# Readme file for "Reassessing Growth Vulnerability"

This folder contains information related to Data and R scripts related to "Reassessing Growth Vulnerability" which replicates Adrian et al. (2019).

# 1    Exact Replication of Adrian et al. (2019)

R scripts and Data in **ExactReplication** folder.

## 1.1    Data

- DataVulnerability.csv - GDP growth and NFCI provided by Adrian et al. (2019).

- **1_ImportData.R** imports data and and save into R data file, df_final.RData.

## 1.2    Figure 1

- **4_Fig4.R** in ExactReplication folder contains script for replicating figure 4 of Adrian et al. (2019) which is Figure 1A of the paper

- **5_Fig5.R** in ExactReplication folder contains script for replicating figure 5 of Adrian et al. (2019) which is Figure 1B of the paper.

- **7_Fig9_part1.R** in ExactReplication folder contains script for estimating skewed-t distribution for each quarter based on the fitted quantile regression.

  – The skewed-t distribution fitted with fitted conditional quantile regression with both NFCI and GDP growth is saved in cond_t_est_h1_both.Rda and cond_t_est_h4_both.Rda for h=1 and h=4 cases respectively.

  – The skewed-t distribution fitted with fitted conditional quantile regression with GDP growth only is saved in cond_t_est_h1_gdp.Rda and cond_t_est_h4_gdp.Rda for h=1 and h=4 cases respectively.

  – The skewed-t distribution fitted with unconditional quantile regression result is saved in unc_t_est_h1.Rda and unc_t_est_h4.Rda for h=1 and h=4 cases respectively.

- **9_Fig9_part2.R** in ExactReplication folder contains script for plotting Figure 1C of the paper which replicates Figure 9 Panel A of Adrian et al. (2019). It uses saved R data files which contain the parameter estimates of the fitted skewed-t distribution of each quarter obtained in 7_Fig9_part1.R'

## 2  Wide sense replication of Adrian et al. (2019)

R scripts and Data in **ExtendedResults** folder.

### 2.1  Data

- A191RL1Q225SBEA.csv - real GDP growth obtained from FRED

- NFCI.csv - weekly data obtained from FRED

### 2.2  R scripts

- **1_ImportData.R** imports data and and save into R data file, df_final.RData.

- **2_Fig2_part1_wo_IVXQR.R** estimates model using cai-see and qr-see. We have obtained script related to IVXQR from Jihyung Lee which is available upon request and scripts related to IVXQR and IVXQR with SEE are removed. When running this R script, **funcs_for_extendedR_wo_IVXQR.R**, **gmmq.R**, and **ivqr_bw.R** in Rscripts folder should be sourced.

- **2_Fig2_part2_wo_IVXQR.R** plots Figure 2 of the paper using the estimated results obtained from **2_Fig2_part1_wo_IVXQR.R**.

- **3_Fig3_wo_IVXQR.R** contains script related to Figure 3 of the paper. When running this R script, **funcs_for_extendedR_wo_IVXQR.R**, **gmmq.R**, and **ivqr_bw.R** in Rscripts folder should be sourced.

## 3  Other exact replication results of Adrian et al. (2019) in Appendix

### 3.1  Data

- DataVulnerability.csv - GDP growth and NFCI provided by Adrian et al. (2019).

- **1_ImportData.R** imports data and and save into R data file, df_final.RData.

## 3.2 R scripts

- **3_Fig3.R** in ExactReplication folder contains script for plotting Figure 3 of Adrian et al. (2019) which is Figure 1 of the Appendix.

- **4_Fig4.R** in ExactReplication folder contains script for plotting Figure 4 of Adrian et al. (2019) which is Figure 2 of the Appendix.

- **5_Fig5.R** in ExactReplication folder contains script for plotting Figure 5 of Adrian et al. (2019) which is Figure 3 of the Appendix.

- **6_Fig6.R** in ExactReplication folder contains script for plotting Figure 6 of Adrian et al. (2019) which is Figure 4 of the Appendix.

- **8_Fig7Fig8.R** file contains script for plotting Figures 7 and 8 Adrian et al. (2019) which are Appendix Figures 5 and 6 of the current paper. It uses saved R data files which contain the parameter estimates of the fitted skewed-t distribution of each quarter obtained in 7_Fig9_part1.R

- **9_Fig9_part2.R** in ExactReplication folder contains script for plotting Figure 9 Panel A of Adrian et al. (2019) which is Appendix Figure 7 of the current paper. It uses saved R data files which contain the parameter estimates of the fitted skewed-t distribution of each quarter obtained in 7_Fig9_part1.R.

# References

Adrian, T., Boyarchenko, N., and Giannone, D. (2019). Vulnerable growth. *American Economic Review*, 109(4), 1263–89.