

Income Inequality Comparison through Parametric Modeling



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Hussnain Abbas: 14002203007

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Research Completion Certificate

It is certified that the research work contained in the thesis “Income Inequality Comparison Through Parametric Modeling” has been conducted under my supervision to my satisfaction by Mr. Hussnain Abbas, ID, 14002203007, of MS Applied Statistics program.

Supervisor’s Name: Dr. Muhammad Moeen Butt

Assistant Professor

Department of Quantitative Methods

Signature_____

Co-Supervisor’s Name:

School of Business and Economics

Signature_____

Date _____

DECLARATION

I Hussnain Abbas ID #. 14002203007 Session 2014-2016, hereby certify that this thesis is being submitted in partial fulfillment of the requirements for the MS degree in Applied Statistics. This thesis is my original work, and the data/material presented herein has not been used for the acquisition of any other degree from any institution.

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Date: _____

Researcher Signature -----

Researcher (Name) -----

Confirmed by _____

Supervisor's Signature _____

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Allah's Greatness and Kindness cannot be explained.

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Hussnain Abbas

Abstract

This study takes into account the determination of income inequality by non-parametric and parametric approach and comparison of the two techniques in the context of Multiple Indicator Cluster survey (MICS) data of Punjab for the years 2007-08 and 2013-14.

Different probability distributions namely Pareto, exponential, generalized Pareto, gamma, Weibull, log-normal, Singh Maddala, Fisk, beta type II and generalized beta type II, have been applied in order to select a suitable distribution for the per capita income of Punjab, Pakistan, for the period of 2007-08 and 2013-14. For this purpose Akaike information criterion (AIC) and Bayesian information criteria (BIC) have been used to choose the best model for the data sets. We find that the Generalized Beta distribution of second kind (GBII) is more appropriate for the given data set. Parameters of the aforementioned distributions have been estimated using the maximum likelihood estimation method. Moreover, Lorenz curve, Gini coefficient (parametric and nonparametric) have been used to measure the income inequality for the data sets. Parametric Gini coefficient for generalized Pareto distribution, not available in literature, has been also derived.

On the basis of parametric Gini coefficient value, it is found that there is a decrease of 0.04 in income inequality in 2013-14 as compared to 2007-08 for the province of Punjab. There also exists a difference in point estimates of Gini coefficient estimated by parametric and non-parametric methods.

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Chapter 1

Introduction

1.1 Background

It is a matter of specific interest for the economists, organizations and for the general people to know about the effect of an increase in globalization and free trade trend related to the beneficial policies of all around the world's peoples. They are much anxious about the certain increase in globalization and they think that it may lead to increase the inequality in income. Further such an increase in inequality may worse damage the current level of world sustainability ((Chotikapanichet *al* (2007b)).

Wolfehnsohn (2000) states that in order to have peace and prosperity it is a matter of great importance to fight against inequality.

The term "Income inequality" usually refers to the unequal levels of income across the different public groups or different societies. As the phrase "the rich get richer while the poor get poorer," highlighted the income gap in the different segments of societies of a nation. These segments are poorest and richest (Porter, 2014).

So for so economist and policymakers are concerned, their main interest is related to the poverty, income's inequality and growth in income. The mentioned three themes actually rotating around a one subject and it is the income's distribution. The problems of income distribution is concern with almost all the emerging countries and this problem is not a new one but spread all over the history. Due to globalization, the distribution of income in different countries and regions is different as it can be seen in these countries. For example in East and South East Asia countries, there is a great improvement in income's growth and living standard but when we take an overview with in this region then such performance is not to be seem alike. Therefore it becomes an important issue to measure income's distribution more precisely on regional and country level on regular basis so that the effect of increasing trend of globalization on the welfare of the people can be checked.