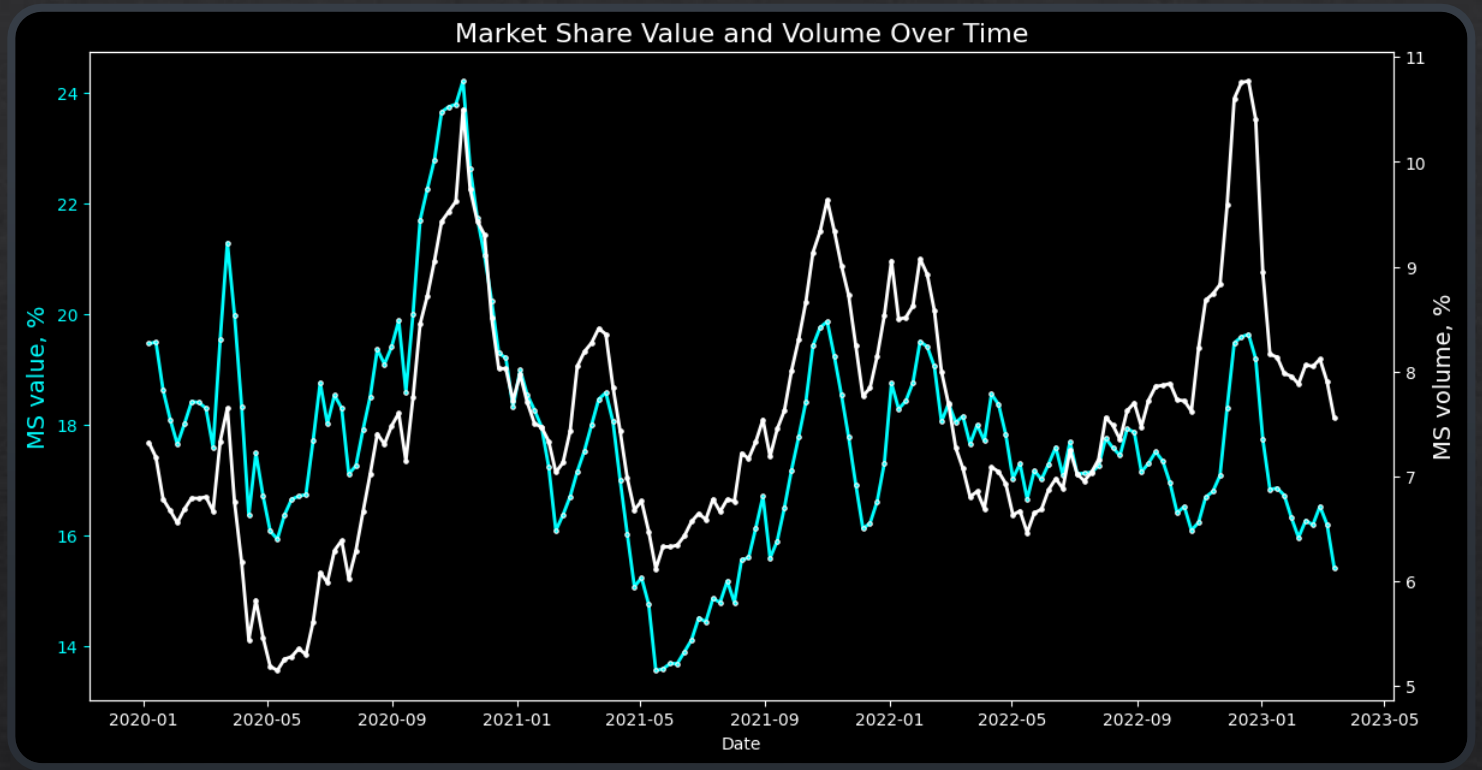
Testcase

0: Data preparation

Main points:

- Prepare excel file for pandas
- Check for missing values
- Ensure correct data format

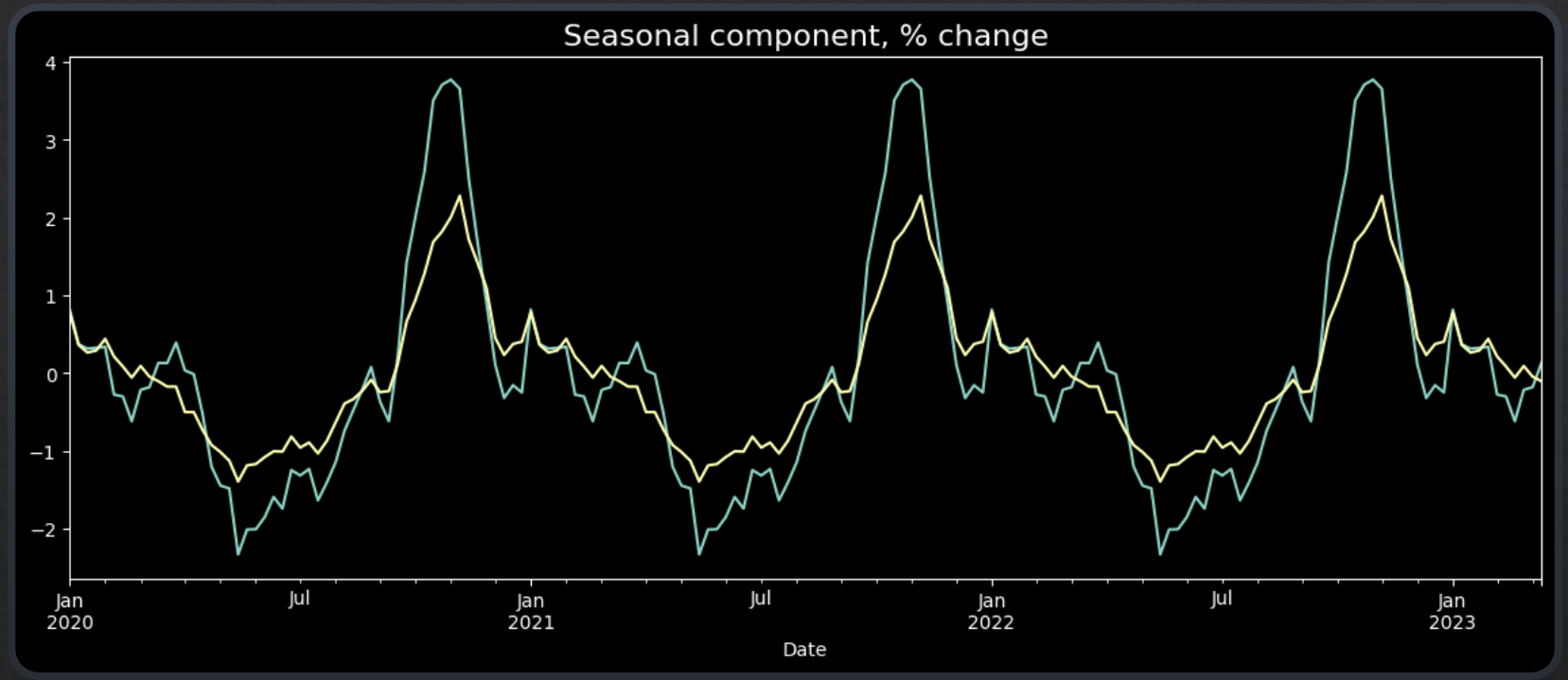


1:Analyze brand's volume & value MS% dynamics, estimate brand's seasonality

Key points:

- MS value and volume follow almost the same pattern; however value is significantly greater than volume, which might indicate targeting on “premium” niche

1:Analyze brand's volume & value MS% dynamics, estimate brand's seasonality



Key points:

- Clear seasonal component: peaks in Q4, relatively bad performance in mid-year months

2. Calculate average brand price, price index (brand's price relatively to market price).

Key points:

- The average price index is 2.38, meaning the brand sells at almost 2.4 times the market average price.

	Average Brand Price	Average Market Price	Average Price Index
Value	201.556362	86.496892	2.378572

3. Regression model (motivation)

Key points:

- Chosen model – OLS, as we need to estimate impact on the target value and reveal business insights.
- Model estimated with HAC robust standard errors (8 lags) to correct for autocorrelation/heteroskedasticity in weekly time series
- Among models with/without seasonality, the version with week dummies shows higher adjusted R-squared
- Log–log specification for simple interpretation,

3. Regression model (warnings)

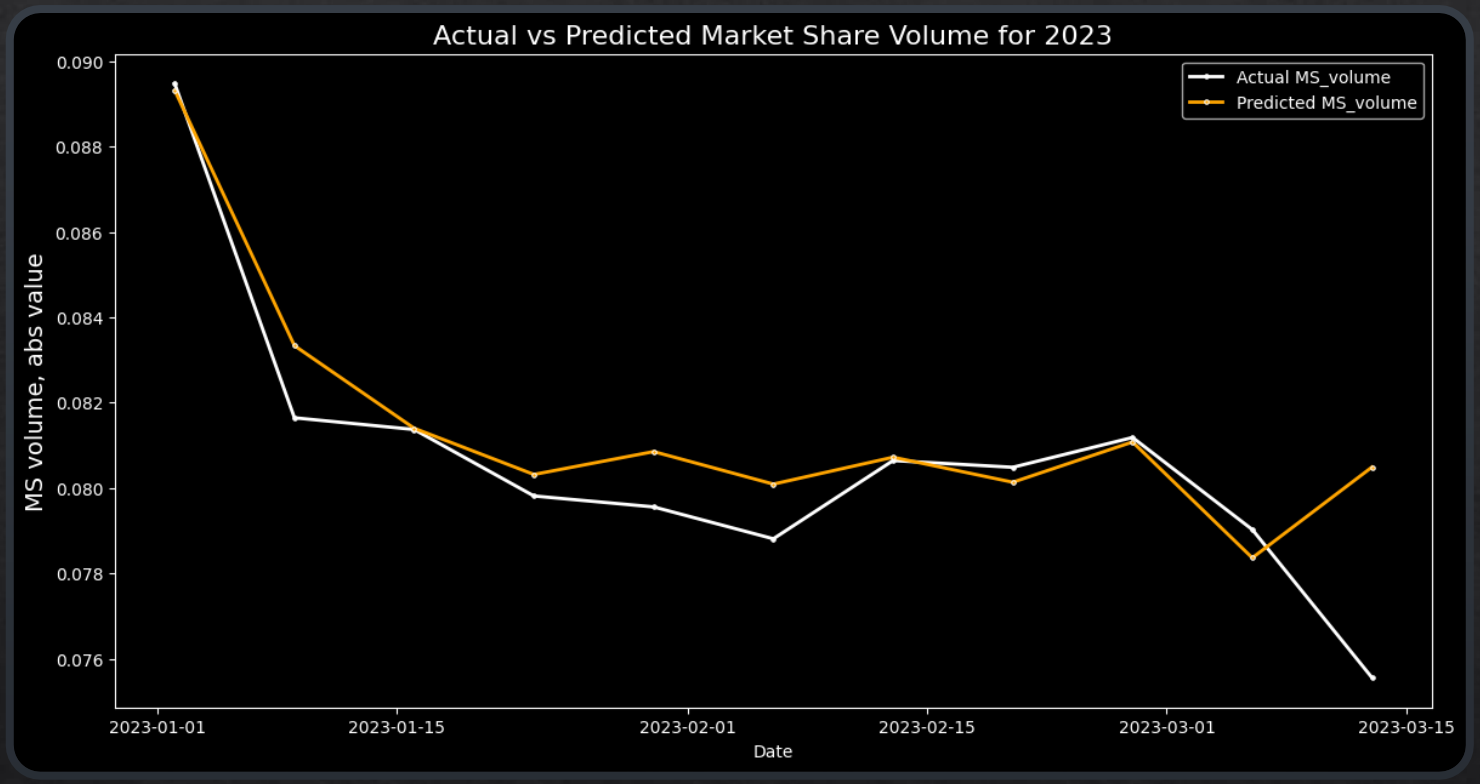
Model suffers from autocorrelation and serial correlation

	feature	VIF
0	log_price_index	47.169761
1	log_Weighted_distribution	44.417965
2	log_Video, TRP	3.338725
3	log_SMM, TRP	1.323569
4	log_TV, TRP	2.474378

Durbin-Watson statistic: 0.26393610217594 18

3. Regression model (potential improvements)

- Adding interaction terms
- Adding new features (macro factors, market competition situation (categorical), people information consumption habits (back to media support impact)



RMSE for 2023 predictions, in %: 0.1689%

3. Regression model (Prediction)

4. Insights

- Model explains 81% of variation in log MS_volume_%.
- Price index is the only statistically significant marketing variable (coef = –0.45)
- 1% increase in relative price lowers brand volume MS by ≈ 0.45% (price elasticity of share)
- Coefficients for weighted distribution and all media TRPs are not statistically significant at conventional levels in this specification.
- Many week dummies are significant and negative, confirming strong seasonal pattern.

4. Insights (non-technical)

- Increase in price leads to decrease in MS volume
- Seasonal component is crucial; Focus on Q4
- Distribution and media pressure do not show an impact on weekly market share.

5. Recommendations

- Avoid price increases
- concentrate media and trade activity in high-performance weeks (Q4 and early Q1)
- Collect data about competitors and people habits

Code: https://github.com/Korch195/Econometrics

(More graphs, tests, etc)