EoS - E-tutorial 03 - WiSe 2022/2023

StatRef.D.2.2.00018 (60 Punkte)

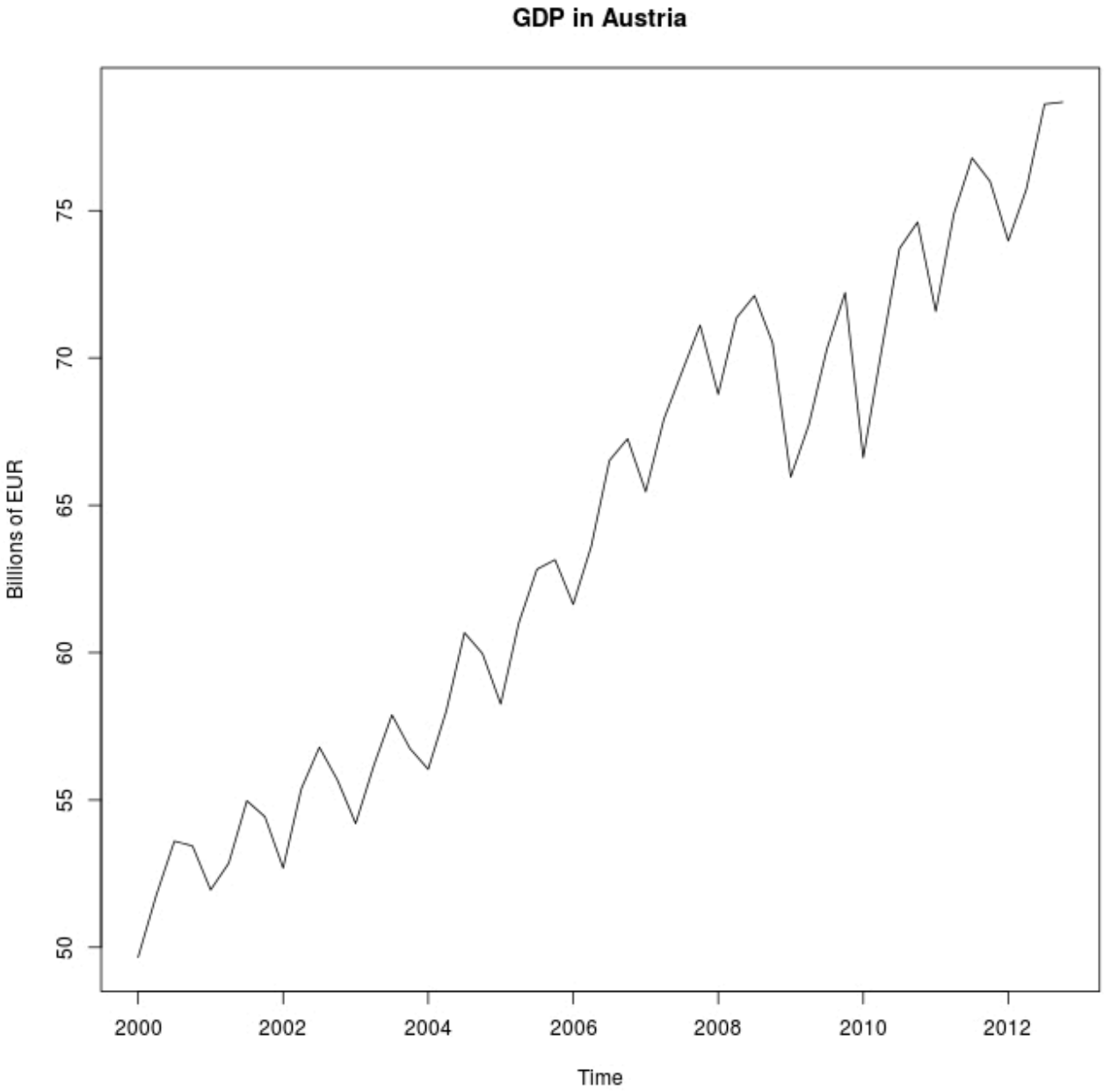
Sie haben die folgende Antwort gegeben:

The following dataset contains quarterly data on the gross domestic product (GDP) in Austria. The available data reach from the first quarter (Q1) of 2000 to the fourth quarter (Q4) of 2012. Download the dataset and load it into R.

Hint: Please round your results - if necessary and not demanded otherwise - to **four** decimal places.

Hint: You might want to use the R functions **ts** and **decompose**.

Hint: Assume that there is a constant seasonal pattern in the data and therefore assume an additive model.



il__qst_34353

il__qst_34353.RData (552 B)

a) (18 points) You want to determine the trend-cycle component (combination of trend and cycle) of the time series. Calculate the value of the trend-cycle component for the 4th quarter 2006 by using a suitable moving average. 66.2517 ✓

b) (8 points) Now calculate the standardised seasonal component of the time series for the 2nd quarter. -0.4799 ✗

c) (4 points) In theory, which value would result for the sum of the standardised seasonal components of one year? 0 ✓

d) (10 points) Calculate the random error of the time series for the 3rd quarter 2010. Assume that the value of the trend-cycle component for this quarter amounts to 71.9117. 0.1524 ✗

e) (16 points) Now forecast the value of the GDP in the 2nd quarter of 2013. 71.3981 ✗

f) (4 points) By how many percent did GDP change from Q1 2003 to Q3 2007? **Please specify your result in percent!** 28.2687 ✓ %

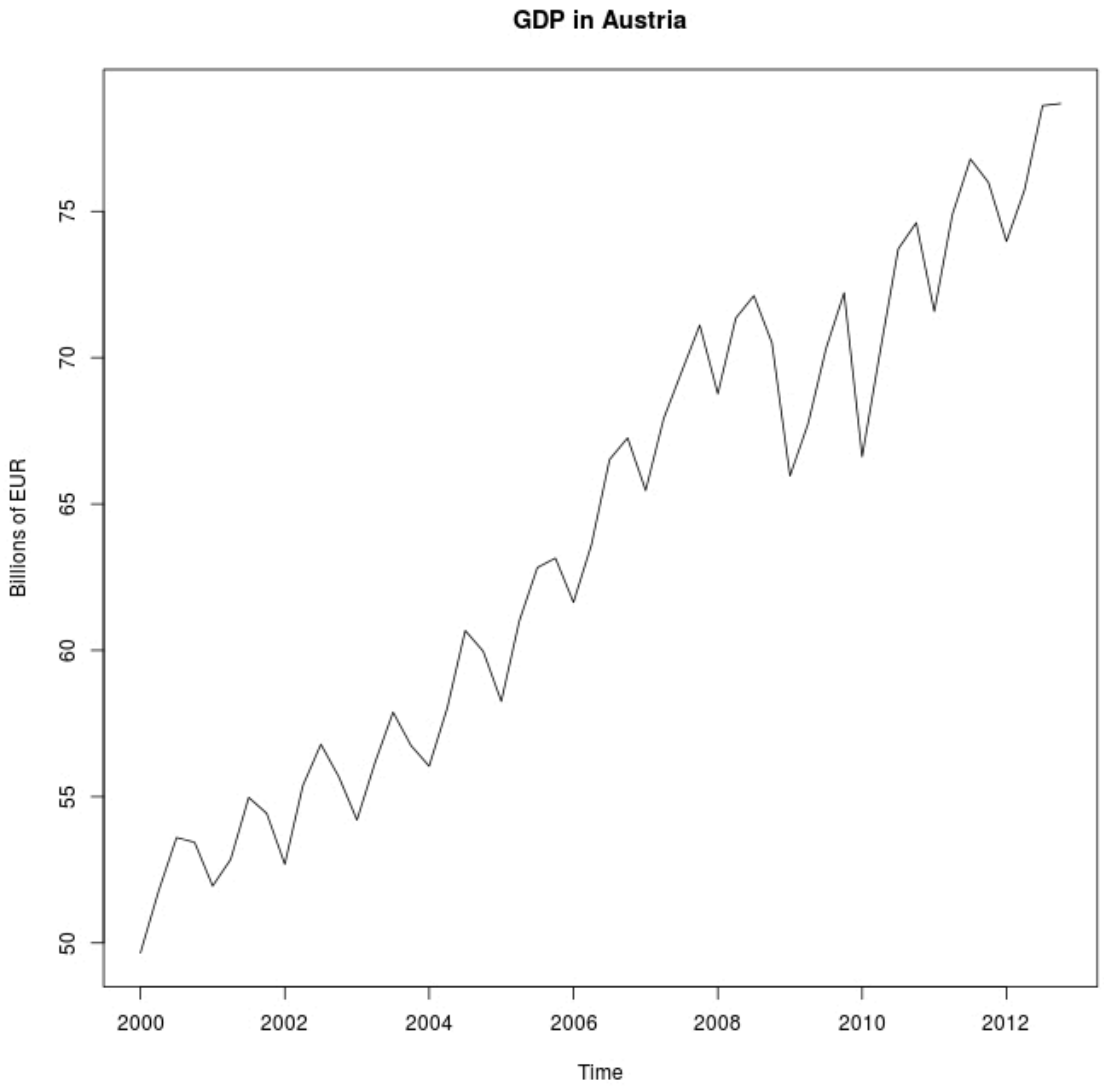
Die bestmögliche Lösung lautet:

The following dataset contains quarterly data on the gross domestic product (GDP) in Austria. The available data reach from the first quarter (Q1) of 2000 to the fourth quarter (Q4) of 2012. Download the dataset and load it into R.

Hint: Please round your results - if necessary and not demanded otherwise - to **four** decimal places.

Hint: You might want to use the R functions **ts** and **decompose**.

Hint: Assume that there is a constant seasonal pattern in the data and therefore assume an additive model.



il_qst_34353

il_qst_34353.RData (552 B)

a) (18 points) You want to determine the trend-cycle component (combination of trend and cycle) of the time series. Calculate the value of the trend-cycle component for the 4th quarter 2006 by using a suitable moving average. 66.2517

b) (8 points) Now calculate the standardised seasonal component of the time series for the 2nd quarter. -0.217

c) (4 points) In theory, which value would result for the sum of the standardised seasonal components of one year? 0

d) (10 points) Calculate the random error of the time series for the 3rd quarter 2010. Assume that the value of the trend-cycle component for this quarter amounts to 71.9117. 0.413

e) (16 points) Now forecast the value of the GDP in the 2nd quarter of 2013. 78.5197

f) (4 points) By how many percent did GDP change from Q1 2003 to Q3 2007?
Please specify your result in percent!
28.2687 %

Sie haben 26 von 60 möglichen Punkten erreicht.