Pages: 287 – 305 | **Vol.** VIII, **No.** I (Winter 2023) | **DOI:** 10.31703/ger.2023(VIII-I).25

URL: http://dx.doi.org/10.31703/ger.2023(VIII-I).25 | Global Economics Review (GER)

Cite Us

Should We Celebrate Signing of IMF Program(s)?: Analysing from the lens of Income Inequality in Pakistan

Rahila Tabassum [*] Zafir Ullah Khan [†] Muhammad Zubair [‡]

p-ISSN: 2521-2974 | **e-ISSN:** 2707-0093 | **L-ISSN:** 2521-2974

Citation: Tabassum, R., Khan, Z. U., & Zubair, M. (2023). Should We Celebrate Signing of IMF Program(s)?: Analysing from the lens of Income Inequality in Pakistan. *Global Economics Review, VIII*(I), 287-305. https://doi.org/10.31703/ger.2023(VIII-I).25

Abstract: *This article examines whether signing the IMF program can help reduce income inequality and create political stability in Pakistan. Considering economic, political and social factors, the paper uses the ARDL model to test the empirical relationship between income inequality, IMF program agreements and political stability for the period 1996-2022. The study found that IMF assistance has a direct impact on income inequality in Pakistan which implies that the IMF program has further exacerbated unequal distribution in income in Pakistan. Likewise, political stability, institutional quality, GDP growth and population growth directly affect income inequality in Pakistan. Given the study's conclusions, policymakers in Pakistan need to consider a different approach that highlights the interconnectedness of IMF programs, political stability, and income inequality. The focus should be on a balance between economic reforms, social justice and political considerations. Collective efforts of the IMF, governments, and civil society are needed to resolve the economic, social and political issues in Pakistan.*

Key Words: IMF Programs, Political Stability, Income Inequality, ARDL, ARDL Bound Test

JEL Classification:

Introduction

Background

Equal distribution of resources is the central issue that has been debated for centuries to find out why only a few countries have equal income distribution while others have greater income inequality. Kuznets (1955) found that countries with the highest share of industry have a more equal income distribution, while other countries with less industry have a more unequal income distribution. In addition, Goldsmith & Blakely (2010) noted that poverty and income inequality stem from problems in the financial sectors that is the poor class has no or less access to financial services while the rich class has easier access, leading to income inequality. Similarly, Beck et al. (2007) argued that the rich class has more opportunities to acquire capital-intensive technologies through financial services, while financial services are costly for the poor segment of society.

Pakistan has a high level of income inequality, with more than half of the population struggling to meet their basic needs while a sizable portion of the population lives in

[*] M.Phil Scholar, Department of Economics, University of Science & Technology Bannu, KP, Pakistan.
[†] Chairman, Department of Economics, University of Science & Technology Bannu, KP, Pakistan.
[‡] Director, Institute of Management Sciences, University of Science & Technology Bannu, KP, Pakistan.

Corresponding Author: Zafir Ullah Khan (M.Phil Scholar, Department of Economics, University of Science & Technology Bannu, KP, Pakistan. Email: dr.zafir@gmail.com)

poverty. According to the UNDP (2016) report, between 1988 and 2014, the income of the upper class increased by 31.7%, compared to the poor, whose income increased by just 4.1%. According to a report from Pakistan's Planning Ministry from 2013, the rich class spends seven times as much as the poor class on consumption, and the country's GINI index increased from 0 to 41 points between 1988 and 2014. Pakistan is ranked 147th out of 188 countries in the world's Human Development Index (HDI) report for inequality. According to the World Development Report, institutional weaknesses and a concentration of power in a small number of hands are the primary causes of economic disparities, which arise when members of the elite class usurp authority and decentralize the system to their own ends.

Political instability in Pakistan can lead to policies that only benefit a small number of the upper class while ignoring the needs of the marginalized society. Examples of how this can happen include when individual citizens avoid participating in the decision-making process or when their concerns and interests are not taken into consideration. As a result, low public participation reduces a variety of voices and ideas, which promotes inequality. Similar to this, in Pakistan, a small number of economic elites hold all the power, allowing them to enact policies that serve their own interests. This leads to an uneven distribution of resources, which exacerbates social and economic inequality by further marginalizing and excluding vulnerable groups from the decision-making process. Moreover, one of the main tenets of a democratic system is an equitable and transparent one. In Pakistan, however, a lack of impartial accountability and openness fosters corruption and favouritism that enrich the privileged and widen the economic divide. Furthermore, poor governance contributes to Pakistan's political instability by misusing public resources to provide public goods and services that disproportionately benefit the underprivileged, thus widening the gap between rich and poor. Pakistan's legal system is also beset by inefficiencies and political meddling, which primarily denies marginalized groups in society access to the courts. The cost of justice is comparatively high for the marginalized class, and they are unaware of their rights.

The International Monetary Fund (IMF) provides crisis-affected countries with financial assistance to give them time to put measures in place that will restore economic growth and stability. It additionally provides pre-emptive financing to aid in crisis aversion. Low-income nations receive support from the IMF in the form of financial aid and other forms. The International Monetary Fund's (IMF) surveillance program provides ongoing oversight of the financial and economic policies of its member countries. The primary topics of conversation with national authorities concern the effects of their economic policies on growth and stability as well as the best course of action. A country enters into an agreement with the IMF and implements economic reforms and policy measures aimed at stabilizing the financial deficit and economic crisis. According to Reinsberg and collaborators (2019), a lot of countries implement economic reforms as part of IMF programs, but doing so has distributional effects. Fiscal and monetary tightening, as well as structural reforms, are frequently requirements for IMF programs. The requirements also cover strategies for addressing economic imbalances and potential impacts on income inequality.

The main goals of the IMF programs in Pakistan were to implement structural reforms, reduce budget deficits, and practice fiscal austerity. When subsidies are reduced or mitigated and social spending is cut, the process may have regressive effects. However, the effectiveness of IMF programs on inequality is dependent on how they are designed and implemented, and if they place an undue burden on the poor and marginalized, inequality may rise as a result. Now, in order to counteract the detrimental impact of IMF programs on inequality, it is necessary to implement extensive social protection programs, take human capital development into account, and adopt inclusive growth policies that can aid in

achieving economic stabilization and reforms while allocating resources fairly across society. To assess program design, implementation, and future socioeconomic context, a thorough analysis would be required to determine the impact of IMF programs on inequality in Pakistan. The political and economic stability of Pakistan's economy has long been a source of great difficulty. The conditionality of IMF programs, which are meant to address economic problems but unfortunately have an impact on income inequality within the nation, further exacerbates the socioeconomic problems of Pakistan.

The governance system in Pakistan lacks ethics and standards, and a small number of elites hold all the power. Aside from that, the economic decision-making process excludes people and marginalizes their voices. Since they make decisions based on their own interests and limit the autonomy of elected officials, non-state actors like strong interest groups frequently have a significant impact on how policies are made in Pakistan. This undermines democratic governance.

The purpose of this study is to clarify how Pakistan's political stability, income inequality, and IMF programs interact. Furthermore, the research endeavours to elucidate the potential correlation between IMF programs and Pakistan's political stability. Additionally, the study looks for interactions between political stability and IMF conditionality and their effects on income inequality in Pakistan. Lastly, the study contributes to existing literature by providing empirical evidence on Whether or not IMF programs affect income inequality in the short- or long-term.

The article is structured as follows: Background information and objectives are covered in the first section. A review of the literature is given in section two. The third section covers Data and Methodology. Section 4 presents the findings and discussion. Section five presents conclusions and suggestions.

Literature Review

This section provides past studies showing the relationship between income inequality and the IMF program. Limited literature is available for the evaluation of IMF funds in the case of Pakistan whereas rich literature is available on income inequality assessment in the case of Pakistan. The literature found mixed results regarding the effect of the IMF program on income inequality and political stability.

Countries often approach to IMF for short-term financing when face balance of payment problems. Literature shows that countries that approach the IMF for support funds have improved their balance of payment performance (Bagci and Perraudin, 1997; Khan and Knight, 1981; Schadler et.al.1993). In contrast, the study of Connors (1979), Loxley (1984) and Moran (1990) shows that IMF-supported programs have no effect on the balance of payment in countries that approached the IMF program. Iqbal (1994) argued that in the case of Pakistan, the IMF fund-supported program declined the aggregate output. similarly, the inflation rate increased and exports remained insignificant during the three-year fund support program in 1980. Bilquees (1987) argued that the funds support program unchanged the exports objective while the inflation increased during the program. The study of Bruno (1992) shows the IMF funds supported program ended with a collapse in output in countries such as Hungary, Poland, Bulgaria and Romania.

Pakistan's economy is comparable to that of developing nations; in 1980, it grew at a rate of 5% annually and experienced high economic growth. The economic growth does, however, rapidly decline when Pakistan joins IMF-supported programs. According to Ahmad and Bengali's study, economic stabilization and growth are not mutually exclusive when both are required for sound economic policy. According to Khan (2002), Pakistan's economic growth is unsustainable, which is a crucial element in reducing poverty. By generating high levels of employment, high wages, and high productivity, sustainable economic growth helps to reduce poverty. When government priorities include enhancing public services, supporting human growth, and building physical infrastructure,

high growth also helps to reduce poverty. The study of Khilji and Leon (1989) found that there is no evidence that only unanticipated policy has a real output effect.

Ahmad (1998) argued that when achieving fiscal targets, IMF reforms are at odds with both fiscal and non-fiscal policies. During the period of 1980 to 1998, the government succeeded in reducing the fiscal deficit from 7% to 5% of GDP, but at the cost of deteriorating terms of trade. When the fiscal deficit decreases, the growth target is reduced, which further lowers the potential for revenue. The economy barely met the initial economic targets as well as the program's objectives at the end of 1988 due to the IMF reforms' slow implementation and unfavourable external developments. According to Naik(1993), the macroeconomic indicators of the Pakistani economy are unable to stabilize. In a similar vein, Zaidi (1999) made the case that the fund-supported programs in Pakistan can have an impact, and contribute to extreme poverty, high unemployment, low wages, and economic inequality in the area. In Pakistan, where the economy grows at a slower rate with higher inflation, a few IMF program outcomes like high economic growth and low inflation have not yet materialized.

According to Kemal (1994), the fiscal deficit and non-development spending increase at the cost of employment, where the wage rate reduces employment by about 15%. In Pakistan's economy, poverty and inequality are getting worse as a result of privatization and IMF adjustment programs. While the percentage of the poor increased from 13 to 14 percent between 1988 and 1991, the GINI index increased from 34 to 41 percent. According to Amjad's study (2004), interest rates increased during the 1980s IMF reform period, which led to a number of negative consequences for the government and the economy, including higher interest payments.

According to Ivanova et al. (2003), borrowing countries' political environments have a major influence on how the IMF reforms are implemented. The study demonstrates how economic inefficiency and a lack of political stability can erode program implementation. Interest groups caused Egypt's reforms to be delayed or improperly implemented, despite the country's growing problems with debt, macroeconomic imbalances, micro distortions, a shortage of jobs, and the need to reduce poverty (Richards, 1991).

According to the literature, there is a connection between political stability and income inequality, and disparities in different regions are primarily caused by political instability. In their study, Liang Zhang and Hao Zhang (2019), made the case that political stability and income inequality have an antagonistic relationship. In other words, if the country has a stable political climate, there will be less income inequality and a greater degree of regional equality. Similarly, Bruno and Simon (2003) asserted that greater political stability is associated with minimum income inequality while greater public spending is intended to reduce inequality. Similar findings were made in the study conducted by Axel Dreher et al. in 2008, which asserted that political stability and income inequality have an antagonistic relationship. An inverse correlation between political stability and income inequality was also discovered by Ramzi and Anastasia (2011) and Khalid Rashid (2014).

The cited literature demonstrates a complex relationship between Pakistan's political stability, income inequality, and IMF programs. Khan and Knight (1981), Bagci and Perraudin (1997), and Schadler et al. (1993) emphasize that nations approaching IMF support can improve their balance of payments and deal with economic difficulties. Connors (1979), Loxley (1984), and Moran (1990) disagree that IMF-Support programs have a significant impact on payment balancing. Iqbal (1994) and Bilquees (1987) highlight the possibility that IMF programs reduce overall output and inflation with little impact on exports. Khan (2002) emphasizes the need for sustainable economic growth to reduce poverty through increased employment, wages, and productivity, while Ahmad and Bengali emphasize the value of

combining economic stabilization and growth to do so. Liang Zhang and Hao Zhang (2019), Bruno and Simon (2003, Axel Dreher et al. (2008), Ramzi, Anastasia, and Khalid Rashid (2011) and Khalid Rashid (2014) find an inverse relationship between political stability and decreased income inequality and increased regional equity. However, as noted by Zaidi (1999), challenges posed by IMF reforms can result in fiscal deficits and reduced revenue potential, which would then increase poverty and unemployment. Having in mind the complex relationship heighted by the researchers, the present study tries the contribute to the literature by further elaborating the relationship between IMF Support program, political stability and income inequality using appropriate methodology and econometrics techniques.

Data and Methodology

The article examines the relationship between IMF Program, Political stability and income inequality using time series data for the period 1996-2022 (Detail of the variables is given in Annexure-I).To tackle the issue of spurious regression, Unit root tests are employed to check the order of integration of the variables. The results of the unit root tests indicate that the variables are integrated in mixed order, therefore, the paper employs the ARDL method to investigate the impact of IMF programs and democratic deficit on income inequality in Pakistan. The study used the following ARDL model

$$\text{Income\_Inequility} = \beta_0 + \beta_1 \text{IMF\_Program} + \beta_2 \text{Political\_Stabilty} + \beta_3 (\text{IMF\_Program} * \text{Political\_Stability}) + X\,\varepsilon$$

Here income inequality is measured by the Gini index, which is considered a dependent variable, IMF indicators are measured by a dummy variable, which indicates whether a country approached the IMF for assistance in a given year or not (0 or 1). Furthermore, trade openness, inflation, and GDP growth are taken into account as control variables. The average of three indices, such as the regulatory quality index, the role of law index, and the corruption index, is used to measure institutional quality, which is used as a proxy for the democratic deficit. The secondary school enrolment rate is used to measure the socioeconomic effect in relation to education. However, the population is thought of as a control variable. Various econometrics methods such as the Vector Autoregressive (VAR) model and Error Corrections (ECM) models are employed to examine the determinant of income inequality (Khan and Qayyum, 2007; Iqbal and Khan, 2013; Ali, 2014). This study uses the ARDL method proposed by Pesaran et al. (1999) to investigate the relationship between income inequalities and IMF programs. This approach examines both short-term and long-term relationships between income inequality and IMF programs. The ARDL approach is ideal for our analysis because it can be applied without considering the integrated order of variables, whether they are I(0), I(1), or partly integrated.

Co-integration relation between income inequality and the IMF program along with other macroeconomic variables are estimated using Bound statistics Akaike Information Criteria (AIC) and Schwarz Bayesian Criteria (SBC). This article uses the ARDL co-integration model following Shin et al. (2001).

$$\triangle GINI_t = \beta_1 + \sum_{i=1}^{p} \alpha_i \triangle GINI_{t-1} + \sum_{i=1}^{q} \rho_i \triangle X_{t-i} + \sum_{i=1}^{q} \delta_i X_{t-1} + \delta_j GINI_{t-1} + \epsilon_t$$

Where the coefficient α_i represents the short-run dynamic while δ_i and δ_j represent the long-run. The F statistic is calculated for the joint null hypothesis that the coefficient of the lag variable $\sum_{i=1}^{q} \delta_i X_{t-1}, \delta_j GINI_{t-1}$) represents the vector of the independent variable while Δ showing the first difference of the variable. The result of the bound test suggests a long-run relation between the variable of interest, therefore the study uses the following error correction model ECM.

$$\triangle GINI_t = \beta_1 + \sum_{i=1}^{p} \alpha_i \triangle GINI_{t-1} + \sum_{i=1}^{q} \rho_i \triangle X_{t-i} + \theta_i \left[\delta_1 GINI_t - \sum_{i=0}^{q=0} \delta_j X_t \right] + \epsilon_t$$

Where θ_i shows the ECM coefficient which measures the speed of adjustment from the short-run dynamics to the long-run

equilibrium. The results of diagnostic tests such as Autocorrelation, Heteroscedasticity, normality and Model stability tests are reported in Annexure II.

Results and Discussion

The first graph shows the GINI index representing income inequality where the minimum GINI score is 28.7 and the maximum score is around 33.4 from 1996 to 2022. Similarly, the political stability index is shown in the second graph while the third graph shows the total IMF assistance programme arranged by Pakistan. The graphs show that Pakistan has arranged a total of 7 IMF assistance programs including an Extended fund facility, an Extended credit facility and 2 stand-by arrangement programs from 1996 to 2022. The fourth graph shows the Institutional quality index range between -2.5 to 2.5 followed by GDP growth and population growth (Figures 1-4 are given in Annexure II).

Correlation Analysis

The results given in Table 1, show the correlation between the GINI index and IMF financial assistance is approximately -0.145 showing a weak negative correlation between income inequality and financial aid by IMF to Pakistan. This shows that regions with more income disparities might receive less financial aid and vice versa. Similarly, the indicator of IMF (1 if receiving IMF assistance in a specific year otherwise zero) is about 0.149 which is a weak positive correlation. Suggested that regions with more financial assistance might have higher income inequality however, the relationship is not too strong. The correlation between inflation and the GINI index is around -0.008 which is a very weak negative correlation. Similarly, Institutional quality and the GINI index have approximately -0.087 correlation with a weak negative correlation. Suggested that regions with poor-quality institutions might have higher income inequality but the strength is not very strong. Moreover, the correlation between the GINI index and political stability is about 0.427 which is a moderate positive correlation. It suggested that regions with higher political instability have more unequal income distribution. Or the region with more political issues might experience higher income inequality. The population growth and GINI index have approximately 0.162 correlation coefficient which is a weak positive correlation. It suggested that higher population growth might increase income inequality in the region.

To sum up, the correlation coefficient provides insight into the relationship between GINI and other variables. However, it is necessary to note that correlation does not show causation whereas correlation only shows potential associations between variables and does not imply direct cause-and-effect relationships. Therefore further analysis is needed to fully analyse the dynamics.

Table 1

Correlation Matrix

	GINI	FINAN_ASS	IMF_IND	GDP_G	INST_Q	POL_STAB	POP_GR
GINI	1.000	-0.144	0.148	0.177	-0.087	0.427	0.162
FINAN_ASS	-0.144	1.000	0.530	-0.347	0.103	-0.570	-0.337
IMF_IND	0.148	0.530	1.000	-0.321	-0.289	0.264	0.258
GDP_G	0.177	-0.347	-0.321	1.000	-0.059	0.066	-0.209
INST_Q	-0.087	0.103	-0.289	-0.059	1.000	-0.256	-0.470
POL_STAB	0.427	-0.570	0.264	0.066	-0.256	1.000	0.725
POP_GR	0.162	-0.337	0.258	-0.209	-0.470	0.725	1.000

ADF Tests Result

The results in Table 2 show that the GINI index, IMF financial assistance, inflation, quality of institution, and political stability

have integrated order of I (1) regardless of their specification (ADF with intercept, ADF with intercept and trend and ADF with no intercept and trend). It suggests that this variable needs the first difference to become stationary. Similarly, GDP growth and population growth have integrated order of I (0) in all specifications of the ADF test therefore it does not need differencing. The test results are based on a 5 % critical value. The stationary test is necessary to analyse because this might help to ensure that the data used in models meet the criteria and assumptions. The results presented in Table 2 show that variables are integrated of a different order which recommends using the Autoregressive Distributed lag Model(ARDL) or examining the relationship among IMF program, Political stability and income inequality.

Table 2

Augmented Dickey-Fuller(ADF) Test Results

Variables	With Intercept	with Intercept & T	No Intercept &T
GINI	I (1)	I (1)	I (1)
IMF Financial Assistance	I (1)	I (1)	I (1)
GDP Growth	I (0)	I (0)	I (0)
Trade Openness	I (1)	I (1)	I (1)
Inflation	I (1)	I (1)	I (1)
Quality of Institutions	I (1)	I (1)	I (1)
Political Stability	I (1)	I (1)	I (1)
Population Growth	I (0)	I (0)	I (0)

Note: I is the integrated order of each variable, Trend= T

5 % Probability values are used for integrated order

ARDL Model Results

ARDL model is estimated to examine the relation between income inequality and IMF assistance and political stability along with other macroeconomic factors and the results are reported in Table 3. ARDL (1, 0, 0, 1, 0, 1, 1, 1) is chosen on the basis of Akaik info Criterion (AIC) where a total of 128 model is evaluated the model selection criteria table is presented in Annuxure-II. The sample period is from 1996 to 2022 with a total of 27 observations. The dependent variable is the GINI index while the independent variable includes IMF assistance, IMF indicator (1 if a country goes for assistance otherwise 0), GDP growth, quality of institution (index), Political stability (index), population growth and interaction term of IMF indicator and political stability along with lag of the dependent as well lag of independent variables.

To examine the overall performance of the model we need to examine the R square and F statistics. The R square value is about 0.74 showing that Income inequality (GINI) is explained by 73 % by independent variables or 73 % variation in the dependent variable (GINI) is due to independent variables. Similarly, the F statistic value is about 3.13 and the probability value is 0.025 which is less than a 5 % level of significance suggesting that the overall model is the best fit. The residual diagnostic statistic is also examined in the latter section.

The results show that Income inequality (GINI) and the previous year (lag of GINI) have positive and statistically significant relations where the sign is positive and the probability value is less than a 5 % level of significance. It suggested that the previous year's income inequality directly affects the current year's income inequality. One unit change in the previous year might change income inequality by 0.82 units. We observe that the previous year's income inequality is important to consider because alleviating poverty and income inequality needs sustainable policy formulation. Income inequality is likely to continue over time due to different factors such as economic dynamics, historical

legacies and social structure therefore previous years' income inequality can provide important insights into these persistence patterns. Considering these historical patterns helps in designing policies that are not only responsive to current conditions but also account for historical context.

IMF financial assistance has a positive and statistically significant relation with income inequality in Pakistan where the probability value is less than a 5 % level of significance. The results show that a unit increase in financial aid by the IMF to Pakistan might increase income inequality (GINI). The direct relation between IMF assistance and income inequality is due to the conditionality imposed by the IMF to reduce government expenditure, minimize subsidies and increase taxes which hurt the poor and vulnerable in society. Similarly, the IMF indicator which is a dummy has an inverse but statistically insignificant relation with income inequality because the probability value is greater than a 5 % level of significance.

Moreover, the quality of the institution has an inverse and statistically insignificant relation with income inequality because the probability value is greater than a 5 % level of significance. The previous year's institution quality (lag) has a positive and statistically significant relation with income inequality because the probability value is less than a 5 % level of significance. It suggested that a change in the institutional quality might increase income inequality in Pakistan. Because the index value ranges between -2.5 and 2.5 Pakistan has a negative score from 1996 to 2022. So moving further in a negative direction means an increase in corruption, worse rule of law and bad regulatory quality that might affect income distribution in society. So it is important to consider and improve institutional quality when formulating policy for reducing poverty in society.

Table 3

ARDL Model: Estimation Result

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
GINI(-1)	0.82	0.22	3.66	0.00
FINAN_ASS	0.00	0.00	2.12	0.05
IMF_IND	-8.92	7.71	-1.16	0.27
INST_Q	-3.27	4.88	-0.67	0.52
INST_Q(-1)	18.23	7.42	2.46	0.03
IMF_IND*POL_STAB	-2.58	3.48	-0.74	0.47
POL_STAB	12.51	4.71	2.66	0.02
POL_STAB(-1)	8.52	3.30	2.58	0.02
POP_GR	5.89	2.39	2.46	0.03
POP_GR(-1)	8.77	2.91	3.01	0.01
GDP_G	0.54	0.21	2.60	0.02
GDP_G(-1)	0.38	0.17	2.22	0.04
C	17.15	9.00	1.91	0.08
R-squared	0.74	Mean dependent var		30.52
Adjusted R-squared	0.51	S.D. dependent var		1.54
S.E. of regression	1.08	Akaike info criterion		3.30
Sum squared resid	15.14	Schwarz criterion		3.93
Log-likelihood	-29.87	Hannan-Quinn criterion.		3.48
F-statistic	3.13	Durbin-Watson stat		1.56
Prob(F-statistic)	0.02			

Similarly, political stability and income inequality have a positive and statistically significant relation because the probability value is less than a 5 % level of significance.

The results suggested that a change in the score of the political stability index might increase income inequality in both the current and previous year (lag) in magnitude 12.5 and 8.5 respectively. The score of political stability is between -2.5 to 2.5 where from 1996 to 2022 index of Pakistan shows a negative sign so increasing in political stability might directly affect income inequality. It is important to note that improvements in political stability could have a great impact on income inequality as the negative trajectory in the stability index during these years suggests a potential link between political stability and socio-economic disparities.

Another factor is population growth and the lag of population growth has a positive relation with income inequality. The coefficient is statistically significant because the probability value is less than a 5 % level of significance. The results suggested that a unit change in population growth might change the income inequality by 5.8 units. Similarly, the previous year's population growth might change the income inequality by 8.76 units. The high growth in population might be directly linked with income inequality when the population grow at a higher rate the demand for all resources and opportunities also increases if employment and economic opportunities lag behind the population growth it can result in unequal access to essential services and economic opportunities, thus widening the income gap.

GDP growth and income inequality have a direct relationship which is statistically significant (p-value is less than 5 % level of significance). Showing that one unit change in GDP growth might increase income inequality by 0.53 units. In the case of Pakistan GDP growth is positive and might increase income inequality where economic growth can generate overall prosperity but if growth is not sustainable then certain groups may capture a larger share of the gains from growth, leaving others behind and exacerbating income disparities.

The interaction terms of IMF indicator and political stability are negative and statistically insignificant. It shows that when IMF aid is taken (IMF indicator =1) and the political index improves in a specific year then income inequality tends to reduce in Pakistan. The results show that taking aid from financial institutions also needs political stability for poverty and income inequality reduction.

The Lagrange Multiplier (LM) test, which was considered to examine the presence of serial correlation in the residuals of the model, shows insignificant results where the probability value is greater than a 5 % level of significance, indicating that the residuals do not have any systematic pattern of the correlation over time. The Results of the Breusch-Pagan-Godfrey test show insignificant outcomes indicating that the model residuals exhibit relatively constant variance. Therefore the test results further strengthen the validity of the model parameter. The results of the Ramsey RESET test suggested that the model has no problem with omitted variable bias and misspecification (Diagnostic test results are given in Annexure II).

ARDL Bound Test

The bound approach test is used to examine the long-run relationship between variables of the model. The null hypothesis of the test shows that the variable has no level relationship. The test used upper I(1) and lower bound I(0) if the F statistic value is greater than the upper bound suggest the long-run relation between variable although if the F statistic value is less than the lower bound indicates no long-run relationship between variables. Similarly, if the F statistic value is between the lower and upper bound then the bound test result will be inconclusive the test does not show any relation.

The table shows the results of the ARDL bound test the F statistic value is 3.02 with 7 degrees of freedom while at 5 % the upper and lower bound is [4.16 and 2.73] respectively. The F statistic value is between lower and upper bound suggesting inconclusive results about the long-run relationship and we cannot reject or accept the null hypothesis. Moreover, at a 1% level of significance, the upper and lower bound is [5.69 and 3.86] respectively. The F statistic value is less than the lower

bound at 1 % indicating that there is no long-run relationship between Income inequality, financial aid and political stability. So at 5%, the results show inconclusive so we cannot move further to test the dynamic relation between income inequality and financial assistance.

Table 4

ARDL Bound Test

F-Bounds Test		Null Hypothesis: No levels of relationship		
Test Statistic	Value	Signif.	I(0)	I(1)
			Asymptotic: n=1000	
F-statistic	3.024	10%	1.92	2.89
K	7	5%	2.17	3.21
		2.5%	2.43	3.51
		1%	2.73	3.9
Actual Sample Size	26		Finite Sample: n=35	
		10%	2.196	3.37
		5%	2.597	3.907
		1%	3.599	5.23
			Finite Sample: n=30	
		10%	2.277	3.498
		5%	2.73	4.163
		1%	3.864	5.694

Income inequality and financial assistance (such as IMF loans) have different dynamics and the long-run effect might not be clear immediately. Where the impact could take time to materialise. Another reason might be that policy effects such as financial aid depend on policy implementation if income inequality is addressed and a part of financial assistance then their impact becomes clearer over time.

Conclusion & Recommendation

The study examined the complex relationship between IMF programs, political stability and income inequality in the case of Pakistan. The study employed a comprehensive analysis and considered economic, political and social factors to shed light on different dynamics which shape the economic landscape of Pakistan.

The finding of the study reveals that the previous year's income inequality can provide important insights into persistent patterns in poverty and income distributions. Considering these historical patterns helps in designing policies that are not only responsive to current conditions but also account for historical context. Similarly, another finding suggested that IMF assistance has a discernible impact on income inequality. The condition of financial aid provides short-term stabilization of the economy, but their associated policies bring economic and social challenges that contribute to political unrest. The government reforms necessary for economic recovery can lead to income inequality and affect the poor segments of society disproportionately.

Additionally, the study shows that institutional quality might increase income inequality in Pakistan. The increase in corruption, worse rule of law and bad regulatory quality might affect income distribution in society. If institutions fail to provide transparent governance, a certain group of society with more resources and connections exploit the system and turn contributes to income inequality. Similarly, political stability is another pivotal factor influencing the efficiency and success of social development programs for poverty reduction. Where politically stable atmosphere helps the government to implement necessary reforms which leads to economic recovery as well as poverty alleviation. However, the strict IMF

conditions in times of political instability can lead to social pressures and hinder the achievement of long-term stability.

Furthermore, another factor that affects the income distribution directly is the high growth in population which might be directly linked with income inequality in Pakistan. When if population grow at a higher rate the demand for all resources and opportunities also increases now if the employment and economic opportunities lag behind the population growth it can result in unequal access to essential services and economic opportunities, thus widening the income gap. Moreover, another factor influencing income distribution is unsustainable economic growth. Although economic growth can generate overall prosperity if growth is not sustainable then certain groups may capture a larger share of the gains from growth, leaving others behind and exacerbating income disparities.

In light of the conclusion of the study stockholders, and policymakers in Pakistan must consider a different approach that highlights the interconnectedness of IMF programs, political stability, and income inequality. The priority should be a striking balance between economic reforms social equity and political considerations. The combined efforts involving international institutions governments, civil society and the private sector are important to address the challenges highlighted by this nexus.

After the comprehensive analysis, different recommendations are formulated to address policy decisions and actions to determine these challenges:

The government must design comprehensive policies to account for past disparities that not only address the current situation but also underlying systematic issues.

The stakeholders must consider a balanced approach when implementing IMF reforms. Such as when economic recovery is important special consideration should be given to safeguard the vulnerable group of society.

Policymaker should highlight institutional weaknesses that leads to poor rule of law, bad governance and corruption. Where priorities should be given to institutional reforms and improvement of the quality of institutions which can create an environment for inclusive growth and fair income distribution.

All the stakeholders should join hands to bring political stability as Political stability is key to successful reforms.

References

Ali, S. (2014). Inflation, income inequality and Economic Growth in Pakistan: A Cointegration analysis. *International Journal of Economic Practices and Theories*, *4*(1), 33–42. https://ideas.repec.org/p/pra/mprapa/53706.html

Bagci, P., & Perraudin, W. R. (1997). The impact of IMF programmes. *University of London*.

Beck, T., Demirgüç-Kunt, A., & Levine, R. (2007). Finance, inequality and the poor. *Journal of Economic Growth*, *12*(1), 27–49. https://doi.org/10.1007/s10887-007-9010-6

Bilquees, F. (1987). The IMF stabilization package and Pakistan's stabilization experience. *The Pakistan Development Review*, *26*(4), 767–774. https://doi.org/10.30541/v26i4pp.767-774

Bruno, M. (1992). Stabilization and Reform in Eastern Europe: A preliminary evaluation. *Staff Papers*, *39*(4), 741. https://doi.org/10.2307/3867420

Connors, T. A. (1979). The apparent effects of recent IMF stabilization programs. *International Finance Discussion Papers*, *1979*(135), 1–16. https://doi.org/10.17016/ifdp.1979.135

Forster, T., Kentikelenis, A., Reinsberg, B., Stubbs, T., & King, L. (2019). How structural adjustment programs affect inequality: A disaggregated analysis of IMF conditionality, 1980–2014. *Social Science Research*, *80*, 83–113. https://doi.org/10.1016/j.ssresearch.2019.01.001

Goldsmith, W., & Blakely, E. (2010). *Separate societies: Poverty and inequality in US cities*. Temple University Press. https://books.google.com.pk/books?id=jchOM15hTYkC&printsec=frontcover&source=gbs_ge_summary_r&cad=0#v=onepage&q&f=false

Iqbal, Z. (1994). Macroeconomic effects of adjustment lending in Pakistan. *The Pakistan Development Review*, *33*(4II), 1011–1031. https://doi.org/10.30541/v33i4iipp.1011-1031

Ivanova, A., Mayer, W., Mourmouras, A., & Anayiotos, G. (2003). What determines the implementation of IMF-Supported programs? *Social Science Research Network*. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=879083

Kemal, A. R. (1994). Structural adjustment, employment, income distribution and poverty. *The Pakistan Development Review*, *33*(4II), 901–914. https://doi.org/10.30541/v33i4iipp.901-914

Khan, M. A., & Qayyum, A. (2007). Trade, financial and growth nexus in Pakistan (No. 2007, 14). *Economic Analysis Working Papers*. https://www.econstor.eu/bitstream/10419/43428/1/628480881.pdf

Khan, M. S., & Knight, M. D. (1981). Stabilization Programs in Developing Countries: A Formal Framework, *IMF Staff Papers*, *1981*(001), A001. Retrieved Oct 30, 2023, from https://doi.org/10.5089/9781451956573.024.A001

Khan, S. R. (2002). IMF Conditions Stunt Growth. *Economic and Political Weekly*, *37*(44/45), 4541–4544. http://www.jstor.org/stable/4412812

Khilji, N. M., & Claude, J. (1989). Output effects of stabilization policies: the case of Pakistan. *The Pakistan Development Review*, *28*(4), 691–707. https://econpapers.repec.org/article/pidjournl/v_3a28_3ay_3a1989_3ai_3a4_3ap_3a691-707.htm

Kuznets, S. (1955). Economic Growth and Income Inequality. *The American Economic Review*, *45*(1), 1–28. http://www.jstor.org/stable/1811581

Loxley, J., & Institute, N. (1984). *The IMF and the poorest countries: The Performance of the Least Developed Countries Under IMF Standby Arrangements*. https://catalogue.nla.gov.au/catalog/449582

Moran, T. H. (1990). International Economics and National Security. *Foreign Affairs*, *69*(5), 74. https://doi.org/10.2307/20044602

Pesaran, M. H., Shin, Y., & Smith, R. (1999). Pooled mean group estimation of dynamic heterogeneous panels. *Journal of the American Statistical Association*, *94*(446), 621–634. https://doi.org/10.1080/01621459.1999.10474156

Pesaran, M. H., Shin, Y., & Smith, R. J. (2001). Bounds testing approaches to the analysis of level relationships. *Journal of Applied Econometrics*, *16*(3), 289–326. https://doi.org/10.1002/jae.616

Richards, A. (1991). The political economy of dilatory reform: Egypt in the 1980s. *World Development*, *19*(12), 1721–1730. https://doi.org/10.1016/0305-750x(91)90015-a

Undp, A. (2016). Africa human development report 2016 accelerating gender equality and women's empowerment in Africa (No. 267638). *United Nations Development Programme (UNDP).* https://www.afdb.org/fileadmin/uploads/afdb/Documents/AEC/2016/AfHDR_Summary_highres_EN.pdf

Zaidi, S. A. (1999). IMF Package: Nothing to celebrate. *Economic and Political Weekly,* *34*(8), 457-458. https://epw.in/journal/1999/08/commentary/pakistan-imf-package-nothing-celebrate.html

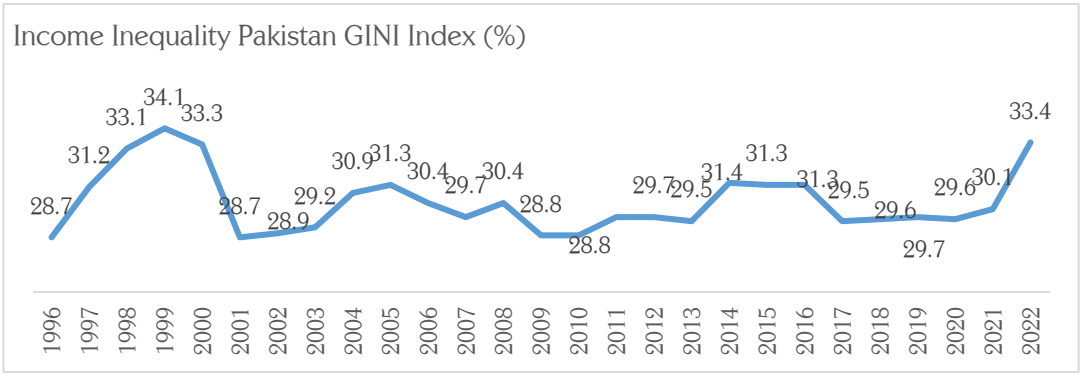
Annexure-I

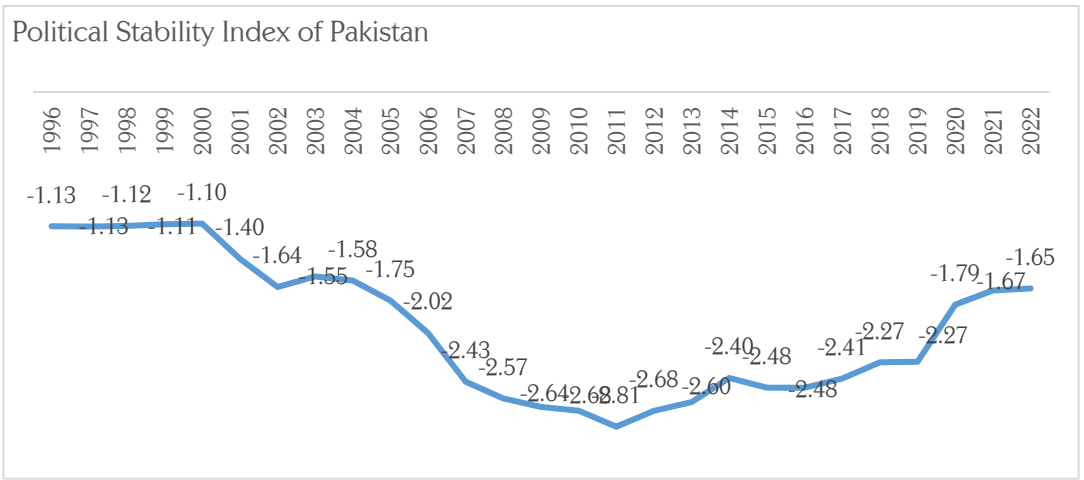
Variable Description

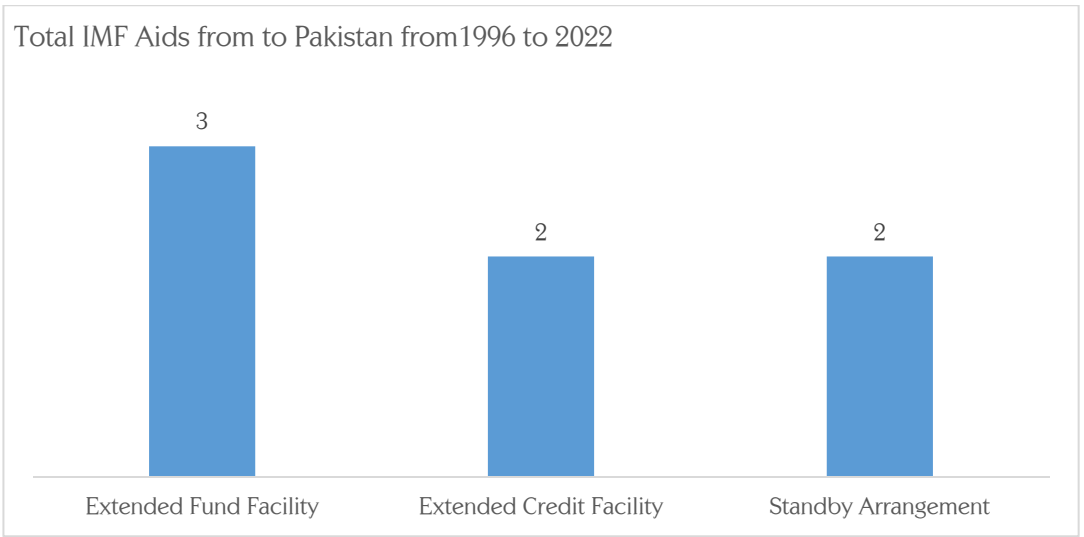
The table shows the variable description where the first column shows the variable name second column shows symbols third column shows the definition and 4th column shows the unit and the last column shows the sources. Where IMF is the International Monetary Fund, WDI is the World Development Indicator, and WGI is the World Governance Indicator.

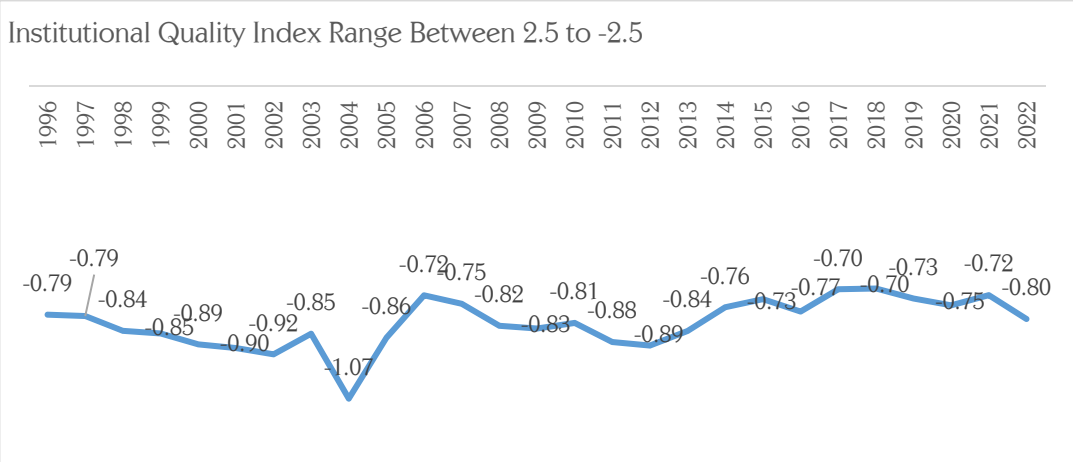
Variables	Symbols	Definition	Measurement	Sources
GINI Index	GINI	The Statistical measure to quantify income inequality	Index	WDI
IMF Indicators	IMF_IND	Dummy shows the presence of IMF programs in a specific year one if for a year when the IMF program is present otherwise zero	Dummy	IMF
IMF Financial Assistance	FINAN_ASS	The total loan amount disbursed by the IMF during the specific time period	Billion US Dollar	IMF
GDP Growth	GDP_G	GDP growth refers is the annual change in GDP within the border for a specific time period	Percentages	WDI
Inflation	INF	A persistent change in general price level for a specific time. The proxy of the CPI index is used for inflation	Index	WDI
Trade Openness	Trade_OP	Trade openness is the measure of exports plus imports divided by the Total GDP	Ratio	WDI
Quality of Institutions	INST_Q	The quality of an institution consists of the indexes of corruption, regulatory quality and role of law where the study takes the average of these three indexes.	Index	WGI
Political Stability	Political Stability	Political Stability and Absence of Violence/Terrorism measures perceptions of the likelihood of political instability and/or politically motivated violence, including terrorism.	percentage	WDI
Population Growth	PoP_GR	Refers is the annual change in the population of the country	percentage	WDI
Time Period	This study used time series data where the frequency of the data is 1980 to 2022 where the GINI index data is available from 1987 onward while Quality of Institutional quality data is available from 1995 onward so we will change the frequency of data according to the availability of data of GINI index and Institutional quality if not found from 1980.			

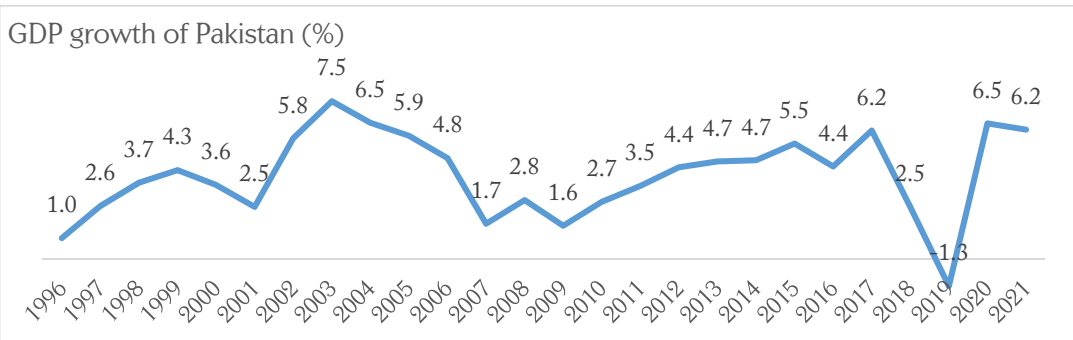
Annexure-II Figures 1-4











Model Selection Criteria Table
Dependent Variable: GINI
Date: 06/17/23 Time: 15:51
Sample: 1996 2022
Included observations: 26

Model	LogL	AIC*	BIC	HQ	Adj. R-sq	Specification
105	-29.870072	3.297698	3.926746	3.478841	0.505951	ARDL(1, 0, 0, 1, 0, 1, 1, 1)
73	-29.404316	3.338794	4.016230	3.533871	0.483616	ARDL(1, 0, 1, 1, 0, 1, 1, 1)
33	-28.479852	3.344604	4.070429	3.553615	0.475340	ARDL(1, 1, 0, 1, 1, 1, 1, 1)
97	-29.483357	3.344874	4.022310	3.539951	0.480467	ARDL(1, 0, 0, 1, 1, 1, 1, 1)
9	-28.503031	3.346387	4.072212	3.555398	0.474404	ARDL(1, 1, 1, 1, 0, 1, 1, 1)
41	-29.790078	3.368468	4.045904	3.563545	0.468063	ARDL(1, 1, 0, 1, 0, 1, 1, 1)
65	-29.283132	3.406395	4.132220	3.615406	0.441899	ARDL(1, 0, 1, 1, 1, 1, 1, 1)
1	-28.435072	3.418082	4.192296	3.641028	0.424859	ARDL(1, 1, 1, 1, 1, 1, 1, 1)
106	-34.051694	3.542438	4.123098	3.709647	0.367177	ARDL(1, 0, 0, 1, 0, 1, 1, 0)
121	-34.827225	3.602094	4.182754	3.769303	0.328276	ARDL(1, 0, 0, 0, 0, 1, 1, 1)
125	-35.987296	3.614407	4.146679	3.767682	0.314540	ARDL(1, 0, 0, 0, 0, 0, 1, 1)
74	-34.000252	3.615404	4.244452	3.796547	0.321190	ARDL(1, 0, 1, 1, 0, 1, 1, 0)
98	-34.014054	3.616466	4.245514	3.797609	0.320469	ARDL(1, 0, 0, 1, 1, 1, 1, 0)
42	-34.041357	3.618566	4.247614	3.799709	0.319040	ARDL(1, 1, 0, 1, 0, 1, 1, 0)
127	-37.109295	3.623792	4.107675	3.763133	0.299454	ARDL(1, 0, 0, 0, 0, 0, 0, 1)
34	-33.125287	3.625022	4.302459	3.820099	0.312488	ARDL(1, 1, 0, 1, 1, 1, 1, 0)
110	-36.187152	3.629781	4.162053	3.783056	0.303921	ARDL(1, 0, 0, 1, 0, 0, 1, 0)
128	-38.206548	3.631273	4.066768	3.756680	0.282596	ARDL(1, 0, 0, 0, 0, 0, 0, 0)

109	-35.246512	3.634347	4.215007	3.801556	0.306258	ARDL(1, 0, 0, 1, 0, 0, 1, 1)
10	-33.264871	3.635759	4.313196	3.830837	0.305066	ARDL(1, 1, 1, 1, 0, 1, 1, 0)
57	-34.698399	3.669108	4.298156	3.850251	0.283739	ARDL(1, 1, 0, 0, 0, 1, 1, 1)
89	-34.773832	3.674910	4.303958	3.856053	0.279570	ARDL(1, 0, 1, 0, 0, 1, 1, 1)
126	-37.774166	3.674936	4.158819	3.814277	0.262694	ARDL(1, 0, 0, 0, 0, 0, 1, 0)
113	-34.776800	3.675138	4.304187	3.856282	0.279406	ARDL(1, 0, 0, 0, 1, 1, 1, 1)
123	-36.817397	3.678261	4.210533	3.831536	0.269343	ARDL(1, 0, 0, 0, 0, 1, 0, 1)
112	-37.886012	3.683539	4.167423	3.822880	0.256323	ARDL(1, 0, 0, 1, 0, 0, 0, 0)
66	-33.958728	3.689133	4.366570	3.884210	0.266967	ARDL(1, 0, 1, 1, 1, 1, 1, 0)
61	-35.960785	3.689291	4.269951	3.856500	0.267075	ARDL(1, 1, 0, 0, 0, 0, 1, 1)
93	-35.969327	3.689948	4.270608	3.857157	0.266593	ARDL(1, 0, 1, 0, 0, 0, 1, 1)
117	-35.982513	3.690963	4.271622	3.858172	0.265849	ARDL(1, 0, 0, 0, 1, 0, 1, 1)
119	-37.084845	3.698834	4.231106	3.852109	0.254156	ARDL(1, 0, 0, 0, 1, 0, 0, 1)
95	-37.093383	3.699491	4.231763	3.852766	0.253665	ARDL(1, 0, 1, 0, 0, 0, 0, 1)
111	-37.098971	3.699921	4.232192	3.853196	0.253345	ARDL(1, 0, 0, 1, 0, 0, 0, 1)
63	-37.103508	3.700270	4.232541	3.853545	0.253084	ARDL(1, 1, 0, 0, 0, 0, 0, 1)
64	-38.115095	3.701161	4.185044	3.840502	0.243102	ARDL(1, 1, 0, 0, 0, 0, 0, 0)
2	-33.125264	3.701943	4.427768	3.910955	0.249988	ARDL(1, 1, 1, 1, 1, 1, 1, 0)
96	-38.163603	3.704893	4.188776	3.844233	0.240272	ARDL(1, 0, 1, 0, 0, 0, 0, 0)
120	-38.166974	3.705152	4.189035	3.844493	0.240075	ARDL(1, 0, 0, 0, 1, 0, 0, 0)
102	-36.174136	3.705703	4.286363	3.872912	0.254947	ARDL(1, 0, 0, 1, 1, 0, 1, 0)
101	-35.182491	3.706345	4.335394	3.887489	0.256564	ARDL(1, 0, 0, 1, 1, 0, 1, 1)
78	-36.184362	3.706489	4.287149	3.873698	0.254361	ARDL(1, 0, 1, 1, 0, 0, 1, 0)
46	-36.184644	3.706511	4.287171	3.873720	0.254344	ARDL(1, 1, 0, 1, 0, 0, 1, 0)
124	-38.206032	3.708156	4.192040	3.847497	0.237789	ARDL(1, 0, 0, 0, 0, 1, 0, 0)
77	-35.218623	3.709125	4.338173	3.890268	0.254495	ARDL(1, 0, 1, 1, 0, 0, 1, 1)
45	-35.231587	3.710122	4.339170	3.891265	0.253751	ARDL(1, 1, 0, 1, 0, 0, 1, 1)
62	-37.488612	3.729893	4.262165	3.883168	0.230627	ARDL(1, 1, 0, 0, 0, 0, 1, 0)
49	-34.548653	3.734512	4.411948	3.929589	0.232937	ARDL(1, 1, 0, 0, 1, 1, 1, 1)
94	-37.580482	3.736960	4.269232	3.890235	0.225170	ARDL(1, 0, 1, 0, 0, 0, 1, 0)
118	-37.603930	3.738764	4.271035	3.892039	0.223772	ARDL(1, 0, 0, 0, 1, 0, 1, 0)
25	-34.618705	3.739900	4.417337	3.934978	0.228792	ARDL(1, 1, 1, 0, 0, 1, 1, 1)
107	-36.749473	3.749959	4.330619	3.917168	0.221233	ARDL(1, 0, 0, 1, 0, 1, 0, 1)
122	-37.763616	3.751047	4.283319	3.904322	0.214178	ARDL(1, 0, 0, 0, 0, 1, 1, 0)
81	-34.772996	3.751769	4.429206	3.946846	0.219585	ARDL(1, 0, 1, 0, 1, 1, 1, 1)
85	-35.794822	3.753448	4.382496	3.934591	0.220708	ARDL(1, 0, 1, 0, 1, 0, 1, 1)
91	-36.798378	3.753721	4.334381	3.920930	0.218298	ARDL(1, 0, 1, 0, 0, 1, 0, 1)
115	-36.799008	3.753770	4.334430	3.920979	0.218260	ARDL(1, 0, 0, 0, 1, 1, 0, 1)
59	-36.815695	3.755053	4.335713	3.922262	0.217256	ARDL(1, 1, 0, 0, 0, 1, 0, 1)
108	-37.825576	3.755814	4.288085	3.909088	0.210424	ARDL(1, 0, 0, 1, 0, 1, 0, 0)
104	-37.877752	3.759827	4.292099	3.913102	0.207248	ARDL(1, 0, 0, 1, 1, 0, 0, 0)
53	-35.879342	3.759949	4.388998	3.941092	0.215625	ARDL(1, 1, 0, 0, 1, 0, 1, 1)
80	-37.879893	3.759992	4.292263	3.913267	0.207118	ARDL(1, 0, 1, 1, 0, 0, 0, 0)
48	-37.884912	3.760378	4.292649	3.913653	0.206812	ARDL(1, 1, 0, 1, 0, 0, 0, 0)
69	-34.916517	3.762809	4.440246	3.957886	0.210921	ARDL(1, 0, 1, 1, 1, 0, 1, 1)
38	-35.923584	3.763353	4.392401	3.944496	0.212951	ARDL(1, 1, 0, 1, 1, 0, 1, 0)
29	-35.958661	3.766051	4.395099	3.947194	0.210825	ARDL(1, 1, 1, 0, 0, 0, 1, 1)
56	-38.007141	3.769780	4.302052	3.923055	0.199319	ARDL(1, 1, 0, 0, 1, 0, 0, 0)
55	-37.022960	3.770997	4.351657	3.938206	0.204676	ARDL(1, 1, 0, 0, 1, 0, 0, 1)
70	-36.036178	3.772014	4.401062	3.953157	0.206105	ARDL(1, 0, 1, 1, 1, 0, 1, 0)
37	-35.045750	3.772750	4.450187	3.967827	0.203038	ARDL(1, 1, 0, 1, 1, 0, 1, 1)
87	-37.049357	3.773027	4.353687	3.940236	0.203059	ARDL(1, 0, 1, 0, 1, 0, 0, 1)
103	-37.052247	3.773250	4.353910	3.940459	0.202882	ARDL(1, 0, 0, 1, 1, 0, 0, 1)
79	-37.065303	3.774254	4.354914	3.941463	0.202081	ARDL(1, 0, 1, 1, 0, 0, 0, 1)
32	-38.065803	3.774293	4.306564	3.927568	0.195697	ARDL(1, 1, 1, 0, 0, 0, 0, 0)
31	-37.080264	3.775405	4.356065	3.942614	0.201162	ARDL(1, 1, 1, 0, 0, 0, 0, 1)
47	-37.083370	3.775644	4.356304	3.942853	0.200972	ARDL(1, 1, 0, 1, 0, 0, 0, 1)
60	-38.113002	3.777923	4.310195	3.931198	0.192772	ARDL(1, 1, 0, 0, 0, 1, 0, 0)
14	-36.121195	3.778553	4.407602	3.959697	0.200896	ARDL(1, 1, 1, 1, 0, 0, 1, 0)
88	-38.161795	3.781677	4.313948	3.934952	0.189737	ARDL(1, 0, 1, 0, 1, 0, 0, 0)
92	-38.163584	3.781814	4.314086	3.935089	0.189625	ARDL(1, 0, 1, 0, 0, 1, 0, 0)
116	-38.166742	3.782057	4.314329	3.935332	0.189428	ARDL(1, 0, 0, 0, 1, 1, 0, 0)
13	-35.212212	3.785555	4.462991	3.980632	0.192767	ARDL(1, 1, 1, 1, 0, 0, 1, 1)

54	-37.374431	3.798033	4.378693	3.965242	0.182880	ARDL(1, 1, 0, 0, 1, 0, 1, 0)
58	-37.412061	3.800928	4.381588	3.968137	0.180511	ARDL(1, 1, 0, 0, 0, 1, 1, 0)
30	-37.463214	3.804863	4.385523	3.972072	0.177280	ARDL(1, 1, 1, 0, 0, 0, 1, 0)
17	-34.507636	3.808280	4.534105	4.017291	0.165840	ARDL(1, 1, 1, 0, 1, 1, 1, 1)
90	-37.541730	3.810902	4.391562	3.978111	0.172296	ARDL(1, 0, 1, 0, 0, 1, 1, 0)
114	-37.556352	3.812027	4.392687	3.979236	0.171365	ARDL(1, 0, 0, 0, 1, 1, 1, 0)
86	-37.557766	3.812136	4.392796	3.979345	0.171275	ARDL(1, 0, 1, 0, 1, 0, 1, 0)
21	-35.567676	3.812898	4.490335	4.007975	0.170390	ARDL(1, 1, 1, 0, 1, 0, 1, 1)
5	-34.603870	3.815682	4.541507	4.024694	0.159642	ARDL(1, 1, 1, 1, 1, 0, 1, 1)
6	-35.604336	3.815718	4.493155	4.010795	0.168047	ARDL(1, 1, 1, 1, 1, 0, 1, 0)
75	-36.672732	3.820979	4.450028	4.002123	0.166264	ARDL(1, 0, 1, 1, 0, 1, 0, 1)
99	-36.678545	3.821427	4.450475	4.002570	0.165891	ARDL(1, 0, 0, 1, 1, 1, 0, 1)
51	-36.708791	3.823753	4.452801	4.004896	0.163948	ARDL(1, 1, 0, 0, 1, 1, 0, 1)
43	-36.726110	3.825085	4.454134	4.006229	0.162833	ARDL(1, 1, 0, 1, 0, 1, 0, 1)
27	-36.736547	3.825888	4.454937	4.007031	0.162161	ARDL(1, 1, 1, 0, 0, 1, 0, 1)
40	-37.736637	3.825895	4.406555	3.993104	0.159793	ARDL(1, 1, 0, 1, 1, 0, 0, 0)
83	-36.798329	3.830641	4.459689	4.011784	0.158170	ARDL(1, 0, 1, 0, 1, 1, 0, 1)
16	-37.808180	3.831398	4.412058	3.998608	0.155157	ARDL(1, 1, 1, 1, 0, 0, 0, 0)
76	-37.814827	3.831910	4.412570	3.999119	0.154725	ARDL(1, 0, 1, 1, 0, 1, 0, 0)
100	-37.815963	3.831997	4.412657	3.999206	0.154651	ARDL(1, 0, 0, 1, 1, 1, 0, 0)
44	-37.824164	3.832628	4.413288	3.999837	0.154117	ARDL(1, 1, 0, 1, 0, 1, 0, 0)
72	-37.872976	3.836383	4.417043	4.003592	0.150935	ARDL(1, 0, 1, 1, 1, 0, 0, 0)
23	-36.950325	3.842333	4.471381	4.023476	0.148269	ARDL(1, 1, 1, 0, 1, 0, 0, 1)
24	-37.967911	3.843685	4.424345	4.010894	0.144712	ARDL(1, 1, 1, 0, 1, 0, 0, 0)
39	-36.989682	3.845360	4.474408	4.026503	0.145687	ARDL(1, 1, 0, 1, 1, 0, 0, 1)
52	-38.001423	3.846263	4.426923	4.013472	0.142504	ARDL(1, 1, 0, 0, 1, 1, 0, 0)
71	-37.019872	3.847682	4.476731	4.028826	0.143701	ARDL(1, 0, 1, 1, 1, 0, 0, 1)
15	-37.052830	3.850218	4.479266	4.031361	0.141527	ARDL(1, 1, 1, 1, 0, 0, 0, 1)
28	-38.055723	3.850440	4.431100	4.017649	0.138915	ARDL(1, 1, 1, 0, 0, 1, 0, 0)
84	-38.161569	3.858582	4.439242	4.025791	0.131876	ARDL(1, 0, 1, 0, 1, 1, 0, 0)
22	-37.223502	3.863346	4.492395	4.044489	0.130182	ARDL(1, 1, 1, 0, 1, 0, 1, 0)
50	-37.277725	3.867517	4.496566	4.048660	0.126546	ARDL(1, 1, 0, 0, 1, 1, 1, 0)
26	-37.360955	3.873920	4.502968	4.055063	0.120936	ARDL(1, 1, 1, 0, 0, 1, 1, 0)
82	-37.535678	3.887360	4.516408	4.068503	0.109042	ARDL(1, 0, 1, 0, 1, 1, 1, 0)
35	-36.580548	3.890811	4.568248	4.085889	0.103168	ARDL(1, 1, 0, 1, 1, 1, 0, 1)
11	-36.599511	3.892270	4.569707	4.087347	0.101859	ARDL(1, 1, 1, 1, 0, 1, 0, 1)
36	-37.643424	3.895648	4.524696	4.076791	0.101627	ARDL(1, 1, 0, 1, 1, 1, 0, 0)
67	-36.670243	3.897711	4.575148	4.092788	0.096959	ARDL(1, 0, 1, 1, 1, 1, 0, 1)
12	-37.688802	3.899139	4.528187	4.080282	0.098485	ARDL(1, 1, 1, 1, 0, 1, 0, 0)
8	-37.701323	3.900102	4.529150	4.081245	0.097617	ARDL(1, 1, 1, 1, 1, 0, 0, 0)
19	-36.705603	3.900431	4.577868	4.095508	0.094499	ARDL(1, 1, 1, 0, 1, 1, 0, 1)
68	-37.813927	3.908764	4.537812	4.089907	0.089766	ARDL(1, 0, 1, 1, 1, 1, 0, 0)
7	-36.921513	3.917039	4.594476	4.112117	0.079335	ARDL(1, 1, 1, 1, 1, 0, 0, 1)
20	-37.967910	3.920608	4.549657	4.101752	0.078921	ARDL(1, 1, 1, 0, 1, 1, 0, 0)
18	-37.187089	3.937468	4.614905	4.132546	0.060333	ARDL(1, 1, 1, 0, 1, 1, 1, 0)
3	-36.580481	3.967729	4.693554	4.176741	0.021643	ARDL(1, 1, 1, 1, 1, 1, 0, 1)
4	-37.639166	3.972244	4.649680	4.167321	0.027081	ARDL(1, 1, 1, 1, 1, 1, 0, 0)

Breusch-Godfrey Serial Correlation LM Test:			
F-statistic	0.994	Prob. F(3,10)	0.434
Obs*R-squared	5.976	Prob. Chi-Square(3)	0.112

Heteroskedasticity Test: Breusch-Pagan-Godfrey			
F-statistic	0.621	Prob. F(12,13)	0.791
Obs*R-squared	9.474	Prob. Chi-Square(12)	0.662
Scaled explained SS	1.660	Prob. Chi-Square(12)	0.999

Table

Ramsey RESET Test

	Omitted Variables: Squares of fitted values		
	Value	df	Probability
t-statistic	0.563113	12	0.5837
F-statistic	0.317096	(1, 12)	0.5837