ABSTRACT

The regression model estimator is considered an efficient if it robust and resistance toward the presence of heteroscedasticity variance, multicollinearity or unusual observations called outliers. However, regard to these problems, the wild bootstrap and robust wild bootstrap are no longer efficient since it could not produce the smallest variance. Hence this research investigates the use of robust PC with wild bootstrap techniques on regression model as an estimator for real and simulation data in a situation where multicollinearity, heteroscedasticity and multiple outliers are presence. This paper proposed a robust procedure based on the weighted residuals which combine the Tukey bisquare weighted function, principal component analysis (PCA) to remedy the multicollinearity problems, least trimmed squares (LTS) estimator, robust location and scale, and the wild bootstrap sampling procedure of Wu's and Liu that remedy the heteroscedasticity error variance. The RPCWBootWu and RPCWBootLiu was obtained through a modified version of RBootWu and RBootLiu. Finally, based on the real data and simulation study, the performance of the RPCWBootWu and RPCWBootLiu is compared with the existing RBootWu, RBootLiu and also with BootWu and BootLiu using the biased, RMSE and standard error. The numerical example and simulation study shows that the RPCWBootWu and RPCWBootLiu techniques have proven to be a good alternative estimator for regression model with lower standard error values.

Keywords: Wild Bootstrap, Heteroscedasticity, Multicollinearity and Multiple Outliers PACS.

ST 59 - ESTIMATION PARAMETERS USING BISQUARE WEIGHTED ROBUST RIDGE REGRESSION BRLTS ESTIMATOR IN THE PRESENCE OF MULTICOLLINEARITY AND OUTLIERS

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ABSTRACT

This study presents an improvement to robust ridge regression estimator. We proposed two methods Bisquare ridge least trimmed squares (BRLTS) and Bisquare ridge least absolute value (BRLAV) based on ridge least trimmed squares RLTS and ridge least absolute value (RLAV) respectively. We compared these methods with existing estimators, namely ordinary least squares (OLS) and Bisquare ridge regression (BRID) using three criteria: Bias, Root Mean Square Error (RMSE) and Standard Error (SE) to estimate the parameters coefficients. The results of Bisquare ridge least trimmed squares (BRLTS) and Bisquare ridge least absolute value (BRLAV) are compared with existing methods using real data and simulation study. The empirical evidence shows that the results obtain from the BRLTS are the best among the three estimators followed by BRLAV with the least value of the RMSE for the different disturbance distributions and degrees of multicollinearity.

ST 61 - A NEW APPROACH FOR FISHERY LANDING FORECASTING BASED ON EMPIRICAL MODE DECOMPOSITION AND ARIMA MODEL

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ABSTRACT

This paper proposes a new approach for fishery landing forecasting method based on ensemble empirical mode decomposition (EEMD) and Autoregressive Integrated Moving Average (ARIMA) model. This hybrid model is formulated specifically to address difficulties in modelling fishery landing which has inherently high nonlinear, non-stationary and seasonality. At first, EEMD was applied to decompose the time series into a series of different scales of intrinsic mode function (IMF). Then ARIMA is implemented to forecast every extracted IMFs independently. Finally, the forecast of proposed model is obtained by aggregating all forecasting results of the sub-series. To assess the effectiveness of this model, monthly fishery landing data from East Johor of Peninsular Malaysia, has been used as a case study. The result shows that the proposed EEMD-ARIMA yield better forecast than ARIMA and EMD-ARIMA models.

Keywords: fishery landing, forecasting, ARIMA, EEMD, EMD,

ST 62 - ANALYSIS ON THE FUTURE MONTHLY RAINFALL AMOUNT IN JOHOR

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