

## Simex Method For Economic Data In The Presence Of Measurement Error And An Application For Gross Domestic Product

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### Abstract

Gross domestic product (GDP) is one of the measures of economic growth for countries. Three different GDP estimates exist. These are a widely-used expenditure-side version ( $GDP_E$ ), income-side version ( $GDP_I$ ) and production-side version ( $GDP_P$ ). So, GDP can not exactly estimate because of economic outage. While this case provides a biased estimation about GDP of economic models because of presence measurement error. The aim of this research is to derived unbiased estimators after finding the relationship between GDP and inflation in the sense of regression models. Simulation-extrapolation method (SIMEX) which provides a reduction of bias and a correction of measurement error will be used to estimate the parameters. First of all, measurement error and SIMEX method will be explained, and also the relationship between GDP and inflation will be given. In this sense that the success of the method and the correction of bias will be demonstrated by SIMEX, least squares (OLS) and general ordinary least squares (GOLS) methods. The efficiency of SIMEX method is shown and pointed to a lot of application. In this study we will research the efficiency of this method on economic data and make suggestions for researchers who interest with this subject.

**Key Words:** Bias reduction, Extrapolation, Simulation, Linear regression, Variance estimation, GDP, General linear regression, SIMEX, Measurement error.

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