METU Dept. of Business Administration
MARC Seminar Series

"On Nonlinearities in USA Macro-Financial Time Series"

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Abstract

We investigate possible existence of nonlinearities in eighteen U.S.A. macro-financial time series i.e. gross national product ( ), consumption, real gross domestic product ( ), GDP deflator, consumer price index (CPI), industrial production, gross domestic investment, gross investment, unemployment rate, employment rate non-industrial civilians, hourly compensation, monetary base, narrow money supply , relatively broader money supply , quasi money, U.S.A. bond, AAA bond yield, and S & P 500 stock prices using alternate regime switching time series models that fully account for time varying volatility, long memory and outlier that may be present in all the series. Additionally we employ nonlinear time series models to construct linearity tests for testing departure from linearity in conditional mean for all the series. Likewise, we employ neural network model approximations for constructing neural network linearity tests for testing possible existence of nonlinearities as well as existence of neglected nonlinearities (if any) in all the series.

Our findings based on nonlinear switching time series models reveal strong evidence of nonlinearities in all the series. The results from nonlinearity tests based on nonlinear time series models are not much different. Likewise, neural network tests for possible existence of nonlinearities show statistically significant evidence of nonlinearities in all the series and neural network tests for existence of neglected nonlinearities also show statistically significant evidence of nonlinearities in all the series. The results for nonlinearities in U.S.A. real GDP are in line with previous studies including Bidarkota (2000), Anderson and Ramsey (2002), Kiani and Bidarkota (2004) and Kiani (2005), but in sharp contrast with Balke and Fomby (1994).

Khurshid Kiani holds M.Sc. degrees in economics from the University of the Punjab and Kansas State University, as well as an MBA in Finance from AIO University Islamabad, Pakistan. He also has a Ph.D. in economics from Kansas State University. Kiani worked as Assistant Professor in the Department of Economics at Wilfrid Laurier University, Waterloo, Ontario, Canada, Faculty at the Department of Economics at the University of the West Indies at their Mona Campus in Kingston, Jamaica, Assistant Economic Adviser, and Research Officer to the Government of Pakistan, Ministry of Finance, Islamabad, and Assistant Director, National Tariff Commission, Ministry of Commerce, Islamabad, Pakistan. At present he is an Associate Professor in the Department of Finance at Bang College of Business, KIMEP, Almaty, Kazakhstan, and teaches investments, money banking and finance, and international financial management at undergraduate level and research methods at DBA level.

His research interests centers on conventional statistical modeling that encompasses stable distributions, conditional heteroskedasticity and long memory, and unconventional statistical predictive modeling using techniques such as artificial neural networks, genetic algorithms and entropy in an out-of-sample predictive framework. His research work appears in a number of academic journals including Oxford Bulletin of Economics and Statistics, Computational Economics, Applied Financial Economics, Letters, The Quarterly Review of Economics and Finance, International Journal of Business and Economics, Transition Studies Review, Pakistan Development Review, International Journal of Applied Economics, Applied Econometrics and International Development, International Journal of Applied Econometrics and Quantitative Studies,, and Business Review. In addition, one of his books on business cycle fluctuation and public policy is in press and the other on Behavior of Macro-Financial Variables in Leading Caribbean Economies is under review for publication with Sir Arthur Lewis Institute of Social and Economic Studies. He is on the editorial board of a research journal and reviewer of a number of journals that including Computational Economics, Applied Economics, International Review of Applied Economics, Social and Economic Studies, and Business Review.