ABSTRACT

There is always a fluctuating/unstable condition in economy of Pakistan where purchasing power of a consumer remains always low. These fluctuations are usually seen in different clusters and tenure. The aim of this research work is to estimate an appropriate forecast model for monthly Consumer Price Index (CPI) of Pakistan for whole basket of consumer goods and service that Pakistan Bureau of Statistics compute. Box and Jenkins (1976) methodology has been used to estimate Seasonal Autoregressive Integrated Moving Average (SARIMA) model. ARCH-LM test indicates that there exists volatility clustering in financial time series of CPI. To remove this effect conditional volatility models has been used. In data analysis we have included; data collection, examination, order of integration, order of estimated model, parameter estimation, diagnostic checks, ARCH effect identification, selection of appropriate forecast model. After this we further include seasonal explanatory variables to completely remove ARCH effect.

The purpose of this thesis is also to capture volatility clustering from monthly consumer price index series. A Generalized Autoregressive Conditional Heteroskedasticity (GARCH) model is well known technique in modeling used to remove volatility from Consumer Price Index Series. GARCH(1,1) is selected as an best forecast model. Forecast comparison between SARIMA and GARCH models have been carried out. A finest forecast model is selected on the basis of predefined forecast evaluation criteria, also indicating that variation in consumer price index is due to seasonality. The Seasonal ARIMA model is not an appropriate forecast model because of non constant conditional variances. Seasonal dummy as explanatory variables are incorporated in SARIMA$((1,3),1,2)\times(1,0,0)_{12}$ model and in mean and conditional variance equation of GARCH model. Different GARCH models were applied with different ARCH and GARCH terms. GARCH (1,1) has been identified as an outperform model in forecasting for Pakistan consumer price index. This study discover that conditional volatility of consumer price index contain seasonal effect in consumer price index.