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Does the Effectiveness of Budget Deficit Vary between Welfare and Non-Welfare Countries?

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Abstract: Government intervention is imperative in the mixed economic system due to market failures, imperfection, pure public goods, and economic externalities. To this end, we measure the comparative impact of budget deficits on economic growth, incorporating the moderating role of quality of governance (QOG) for welfare and non-welfare countries. We apply a newly developed econometric model, namely Panel Quantile Regression via Moment Conditions, considering the scale and location effect due to high heterogeneity in our panel time series data over 1990–2020. Our empirical investigation shows that the budget deficit promotes economic growth sustainability in the overall sample countries. The comparative analysis confirms that budget deficit promotes economic growth for welfare countries while it impends for non-welfare countries. Furthermore, QOG augments sustainable economic growth in different economic circumstances in welfare countries and non-welfare countries. Finally, the results also demonstrate that the QOG plays a supportive role in the nexus between budget deficit and economic growth in the full sample countries. The findings indicate that the effectiveness of the budget deficit varies across welfare and non-welfare countries. In general, QOG promotes economic growth, but its stringent rules and restrictions somewhat slow down the wheel of the growth process. We provide several policy implications.

Keywords: economic growth; budget deficit; governance; quantile via moment; welfare country

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1. Introduction

One of the primary mandates of any government is to achieve sustainable economic growth, which is associated with a reduction in unemployment, improvement in the standard of living and progress in the human development index. To accelerate the growth rate at a sustainable level, governments adapt different policies, including fiscal and monetary policies. Sometimes, the national budget can be in deficit, implying that the expenditure exceeds the revenue at the time when government must emphasize some adverse economic conditions, including recession, high unemployment rates, pandemics, and natural phenomena [1]. In the case of a deficit budget, the government borrows money either from the domestic economy or abroad, with a different type of interest system and duration [2]. The effectiveness of budget deficit is contrasting in the different schools of thought (Keynesian vs. Classical) and the empirical literature. Since no study can generalize the effectiveness of budget deficit in explaining long-term growth, we believe that the role of the budget deficit can be conditional on other factors. Precisely, the pattern and sustainable threshold of fiscal expenditure diverge significantly over welfare and non-welfare states. Therefore, we are motivated to re-scrutinize the effectiveness of budget deficit on economic growth by clubbing our sample countries into welfare vs. non-welfare.

We are further motivated by several strands of propositions to conduct this study. First, the effectiveness of budget deficit in promoting economic growth has been a long debate

in theoretical and empirical studies [3,4]. The Keynesian school of economics considers the budget deficit as one of the significant macroeconomic tools that can drive economic growth by increasing net government spending, investment, and consumption [5,6]. On the other hand, Classical and Neoclassical followers criticize the viewpoints of Keynesian economics. They argue that the budget deficit might be helpful in the short term, but in the long term, it creates a huge debt burden, high inflation and crowd-out in the private sector [7,8]. Meanwhile, New Keynesians believe that a budget deficit promotes full employment and better wages that stimulate demand, enabling the government to collect significant amounts of revenue from spurring the economy [9–11]. Hence, theoretically, the effectiveness of budget deficit on economic growth is still debated and deserves more attention in a revisitation of the issue.

Second, empirical studies on the effectiveness of budget deficit in economic growth are also in a dilemma. Dweck et al. [12] state that the budget deficit causes high-interest rates and high inflation, which have long-term negative economic repercussions due to limited investment and a shaky domestic debt market. Asandului et al. [13] similarly find that budget deficit reduces private investment due to its crowd-out effect, which limits fund supply from the banking sector to private investors. A number of studies have also come up with similar findings [14]. Contrarily, another group of studies argues that budget deficit encourages macroeconomic components that curb the economic downturn through its multiplier effects [15]. Ahuja and Pandit [16] similarly state that the budget deficit boosts the demand side of the economy by increasing capital formation, employment, and wage levels, which stimulate the macroeconomic environment. Therefore, the existing literature maintains conflicting positions about the effectiveness of budget deficit on sustainable economic growth, which motivates us to revisit the issue with robust methods.

Third, much of the literature argues that the effectiveness of budget deficit is conditional on factors including quality of governance. A number of experts state that QOG is one of the key factors for the economic growth disparity between the countries [17–20]. Studies also argue that QOG removes the distortions from the growth process and ensures the better use of public funds, such as the budget deficit, to spur the whole economy. Recent studies also find similar results regarding the effectiveness of QOG on the nexus between budget deficit and economic growth [3,21,22]. Another group of studies argues that the effectiveness of QOG is diverse in different countries, and poor QOG often promotes growth, whereas strict rules and restrictions on QOG push the economy towards growth stagnation in many developed countries [23,24]. According to the studies, strong QOG frequently creates barriers to the use of public funds, such as the budget deficit, through complex fund governance. Therefore, the role of QOG in economic growth, as well as in the nexus between budget deficit and economic growth, is still debated.

Fourth, prior studies highlight disproportionate economic growth patterns across welfare and non-welfare countries due to the disparity in QOG [4]. However, in some studies, welfare and non-welfare countries are discussed, considering the level of Subsidies and Other Transfers (SOT) to the citizen, the level of Institutional Quality (IQ), and the position of the Human Development Index (HDI) of the country [25–28]. Studies argue that the group of nations that emerged as welfare countries are those in which the government is primarily responsible for safeguarding and advancing its citizens' economic and social well-being. On the other hand, another group of nations, known as non-welfare countries, have made considerably fewer efforts to ensure the economic and social well-being of their population, along with possessing low IQ and a poor HDI rank [28]. Additionally, a strong or weak IQ indicates the best or worst use of SOT funds, and the HDI position confirms the output of the SOT and IQ in determining the Welfare and Non-Welfare Countries. Although the welfare and non-welfare groups are highly related to economic growth factors, the existing literature largely ignores explaining the growth–deficit relationship in these two groups of countries.

The study discovers a number of gaps in prior studies that need to be filled. First, few studies investigate the moderating role of QOG in the deficit–growth relationship. Second,

earlier research primarily considers the European Union, emerging economies, African countries, Asian countries, and developed and developing countries as samples, while ignoring welfare and non-welfare countries in order to investigate the issue. Third, the existing literature employs a variety of static and linear approaches, as well as conventional Quantile Regression, which has a number of drawbacks, including biased estimation and the incapacity to offer information about scale and location. Given the specific shortcomings, the goal of this study is to add new knowledge to the body of literature on the subject.

We contribute to the existing growth literature in several ways. First, to the best of our knowledge, our study is the first attempt to measure the impact of budget deficit on economic growth in the context of welfare and non-welfare countries. As the level of QOG fluctuates between welfare and non-welfare countries, our study investigates both its direct and moderating impact on economic growth in the samples. Second, we apply a newly developed econometric model, namely Quantile via Moment, that considers the quantile in both scale and location due to highly heterogeneous panel data. The Quantile via Moment approach is robust in the presence of an abnormality in the data, cross-sectional heterogeneity, and potential endogeneity issues. Moreover, this approach allows us to measure the impact of the budget deficit and QOG on economic growth in different quantiles. Third, our empirical investigation shows that the budget deficit promotes sustainable economic growth in the overall samples. Interestingly the results indicate that the QOG overall supports growth and the deficit–growth nexus for all samples; however, a QOG that is too strong slows down the growth wheel as well.

The next sections of the study are as follows: the following section reviews the relevant literature. Section 3 explains the data, sample setting and methodology. Section 4 discusses the results. Finally, Section 5 contains conclusions and policy implications.

2. Literature Review

Many internal and external factors, such as economic depression, recession, or other crises, can cause an economy to experience a rapid economic crisis. Governments typically inject more money into the economy through the budget deficit as an expansionary fiscal policy to alleviate the crisis. This method was used as a macroeconomic approach to boost the economy during the 1929 Great Depression, the 1997 Japanese economic crisis, the 2007–2008 global financial crisis, and most recently, the COVID-19 economic downturn [29,30]. During these crises, governments intervened in the economy and upturned public expenditure through a bailout policy, lowering interest rates, and decreasing taxes to stimulate vulnerable sectors and augment aggregate demand [30,31].

Anecdotal evidence argues that government intervention through the budget deficit plays a significant role in managing the financial crisis and upholding economic growth in different countries [9]. However, the effectiveness of budget deficit on economic growth is still inconclusive in different settings, according to numerous studies. Hence, we review several study clusters on the issue throughout the section, along with different theoretical aspects, methodologies, and sample settings, and recommend a newly designed robust econometric model that can yield robust results.

The effectiveness of the budget deficit on economic growth is still debated from the different points of view of macroeconomic theories. The New Keynesian macroeconomic theory has led to cyclical budget deficits in the majority of countries in recent years [9,18]. As the budget deficit increases, other government expenses also increase at the state level, i.e., capital expenditure, development expenditure, welfare expenditure and interest payments. However, in some countries, capital and development expenditure has decreased compared to aggregate social-welfare expenditure, which slows down the growth rate [32]. However, the New Classical theorists argue that the budget deficit may have some impacts on economic growth during the crisis period but barely has any positive impact in the long run [33,34]. Moreover, some countries adopt the budget deficit tool in order to implement the politically promised mega projects, to improve living standards, and to

achieve sustainable economic growth, and many of them frequently fail to generate the expected growth due to an overemphasis on eye-catching megaprojects to win elections [35].

A group of studies argues that budget deficit is a key macroeconomic mechanism for stabilizing economic performance through heavy investment, increasing employment rates, and augmenting aggregate demand [36,37]. From a sceptic perspective, proponents argue that the budget deficit usually has minimal effects, but when the budget deficit utilizes properly, that spurs economic growth. Espinosa et al. [38] and Rickman and Wang [39] similarly report that if the deficit fund is used in productive sectors, such as developing infrastructure, physical capital, and human capital, it can promote economic growth. Nyasha and Odhiambo [40] and Devarajan et al. [41] investigate a similar issue in European countries and demonstrate that raising the share of current spending has favourable and statistically significant growth impacts. Mawejje and Odhiambo [42] and Sedighi et al. [43], by employing the ARDL bound testing approach, reveal inconsistent evidence in several developing or non-welfare African countries, finding that raising government spending through budget deficits encourages economic growth in the short and long term.

Some other studies find that the budget deficit has ambiguous impacts on economic growth. Similarly, Yang & Usman [44] and Mohsin et al. [45] find that the relationship between budget deficit and economic growth is as complex and ambiguous in welfare and non-welfare countries due to dissimilar responses. Additionally, if the budget deficit is financed through heavy borrowing and high tax, it may create distortion in the credit market and banking sector; consequently, private investment may be squeezed out due to the lack of funds, which could inhibit economic growth [46,47]. A number of other studies also find an asymmetric effect of budget deficit on economic growth [12,48]. Hence, the effectiveness of budget deficit is still conflicting in empirical studies.

The QOG encourages governance accountability, transparency, efficiency, and other qualities that make it possible to manage resources effectively for sustainable economic progress [17,19]. Lopez et al. [22] similarly argue that QOG upholds a growth-promoting economic environment and removes obstacles from the growth process. On the other hand, Salawu et al. [49] and Albalate and Bel [50] state that QOG is not the only factor to motivate economic growth; even sometimes, strong QOG slows down economic activities. Moreover, poor QOG facilitates economic growth in many developing countries [51]. In addition, some studies claim that QOG plays a sensitive role in managing budget deficit funds and impacts economic growth [52]. The contrasting findings in the previous studies could be due to model specification, sample setting or biased causal effect relations, and so on, which motivate us to re-examine the issue. in addition, previous studies have mostly failed to provide an estimation that considers scale and location effects; they were also unable to estimate budget deficit effects in different economic conditions where the newly developed Quantile via Moment technique can offer robust estimations considering these issues. However, Table 1 provides the recent picture on the budget deficit, QOG and economic growth relationship using conventional quantile regression, as well as Quantile via Moment.

Table 1. Summary of the Relationship Among Budget Deficit, QOG and Economic Growth.

Authors	Sample Countries	Period	Methods	Findings
Mohsin et al. [45]	South Asia	2000–2018	Quantile regression	Deficit finance has a negative impact, and external debt stock has a positive impact on economic growth.
Bilgili et al. [53]	Asian countries		Quantile regression	The higher the spending, the higher the growth.

Table 1. *Cont.*

Authors	Sample Countries	Period	Methods	Findings
Nguyen [54]	Developed countries (34)	2002–2019	Quantile regression	Budget deficit motivates growth, while good governance plays an important role.
Hieu and Mai [55]	Developing Countries	1990–2020	(MMQR)	Energy consumption (renewable or hydrocarbon) promotes economic growth in most quantiles.
Balcilar, Usman and Ike [56]	OECD countries (23)	1990–2017	(MMQR)	Spending on renewable or green energy supports growth in long run.
Adebayo et al. [57]	BRICS countries	1990–2018	(MMQR)	Globalization, economic growth, the usage of renewable energy, and political risk can all help forecast CO_2 emissions in the long term.
Boikos, Panagiotidis and Voucharas [58]	Countries (81)	1990–2020	(MMQR)	Financial policy reform support economic growth in quantiles

Table 1 demonstrates the budget deficit and economic growth relationship in different sample settings, in order to examine the economic growth the recent studies mostly apply the MMQR method. In addition, some of the studies examine the budget deficit and economic growth relationship using conventional Quantile Regression, which is unable to provide information about scale and location [45,53,54]. The method also has data smoothing issues, computing, and mathematical limitations [59]. Other studies employ the new MMQR, or the method of moment approach, in examining the impacts of the oil sector, renewable energy use and environmental issues on economic growth [55–57]. These studies mostly ignore examining the impacts of budget deficit and QOG on economic growth. Additionally, the method of moment, or MMQR, is able to produce less biased estimations in different quantiles considering the scale and location; the method also overcomes the criticism of conventional Quantile Regression as. Therefore, the current study deploys this method to close the methodological gap in the literature on budget deficit, QOG and economic growth issues.

Moreover, a number of the prior studies employ linear models, while we deploy the robust Quantile via Moment technique, developed by Machado and Silva [60], in order to examine the impact of the budget deficit and QOG on the conditional distribution of economic growth. This also differs from the conditional mean regressions carried out by prior studies. To the best of our knowledge, this paper is one of the first to examine the deficit–growth dynamics, and to incorporate QOG into an examination of welfare and non-welfare countries employing this method.

3. Model, Data and Methods

3.1. Data and Source

The study considers 34 welfare countries and 44 non-welfare countries as the sample, covering the period from 1990 to 2020. The welfare and non-welfare countries have been determined by several datasets and the inspiration of previous studies. The selection criteria are attached in the Appendices A and B. In addition, as the core variables of the economic growth model, this study also considers some variables as the control variable, i.e., total labour force, fixed capital formation and trade openness (Table 2).

Table 2. Variable Description and Sources.

Variable	Definition	Source	Scale of Measurement
Economic Growth (GDP)	GDP is obtained by dividing the gross domestic product by the total population.	World Development Indicators (WDI) The World Bank	GDP Per Capita (Constant USD 2010)
Budget Deficit (BD)	External debt per cent of GDP is utilized to measure the budget deficit.	Government Finance Statistics (GFS)—International Monetary Fund (IMF)	Gross government debt (Debt to GDP Ratio)
Quality of Governance (QOG)	QoG index has been compiled by the moving average method from the ICRG dataset.	Developed by Author using ICRG data set	Author Compilation
Trade Openness (to)	Trade is the sum of imports and exports of services and goods as % of GDP.	World Development Indicators (WDI)	Trade (as % of GDP)
Labor Force (LF)	LF includes people aged 15 and older who supply labour to produce goods and services during a specified period.	World Development Indicators (WDI)	Population (aged 15 and above). Per cent of the total population
Fixed Capital Formation (FCF)	Gross FCF (% of GDP) measures, capital constant 2010 USD.	World Development Indicators (WDI)	Gross fixed capital formation (as % of GDP)

3.2. Empirical Model

We develop our empirical models based on the Solow growth model and the outputs were a function of labor force (LF) and fixed capital formation (FCF). Therefore, we incorporate the variables in the models. In our model, the budget deficit (BD) manifests as public expenditure or investment. The samples countries follow open trading policy, as we consider trade openness (TO). Finally, based on a stream of literature, we evaluate the direct and moderating roles of quality of governance (QOG).

$$LGDPC_{it} = B_0 + \beta_1 BD_{it} + \beta_2 TO_{it} + \beta_3 LF_{it} + \beta_4 FCF_{it} + \varepsilon_{it} \quad (1)$$

$$LGDPC_{it} = B_0 + \beta_1 BD_{it} + \beta_2 TO_{it} + \beta_3 LF_{it} + \beta_4 FCF_{it} + \beta_5 QOG_{it} + \varepsilon_{it} \quad (2)$$

The moderating role of QOG

$$LGDPC_{it} = B_0 + \beta_1 BD_{it} + \beta_2 TO_{it} + \beta_3 LF_{it} + \beta_4 FCFfcf_{it} + \beta_5 QOG_{it} + \beta_6 BD_{it} * QOG_{it} + \varepsilon_{it} \quad (3)$$

where LGDPC = logarithmic form of GDP (Gross Domestic Product), $BD_{it} * QOG$ = integration of budget deficit and quality of governance, B_0 = intercept, $\beta_1 - \beta_6$ = indicates the response of respective regressors, and ε_it = error for country i over time t.

3.3. Methods

To estimate our empirical models, we apply the Quantile Regression via Method of Moment approach developed by [60] for several crucial reasons. First, our variables are highly heterogeneous for welfare and non-welfare countries and over time. Any standard panel data-based techniques often fail to capture cross-sectional heterogeneity and variation over time. We want to estimate the conditional quantiles of a random variable Y whose distribution is conditional on a k-vector of covariates X, and which may be written as follows:

$$Q_y(\tau|X_{it}) = (a_i(\tau) + \delta_i q(\tau)) + X'_{it}\beta(\tau) + Z'_{it}\gamma(\tau) \quad (4)$$

where $a_i(\tau)$ is the quantile-τ fixed effect for countries i, or the distributional effect (location effect), $\delta_i(\tau)$ is scale effect over time for all cross-sections, τ is quantile, $Q_y(\tau|X_{it})$ is the quantile of the dependent variable, $X'_{it}\beta$ is the vector of the independent variables, and Z is a vector of known differentiable (with probability 1) transformations of the components of X.

The quantile regression deals with heteroscedasticity in the data structure [61] by modelling the relationship between a set of predictor variables and certain percentiles of the dependent variable. The basic econometric techniques often fail to address the cross-sectional and time heterogeneity bias. To account for the cross-sectional dependency model, we include time series variables in the model, since the quantile regression method does not eliminate distortions due to the cross-sectional dependency (CD). Quantile via moment has a potential to address the endogeneity problem, heterogeneity bias and serial correlation. The advantage of our approach is that it allows the use of methods that are only valid in the estimation of conditional means, such as differencing out cross-sectional effects in panel data models, while providing information on how the regressors affect the entire conditional distribution. These informational gains are perhaps the most striking feature of quantile regression that Chamberlain [62] and Buchinsky [63] emphasized, for example, in the surveys by Koenker and Hallock [61], Cade and Noon [64], and Bassett and Koenker [65]. Besides greatly facilitating the estimation of complex models, our approach also leads to estimates of the regression quantiles that validate a crucial requisite often ignored in empirical applications [56,57].

4. Results and Discussion

4.1. Descriptive Statistics

We start our analysis with descriptive statistics to highlight the nature of our variables. Table 3 also provides the standard deviation of our variables within and between measures to reveal the average variation over time for both the welfare and non-welfare countries combinedly and separately. The table clearly shows that the standard deviation is profound under the "between" option for most variables, implying economic growth disparity in welfare and non-welfare countries.

Table 3. Descriptive Statistics of Welfare and Non-Welfare Countries.

Variable	Observation	Mean	Std. Dev.	Min	Max
LGDPC	2359	9.19	1.40	5.87	11.62
BD	1943	3.77	0.78	0.02	5.66
TO	2339	4.35	0.53	2.62	6.08
LF	2384	15.46	1.71	11.73	20.48
FCF	2286	23.33	6.33	0.0	69.67
QOG	2135	0.66	0.20	0.11	1.00

Descriptive Statistics: 78 Welfare and Non-Welfare Countries.

4.2. Main Findings

Table 4 demonstrates the impact of budget deficit on the economic growth in welfare countries under different economic circumstances. The estimations take the form $Q_{LGDPC}(\tau|BD, TO, LF, FCF) = \alpha + X'(BD, TO, LF, FCF)\beta + \sigma(\delta + Z'\gamma)q(\tau)$. Model 1 considers the economic growth of welfare countries as the dependent variable, where budget deficit (BD) is the independent variable, and trade openness (TO), the labor force (LF) and fixed capital formation (FCF) are the control variables. The second and third column of Table 4 indicate location and scale effect. As for BD, both the location and scale are significant, implying that Quantile via Moment dealt with heterogeneity across countries, as well as over time. The coefficients of BD are positive and significant, up to the 10% significance level from the lower quantile to the upper-medium quantiles, respectively. At the same time, the top two quantiles are insignificant. The finding implies that BD spurs economic growth under different economic circumstances, mostly in the lower quantiles to the middle to upper-middle quantiles, but the effects are insignificant in the topmost quantiles in the context of welfare countries. Dudzevičiūtė et al. [66] report that budget deficit augments economic growth in European Union countries, where these countries are similar to the welfare countries. Parallel results were also reported for Asia-Pacific

Economic Cooperation countries, the US economy, and other high-income countries by Jorgenson and Fraumeni [67] and Chu et al. [68].

Table 4. The Impact of Budget Deficit on Economic Growth in Welfare Countries.

Variables	Location	Scale	q10	q20	q30	q40	q50	q60	q70	q80	q90
BD	0.420 ***	−0.314 ***	1.016 ***	0.714 ***	0.573 ***	0.459 ***	0.370 ***	0.264 **	0.201 *	0.0976	−0.0659
	(−0.0976)	(−0.0777)	(−0.141)	(−0.102)	(−0.0884)	(−0.090)	(−0.097)	(−0.11)	(−0.118)	(−0.137)	(−0.169)
TO	0.00913	0.156 *	−0.287 *	−0.137	−0.067	−0.0106	0.0338	0.0863	0.118	0.169	0.251
	(−0.11)	(−0.087)	(−0.162)	(−0.111)	(−0.102)	(−0.106)	(−0.116)	(−0.132)	(−0.144)	(−0.165)	(−0.203)
LF	0.00287	−0.0774 **	0.150 **	0.0756 *	0.0406	0.0127	−0.00936	−0.0354	−0.0511	−0.0765	−0.117
	(−0.041)	(−0.033)	(−0.061)	(−0.042)	(−0.038)	(−0.04)	(−0.043)	(−0.049)	(−0.053)	(−0.061)	(−0.076)
FCF	−0.0167	−0.0116	0.00534	−0.0058	−0.011	−0.0152	−0.0185	−0.0224	−0.0247	−0.0285	−0.0346
	(−0.012)	(−0.010)	(−0.018)	(−0.012)	(−0.011)	(−0.012)	(−0.013)	(−0.015)	(−0.016)	(−0.019)	(−0.023)
Constant	8.929 ***	2.553 ***	4.074 ***	6.530 ***	7.682 ***	8.606 ***	9.332 ***	10.19 ***	10.71 ***	11.55 ***	12.88 ***
	(−1.069)	(−0.851)	(−1.561)	(−1.094)	(−0.983)	(−1.015)	(−1.101)	(−1.248)	(−1.355)	(−1.56)	(−1.924)
Observations	1020	1020	1020	1020	1020	1020	1020	1020	1020	1020	1020

Note: ***, ** and * indicate 1%, 5% and 10% significance level. Standard errors are in parathesis. Observation: 34 Welfare Countries.

Table 4 exhibits that the trade openness (TO) coefficients are insignificant for all quantiles except the q10, which is negative and significant by the 10% significant level. The level of TO is already high in welfare countries, which could be the reason for such a minor impact. LF is found to be positive and significant up to the 10% significance level for the first two quantiles. At the same time, the coefficients are insignificant in other quantiles. These indicate that the LF barely facilitates economic growth for welfare countries, which is in line with some previous findings by Oliskevych and Lukianenko [69] and Soava et al. [70]. As for FCF, its coefficients are negative under all quantiles except the first quantile, meaning that domestic investment barely promotes economic growth for welfare countries. Similarly, Aslan and Altinoz [71] explain that economic growth is no longer highly dependent on the only FCF for high-income countries. Figure 1 also demonstrates the graphical presentation of the findings. According to the figure, the coefficients of budget deficit stand above the zero line in all quantiles except the top quantile.

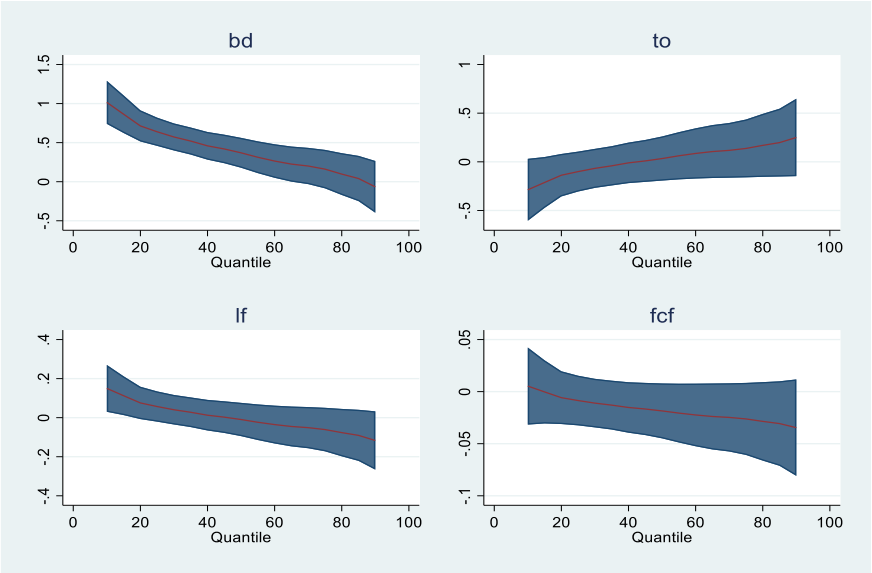

Figure 1. The Impact of Budget Deficit on Economic Growth in Welfare Countries Under Quantiles. Note: Vertical axis indicates the magnitude of coefficients and horizontal axis indicates quantile.

Table 5 depicts the estimations that take the form $Q_{LGDPC}(\tau|BD, TO, LF, FCF) = \alpha + X'(BD, TO, LF, FCF)\beta + \sigma(\delta + Z'\gamma)q(\tau)$ for non-welfare countries. The coefficients of BD are negative and significant by the 1% significance level under all quantiles. This result suggests that budget deficit hurts rather than benefits the economic growth of this group of countries. A number of studies, including those by Asandului et al. [13] and Salawu et al. [49], concede that non-welfare countries (mainly developing countries) struggle to generate economic growth from budget deficits as a result of poor policymaking, expensive interest payments and high administration costs, and other fiscal mismanagements. In all quantiles, growth is continuously negative, as seen in Figure 2.

Table 5. Impact of Budget Deficit on Economic Growth in Non-Welfare Countries.

Variables	Location	Scale	q10	q20	q30	q40	q50	q60	q70	q80	q90
BD	−0.265 ***	−0.00584	−0.256 ***	−0.259 ***	−0.262 ***	−0.263 ***	−0.265 ***	−0.266 ***	−0.269 ***	−0.272 ***	−0.275 ***
	(−0.036)	(−0.022)	(−0.048)	(−0.040)	(−0.037)	(−0.036)	(−0.036)	(−0.037)	(−0.041)	(−0.047)	(−0.056)
TO	0.840 ***	−0.184 ***	1.143 ***	1.025 ***	0.953 ***	0.901 ***	0.853 ***	0.797 ***	0.720 ***	0.623 ***	0.518 ***
	(−0.062)	(−0.037)	(−0.082)	(−0.069)	(−0.064)	(−0.062)	(−0.062)	(−0.064)	(−0.070)	(−0.080)	(−0.094)
LF	−0.112 ***	−0.056 ***	−0.0191	−0.055 ***	−0.077 ***	−0.093 ***	−0.108 ***	−0.126 ***	−0.149 ***	−0.179 ***	−0.212 ***
	(−0.018)	(−0.010)	(−0.024)	(−0.020)	(−0.018)	(−0.018)	(−0.018)	(−0.018)	(−0.020)	(−0.023)	(−0.027)
FCF	−0.008 **	0.002	−0.012 **	−0.010 **	−0.009 **	−0.0088 **	−0.0082 **	−0.0074 *	−0.0063	−0.0050	−0.0036
	(−0.004)	(−0.002)	(−0.005)	(−0.004)	(−0.004)	(−0.004)	(−0.004)	(−0.004)	(−0.004)	(−0.005)	(−0.006)
Constant	7.650 ***	2.415 ***	3.679 ***	5.214 ***	6.159 ***	6.842 ***	7.481 ***	8.211 ***	9.222 ***	10.49 ***	11.87 ***
	(−0.513)	(−0.307)	(−0.684)	(−0.577)	(−0.532)	(−0.511)	(−0.513)	(−0.535)	(−0.588)	(−0.669)	(−0.776)
Observations	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241	1241

Note: ***, ** and * indicate 1%, 5% and 10% significance level. Standard errors are in parathesis. Observation: 44 Non-welfare Countries.

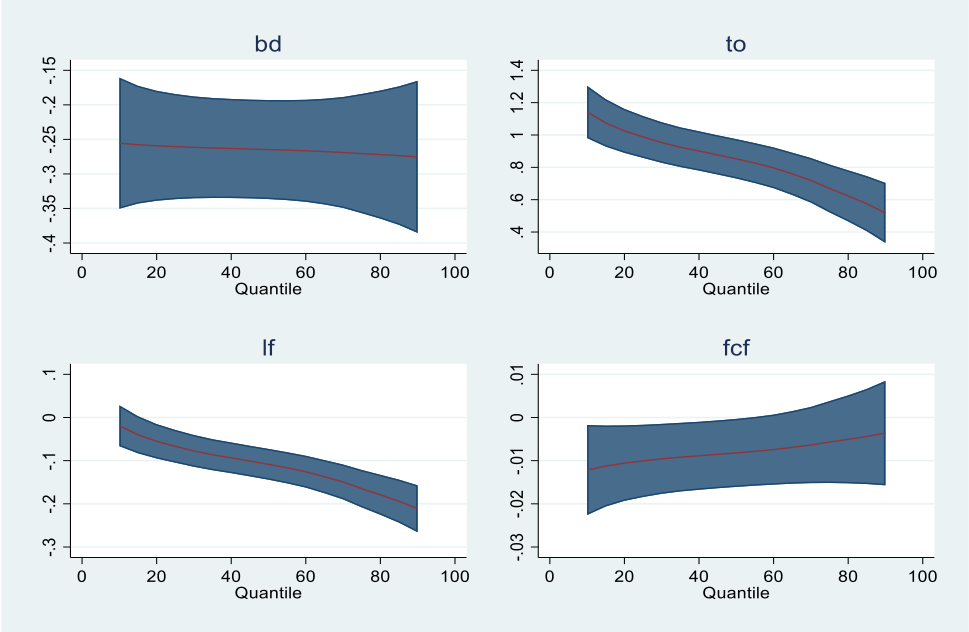

Figure 2. The Impact of Budget Deficit on Economic Growth (EG) in Non-Welfare Countries Under Quantiles. Note: Vertical axis indicates the magnitude of coefficients and horizontal axis indicates quantile.

Table 6 demonstrates the impact of budget deficit on economic growth in both welfare and non-welfare countries under different economic circumstances. The coefficients of BD

are positive and significant at the 5% significance level from quantile 30 to quantile 90, while two lower quantiles are insignificant. The finding implies that BD spurs economic growth under different economic circumstances and has a high impact in upper quantiles and a relatively low impact in lower quantiles. Therefore, in a bigger scenario, the BD is supportive of the growth. On the other hand, the larger amount of BD in welfare countries might be the reason for the positive results for the combined sample. However, the results are consistent with the previous studies in different developed and developing countries by Gurdal et al. [72] and Cigu [73]. The results are graphically depicted in Figure 3.

Table 6. Impact of BD on EG in Welfare and Non-Welfare Countries.

Variables	Location	Scale	q10	q20	q30	q40	q50	q60	q70	q80	q90
BD	0.143 ***	0.062 ***	0.0457	0.0729	0.0936 **	0.125 ***	0.156 ***	0.177 ***	0.198 ***	0.215 ***	0.227 ***
	(−0.037)	(−0.020)	(−0.056)	(−0.049)	(−0.045)	(−0.039)	(−0.036)	(−0.034)	(−0.035)	(−0.035)	(−0.037)
TO	0.469 ***	−0.291 ***	0.920 ***	0.795 ***	0.698 ***	0.553 ***	0.410 ***	0.314 ***	0.214 ***	0.136 **	0.0789
	(−0.067)	(−0.036)	(−0.101)	(−0.089)	(−0.082)	(−0.073)	(−0.065)	(−0.063)	(−0.063)	(−0.064)	(−0.066)
LF	−0.0470 **	−0.00709	−0.036	−0.0391	−0.0414	−0.0449 **	−0.0484 **	−0.0508 **	−0.053 ***	−0.055 ***	−0.056 ***
	(−0.021)	(−0.011)	(−0.032)	(−0.028)	(−0.025)	(−0.022)	(−0.020)	(−0.019)	(−0.019)	(−0.020)	(−0.021)
FCF	−0.019 ***	−0.003	−0.013 **	−0.015 **	−0.016 ***	−0.018 ***	−0.019 ***	−0.020 ***	−0.021 ***	−0.022 ***	−0.023 ***
	(−0.004)	(−0.002)	(−0.006)	(−0.006)	(−0.005)	(−0.004)	(−0.004)	(−0.004)	(−0.004)	(−0.004)	(−0.004)
Constant	7.786 ***	2.377 ***	4.106 ***	5.131 ***	5.916 ***	7.107 ***	8.272 ***	9.057 ***	9.875 ***	10.51 ***	10.98 ***
	(−0.57)	(−0.307)	(−0.865)	(−0.763)	(−0.699)	(−0.621)	(−0.559)	(−0.537)	(−0.537)	(−0.548)	(−0.568)
Observations	2261	2261	2261	2261	2261	2261	2261	2261	2261	2261	2261

Note: ***, ** indicate 1%, 5% significance level. Standard errors are in parathesis. Observation: 78 Welfare and Non-Welfare Countries.

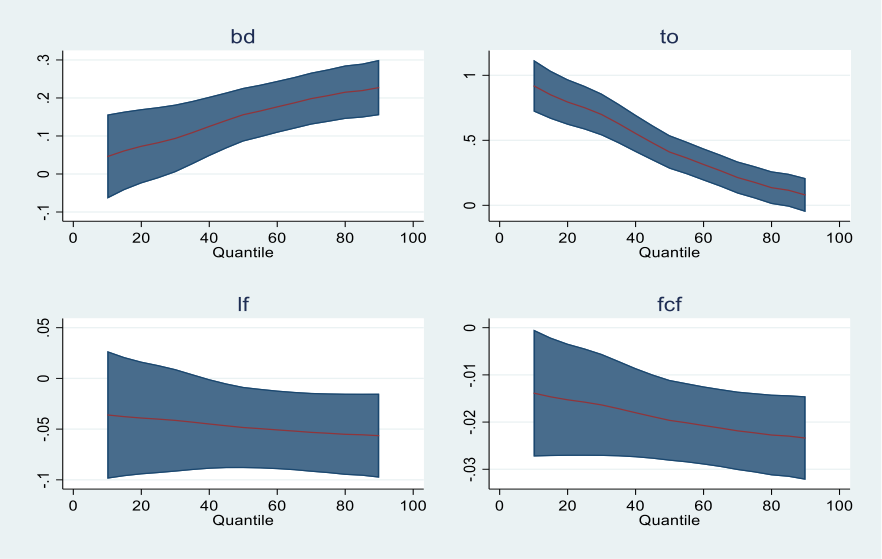

Figure 3. The Impact of Budget Deficit on Economic Growth in Welfare and Non-Welfare Countries Under Quantiles. Note: Vertical axis indicates the magnitude of coefficients and horizontal axis indicates quantile.

The coefficients show the direct impact of QOG on economic growth in different economic conditions in welfare countries. Table 7 shows that the impacts of QOG are highly positive and significant in all quantiles by the 1% significant level, except the q90, which is insignificant. The results indicate that QOG has strong growth-enhancing impacts on economic growth in different economic conditions for welfare countries. Moreover,

the impacts are relatively high at the lower quantiles and are gradually lower in the higher quantiles.

Table 7. Impact of QOG on Economic Growth in Welfare Countries.

Variables	Location	Scale	q10	q20	q30	q40	q50	q60	q70	q80	q90
BD	0.267 ***	−0.212 **	0.646 ***	0.474 ***	0.401 ***	0.324 ***	0.264 ***	0.213 **	0.146	0.0408	−0.0708
	(−0.100)	(−0.087)	(−0.201)	(−0.144)	(−0.122)	(−0.105)	(−0.095)	(−0.091)	(−0.094)	(−0.11)	(−0.139)
TO	0.060	0.117	−0.148	−0.0539	−0.0134	0.029	0.0618	0.0899	0.127	0.185	0.246
	(−0.121)	(−0.106)	(−0.252)	(−0.181)	(−0.154)	(−0.132)	(−0.12)	(−0.115)	(−0.118)	(−0.138)	(−0.174)
LF	0.0357	−0.0650 *	0.152 *	0.0991 *	0.0766	0.053	0.0347	0.0191	−0.00141	−0.0337	−0.0678
	(−0.039)	(−0.034)	(−0.080)	(−0.057)	(−0.049)	(−0.042)	(−0.038)	(−0.036)	(−0.037)	(−0.044)	(−0.055)
FCF	−0.0103	0.00298	−0.0156	−0.0132	−0.0122	−0.0111	−0.0103	−0.00956	−0.00862	−0.00715	−0.00558
	(−0.013)	(−0.011)	(−0.027)	(−0.02)	(−0.017)	(−0.014)	(−0.013)	(−0.012)	(−0.013)	(−0.015)	(−0.019)
QOG	1.897 ***	−0.840 ***	3.394 ***	2.715 ***	2.424 ***	2.119 ***	1.884 ***	1.682 ***	1.417 ***	1.000 ***	0.559
	(−0.35)	(−0.305)	(−0.706)	(−0.507)	(−0.43)	(−0.37)	(−0.336)	(−0.322)	(−0.333)	(−0.387)	(−0.49)
Constant	7.173 ***	2.398 **	2.898	4.835 ***	5.666 ***	6.537 ***	7.210 ***	7.785 ***	8.543 ***	9.732 ***	10.99 ***
	(−1.212)	(−1.055)	(−2.471)	(−1.775)	(−1.509)	(−1.294)	(−1.177)	(−1.13)	(−1.161)	(−1.353)	(−1.711)
Observations	939	939	939	939	939	939	939	939	939	939	939

Note: ***, ** and * indicate 1%, 5% and 10% significance level. Standard errors are in parathesis. Observation: 34 Welfare Countries.

These findings are parallel with the findings of Cigu [73] and Khan et al. [74]. Studies acknowledge that QOG promotes economic growth in welfare countries, but that strong QOG also highly prioritizes the redistribution of wealth, environmental, green growth and so on, which might reduce the growth rate. Therefore, the diminishing trends in growth in the upper quantiles might be caused by these reasons. Figure 4 shows that growth is weakening while QOG is improving.

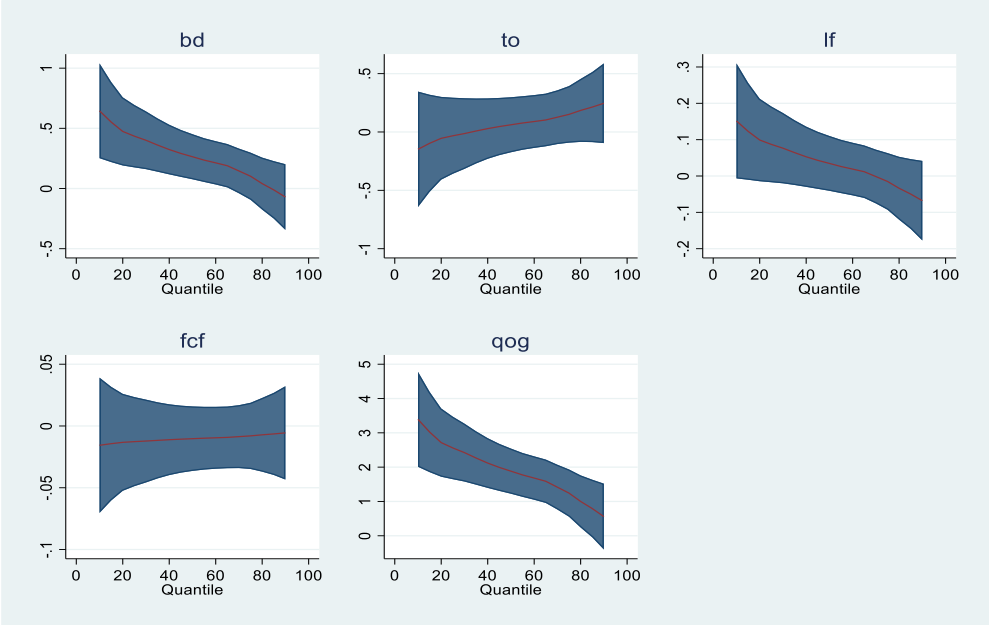

Figure 4. The Impact of QOG on Economic Growth in Welfare Countries Under Quantiles. Note: Vertical axis indicates the magnitude of coefficients and horizontal axis indicates quantile.

The estimations in Table 8 take the form $Q_{LGDPC}(\tau|BD, TO, LF, FCF, QOG) = \alpha + X'(BD, TO, LF, FCF, QOG)\beta + \sigma(\delta + Z'\gamma)q(\tau)$ for non-welfare countries. The coefficients

of all quantiles are positive and significant up to the 10% significance level. Where the exceptions are q10, q80 and q90, the significance level is 5%, 5% and 10%, respectively. In addition, the results are consistent from lower to upper quantiles. It implies that QOG has highly growth-enhancing effects in all quantiles in the context of non-welfare countries and brings stability to the economy; this result is in line with Arvin et al. [75]. However, the impacts of QOG are lower in non-welfare countries than in the welfare countries, as shown in Table 7. The results of Table 8 indicate that emerging and low-income countries need to focus more on QOG to improve the economic condition of their economy. In all quantities, as shown in Figure 5, QoG is quite favorable for economic growth.

Table 8. Impact of QOG on Economic Growth in Non-Welfare Countries.

Variables	Location	Scale	q10	q20	q30	q40	q50	q60	q70	q80	q90
BD	−0.210 ***	−0.057 ***	−0.114 **	−0.154 ***	−0.175 ***	−0.192 ***	−0.204 ***	−0.222 ***	−0.249 ***	−0.280 ***	−0.312 ***
	(−0.036)	(−0.022)	(−0.046)	(−0.038)	(−0.036)	(−0.035)	(−0.036)	(−0.037)	(−0.042)	(−0.049)	(−0.058)
TO	0.980 ***	−0.226 ***	1.357 ***	1.202 ***	1.120 ***	1.051 ***	1.006 ***	0.933 ***	0.827 ***	0.708 ***	0.580 ***
	(−0.061)	(−0.037)	(−0.079)	(−0.066)	(−0.061)	(−0.059)	(−0.060)	(−0.064)	(−0.073)	(−0.083)	(−0.098)
LF	−0.103 ***	−0.052 ***	−0.0147	−0.051 ***	−0.070 ***	−0.086 ***	−0.097 ***	−0.114 ***	−0.139 ***	−0.167 ***	−0.197 ***
	(−0.018)	(−0.011)	(−0.0236)	(−0.0198)	(−0.018)	(−0.018)	(−0.018)	(−0.019)	(−0.021)	(−0.025)	(−0.029)
FCF	−0.014 ***	0.0034	−0.020 ***	−0.017 ***	−0.016 ***	−0.015 ***	−0.014 ***	−0.013 ***	−0.0118 **	−0.00996 *	−0.00797
	(−0.004)	(−0.002)	(−0.005)	(−0.004)	(−0.004)	(−0.004)	(−0.004)	(−0.004)	(−0.004)	(−0.005)	(−0.006)
QOG	0.493 ***	−0.00678	0.504 **	0.499 ***	0.497 ***	0.495 ***	0.493 ***	0.491 ***	0.488 ***	0.484 **	0.481 *
	(−0.158)	(−0.095)	(−0.201)	(−0.167)	(−0.157)	(−0.154)	(−0.156)	(−0.163)	(−0.182)	(−0.213)	(−0.254)
Constant	6.611 ***	2.674 ***	2.138 ***	3.977 ***	4.955 ***	5.769 ***	6.311 ***	7.172 ***	8.433 ***	9.832 ***	11.36 ***
	(−0.503)	(−0.306)	(−0.655)	(−0.559)	(−0.505)	(−0.49)	(−0.497)	(−0.538)	(−0.613)	(−0.693)	(−0.80)
Observations	1091	1091	1091	1091	1091	1091	1091	1091	1091	1091	1091

Note: ***, ** and * indicate 1%, 5% and 10% significance level. Standard errors are in parathesis. Observation: 44 Non-Welfare Countries.

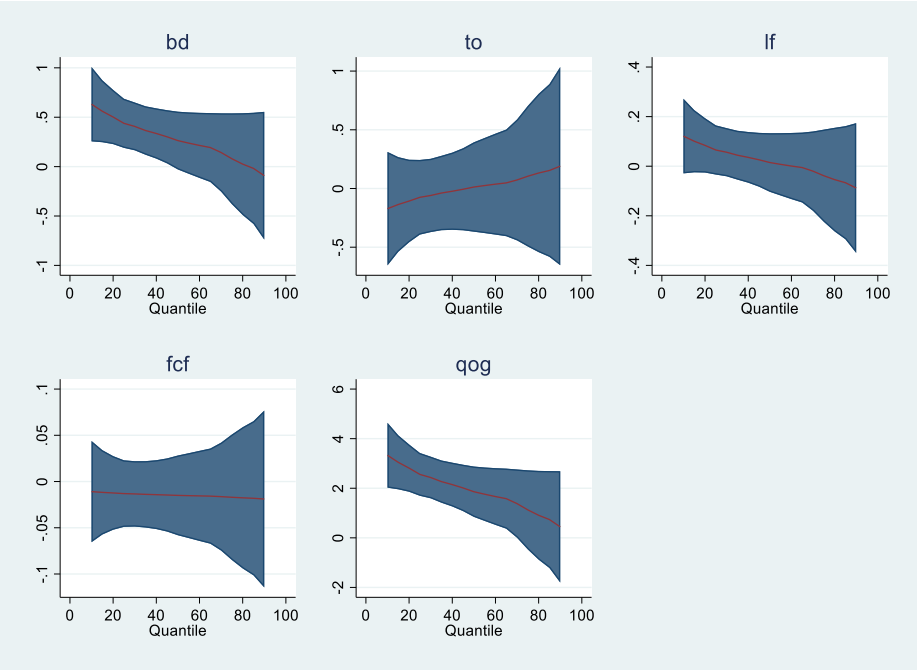

Figure 5. The Impact of QOG on Economic Growth in Non-Welfare Countries Under Quantiles. Note: Vertical axis indicates the magnitude of coefficients and horizontal axis indicates quantile.

Table 9 depicts the results of the combined sample, where the magnitudes of coefficients of QOG on economic growth are positive and significant in all quantiles by the 1% significance level. Table 9 further demonstrates that the lower quantiles have a stronger impact on economic growth than the upper quantiles. This finding thus implies that QOG significantly boosts economic growth in both welfare and non-welfare countries in all economic conditions. According to a recent study by Tran [76], QOG facilitates economic activity and lowers production-related impediments from all economic strata. The findings of these studies are similar to the current study. Figure 6 demonstrates that QoG is quite beneficial for economic growth in all quantiles.

Table 9. The Impact of QOG on Economic Growth in Welfare and Non-Welfare Countries.

Variables	Location	Scale	q10	q20	q30	q40	q50	q60	q70	q80	q90
BD	0.0825 **	−0.076 ***	0.213 ***	0.161 ***	0.125 ***	0.0926 ***	0.0638 **	0.0442	0.0256	0.00499	−0.0162
	(−0.034)	(−0.022)	(−0.062)	(−0.049)	(−0.041)	(−0.035)	(−0.032)	(−0.030)	(−0.030)	(−0.031)	(−0.033)
TO	0.356 ***	−0.285 ***	0.846 ***	0.651 ***	0.517 ***	0.394 ***	0.286 ***	0.213 ***	0.143 ***	0.0662	−0.0132
	(−0.057)	(−0.037)	(−0.105)	(−0.082)	(−0.070)	(−0.060)	(−0.054)	(−0.051)	(−0.051)	(−0.052)	(−0.055)
LF	−0.051 ***	0.0076	−0.0650 *	−0.0598 **	−0.0562 **	−0.052 ***	−0.050 ***	−0.048 ***	−0.046 ***	−0.044 **	−0.041 **
	(−0.019)	(−0.012)	(−0.034)	(−0.027)	(−0.023)	(−0.019)	(−0.017)	(−0.017)	(−0.017)	(−0.017)	(−0.018)
FCF	−0.026 ***	0.0035	−0.032 ***	−0.030 ***	−0.028 ***	−0.027 ***	−0.025 ***	−0.024 ***	−0.024 ***	−0.023 ***	−0.022 ***
	(−0.004)	(−0.002)	(−0.007)	(−0.006)	(−0.005)	(−0.004)	(−0.003)	(−0.003)	(−0.003)	(−0.003)	(−0.004)
QOG	3.316 ***	−0.0938	3.477 ***	3.413 ***	3.369 ***	3.329 ***	3.293 ***	3.269 ***	3.246 ***	3.221 ***	3.195 ***
	(−0.129)	(−0.084)	(−0.234)	(−0.186)	(−0.156)	(−0.134)	(−0.121)	(−0.116)	(−0.115)	(−0.118)	(−0.126)
Constant	6.603 ***	2.292 ***	2.669 ***	4.239 ***	5.315 ***	6.301 ***	7.165 ***	7.756 ***	8.315 ***	8.933 ***	9.571 ***
	(−0.51)	(−0.335)	(−0.931)	(−0.735)	(−0.623)	(−0.537)	(−0.481)	(−0.458)	(−0.455)	(−0.465)	(−0.497)
Observations	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030

Note: ***, ** indicate 1%, 5% significance level. Standard errors are in parathesis. Observation: 78 Welfare and Non-Welfare Countries.

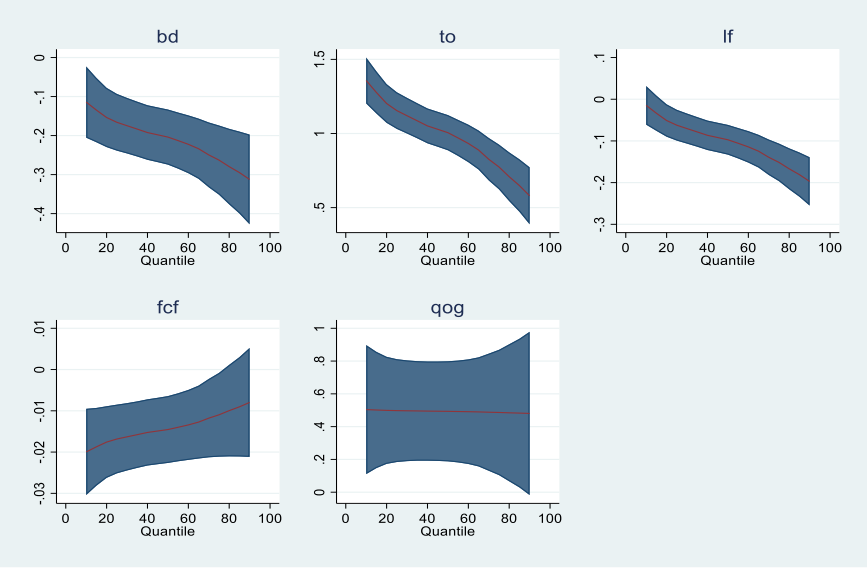

Figure 6. The Impact of QOG on Economic Growth in Welfare and Non-Welfare Countries Under Quantiles. Note: Vertical axis indicates the magnitude of coefficients and horizontal axis indicates quantile.

Table 10 demonstrates the coefficients of the moderating role of QOG in the nexus between budget deficit and economic growth in welfare countries. The estimations

take the form $Q_{LGDPC}(\tau|BD, TO, LF, FCF, QOG, BD * QOGbd, to, lf, fcf, qog, bd * qog) = \alpha + X'(BD, TO, LF, FCF, QOG, BD * QOG)\beta + \sigma(\delta + Z'\gamma)q(\tau)$ in welfare countries, where QOG has a moderating role. Table 10 reveals that the coefficients moderating the role of QOG for the first three quintiles are negatively significant up to the 10% significance level. Afterwards, the coefficients are insignificant from the medium to the top quantiles. The findings imply that, in the context of welfare countries, the nexus between the budget deficit and economic growth has negative and even no impacts when the QOG moderates the relationship. The level of governance in this group of nations is already high; thus, imposing stricter QOG norms and regulations may be the reason behind the detrimental impact on the growth–deficit connection. However, the findings are consistent with the prior studies of Mauro et al. [77] and Al Mamun et al. [78]. The relationship between BD and QOG is unfavorable for EG in welfare countries, as shown by Figure 7.

Table 10. The Moderating Role of QOG on the Nexus Between BD and EG in Welfare Countries.

Variables	Location	Scale	q10	q20	q30	q40	q50	q60	q70	q80	q90
BD	1.449	−0.386	2.085 ***	1.860 ***	1.695 ***	1.545 **	1.435	1.313	1.171	1.024	0.833
	(−0.931)	(−0.893)	(−0.789)	(−0.468)	(−0.508)	(−0.732)	(−0.944)	(−1.194)	(−1.499)	(−1.821)	(−2.246)
TO	−0.0326	0.122	−0.233	−0.162	−0.11	−0.0629	−0.0281	0.0102	0.055	0.101	0.162
	(−0.236)	(−0.227)	(−0.202)	(−0.12)	(−0.13)	(−0.188)	(−0.242)	(−0.307)	(−0.385)	(−0.468)	(−0.577)
LF	0.0442	−0.0526	0.131 *	0.100 **	0.0778 *	0.0573	0.0422	0.0257	0.00628	−0.0138	−0.0399
	(−0.079)	(−0.076)	(−0.067)	(−0.04)	(−0.043)	(−0.062)	(−0.080)	(−0.102)	(−0.128)	(−0.156)	(−0.192)
FCF	−0.00687	0.0052	−0.0154	−0.0124	−0.0102	−0.00817	−0.00667	−0.00504	−0.00312	−0.00113	0.00145
	(−0.028)	(−0.027)	(−0.024)	(−0.014)	(−0.015)	(−0.022)	(−0.029)	(−0.037)	(−0.046)	(−0.056)	(−0.069)
QOG	7.730 *	−1.918	10.89 ***	9.774 ***	8.952 ***	8.209 **	7.658 *	7.056	6.349	5.618	4.666
	(−4.491)	(−4.31)	(−3.806)	(−2.259)	(−2.45)	(−3.533)	(−4.555)	(−5.764)	(−7.235)	(−8.79)	(−10.84)
BD × QOG	−1.62	0.255	−2.040 **	−1.891 ***	−1.782 ***	−1.683 *	−1.61	−1.53	−1.436	−1.339	−1.212
	(−1.143)	(−1.097)	(−0.975)	(−0.577)	(−0.627)	(−0.907)	(−1.171)	(−1.481)	(−1.86)	(−2.26)	(−2.787)
Constant	3.162	2.872	−1.573	0.101	1.332	2.445	3.27	4.172	5.231	6.326	7.751
	(−4.438)	(−4.26)	(−3.733)	(−2.222)	(−2.406)	(−3.457)	(−4.454)	(−5.634)	(−7.071)	(−8.589)	(−10.59)
Observations	939	939	939	939	939	939	939	939	939	939	939

Note: ***, ** and * indicate 1%, 5% and 10% significance level. Standard errors are in parathesis. Observation: 34 Welfare Countries.

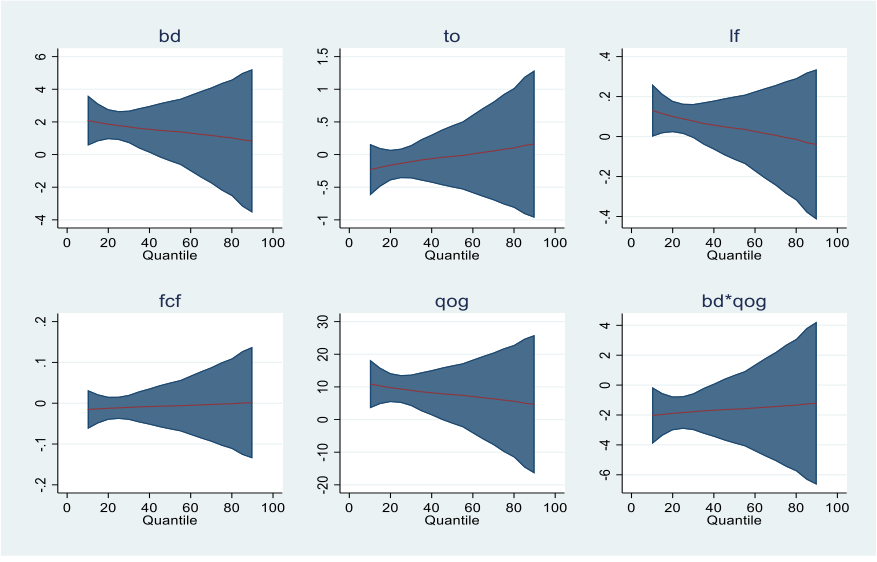

Figure 7. The Moderating Role of QOG on the Nexus Between BD and EG in Welfare Countries Under Quantiles. Note: Vertical axis indicates the magnitude of coefficients and horizontal axis indicates quantile.

Table 11 displays the moderating role of QOG on the connection between budget deficit and economic growth in non-welfare countries under various economic conditions. The magnitudes of the coefficients show that the results are highly positive and significant in all quantiles from lower to upper by the 1% significance level except the lowest quantile, which is insignificant. It implies that the nexus between budget deficit and economic growth works perfectly well when QOG actively works in non-welfare countries. The results are coherent with the number of previous studies by Erum and Hussain [79] and Liu et al. [80]. These studies admit that QOG assists the implementation of budget deficits fund in developing counties and promotes economic growth. Figure 8 illustrates that in non-welfare countries, the link between BD and QOG is quite favorable for EG.

Table 11. The Moderating Role of QOG in BD and EG nexus for Non-Welfare Countries.

Variables	Location	Scale	q10	q20	q30	q40	q50	q60	q70	q80	q90
BD	−0.735 ***	−0.288 ***	−0.243	−0.445 ***	−0.566 ***	−0.643 ***	−0.710 ***	−0.807 ***	−0.933 ***	−1.075 ***	−1.222 ***
	(−0.125)	(−0.075)	(−0.168)	(−0.139)	(−0.127)	(−0.124)	(−0.125)	(−0.13)	(−0.143)	(−0.163)	(−0.19)
to	0.918 ***	−0.279 ***	1.395 ***	1.199 ***	1.082 ***	1.007 ***	0.943 ***	0.848 ***	0.726 ***	0.589 ***	0.446 ***
	(−0.063)	(−0.038)	(−0.085)	(−0.072)	(−0.064)	(−0.062)	(−0.063)	(−0.066)	(−0.073)	(−0.083)	(−0.095)
LF	−0.118 ***	−0.065 ***	−0.0058	−0.052 **	−0.079 ***	−0.097 ***	−0.113 ***	−0.135 ***	−0.164 ***	−0.196 ***	−0.230 ***
	(−0.018)	(−0.011)	(−0.025)	(−0.021)	(−0.019)	(−0.018)	(−0.018)	(−0.019)	(−0.021)	(−0.024)	(−0.028)
FCF	−0.013 ***	0.004 *	−0.020 ***	−0.017 ***	−0.015 ***	−0.014 ***	−0.013 ***	−0.011 ***	−0.010 **	−0.00794	−0.00577
	(−0.004)	(−0.002)	(−0.005)	(−0.004)	(−0.004)	(−0.004)	(−0.004)	(−0.004)	(−0.004)	(−0.005)	(−0.006)
QOG	−2.505 ***	−1.277 ***	−0.326	−1.224	−1.757 **	−2.099 ***	−2.395 ***	−2.826 ***	−3.383 ***	−4.012 ***	−4.666 ***
	(−0.694)	(−0.419)	(−0.928)	(−0.767)	(−0.705)	(−0.688)	(−0.691)	(−0.719)	(−0.791)	(−0.906)	(−1.056)
BD × QOG	0.809 ***	0.339 ***	0.231	0.469 **	0.611 ***	0.701 ***	0.780 ***	0.894 ***	1.042 ***	1.208 ***	1.382 ***
	(−0.181)	(−0.109)	(−0.242)	(−0.2)	(−0.184)	(−0.179)	(−0.18)	(−0.187)	(−0.206)	(−0.236)	(−0.275)
Constant	9.038 ***	3.952 ***	2.294 **	5.071 ***	6.721 ***	7.782 ***	8.696 ***	10.03 ***	11.75 ***	13.70 ***	15.72 ***
	(−0.771)	(−0.465)	(−1.04)	(−0.887)	(−0.788)	(−0.76)	(−0.77)	(−0.819)	(−0.907)	(−1.012)	(−1.165)
Observations	1091	1091	1091	1091	1091	1091	1091	1091	1091	1091	1091

Note: ***, ** and * indicate 1%, 5% and 10% significance level. Standard errors are in parathesis. Observation: 44 Non-Welfare Countries.

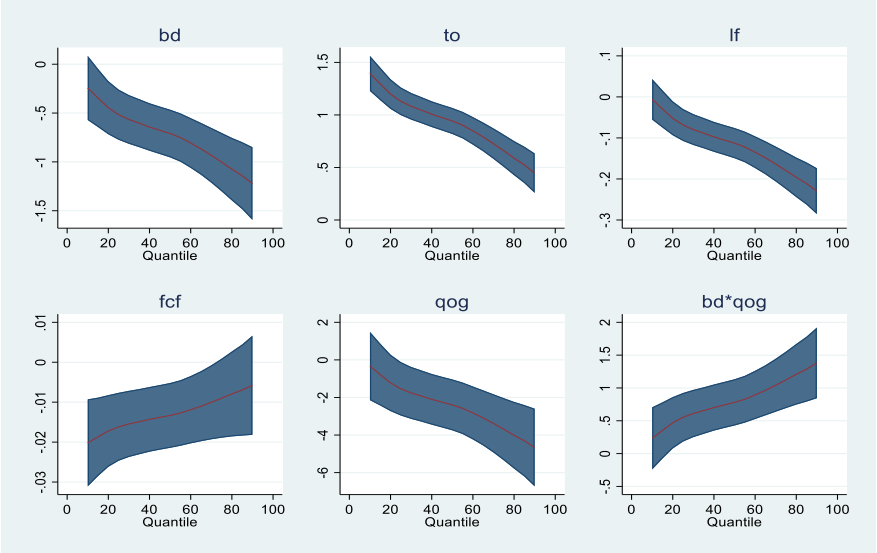

Figure 8. The Moderating Role of QOG on the Nexus Between BD and EG in Non-Welfare Countries Under Quantiles. Note: Vertical axis indicates the magnitude of coefficients and horizontal axis indicates quantile.

Table 12 depicts that when QOG moderates the nexus between budget deficit and economic growth in the context of the combined sample of welfare and non-welfare countries, the coefficients are highly positive and significant in all quantiles by the 1% significance level. The magnitudes of the coefficients are in rising mode from the lower quantile to the upper quantile. It indicates that budget deficit performs well for economic growth when the QOG moderates the relationship. This finding of the study is consistent with the studies by Bilgili et al. [53] and Cheng et al. [81]. The findings thus designate that, in order to fully benefit from the budget deficit fund and promote economic growth, the targeted countries must enhance or maintain a strong QOG. Figure 9 shows that in the combined sample, the mediation role of BD and QOG is somewhat advantageous for economic growth.

Table 12. The Moderating Role of QOG on the Nexus Between BD and EG in Welfare and Non-Welfare Countries.

Variables	Location	Scale	q10	q20	q30	q40	q50	q60	q70	q80	q90
BD	−0.782 ***	−0.11	−0.601 ***	−0.671 ***	−0.719 ***	−0.769 ***	−0.806 ***	−0.834 ***	−0.857 ***	−0.891 ***	−0.932 ***
	(−0.124)	(−0.083)	(−0.222)	(−0.178)	(−0.151)	(−0.128)	(−0.117)	(−0.112)	(−0.111)	(−0.115)	(−0.127)
TO	0.341 ***	−0.267 ***	0.779 ***	0.610 ***	0.491 ***	0.370 ***	0.282 ***	0.213 ***	0.158 ***	0.0763	−0.024
	(−0.057)	(−0.038)	(−0.105)	(−0.082)	(−0.070)	(−0.060)	(−0.054)	(−0.051)	(−0.051)	(−0.053)	(−0.060)
LF	−0.0740 ***	−0.00414	−0.0672 **	−0.0699 **	−0.071 ***	−0.073 ***	−0.074 ***	−0.076 ***	−0.076 ***	−0.078 ***	−0.079 ***
	−0.019	−0.012	−0.034	−0.027	−0.023	−0.019	−0.018	−0.017	−0.017	−0.017	−0.019
FCF	−0.025 ***	0.0025	−0.029 ***	−0.027 ***	−0.026 ***	−0.025 ***	−0.024 ***	−0.024 ***	−0.023 ***	−0.022 ***	−0.021 ***
	(−0.004)	(−0.002)	(−0.007)	(−0.005)	(−0.005)	(−0.004)	(−0.003)	(−0.003)	(−0.003)	(−0.003)	(−0.004)
QOG	−1.448 **	−0.187	−1.142	−1.26	−1.343 *	−1.428 **	−1.490 **	−1.538 ***	−1.576 ***	−1.634 ***	−1.704 **
	(−0.656)	(−0.443)	(−1.173)	(−0.941)	(−0.797)	(−0.679)	(−0.619)	(−0.595)	(−0.59)	(−0.61)	(−0.671)
BD × QOG	1.262 ***	0.0508	1.179 ***	1.211 ***	1.234 ***	1.257 ***	1.274 ***	1.287 ***	1.297 ***	1.313 ***	1.332 ***
	(−0.169)	(−0.114)	(−0.302)	(−0.242)	(−0.205)	(−0.175)	(−0.159)	(−0.153)	(−0.152)	(−0.157)	(−0.173)
Constant	10.23 ***	2.458 ***	6.202 ***	7.756 ***	8.847 ***	9.964 ***	10.78 ***	11.41 ***	11.91 ***	12.67 ***	13.59 ***
	(−0.727)	(−0.491)	(−1.313)	(−1.043)	(−0.887)	(−0.757)	(−0.687)	(−0.659)	(−0.653)	(−0.676)	(−0.753)
Observations	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030

Note: ***, ** and * indicate 1%, 5% and 10% significance level. Standard errors are in parathesis. Observation: 78 Welfare and Non-Welfare Countries.

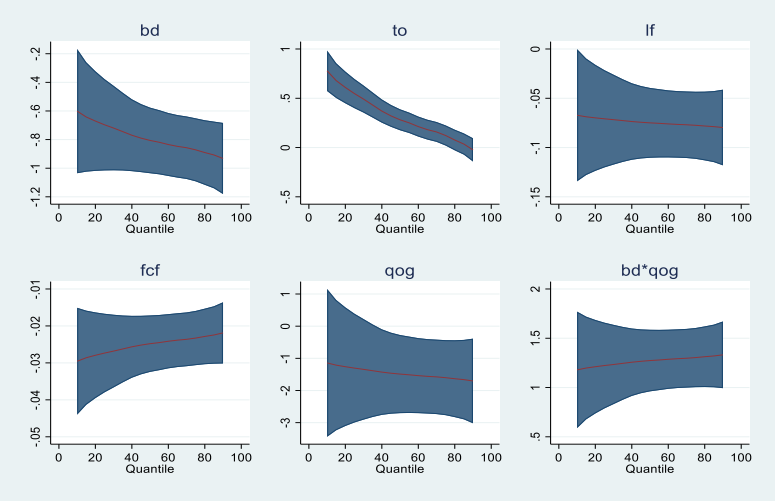

Figure 9. The Moderating Role of QOG on the Nexus Between BD and EG in Welfare and Non-Welfare Countries Under Quantiles. Note: Vertical axis indicates the magnitude of coefficients and horizontal axis indicates quantile.

5. Conclusions and Policy Implication

In order to improve the macroeconomic environment, welfare and non-welfare countries have frequently adopted budget deficits for decades. Because the effect of budget deficit on economic growth is debatable, we re-examine the issue while considering the role of QOG. Our analyses demonstrate that budget deficit benefits welfare countries, while hurting non-welfare countries in achieving sustainable economic growth. Existing studies claim that strong and poor fiscal management, and the presence of corruption, are the major factors that influence the disproportionate growth between welfare and non-welfare countries [22,81]. Additionally, both welfare and non-welfare countries grease up their economies quite effectively with the presence of QOG. A number of studies, including a study by Chu et al. [68], agree that strong governance removes barriers from the growth function and promotes economic growth. The result of this study also reveals that strict regulations and governance norms frequently enhance growth for non-welfare countries in most quantiles and occasionally inhibit growth for welfare countries; these findings are also parallel with Chu et al. [68] and Oliskevych et al. [69]. Finally, our research displays that the QOG plays a critical role in the relationship between economic growth and the budget deficit, and the study also indicates that the QOG promotes growth sustainability in both welfare and non-welfare countries.

Based on the results, we provide several policy implications. First, investigations show that budget deficit is positive for the sustainable economic growth of welfare countries, while being detrimental to non-welfare countries. Anecdotal evidence shows that the budget deficit encouraged the economy to escape the financial crisis in 2007−2009 and even during the COVID-19 pandemic for high-income welfare countries, according to Briceño and Perote [82]. On the other hand, an over-reliance on budget deficit has also invited macroeconomic crises for Greece and, most recently, Sri Lanka. Hence, policymakers should consider the feasibility of the budget deficit before adopting it for their country. Second, QOG has highly growth-enhancing impacts on welfare and non-welfare countries. Therefore, both groups of countries should prioritize keeping a strong level of QOG for sustainable economic growth. However, the coefficients for the moderating role of QOG in the deficit–growth nexus show that QOG demotivates growth activities in welfare countries, whereas it supports economic growth in non-welfare countries. Therefore, welfare countries should consider the negative effects of overly stringent QOG norms and regulations when developing governance policies because their level of QOG is already in a strong position. At the same time, the policymakers of non-welfare countries should improve and maintain a stable QOG to promote a sustainable economy using the budget deficit tool. The overall results suggest that the effectiveness of budget deficits in welfare and non-welfare countries varies, followed by the magnitude of QOG.

This study examines the effectiveness of the budget deficit in welfare and non-welfare countries. While the COVID-19 outbreak fosters the budget deficit once again, some countries are adopting an expansionary fiscal policy to mitigate the adversity of the ongoing pandemic in the economy.

However, the current study was unable to incorporate the global context. Hence, future studies can focus on the topic, looking at the short- and long-term implications of the pandemic-era budget deficit on economic growth, extending beyond the context of welfare and non-welfare countries. In addition, the current study was unable to assess the impact of various aspects of QOG on growth independently. Therefore, future research may investigate the issue using separate components of QOG in difficult samples, in order to provide additional insights into the growth–deficit nexus.

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Appendix A. List of Welfare Countries

According to the strong and weak positions of Subsidy and Other Transfers, Institutional Quality, and Human Development Index, the study determines welfare and non-welfare countries; this is also supported by the previous studies discussed in the 5th paragraph of the first section (introduction).

Welfare Country				
Number	Welfare Country	Mean of Subsidy and Other Transfers 1980−2019	Mean of Institutional Quality 1980–2019	Human Development Index Rank 2018
1	Germany	77.74632	0.9037699	13
2	Sweden	59.27613	0.9790344	4
3	Netherlands	71.11816	0.9727513	8
4	Norway	53.60084	0.9582341	3
5	France	41.74191	0.8214947	22
6	Denmark	22.81363	0.9854497	1
7	Belgium	77.4898	0.8825397	15
8	Finland	46.41814	0.9934193	2
9	Switzerland	73.67707	0.9286376	14
10	Austria	53.39842	0.9270502	9
11	New Zealand	41.22215	0.9667328	4
12	Iceland	32.92993	0.9768518	6
13	Canada	61.86312	0.9621032	10
14	Luxembourg	42.73016	0.9642225	6
15	Italy	43.14717	0.6682209	50
16	Spain	63.60914	0.7498347	26
17	Japan	55.50396	0.854332	17
18	Hungary	54.48836	0.7360449	40
19	Australia	51.0901	0.923082	12
20	Poland	43.78421	0.6650133	32
21	Slovenia	47.9727	0.6943866	32
22	Greece	37.81353	0.6550926	39
23	United States	54.05874	0.888492	19
24	United Kingdom	51.83525	0.9005291	15
25	Portugal	32.98378	0.7525132	25
26	Korea	53.35869	0.661541	31
27	Czech Republic	46.96547	0.7095798	30
28	Israel	31.97986	0.7690476	21
29	Estonia	60.34368	0.6320602	36
30	Slovak Republic	45.62233	0.6670673	27
31	Chile	47.98437	0.6847222	24
32	Ireland	38.67179	0.8592262	11
33	Lithuania	37.39502	0.5700232	43
34	Latvia	50.27287	0.6134259	36

Source: Author Compilations.

Appendix B. List of Non-Welfare Countries

Non-Welfare Country				
Number	Country	Mean of Subsidy and Other Transfers 1980−2019	Mean of Institutional Quality 1980–2019	Human Development Index Rank 2018
1	Turkey	49.0584	0.472222	59
2	Belarus	69.9517	0.399306	50
3	Russia	68.9008	0.333333	49
4	Argentina	65.4836	0.472222	48
5	Singapore	0.25921	0.861111	9
6	Ukraine	64.2913	0.388889	88
7	Cyprus	35.9262	0.833333	31
8	Kazakhstan	64.327	0.444444	50
9	Bahamas	26.3583	0.75	60
10	Malta	32.3342	0.722222	28
11	United Arab Emirates	21.102	0.694445	35
12	Croatia	41.657	0.666667	46
13	Georgia	52.948		70
14	Oman		0.611111	47
15	Bahrain		0.560185	45
16	Kuwait	16.5235	0.555556	57
17	Bulgaria	44.7161	0.453704	52
18	China		0.472222	85
19	Thailand	32.7645	0.416667	77
20	Mauritius	35.0349		66
21	Indonesia	54.6485	0.474537	111
22	Sri Lanka	35.1282	0.49537	71
23	Angola	19.4687	0.319444	149
24	Costa Rica	23.5461	0.5	68
25	Azerbaijan	41.9641	0.361111	87
26	Bhutan	7.14477		134
27	Guatemala	33.5265	0.418982	126
28	El Salvador	28.4693	0.388889	124
29	Dominican Republic	16.5458	0.324074	89
30	Jordan	29.8368	0.555556	102
31	Jamaica		0.541667	96
32	India	40.6923	0.631944	129
33	Kenya	30.6087	0.361111	147
34	Lebanon	37.1708	0.493056	93
35	Kyrgyz Republic	40.3144		122
36	Madagascar	28.9587	0.333333	162
37	Philippines	24.7748	0.527778	106
38	Nepal	61.7785		147
39	Moldova	55.0496		107
40	Pakistan		0.444444	152
41	Romania	33.424	0.416667	52
42	Seychelles	37.23		62
42	Egypt	37.2127	0.444444	116
44	Zambia	22.9836	0.444444	143

Source: Author Compilation.

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