What Caused The Early Millenium Slowdown? Evidenece Based on Vector Autoregressions

Jessica Van der Berg[a]

[a] *20190565*

Abstract

Abstract to be written here. The abstract should not be too long and should provide the reader with a good understanding what you are writing about. Academic papers are not like novels where you keep the reader in suspense. To be effective in getting others to read your paper, be as open and concise about your findings here as possible. Ideally, upon reading your abstract, the reader should feel he / she must read your paper in entirety.

Keywords: Multivariate GARCH, Kalman Filter, Copula

JEL classification L250, L100

1. Test wether variables are stationary

Variables that are included in the dataset (same order): oil, output growth, consumer inflation and short-term nominal interest rate for EU and US.

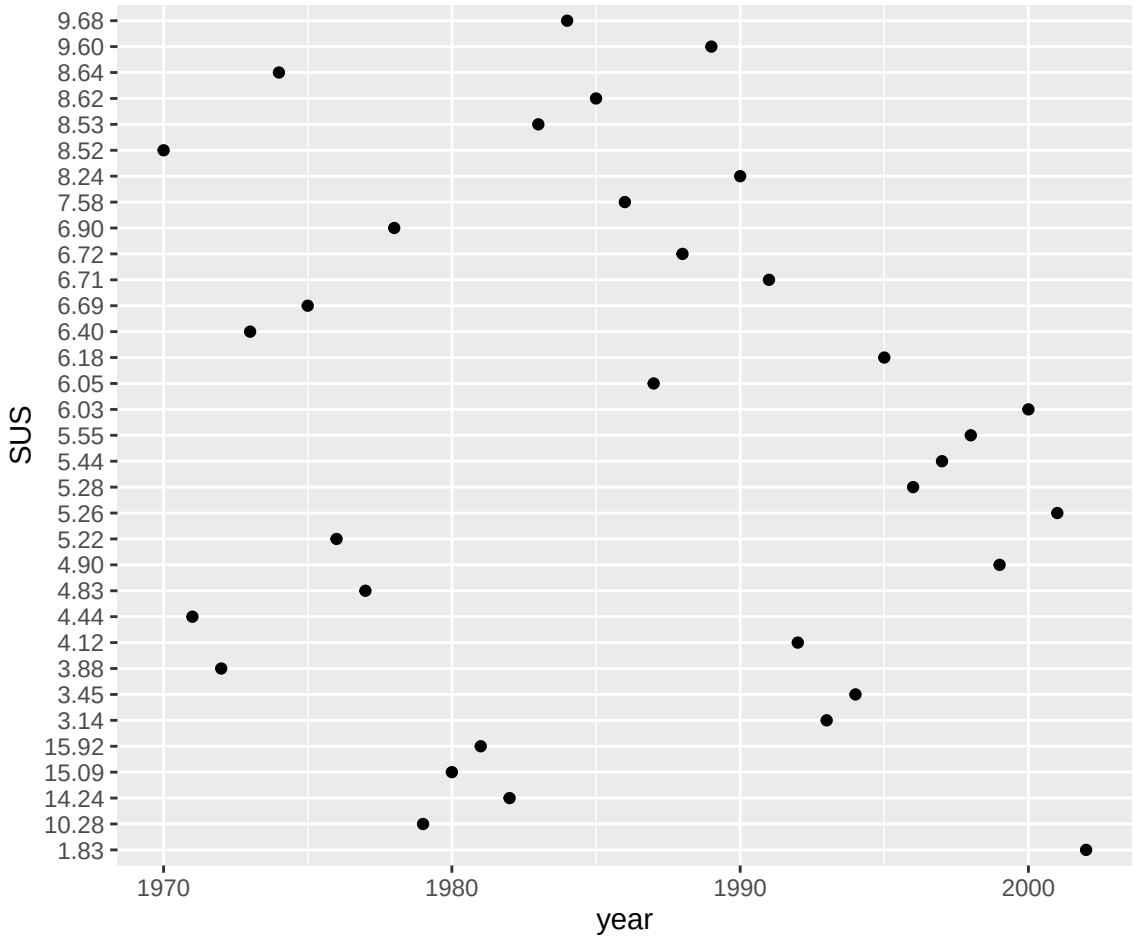
Gideon suggested I only do the replication for the US, since this will be a lot of work.

In order to test whether a variable is stationary, you can use a unit root test such as the Dickey-Fuller (DF) test

Null hypothesis: There is a unit root Alternative hypothesis: Time series is stationary

If p-values is less than 0.05, it means we can reject the null hypothesis.

Email address: 20190565@sun.ac.za (Jessica Van der Berg)




```
##
##  Augmented Dickey-Fuller Test
##
## data:  slowdown_dataset$OIL
## Dickey-Fuller = -2.0358, Lag order = 5, p-value = 0.5616
## alternative hypothesis: stationary


##
##  Augmented Dickey-Fuller Test
##
## data:  slowdown_dataset$YUS
## Dickey-Fuller = -1.3894, Lag order = 5, p-value = 0.8304
## alternative hypothesis: stationary
```

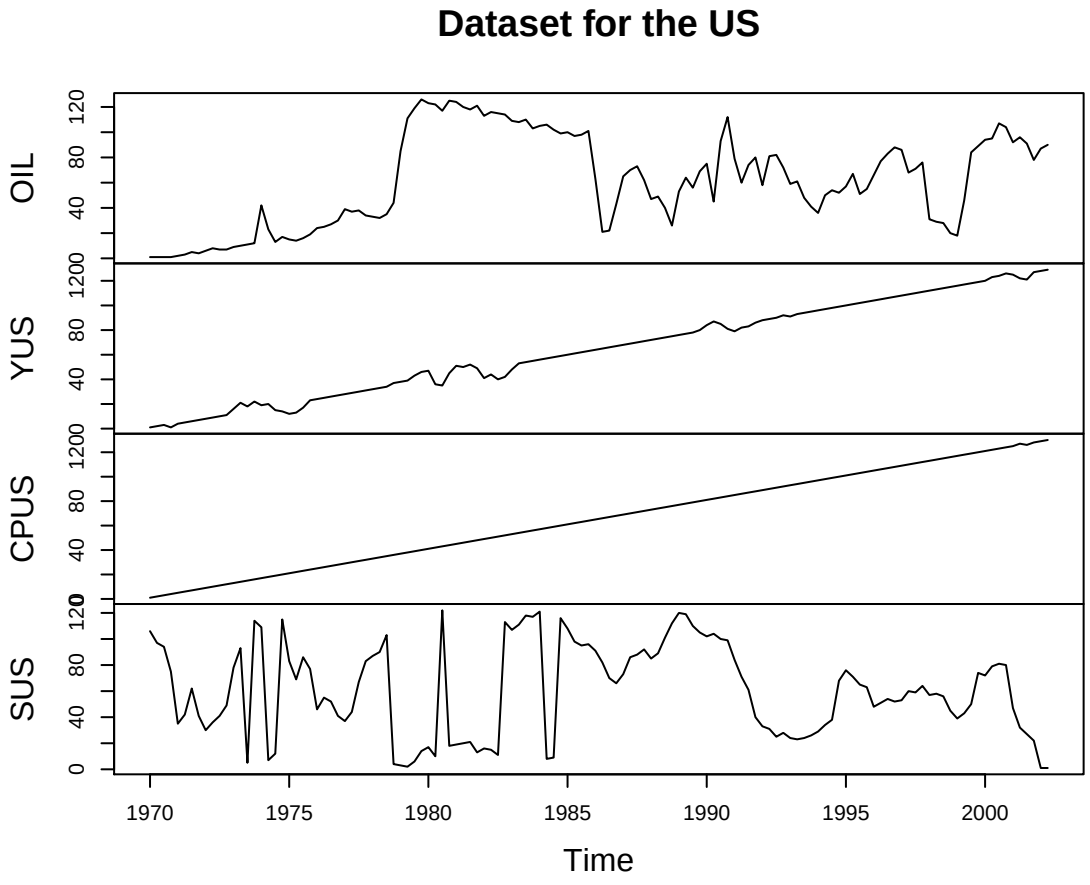
```
##
##  Augmented Dickey-Fuller Test
##
## data:  slowdown_dataset$SUS
## Dickey-Fuller = -3.4394, Lag order = 5, p-value = 0.05113
## alternative hypothesis: stationary


##
##  Augmented Dickey-Fuller Test
##
## data:  slowdown_dataset$CPUS
## Dickey-Fuller = -1.5413, Lag order = 5, p-value = 0.7672
## alternative hypothesis: stationary


##
##  Phillips-Perron Unit Root Test
##
## data:  slowdown_dataset$OIL
## Dickey-Fuller Z(alpha) = -8.7804, Truncation lag parameter = 4, p-value
## = 0.6091
## alternative hypothesis: stationary


##
##  Phillips-Perron Unit Root Test
##
## data:  slowdown_dataset$YUS
## Dickey-Fuller Z(alpha) = -3.501, Truncation lag parameter = 4, p-value
## = 0.9108
## alternative hypothesis: stationary


##
##  Phillips-Perron Unit Root Test
##
## data:  slowdown_dataset$SUS
## Dickey-Fuller Z(alpha) = -11.903, Truncation lag parameter = 4, p-value
## = 0.4288
## alternative hypothesis: stationary
```

```
##
##  Phillips-Perron Unit Root Test
##
## data:  slowdown_dataset$CPUS
## Dickey-Fuller Z(alpha) = -1.0566, Truncation lag parameter = 4, p-value
## = 0.9855
## alternative hypothesis: stationary
```

2. Impulse response function

First thing I need to do is convert the data to a time series object in R. And to do this I need to create a date column.

The graph below, just shows you the dataset for the US. This is nice because you can see the pattern all the vaaraibles follow. This is not in the paper but might be nice to put in under 'descriptive statistics'.



```
## NULL
```

3. Conclusion

References

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Appendix

Appendix A

Some appendix information here

Appendix B