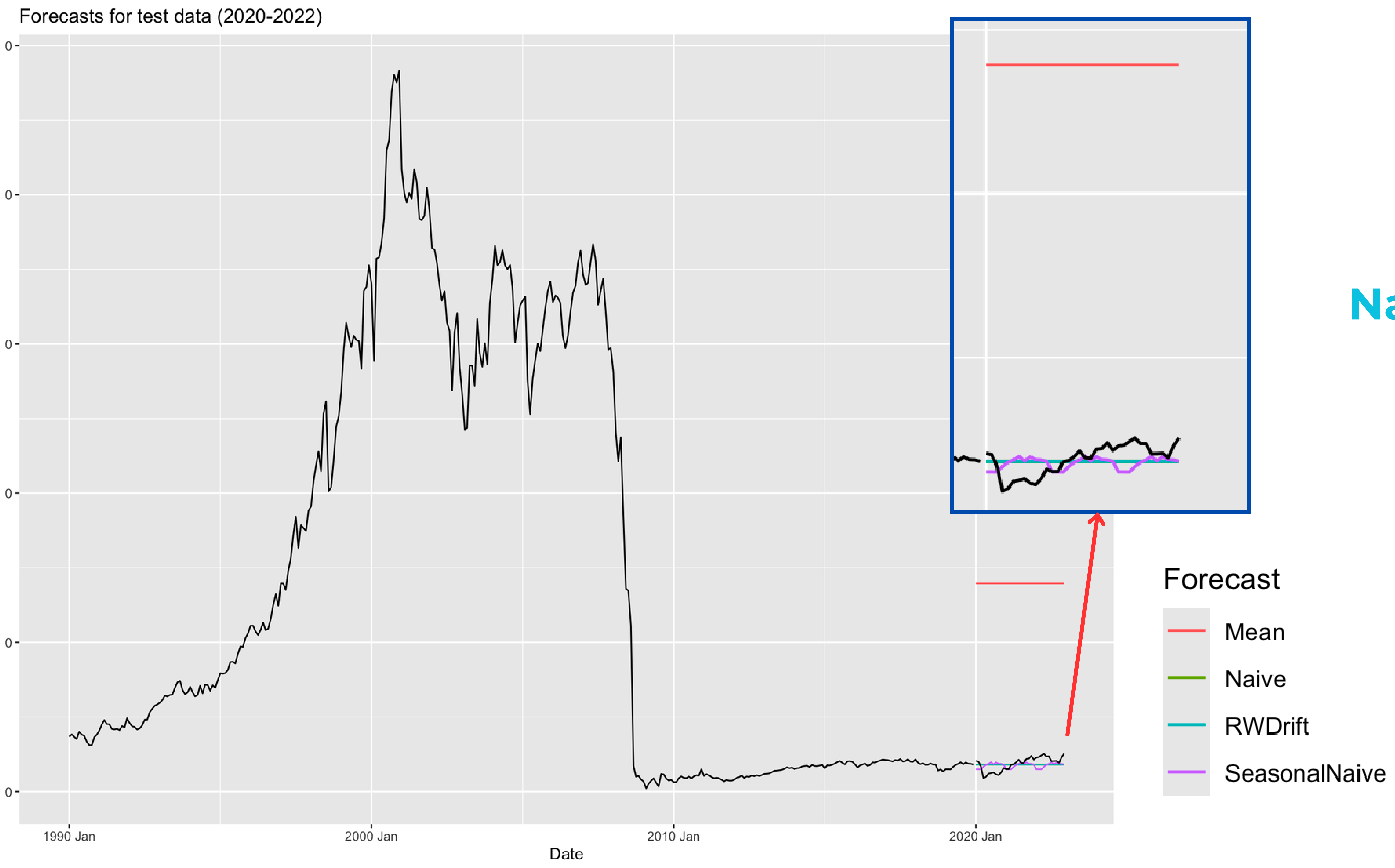
STL DECOMPOSITION FOR AIG'S SHARE PRICE

"Decomposing a time series into three components:"



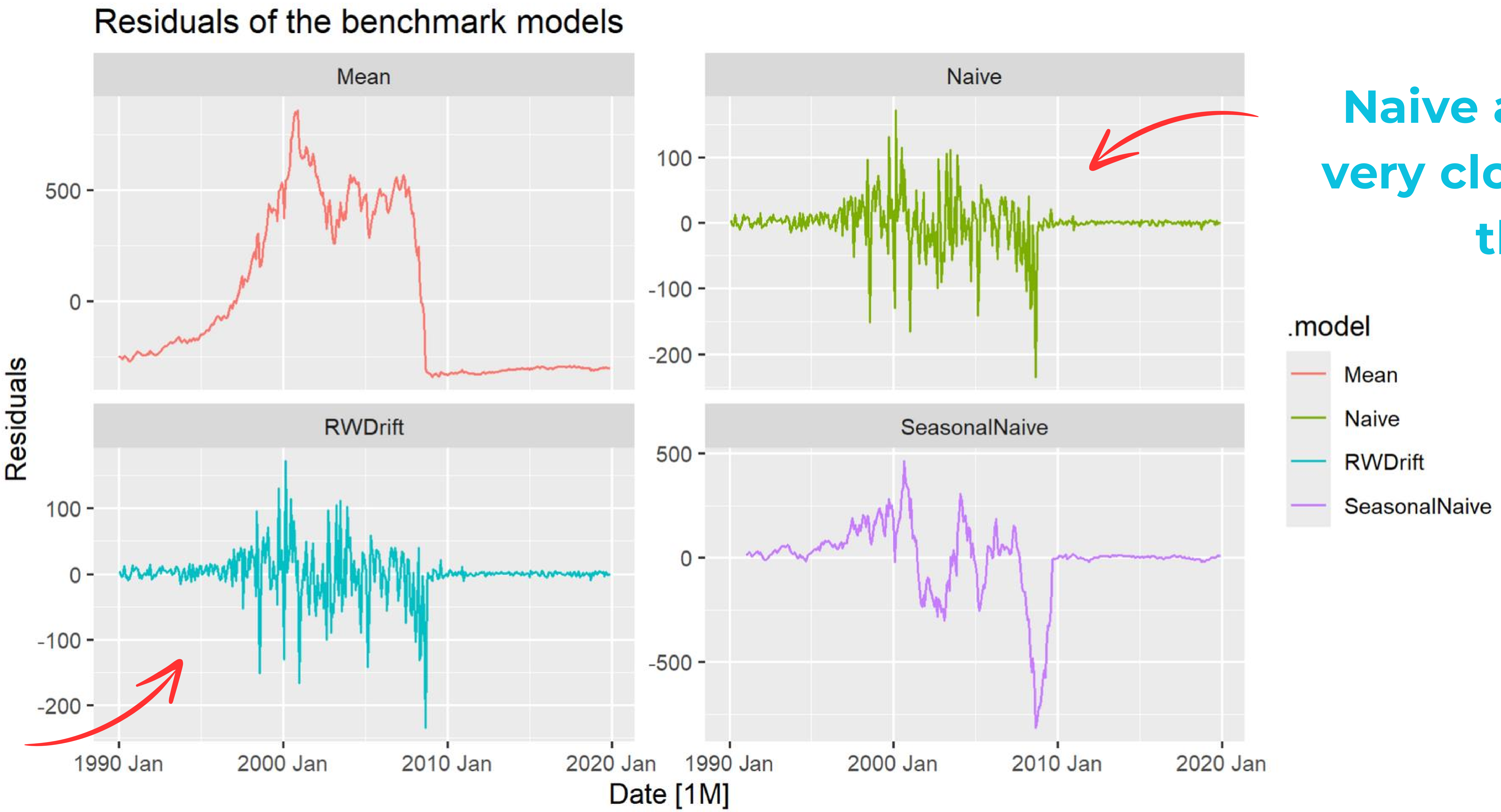
Remainder Component:
Small Remainder: Trend and seasonal components capture most of the variability.
Minor Fluctuations: market events or industry fluctuations.

Benchmark Models



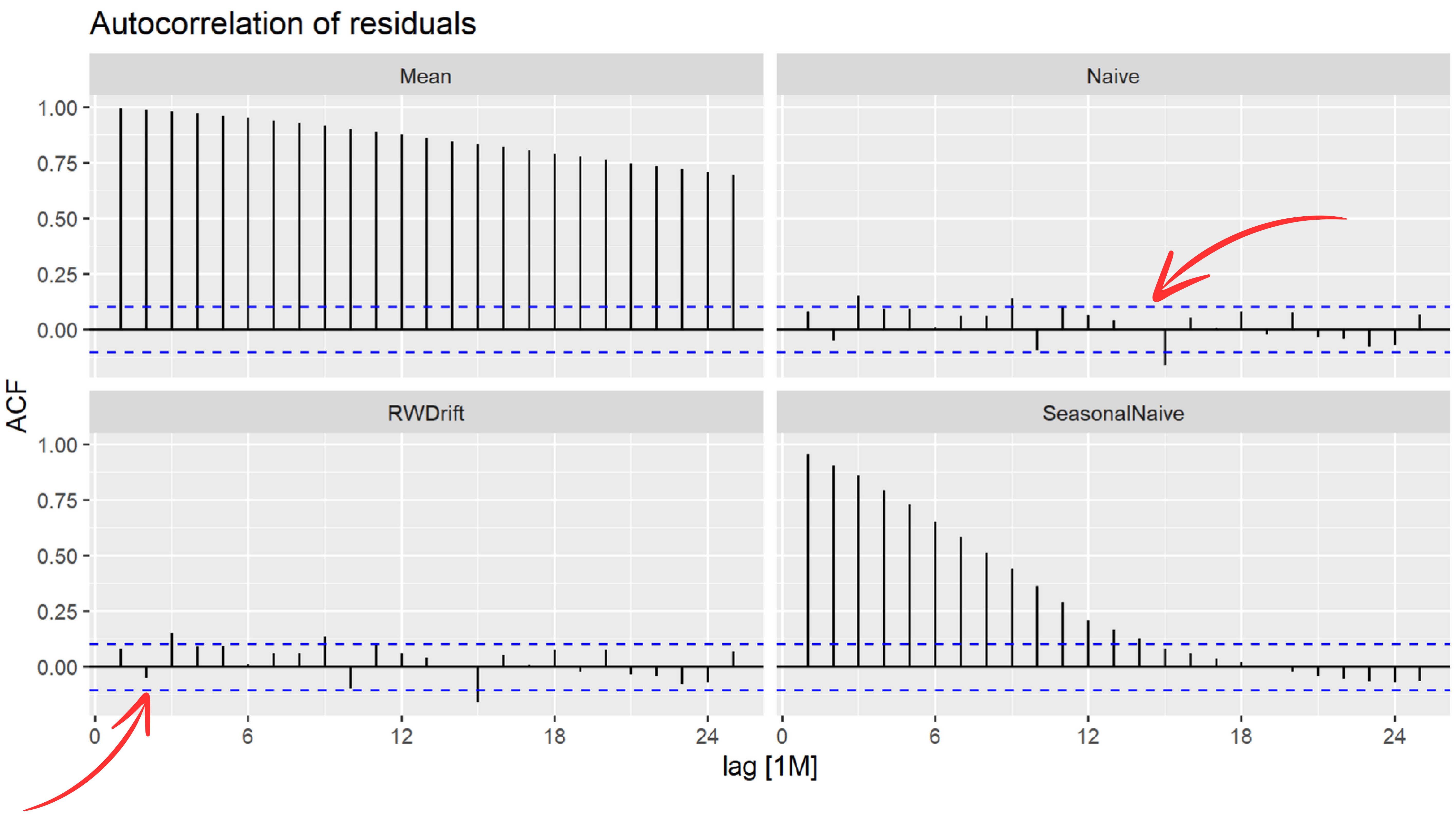
Naive and RWDrift are very clsoe

Benchmark Models Residuals



Naive and RWDrift are very close making them the best fit.

Autocorrelation Residuals



Most of the data falls in the 95% confidence interval in Naive and RWDrift models.

ARIMA MODEL

	.model	.type	ME	RMSE
	<chr>	<chr>	<dbl>	<dbl>
1	arima012011	Test	12.2	18.1
2	arima210011	Test	12.1	18.1
3	auto	Test	-0.215	11.9

Exponential Smoothing

Auto ETS

.model	.type	ME	RMSE
<chr>	<chr>	<dbl>	<dbl>
ETS(Adj.Close..)	Test	-7.29	12.7

Additive error and seasonality

.model	.type	ME	RMSE
<chr>	<chr>	<dbl>	<dbl>
"ETS(Adj.Close.. ~ error…	Test	3.83	11.6

Simple ETS

.model	.type	ME	RMSE
<chr>	<chr>	<dbl>	<dbl>
"ETS(Adj.Close.. ~ error…	Test	-6.78	12.4

Additive Error and Seasonality ETS fits better

ETS with Trend (Holt)

.model	.type	ME	RMSE
<chr>	<chr>	<dbl>	<dbl>
"ETS(Adj.Close.. ~ error…	Test	-4.22	12.3

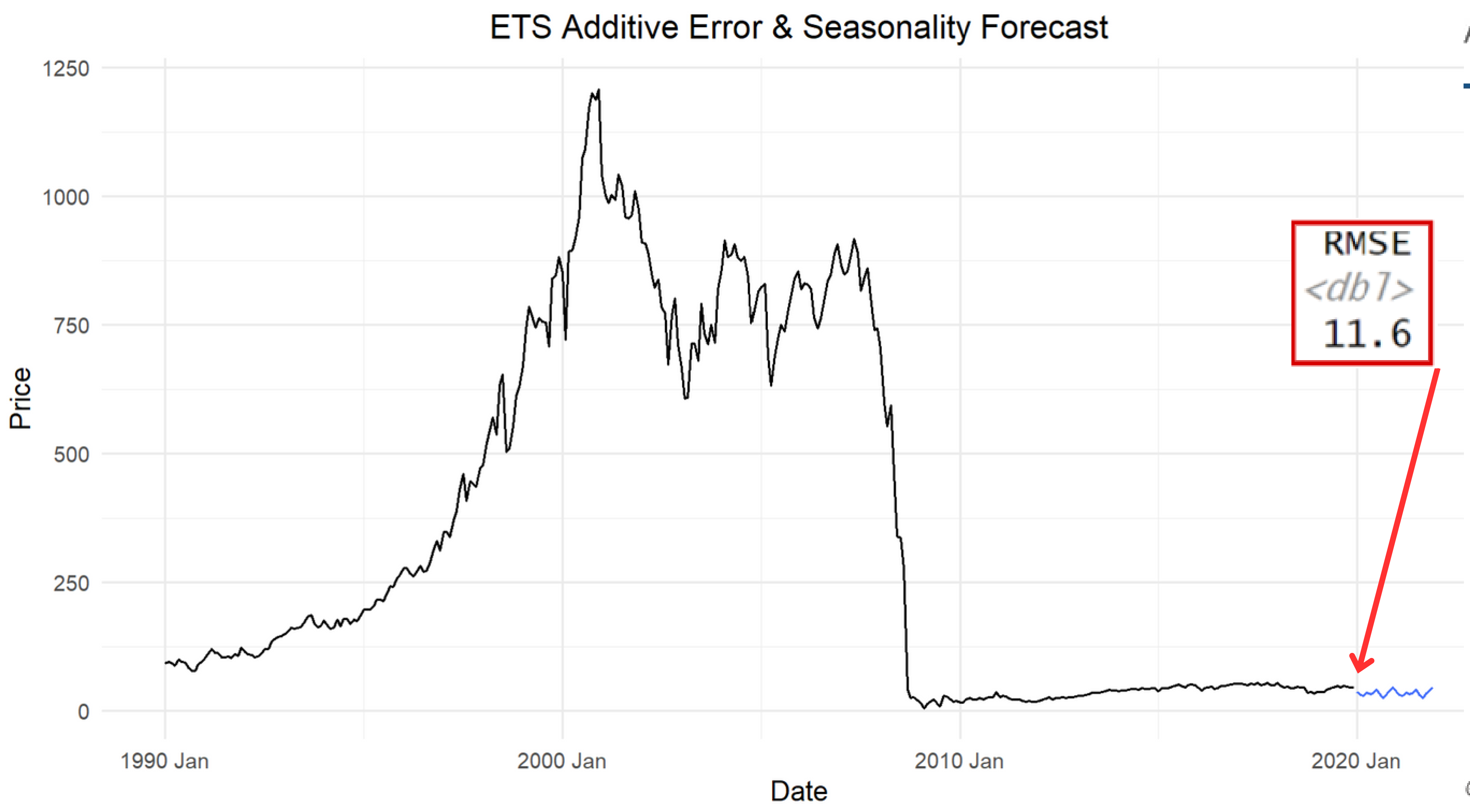
ETS with Damped trend (Damp)

.model	.type	ME	RMSE
<chr>	<chr>	<dbl>	<dbl>
"ETS(Adj.Close.. ~ error…	Test	-6.91	12.5

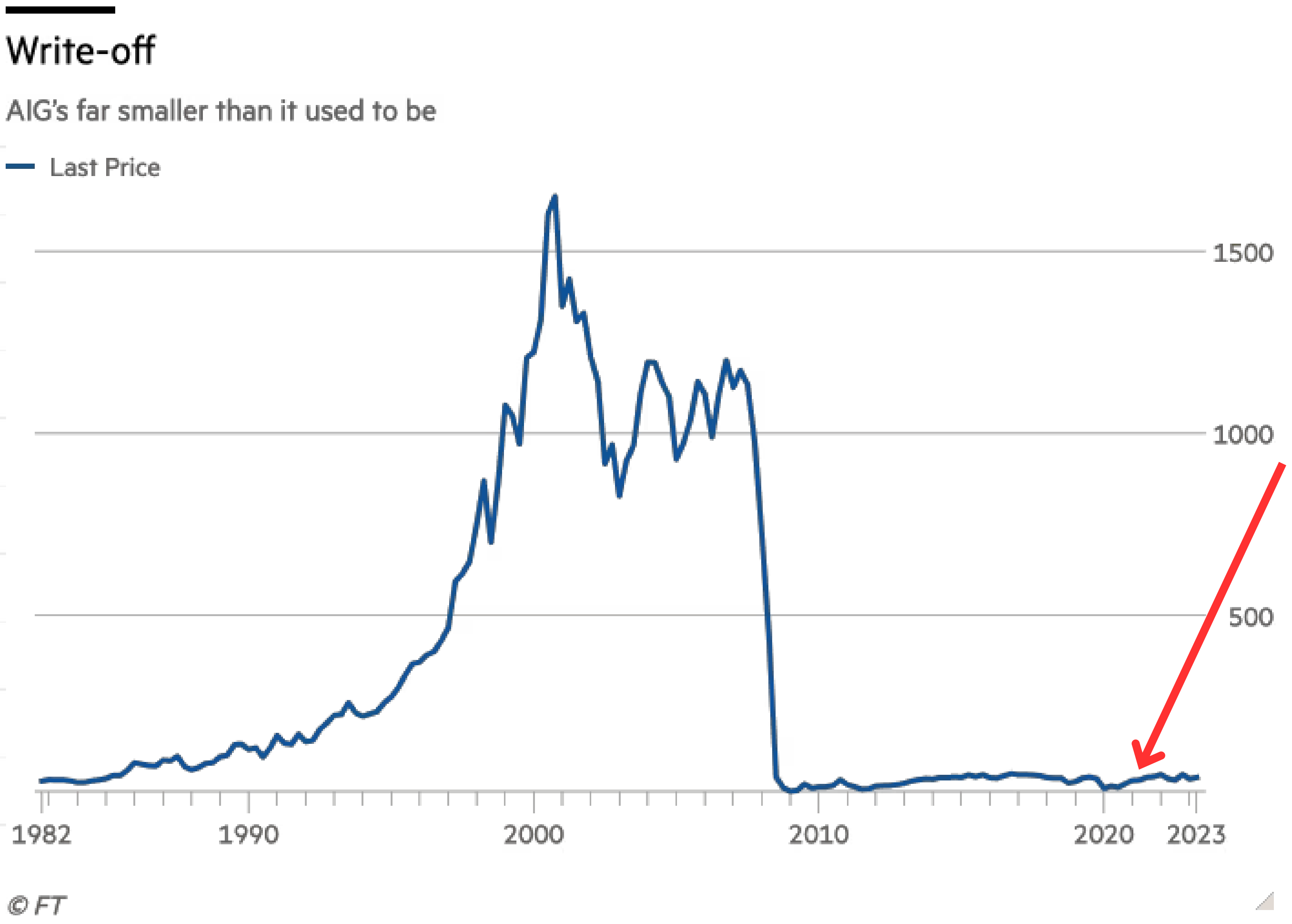
Additive vs Multiplicative

	.model	.type	ME	RMSE
	<chr>	<chr>	<dbl>	<dbl>
1	additive	Test	19.6	25.8
2	multiplicative	Test	-32.6	33.7

Exponential Smoothing Plot



Best Fit ETS model



An official Time Series forecast of AIG share price from **Financial Times**

THANK YOU

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