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Estimating the Impact of Uncertainty of Macroeconomic and Foreign Trade Variables on Income Distribution among Income Deciles

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EXTENDED ABSTRACT

INTRODUCTION

After a significant recession and the prominent role of the government in managing the economy within the framework of Keynesian economics, one of the important issues in macroeconomics is examining the relationship between the uncertainty of macroeconomic variables and income inequality, which is a characteristic of development. The uncertainty of macroeconomic variables poses significant challenges for developing countries, especially regarding income inequality issues. Based on the literature in this area, various factors such as high inflation rates, massive external debt, significant fluctuations in real exchange rates, payment deficits, and many other variables contribute to income inequality in developing countries. It has been observed that developed countries with minimal uncertainty in macroeconomic variables have relatively low income inequality and experience stable economic growth. Considering the importance of the subject, the question addressed in this study is the extent to which uncertainty in macroeconomic variables and foreign trade affect income inequality between income deciles and with what probability they influence income inequality thresholds. Since fuzzy logic modelling is important in various aspects and due to the significance of the subject in this article, an attempt has been made to answer this question using non-linear fuzzy modelling in the form of numerical computation to calculate the upper, middle, and lower limits of income inequality between income deciles along with the degree of predictive credibility of these limits (probability of each threshold). This article is organized into five sections. Following the introduction, the

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second section reviews the literature on the subject. The third section discusses the research methodology, the fourth section presents the research findings, and the fifth section provides conclusions and policy recommendations.

METHODOLOGY

Fuzzy rule-based system in the form of Z-numbers (Z-FRBS): is a fuzzy nonlinear regression model in which fuzzy rules are used. Z-FRBS is a modeling method to investigate the uncertainty behaviors of economic variables, which is one of the main ideas and innovations of this study. The modeling cycle steps for the LSTAR model are as follows. To create a Z-FRBS model, it is first necessary to examine the non-linear behavior of the variables, hence the steps of fitting a non-linear model (ESTAR or LSTAR model) are presented.

FINDINGS

Based on the results of this study, inflation, which is an important indicator of the instability of macro variables, has a dual impact on income distribution in society, causing income inequality to widen. In fact, inflation is seen as a subsidy for some individuals and as a tax for others. It adversely affects individuals with fixed incomes and benefits those who own assets such as land, buildings, etc. Therefore, the government can target groups with low incomes or fixed incomes by implementing special programs for them, including transfer payments, tax reductions, and by redistributing income through progressive income and wealth taxes for individuals who possess more assets than they need.

CONCLUSION

The results of investigating the impact of variable uncertainty show that foreign investment leads to income inequality, especially in the ninth and tenth deciles. The reasons for this inequality, based on empirical studies, are that an increase in foreign investment, due to the possibility of utilizing more capital, increases the final production labor force, thereby increasing labor wages, which ultimately leads to a reduction in income inequality. On the other hand, the susceptibility of the domestic market to international market developments has had a significant impact on exchange rate fluctuations, inflation rates, and stock yield instability, leading to increased macroeconomic policy instability and income inequality differences between income deciles. Considering the importance of inequality among income deciles due to macroeconomic unstable variables resulting from policies, further increases in inequality among higher-income deciles compared to lower-income deciles occur over time, and compensatory policies have not been sufficient to reduce the extent of

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inequality. Therefore, special attention of policymakers to policy-making and its implications leads to inevitable consequences in the economy. Based on the results of this research, the issue of direct foreign investment may pose a challenge for policymakers, but given the inevitable nature of globalization, appropriate plans are necessary to address this challenge, including necessary support for labor, expanding social services, controlling foreign capital, and relying on people-oriented institutions to empower the workforce in dealing with capital, focusing on inequality foundations such as illiteracy and lack of skills, creating social opportunities for education and skill acquisition. The government's efforts to address these problems are among the most effective steps in reducing income inequality in Iran in the face of globalization. Moreover, considering that direct foreign investment and expansion of foreign trade are essential aspects of globalization and governments follow policies to promote globalization due to benefits such as technology transfer and increased productivity, it is recommended that governments, along with globalization, take actions such as creating economic and political stability, strengthening the foundations of the economy.

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