ARIMA Models using SPSS

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Example 1: Non-seasonal case
non-stationary

→ close to 1.0
ARIMA(0,1,1)
Example 2: GAP data (seasonal case)
Trend - Seasonal
+ Non Constant Variance
- diff (1)
- Trans (Log)
Transforms: natural logarithm
seasonal diff is needed!
$SD(1)$

Transforms: natural logarithm, seasonal difference(1, period 4)

$SD(2)$

Transforms: natural logarithm, seasonal difference(2, period 4)
ARIMA \((2,0,2)(0,2,1)_m\)
### Model Description

<table>
<thead>
<tr>
<th>Model ID</th>
<th>GapSales_Model_1</th>
<th>Model Type</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>ARIMA(2,0,2)(0,2,1)</td>
</tr>
</tbody>
</table>

### Model Statistics

<table>
<thead>
<tr>
<th>Model</th>
<th>Number of Predictors</th>
<th>Model Fit statistics</th>
<th>Ljung-Box Q(18)</th>
<th>Number of Outliers</th>
</tr>
</thead>
<tbody>
<tr>
<td>GapSales_Model_1</td>
<td>0</td>
<td>.823</td>
<td>8.444</td>
<td>.814</td>
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</tbody>
</table>

### ARIMA Model Parameters

<table>
<thead>
<tr>
<th>Model</th>
<th>Estimate</th>
<th>SE</th>
<th>t</th>
<th>Sig</th>
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</thead>
<tbody>
<tr>
<td>GapSales_Model_1</td>
<td>19759.887</td>
<td>10961.936</td>
<td>1.803</td>
<td>.076</td>
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<tr>
<td>GapSales, No Transformation</td>
<td>AR Lag 1</td>
<td>.427</td>
<td>.349</td>
<td>1.229</td>
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<td></td>
<td>AR Lag 2</td>
<td>.071</td>
<td>.305</td>
<td>.233</td>
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<tr>
<td></td>
<td>MA Lag 1</td>
<td>-.620</td>
<td>.319</td>
<td>-.969</td>
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<tr>
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<td>MA Lag 2</td>
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<td>.141</td>
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<td>Seasonal Difference</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>MA, Seasonal</td>
<td>Lag 1</td>
<td>.980</td>
<td>.564</td>
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</tbody>
</table>