Assignment I - Macroeconometrics

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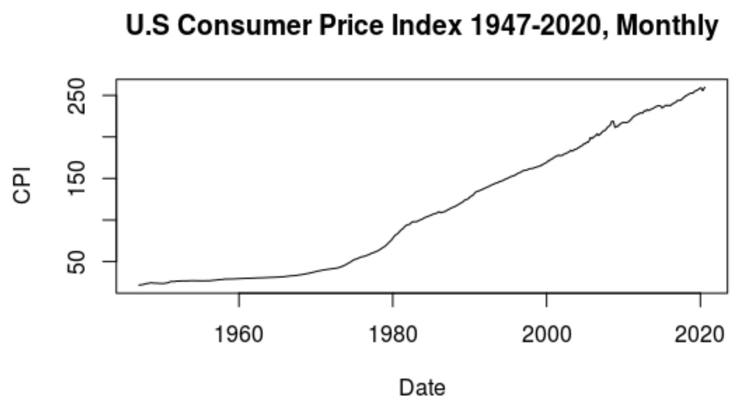
Plot and Comments

The CPI does not go back to a mean value but keeps on rising over the years.



Random Walk Investigation

This series appear to have a time trend so I include one in the next estimation:

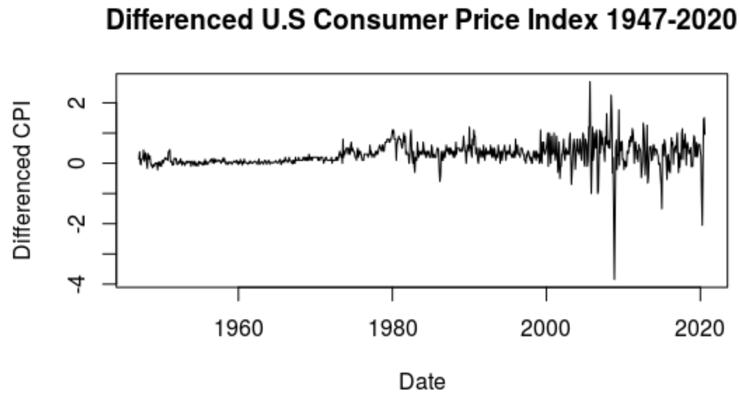
$$p_t = 115.8 + 1p_{t-1} \tag{1}$$

$$p_t = 0.0029 + 0.99p_{t-1} + 0.001t \tag{2}$$

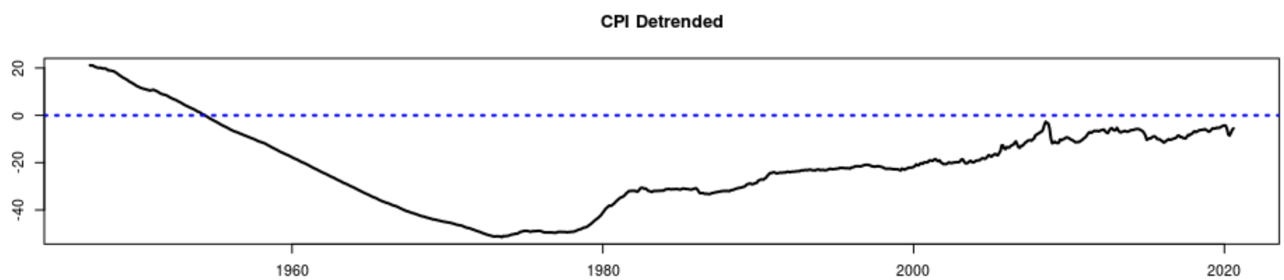
My AR(1) coefficient is far greater than 0.88. I first difference my data and obtain:

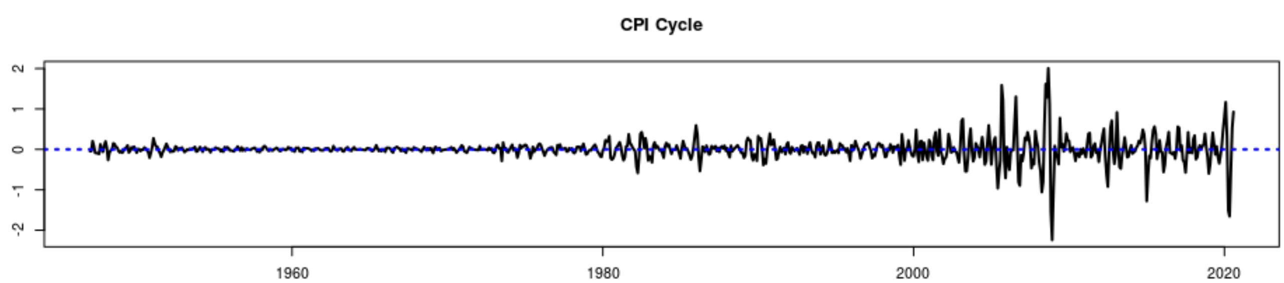
$$\Delta p_t = 0.53 + 0.27\Delta p_{t-1} \tag{3}$$

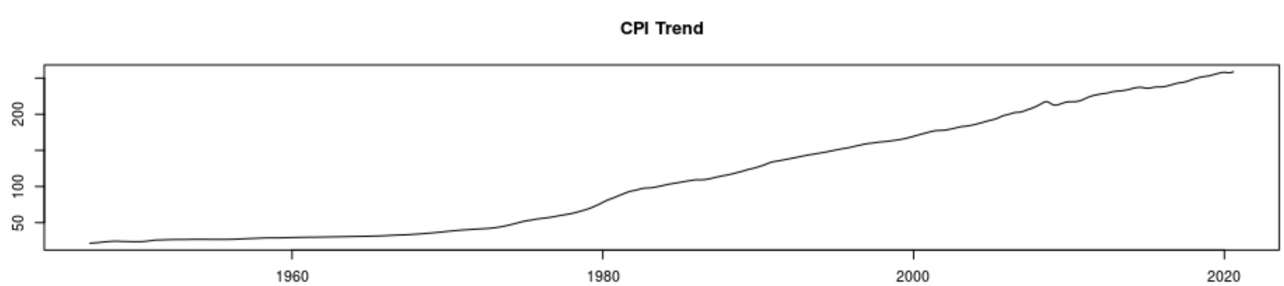
I will use this transformation.



HP Filter Decomposition

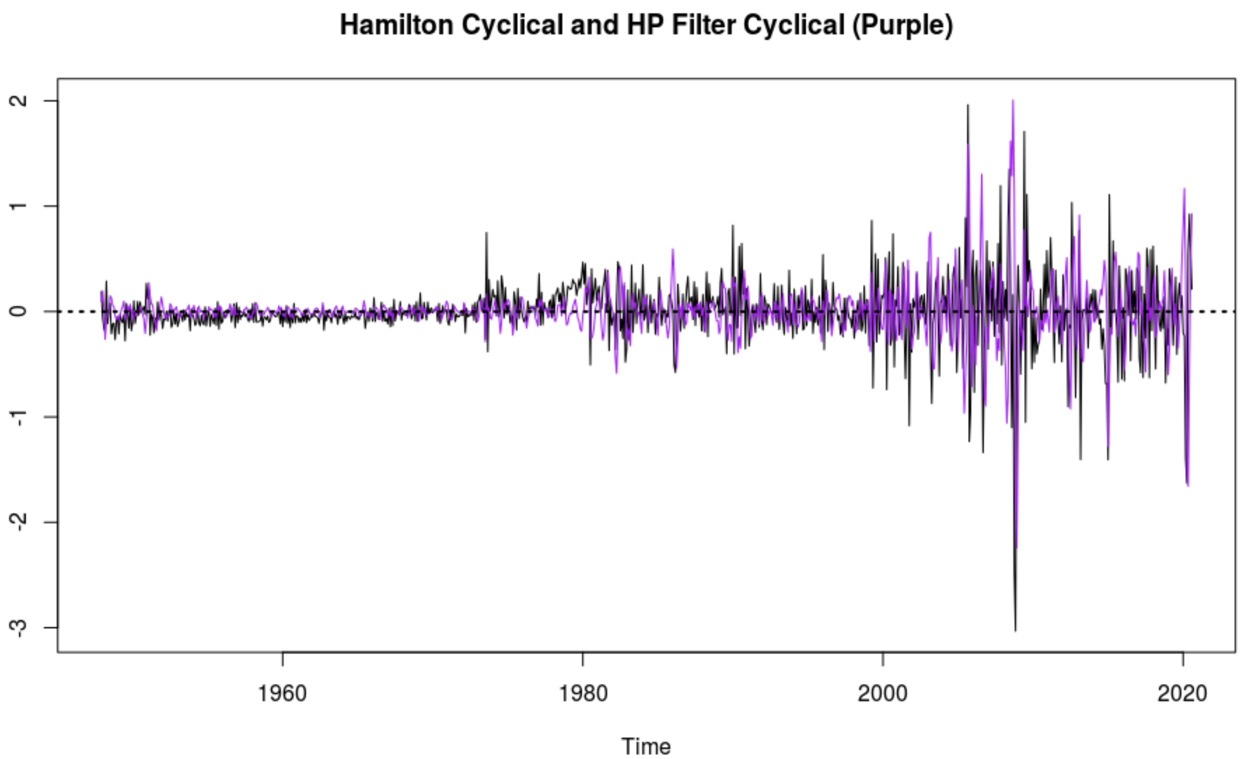






Comparing the detrended CPI with the cyclical component we notice that they differ in magnitudes (obviously) but also seem to have little other similarities with each other.

Hamilton's Alternative



The Hamilton's alternative is far simpler and efficient. A priori, the two series appear more or less similar but a closer observation reveals the following:

- The HP cyclical smoothing is almost perfectly distributed around zero. That is hardly believable for the real world consumer price index cyclical component.
- Because of this feature the Hamilton's approach seems better for modelling extended periods of deviation from zero as between 1947-1970 and also around 1980.The HP filter just keeps on gravitating around zero.