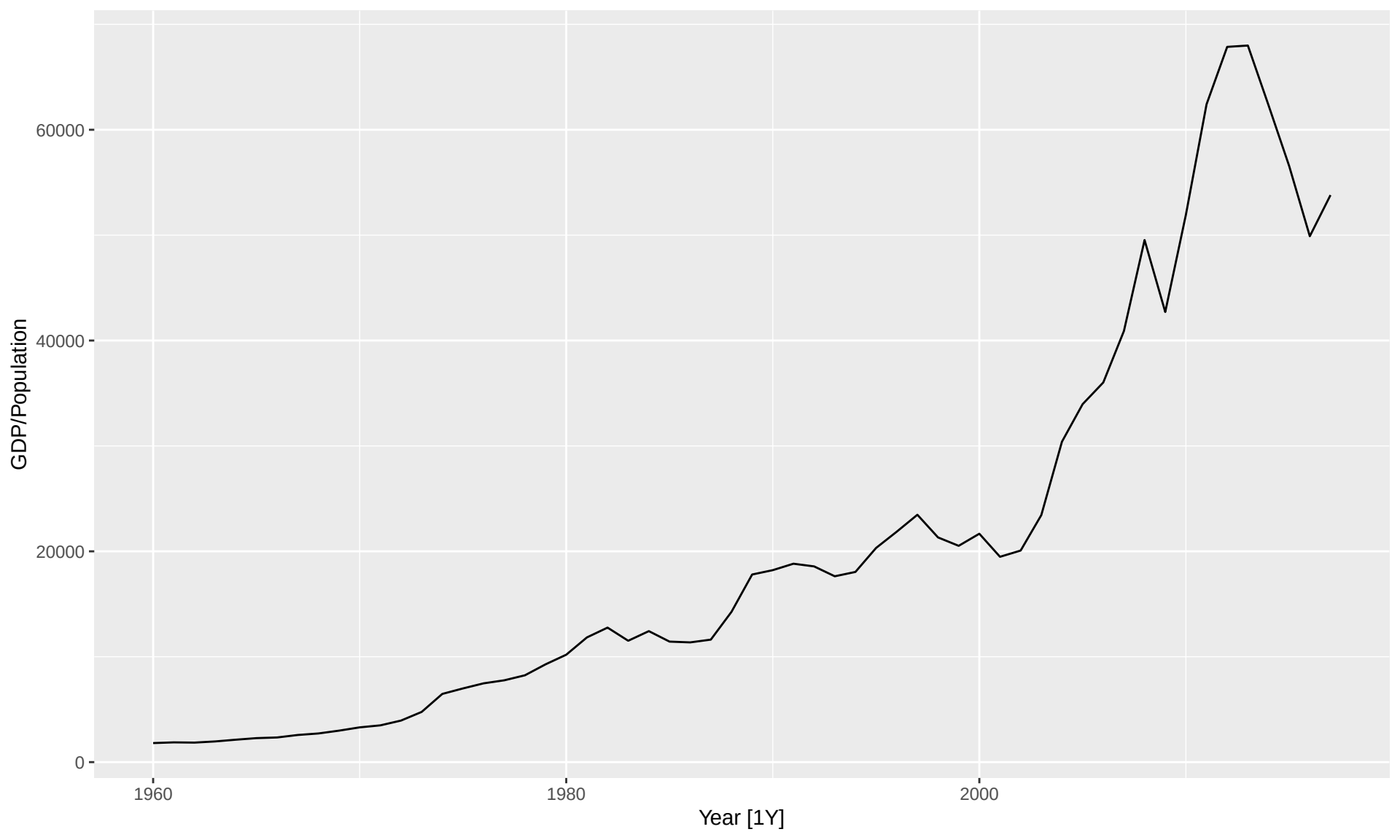
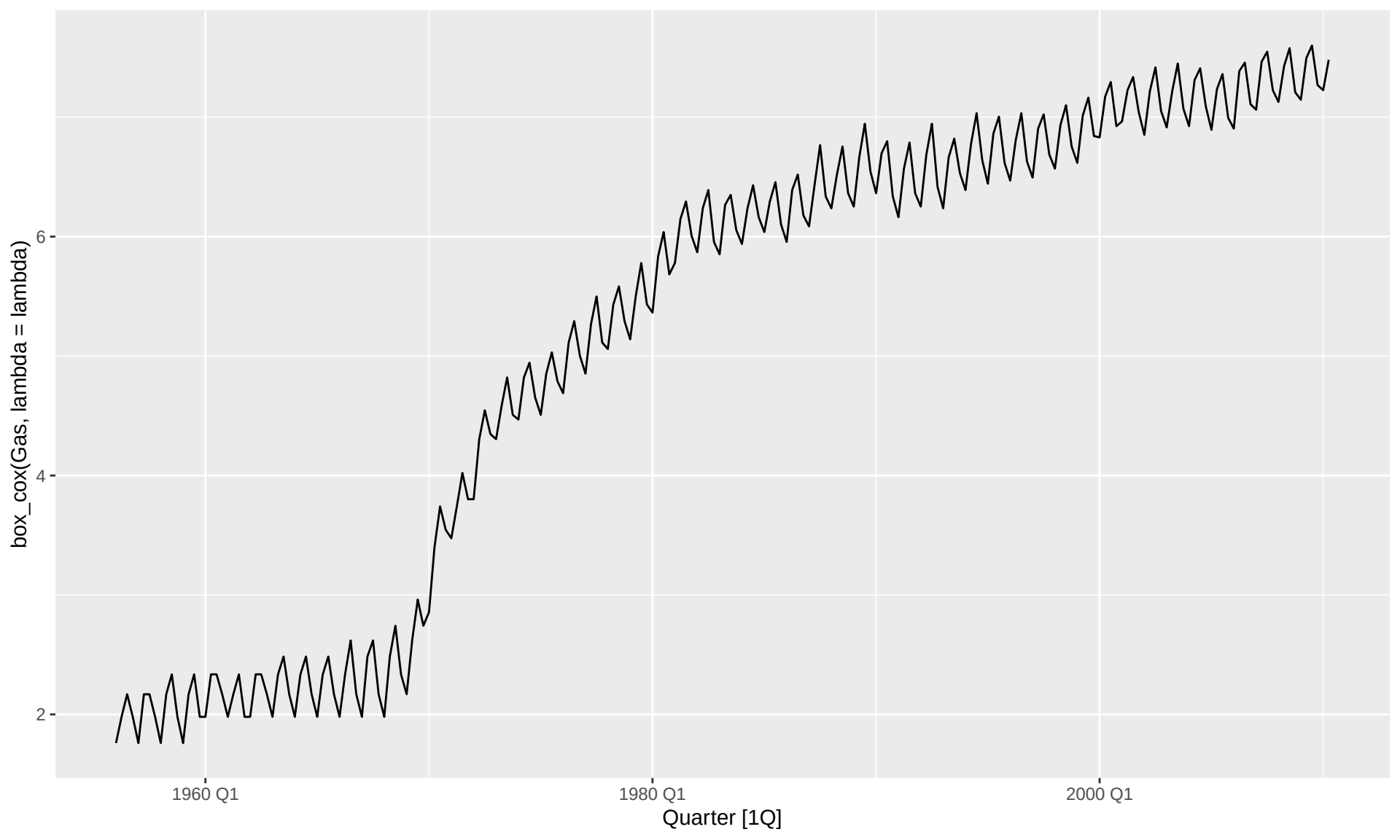
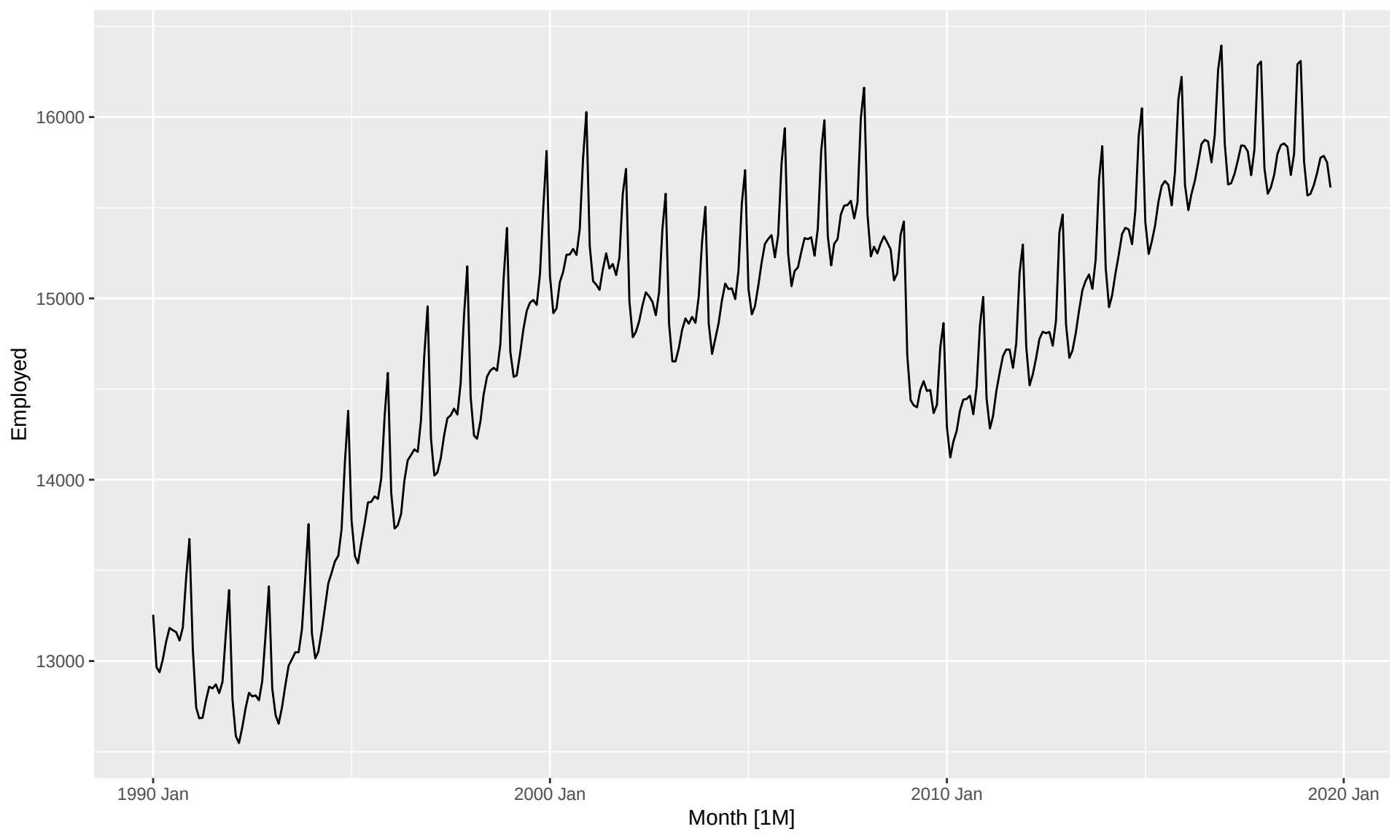
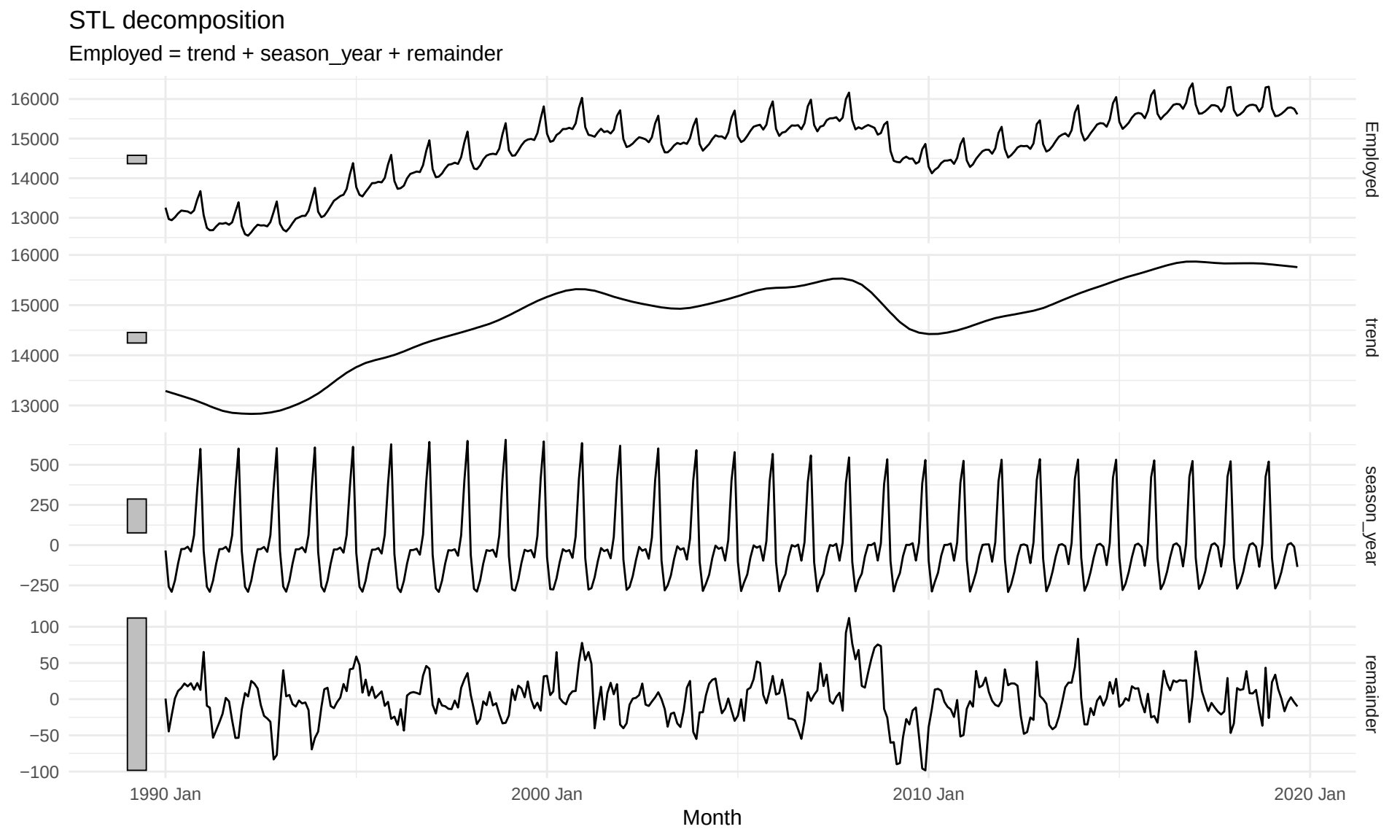
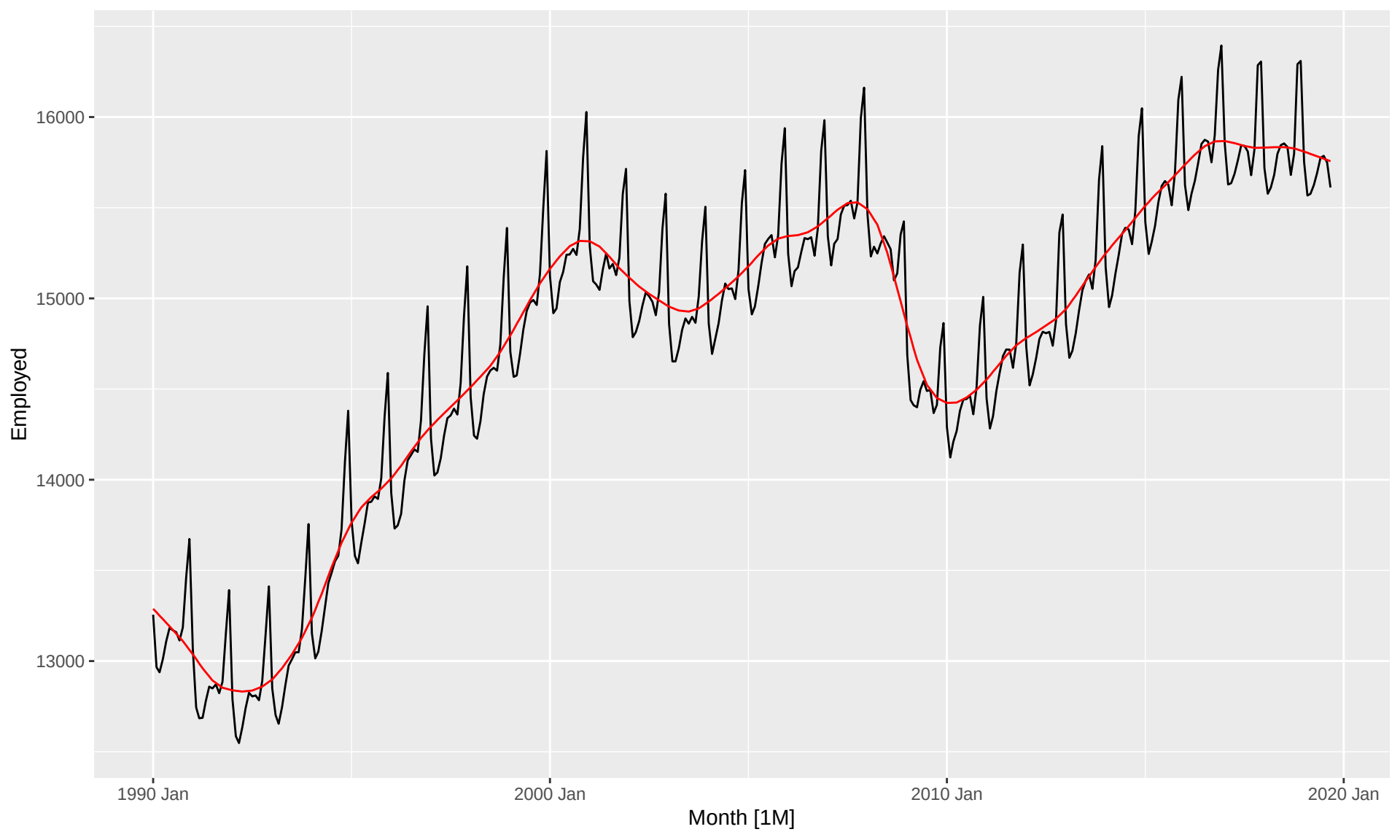
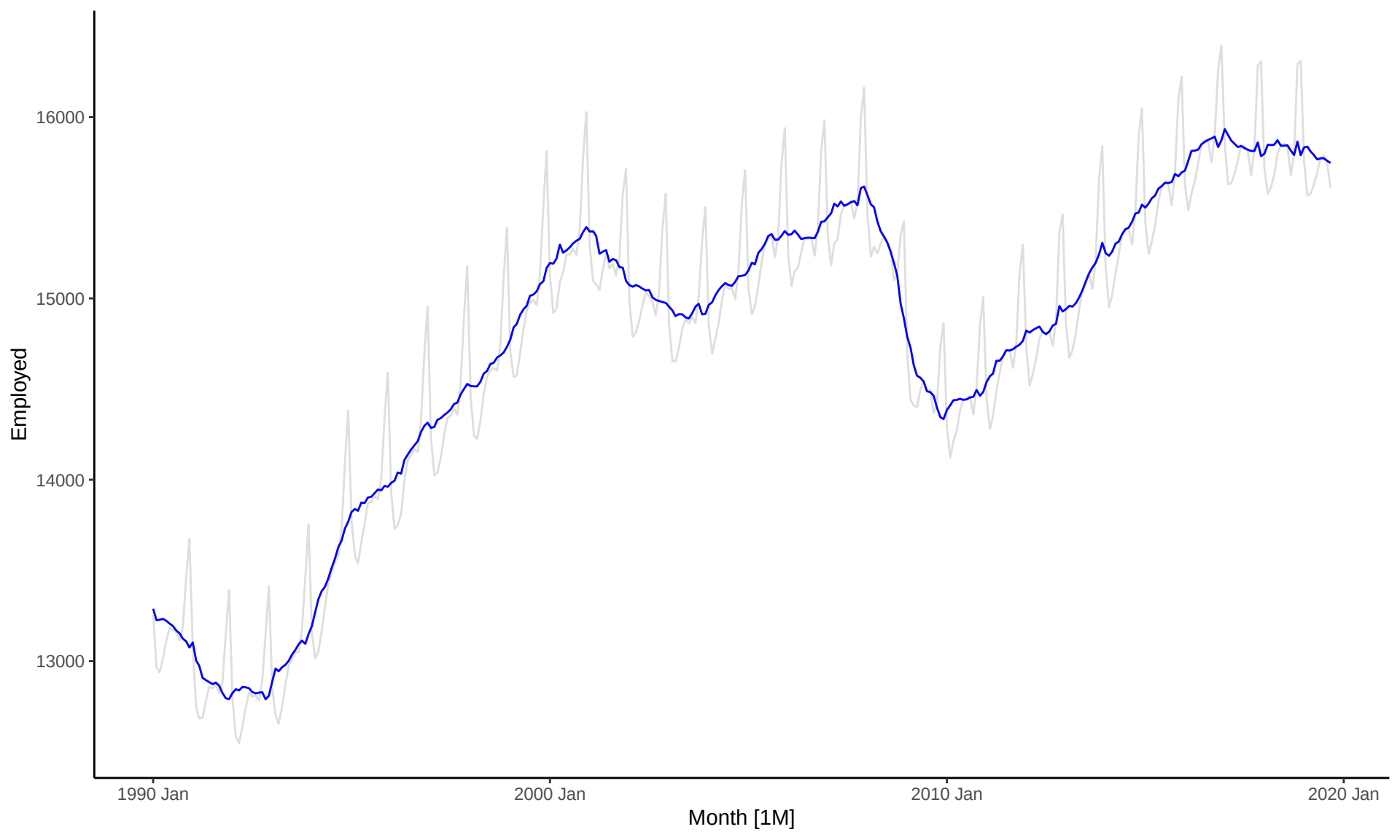

60000
40000
20000
0
GDP/Population
1960
1980
2000
Year [1Y]

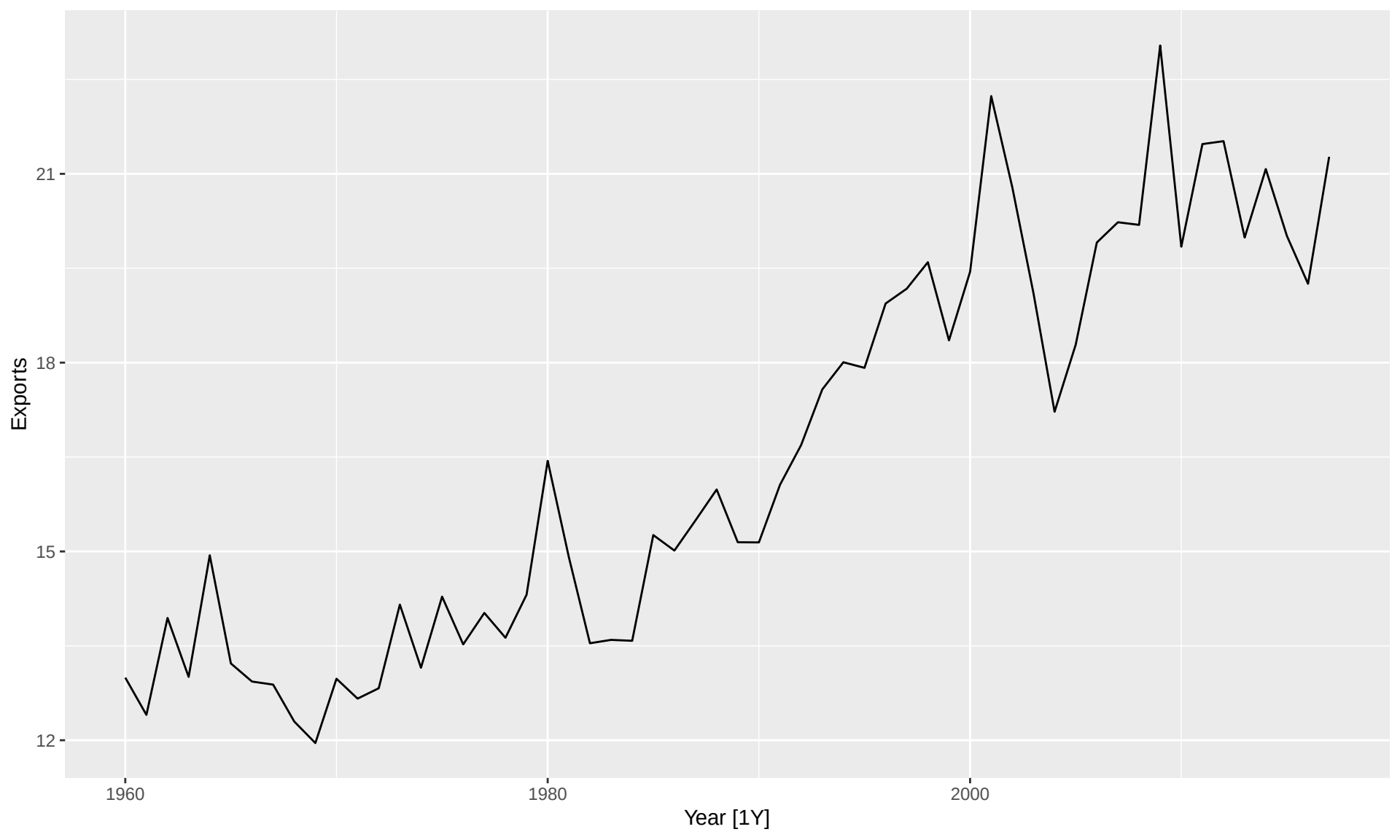

box_cox(Gas, lambda = lambda)
6
4
2
1960 Q1
1980 Q1
2000 Q1
Quarter [1Q]

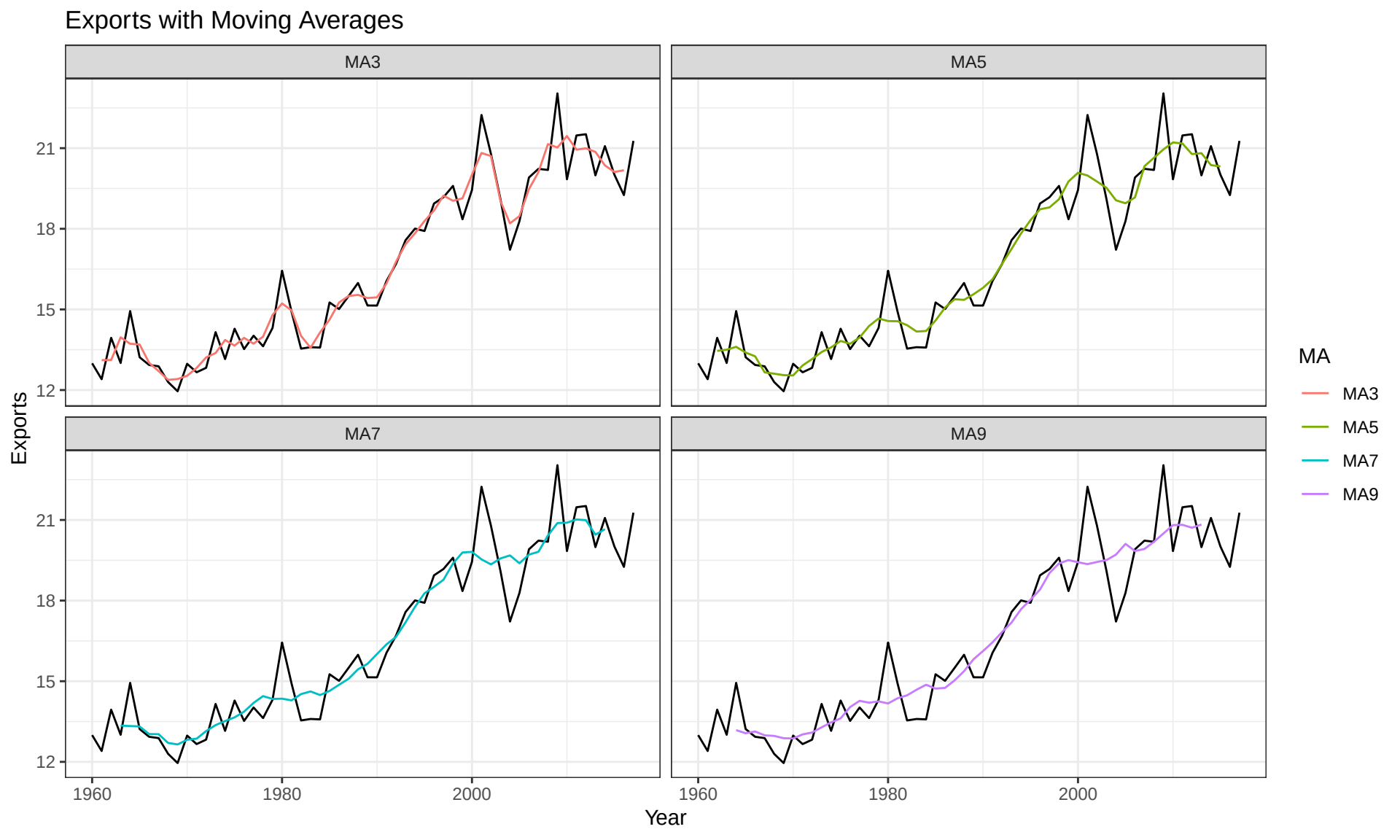

16000
15000
14000
13000
Employed
1990 Jan
2000 Jan
2010 Jan
2020 Jan
Month [1M]

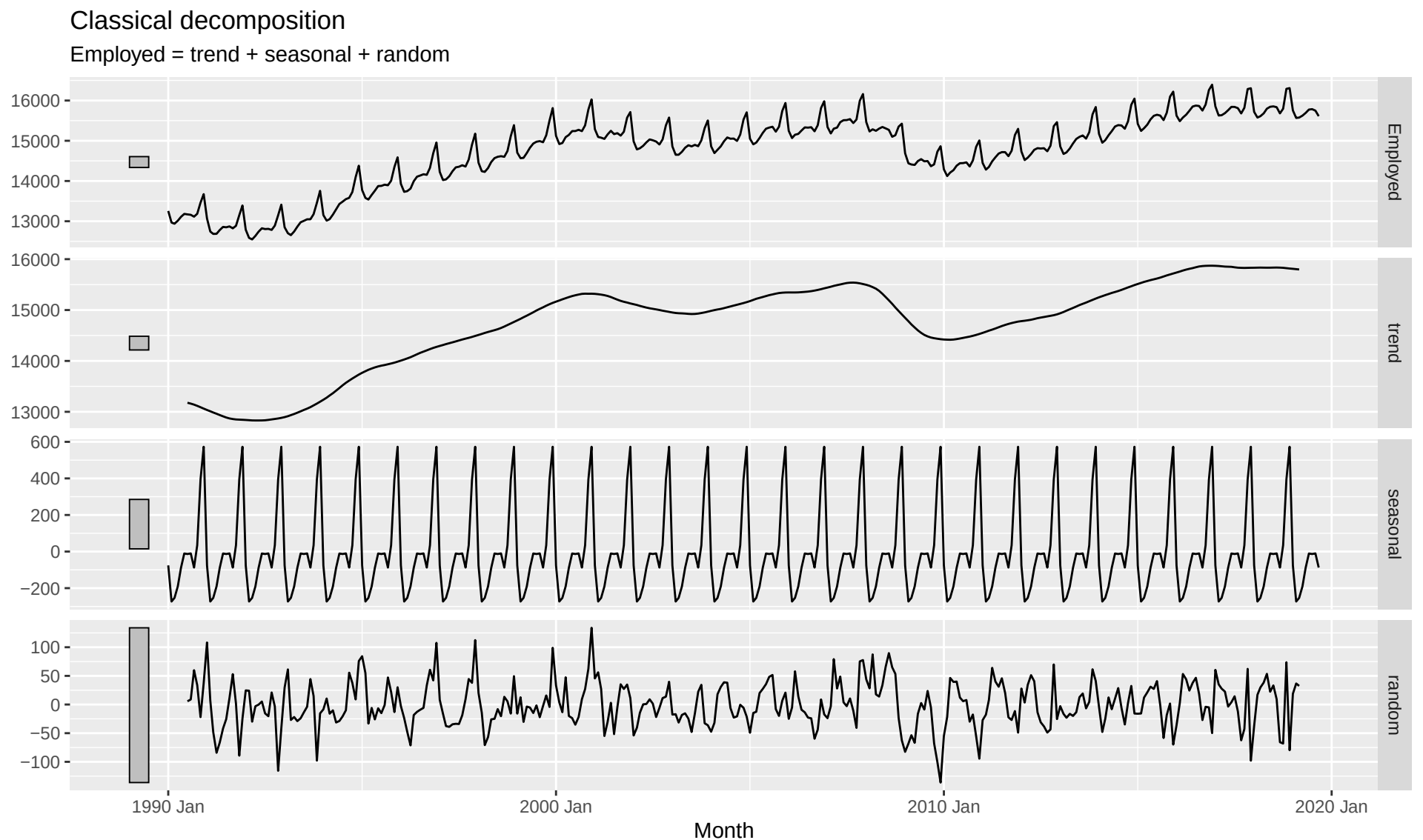

STL decomposition
Employed = trend + season_year + remainder
16000
15000
14000
13000
Employed
16000
15000
14000
13000
trend
500
250
0
−250
season_year
100
50
0
−50
−100
remainder
1990 Jan
2000 Jan
2010 Jan
2020 Jan
Month

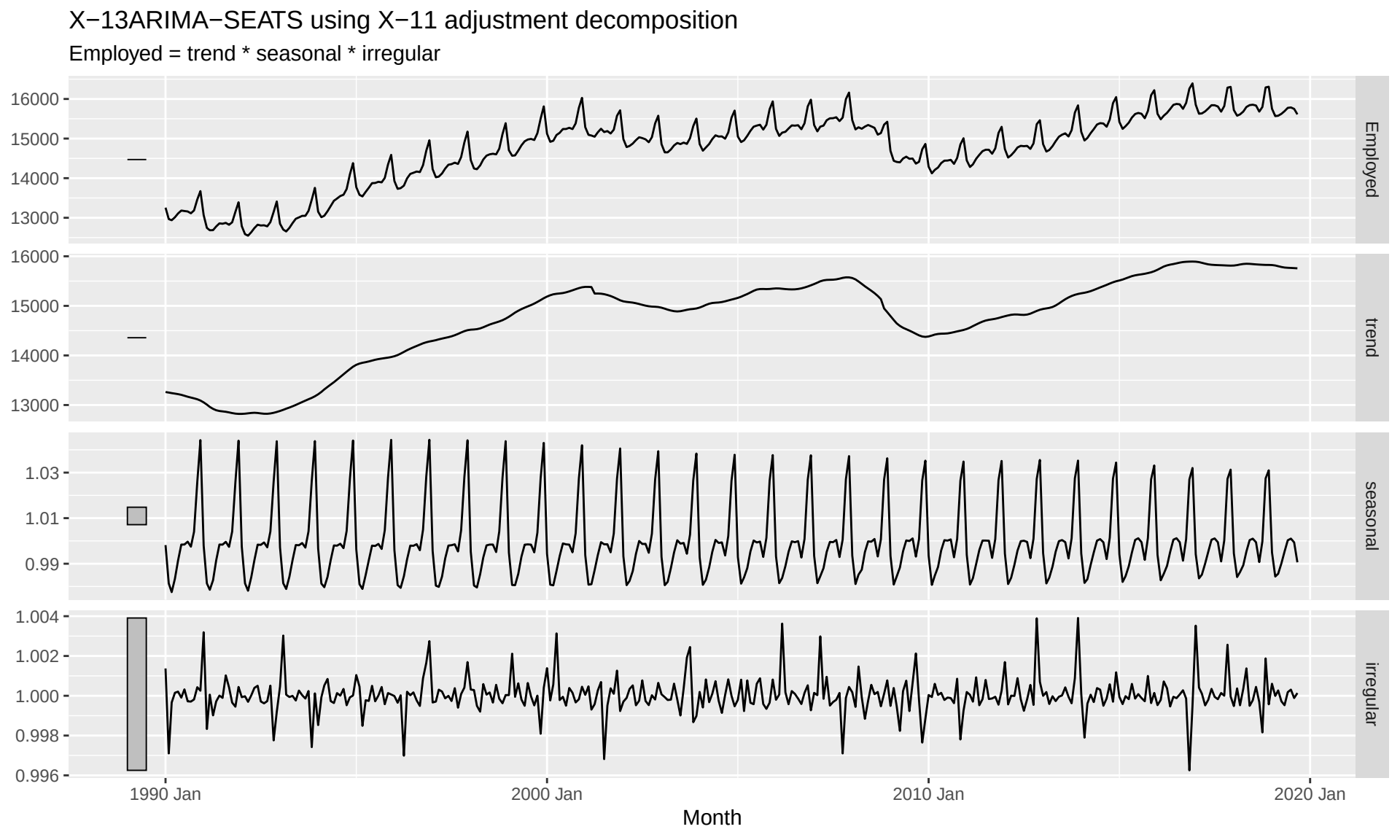

16000
15000
14000
13000
Employed
1990 Jan
2000 Jan
2010 Jan
2020 Jan
Month [1M]

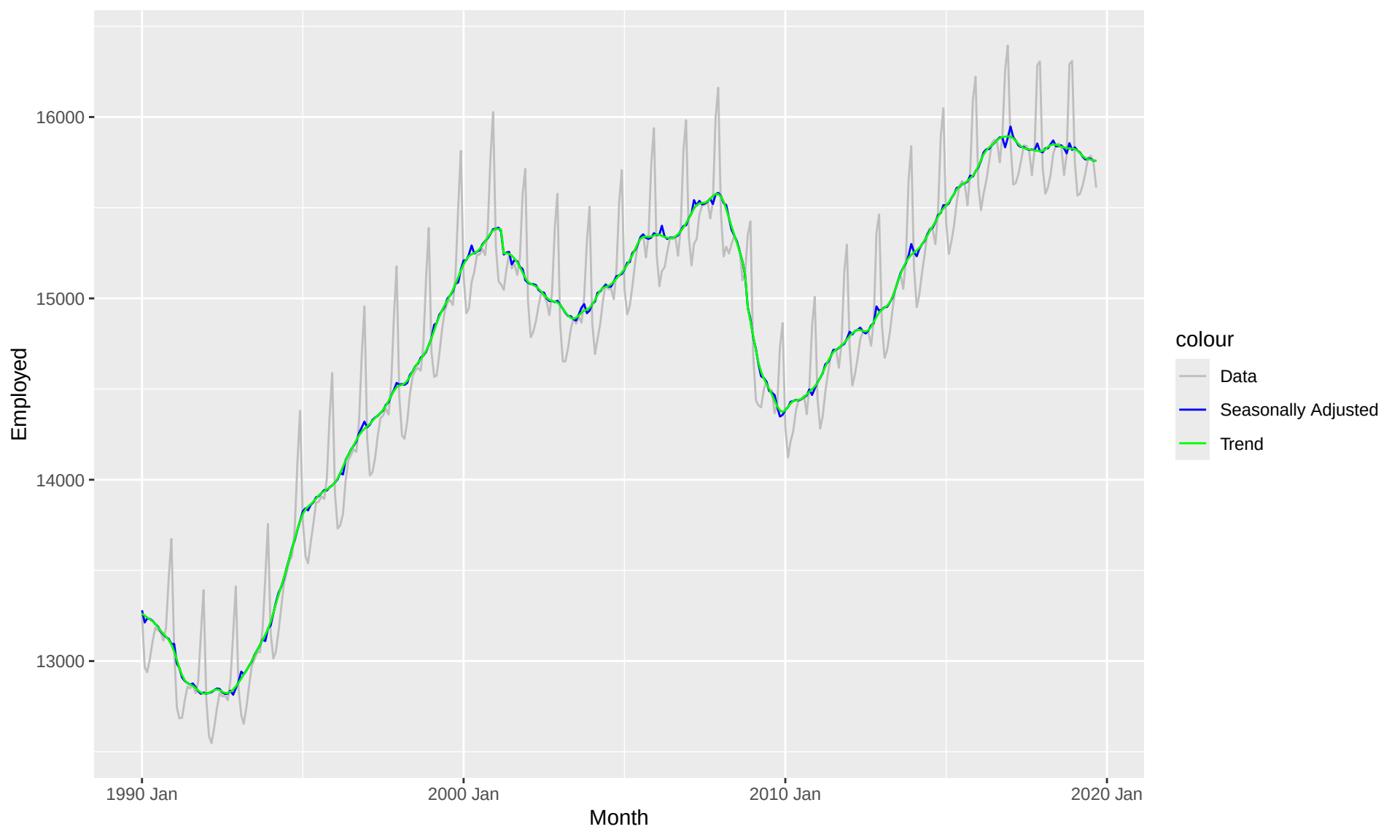

16000
15000
14000
13000
Employed
1990 Jan
2000 Jan
2010 Jan
2020 Jan
Month [1M]

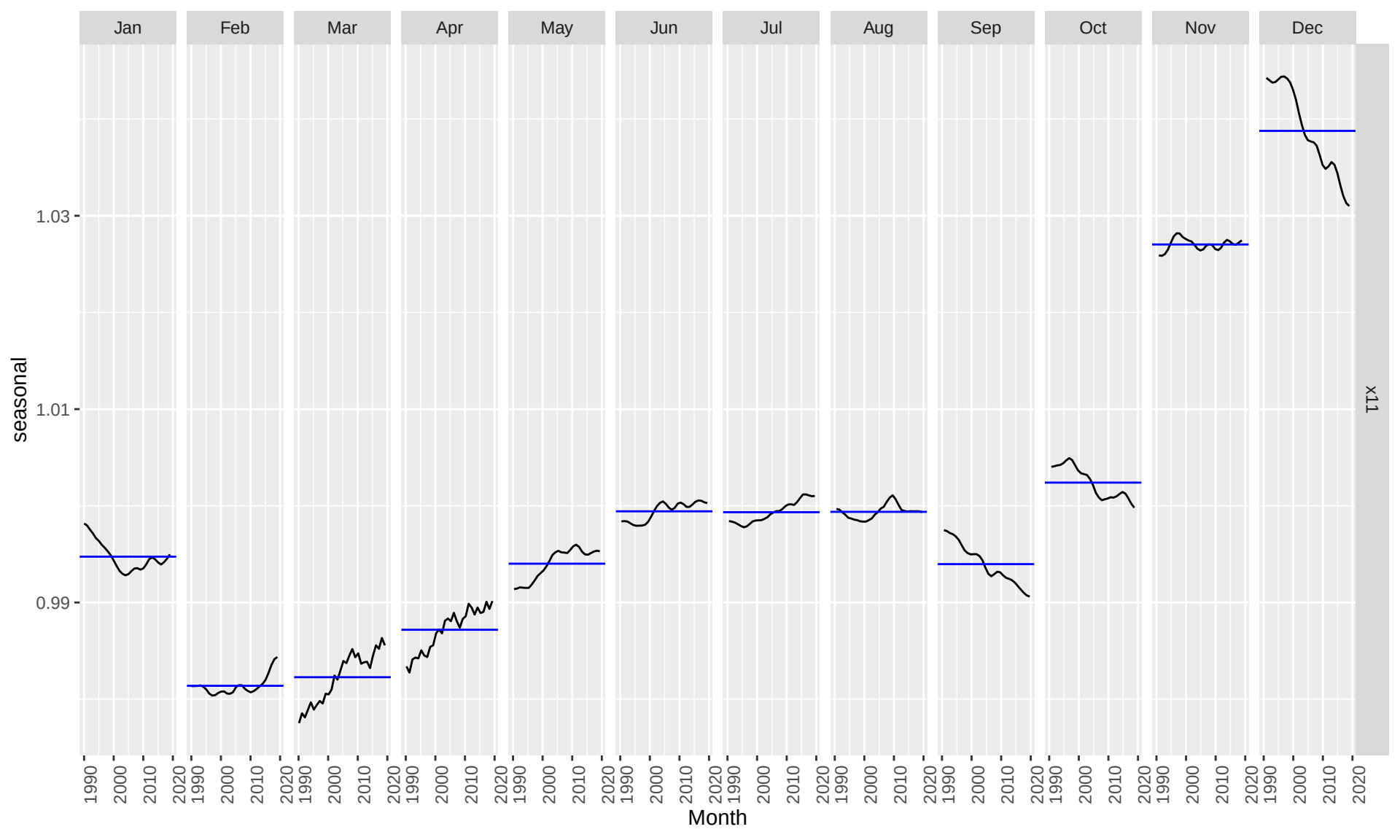

Exports
21
18
15
12
1960
1980
2000
Year [1Y]

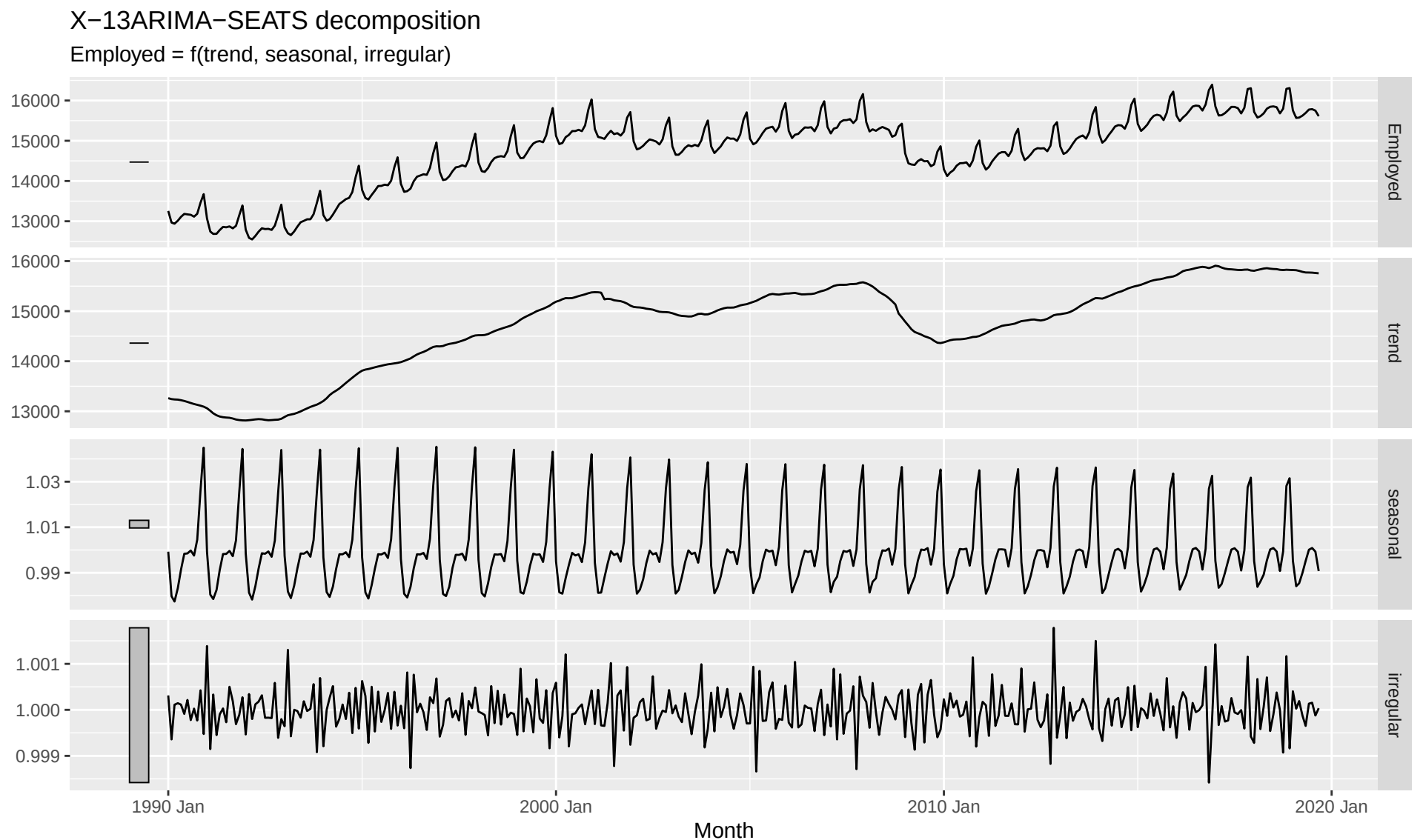

Exports with Moving Averages
MA3
MA5
MA7
MA9
Exports
Year
MA
MA3
MA5
MA7
MA9
12
15
18
21
1960
1980
2000

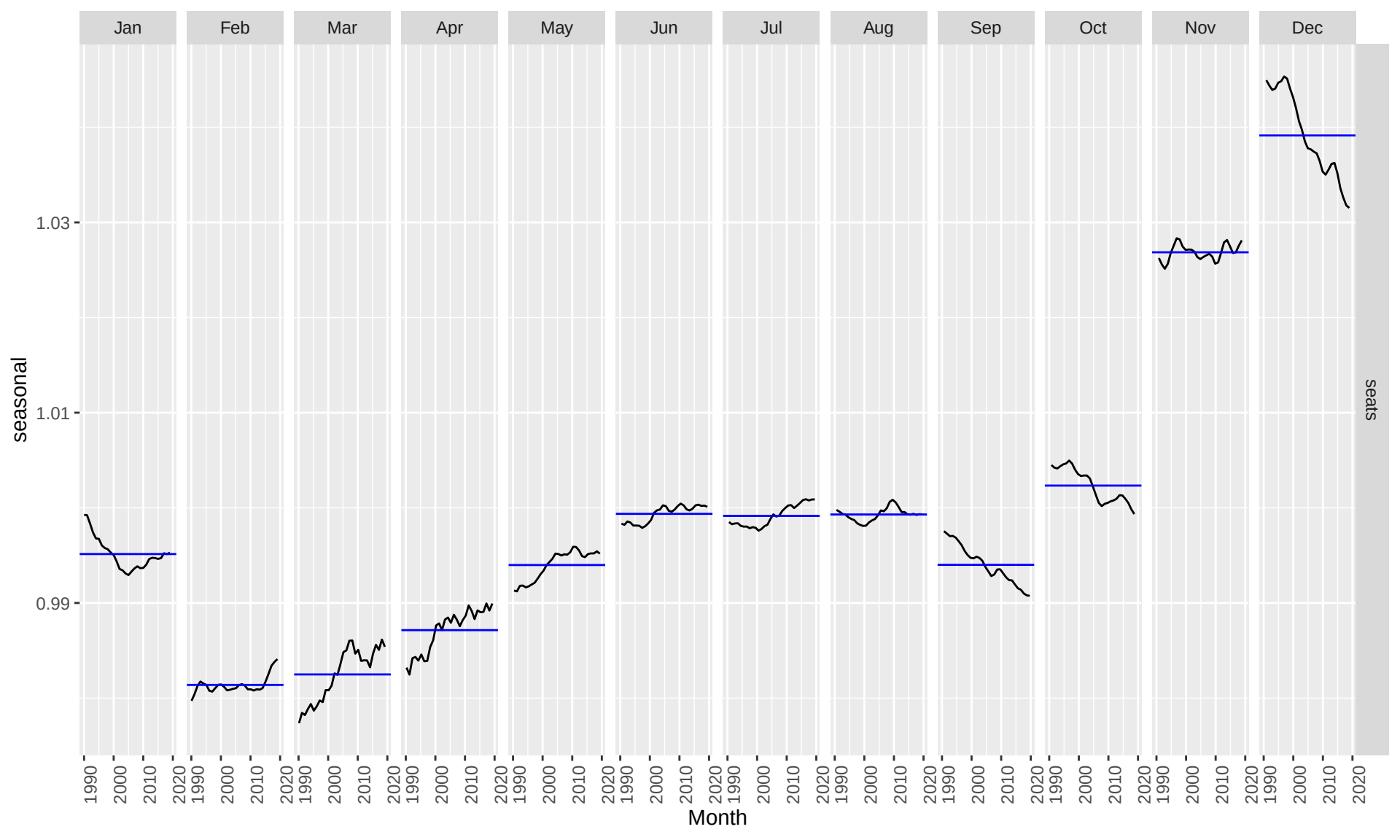

Classical decomposition
Employed = trend + seasonal + random
16000
15000
14000
13000
Employed
16000
15000
14000
13000
trend
600
400
200
0
−200
seasonal
100
50
0
−50
−100
random
1990 Jan
2000 Jan
2010 Jan
2020 Jan
Month


X−13ARIMA−SEATS using X−11 adjustment decomposition
Employed = trend * seasonal * irregular
16000
15000
14000
13000
Employed
16000
15000
14000
13000
trend
1.03
1.01
0.99
seasonal
1.004
1.002
1.000
0.998
0.996
irregular
1990 Jan
2000 Jan
2010 Jan
2020 Jan
Month


16000
15000
14000
13000
Employed
1990 Jan
2000 Jan
2010 Jan
2020 Jan
Month
colour
Data
Seasonally Adjusted
Trend


Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
seasonal
1.03
1.01
0.99
X11
1990
2000
2010
2020
Month


X−13ARIMA−SEATS decomposition
Employed = f(trend, seasonal, irregular)
16000
15000
14000
13000
Employed
16000
15000
14000
13000
trend
1.03
1.01
0.99
seasonal
1.001
1.000
0.999
irregular
1990 Jan
2000 Jan
2010 Jan
2020 Jan
Month


Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
seats
seasonal
1.03
1.01
0.99
1990
2000
2010
2020
Month