**With Literacy Rate and GDP**

xreg <- cbind(rabiesdata$NVD\_pt, rabiesdata$ARB\_pt, rabiesdata$Lit, rabiesdata$GDP)

colnames(xreg) <- c("NVD", "ARB","Lit","GDP")

modArima <- Arima(myts, xreg=xreg, order=c(1,0,0))

modArima

**Series: myts**

**Regression with ARIMA(1,0,0) errors**

**Coefficients:**

**ar1 intercept NVD ARB Lit GDP**

**-0.6687 283.9236 -0.0123 0.0362 -3.1664 -0.0472**

**s.e. 0.2648 37.9201 0.0161 0.0292 0.8782 0.0967**

**sigma^2 estimated as 104: log likelihood=-37.11**

**AIC=88.22 AICc=125.55 BIC=91.01**

Forecasted\_values<-forecast(modArima,xreg=xreg)

Forecasted\_values

**Point Forecast Lo 80 Hi 80 Lo 95 Hi 95**

**2022 91.72372 78.65728 104.79017 71.740316 111.70713**

**2023 99.27743 83.55867 114.99620 75.237653 123.31721**

**2024 92.10126 75.33163 108.87090 66.454323 117.74820**

**2025 91.54904 74.33022 108.76786 65.215132 117.88295**

**2026 75.65501 58.23908 93.07095 49.019641 102.29039**

**2027 53.13764 35.63428 70.64100 26.368558 79.90673**

**2028 50.10159 32.55927 67.64390 23.272926 76.93025**

**2029 40.44211 22.88240 58.00182 13.586855 67.29737**

**2030 35.37643 17.80895 52.94392 8.509289 62.24358**

**2031 32.48415 14.91319 50.05510 5.611688 59.35660**

**2032 32.35144 14.77893 49.92395 5.476606 59.22627**

**Without Literacy Rate and GDP**

xreg <- cbind(rabiesdata$NVD\_pt, rabiesdata$ARB\_pt)

colnames(xreg) <- c("NVD", "ARB")

modArima <- Arima(myts, xreg=xreg, order=c(2,1,1),lambda = 0)

modArima

**Series: myts**

**Regression with ARIMA(2,1,1) errors**

**Box Cox transformation: lambda= 0**

**Coefficients:**

**ar1 ar2 ma1 NVD ARB**

**0.3352 0.6645 -0.9801 -0.0002 0.0008**

**s.e. 0.2500 0.2500 0.1390 0.0004 0.0010**

**sigma^2 estimated as 0.08144: log likelihood=0.46**

**AIC=11.08 AICc=39.08 BIC=12.9**

Forecasted\_values<-forecast(modArima,xreg=xreg)

Forecasted\_values

**Point Forecast Lo 80 Hi 80 Lo 95 Hi 95**

**2022 23.207254 15.875447 33.92513 12.984772 41.47756**

**2023 25.848379 17.131893 38.99970 13.779880 48.48654**

**2024 22.991899 13.501757 39.15249 10.186116 51.89686**

**2025 21.960762 12.216898 39.47607 8.956495 53.84641**

**2026 18.157871 9.238939 35.68681 6.460749 51.03252**

**2027 17.586908 8.392423 36.85460 5.672837 54.52287**

**2028 15.034750 6.633611 34.07552 4.301709 52.54742**

**2029 12.194020 5.025637 29.58712 3.143459 47.30270**

**2030 10.534182 4.031760 27.52371 2.424890 45.76248**

**2031 9.174949 3.275061 25.70325 1.898403 44.34237**

**2032 8.388788 2.786031 25.25879 1.554427 45.27184**