



HETEROGENOUS IMPACT OF GLOBALISATION ON INCOME INEQUALITY IN TURKEY

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ABSTRACT

Theoretical claims about the globalisation-income nexus imply that globalisation in general benefits all groups of countries, that more integrated economies tend to grow faster and economic growth usually improves economic performance, social and political relations. However, previous literature shows opposite findings, globalisation drops developing countries into an income inequality trap. As a developing country, Turkey qualifies as one of the more unequal economies. In view of this, the study suggests the impact of globalisation on income distribution in Turkey is Heterogeneous by implementing Quantile Regression (QR) analysis. In doing so, the possibility of effects of globalisation on unequal explains two levels of the income distribution, namely high-level income and low-level income. This finding provides a thorough explanation for each quantile response from the income distribution. It was determined that the impact of globalisation on the low-income level is greater than the impact on the high-income level in Turkey. In rapidly growing unequal distribution, the income gap between low and high-income levels is even in decline. Thus, Turkey's government should pay greater attention to the low-income group in order to mitigate the negative effects of globalisation. As well as a policy recommendation, it is recommended that Turkey's governments to reform and welcome globalisation activities such as trade and FDI. Due to this suggestion, Turkey is highly recommended to well prepare training workers, education platforms and tariff deregulations. In sum, foreign financing and integration with the international capital markets will increase the productive capacity in the low-level income group.

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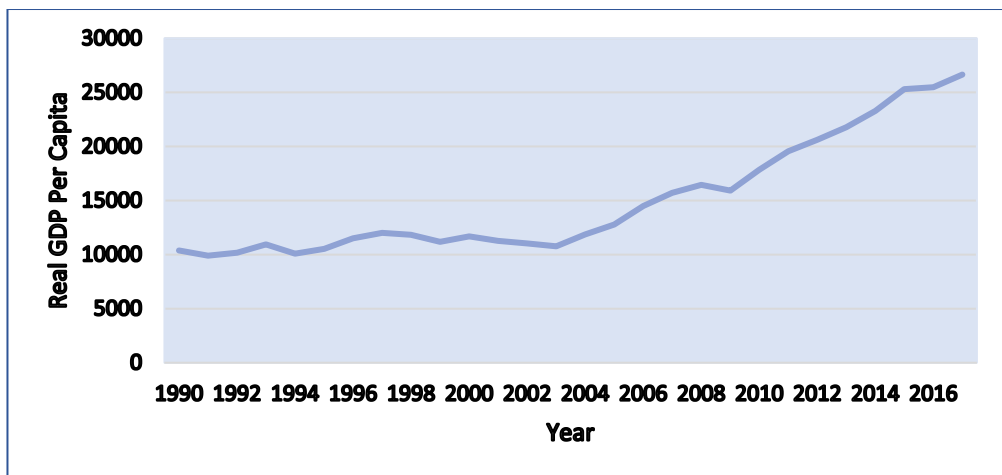
1. INTRODUCTION

Globalisation refers to the continuous paradigm shift of cross-border economic, social and politic (Celik & Baldes; 2010). It is furthered as a transfer channel of goods, services, labour, capital, and technology, seen to integrate the domestic market and individual into the international financial system. While this happens within global legal systems,

globalisation allows the countries to access foreign efficient technologies through international trade policies and foreign direct investment (FDI) (Choi, 2006; Lee et al., 2007; Meshi & Vivarelli, 2009; Ha, 2012). Moreover, in reality, the application is not easy like expected; it depends on the country's capability to absorb the process from globalisation. This capability includes changing people's habits and working environments around the world, bringing some new opportunities and challenges, and threats to others.

Turkey, being one of the developing countries, has high-income inequality (Kayıkçı, 2019). Indeed, Turkey is experiencing considerable economic growth and low inflation with macroeconomic stability in the last decades after many years of economic crisis and macroeconomic imbalances. When we analyse the current situation of inequality in Turkey, we see a high level of income inequality, with a 0.417 Gini coefficient index. Which is, Turkey qualifies as one of the more unequal economies (Yeldan, 2004; Oyvat, 2011; Betti, et al, 2013; Filiztekin, 2015; Sumer, 2016; Torul & Öztunalı, 2018; Altan, et al, 2018; Limanlı, 2019; Kayıkçı, 2019; Filiztekin, 2020). Furthermore, when the richest and poorest are divided into low-income and high-income level groups, an unequal gap emerges, as evidenced by the fact that affluent turkeys earned 8.3 times more than the poorest in 2019. Next, Figure 1 shows the real GDP per capita from 1990 to 2017. In 1990, real GDP per capita in Turkey was around 10371.07 USD. By 2017 it had risen to 26649.9 USD. Based on the development of real per capita GDP in Turkey with and without increasing globalisation. In 2016, real per capita GDP was 8,010 USD due to increasing globalisation compared to without increasing globalisation, real per capita GDP record as 7,600 USD.

Even so, Turkish citizens have not continually welcomed the dynamics of globalisation. Which is, globalisation has thrown up new challenges to Turkey to avoid environmental degradations, financial market volatility, and labour abuse. In order to explain the relationship between income distribution and globalisation, Figure 2 presents plotted data of real GDP per capita and economic globalisation in Turkey for the current year of 1990 to 2017. The scatter plot shows a positive slope or positive correlation in the relation of income and globalisation in Turkey.

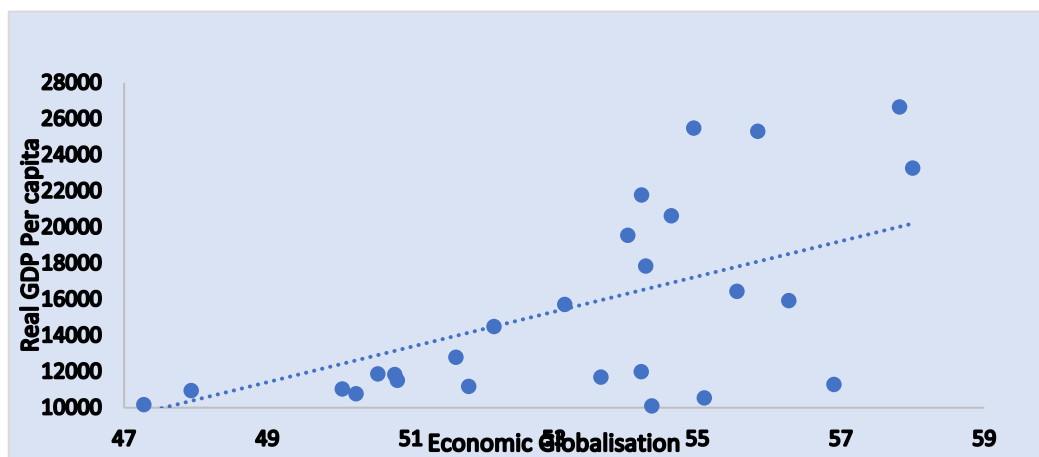


Source: Penn World Table

Figure 1: Real GDP per capita in Turkey.

However, there is a widespread notion that the economic impact of globalisation may be overestimated. There is growing concern that globalisation will make the distribution

of incomes worse and hamper poverty alleviation. It is thus important to conduct a more thorough and systematic analysis of the interaction between globalisation and income inequality, considering existing debates among the variables. Whereas, there is very little research on a globalisation-inequality nexus (Cornia, 2004; Oyvatt, 2011, Yilmaz & Sefil-Tansever, 2019; Erkul & Demir Erkul, 2019; Temilola Osinubi & Akanni Olomola, 2020; Osinubi & Olomola, 2021), there are no specific studies that explain the heterogeneous impact of globalisation on income distribution in Turkey. From an empirical point of view, analysis in Turkey has been done in the specific topic of financial development (Kocak et al., 2019; Topuz & Dağdemir, 2020), redistribution of assets (Kayıkçı, 2019), social assistance budgets (Tekgüç, 2018), the effect of CO₂ emission (Demir et al., 2019), public debt (Arslan, 2019), education (Öztürk & Kayaoğlu, 2016), tourism (Uzar & Eyuboglu, 2019), military spending (Elveren, 2012), household-level inflation (Kizilirmak & Akkoc, 2021), inflation and employment (Serin Oktay, 2019), homeownership (Dayioğlu & Başlevent, 2006) and foreign trade (Öz, 2017). Thus, using Quantile Regression (QR) analysis, we believe the impact of globalisation on unequal distribution is heterogeneous explain by low-level income and high-level income. With the expectation that low-level income will absorb globalisation more than high-level income. This paper empirically used quantile regression to prove the heterogeneous result of globalisation.



Sources: KOF Swiss Economic Institute

Figure 2: Real GDP per capita and economic globalisation.

2. LITERATURE REVIEW

Owing to the theoretical connection between inequality and growth, extended studies on the relationship between income inequality and globalisation are often linked to economic growth. Several studies hold divergent views on the relationship between these variables. There is scanty research on the role of globalisation on income inequality. The studies that examine these two roles only investigate the effect of globalisation on income inequality in different economies. Some of the studies affirm globalisation as a means of increasing income inequality (Choi, 2006; Dreher, 2006; Berg & Nilson, 2010; Ha, 2012; Park, K. 2020). Others argue that globalisation decreases income inequality (Adam, 2008; Celik & Baldes, 2010). Instantly, Bussmann et al. (2005) suggest that foreign direct investment to gross domestic product is unrelated to the distribution of incomes in both developing and developed countries. By the same token, Macdonald and Majeed (2010) show that trade as a part of globalisation has no significant effect on income inequality. Evidence from literature reveals that globalisation has both positive and negative effects

on income inequality. Empirically, the significant impact of globalisation also differs for different country groups such as advanced countries and developing countries (Çelik & Basdas, 2010; Heimberger, 2020). It was reported in the literature that globalisation is associated with increasing inequality in most advanced economies but with falling disparities for the large majority of emerging economies (Heimberger, 2020).

Baek & Shi (2016) decomposes economic globalisation into trade intensity and financial integration. This finding suggests that trade intensity would widen income inequality in developed countries, or else it could reduce the inequality in developing countries. Latterly, the influence of financial integration would reduce the income inequality in developed countries; otherwise, it increases the inequality in developing countries. Equally important, in developing countries, the level of income may read low-level level income and high-level income follow the range of distribution. This was successfully established as described by Cabral et al. (2016) evince the Globalization index has a large impact on high-level income countries than in low-income countries. Even so, the globalisation index seems to matter only in low-level income countries (Berg & Nilsson, 2010). While this is the case, Macdonald and Majeed (2010) claiming particular globalisation has a favourable effect on income distribution at the high-income level.

To consider the impact of income inequality at the low and high-income levels, which may be heterogeneous and not well explained by the single Gini coefficient Wu (2009). In order to address the heterogenous impact on distribution, the Gini coefficient in index value 0 to 1, not favourable to read the level of income distribution like real GDP per capita. This has been discussed by a great number of authors in literature who applied household survey & GDP per capita to explain differences effect on income distribution (Lindert, 2000; Alves, 2012; Widyanti, 2018). Distribution of Income in terms of real GDP per capita may result from the selection of globalisation index (overall or economic, social and political), the countries involved and the period considered (Dreher, 2006; Rao et al., 2011; Maqbool-ur-Rahman, 2015; Elsherif, 2016). Adopts this frame of analysis by Lee (2014) to argue financial globalisation increases income inequality. Heimberger (2020) proved this finding, who makes a comparison between trade and financial globalisation found that the effect of trade globalisation is small, financial globalisation shows a more sizeable and significantly stronger toward inequality. Moreover, the effect of trade ever small, trade globalisation significantly reduces income inequality compared to financial globalisation significantly increase income inequality in the presence of improved institutional quality significantly (Osode et al., 2020).

3. METHODOLOGY

This study was to examine the impact of globalisation on income inequality. Specifically, the study evaluated the possibility of any differential effect of globalisation on different levels of income in Turkey. The following sub-sections explain the estimated model and dataset used to test this objective.

3.1 Model specification

To test the impact of globalisation on income inequality, a model that is broadly similar to other works (e.g. Dreher, 2006) was used. The baseline model is expressed by Equations (3.1) below:

$$Y_{it} = \beta_0 + \beta_1 KOFEC_i + \beta_2 X_i + \varepsilon_i \quad (3.1)$$

Where Y is the real income per capita, KOFEC is an index of economic globalisation. In addition to this broad index, more specific indices for trade and financial globalisations are also used. Meanwhile, X denotes a set of control variables that are hypothesised to affect income, and ε is the usual error term. The coefficient of interest throughout the paper is β_1 , which measures the impact of economic globalisation on income. The variables included in vector X are selected based on the previous empirical works (see, for example, Tsai, 1995; and Ezcurra and Rodriguez-Pose, 2013). This includes the growth rate of population (POP), gross capital formation (IGCI), and human capital Index (IHCI). All data are transformed into the logarithmic form prior to the analysis except for population growth.

3.2 Quantile regression

Methodologically, this paper used quantile regression (QR) as an approach to estimate the impact of globalisation on income inequality (Dreher, 2006). This estimation introduced by Koenker and Basset (1978) proposes quantile regression to analyse the conditional quantiles of a dependent variable using covariates. Conditional median regression commonly functions in the middle of the quantile. According to Koenker and Basset (1978), the model can be expressed using Eq. (3.2):

$$\text{Log } Y_{it} = x_{it}\beta_{\theta} + \mu_{it\theta} \quad (3.2)$$

In particular, $Q_{\theta}(\log Y|x_i) = x_i\beta_{\theta}$ indicates the θ_{th} ($0 < \theta < 1$) quantile of the conditional distribution of Y_i given the known vector of regressors x_i , with the θ_{th} value ranging between 0 and 1. In this paper, regression analyses were performed for nine different quantiles of the income per capita (i.e. 10_{th}, 20_{th}, 30_{th}, 40_{th}, 50_{th}, 60_{th}, 70_{th}, 80_{th}, and 90_{th} percentile). In this scenario, $\beta(q)$ denotes the vector of parameters to be estimated at a particular value of the quantile of the distribution q . The coefficient of β forms a quantile regression in θ_{th} to minimise any errors, with θ describing a positive error and $(1 - \theta)$ describing a negative error. Meanwhile, u_i is the error term that is assumed to be independently and identically distributed around zero. To be more precise, Eq. (3.4) defines the quantile regression model as follows:

$$\hat{\beta}^{Min}_{\beta} \{ \theta \sum_{it: \log Y_{it} \geq x_{it}} | \text{Log } Y_{it} - x_{it}\beta_{\theta} | + (\theta - 1) \sum_{it: \log Y_{it} < x_{it}} | \text{Log } Y_{it} - x_{it}\beta_{\theta} | \quad (3.3)$$

Equation (3.3) can be transformed into Eq. (3.5)

$$\text{Min}_{\beta \in R^k} \sum_{it} \rho(\log Y_{it} - x_{it}\beta_{it}) \quad (3.4)$$

where,

$$p_{\theta}(\mu_{it}) = \theta \mu_{it} \text{ if } : \mu_{it} \geq 0 \quad (3.5)$$

$$p_{\theta}(\mu_{it}) = (\theta - 1) \mu_{it} \text{ if } : \mu_{it} < 0 \quad (3.6)$$

Where $p_{\theta}(\mu_t)$ denotes the check function in Equations (3.5) and (3.6), where the error term is defined as $\text{Min}_{\beta \in R^k} \sum_i \rho(\log Y_i - x_i\beta_i)$. The QR analysis has several advantages over the typical mean regression estimation method. In the QR approach, conditional quantiles are used as a function of the estimator to minimise the sum of absolute residuals.

Moreover, the impact of the covariates in each quantile distribution of inequality is absorbed.

In this framework, the impact of globalisation income inequality was evaluated by assessing the value of estimated coefficients at the 10th and 90th quantiles. For instance, if the impact was negative (i.e. reducing income) at the 0th quantiles and positive (i.e. increasing income) at the 90th, this is evidence that globalisation has led to increased income inequality.

3.3 Description of data and estimation strategy

This study focused on Turkey's country data from 1990 to 2017. As a proxy of income distribution real GDP per capita is used. This real GDP per capita data has been collected from the Penn World Table. We use the KOF index of globalisation constructed by Dreher (2006) and updated by Dreher and Gaston (2008). The index is a ranking of the most global countries based on three dimensions of globalisation: economic globalisation, social globalisation, and political globalisation. It measures globalisation on a scale from 1 to 100, whereas higher values indicate more globalisation.

In this study, we focus only on the economic globalisation index, which is constructed using eight variables associated with different dimensions of economic integration. This includes trade, foreign direct investment, portfolio investment, income payment to a non-resident, hidden import barriers, mean tariff rate, taxes on international trade, and capital account restrictions. These data are aggregated into two sub-indexes (i.e. financial and trade globalisation) and one overall index of economic globalisation. In addition to the overall index of economic globalisation, this study also employs sub-indexes of trade and financial globalisation. For the control variables, this paper uses the population growth rate, which is explained by the annual population growth rate, including all residents regardless of legal status or citizenship—this data collected from the World Development Indicators database. Next, the Human capital index based on the average years of schooling included the rate of return to education. Gross capital formation comprises outlays on additions to the economy's fixed assets plus net adjustments in the level of inventories. Both of these variables were collected from Penn World Tables.

4. RESULT

Commonly, empirical findings show the effects of globalisation on income distribution in Turkey. The first step in the analysis is to estimate the fitted model using a quantile estimator to test for heterogeneous impact on income distribution. Tables 4.1 and 4.2 show the results. Table 4.1 shows the results of the overall index of economic globalisation. The results of pooled OLS estimation are also provided in the table for comparison purposes. The OLS results show that the variable of interest KOFEC is statistically significant at the 1 percent level, implying that globalisation of economic activities will improve income (Ha & Kim, 2004; Jensen & Rosas, 2007; Adam, 2008; Celik & Baldes, 2010; Nathan, 2018). Additionally, all other coefficients are found to be statistically significant at the usual level. In order to control for the distributional heterogeneity, the quantile estimator suggested by Koenker and Bassett (1978) was used.

Table 4.1 reveals the quantile regression estimation results for the 10th, 20th, 30th, 40th, 50th, 60th, 70th, 80th, and 90th percentiles of the conditional per capita income distribution. Clearly, the overall results of quantile regression reveal that the impacts of various factors on per capita income are heterogeneous, depending on the level of income per capita. In the case of KOFEC, the coefficients are positive and statistically significant at the usual level at all quantiles. Identically, a closer observation reveals that the magnitude of the impacts on income is heterogeneous in Turkey. Specifically, the effects

of KOFEC on income are greater at low-income levels (i.e. 20th quantiles) than at high-income levels (i.e. 80th). A formal test of slope equality confirmed that there is a differential effect across low and high quantiles. This indicates that globalisation benefited the low-income level more than the high-income level (Berg & Nilsson, 2010; Ezcurra & Rodreiguez, 2013). This finding also consistent with the view that economic globalisation has actually reduced the income gap (Wei & Wu, 2001; Jalil, 2012; Pleninger & Sturm, 2020). The other results for the control variables included in the model are also informative. First, we observe that the impact of gross capital information on income follows a similar pattern to globalisation as the positive impact on the low-income level is more than the impact on the high-income level, which would reduce the income gap. Hence, the impact of the human capital index shows the impact of a low-income level higher than high-level of income, though not in the huge difference, will improve the income (Castelló & Doménech, 2002; Huang et al., 2016; Berthelon et al., 2017; Tu et al., 2020; Nandelenga & Oduor, 2020; Le, 2021).

The inter-quantile tests are performed to verify the heterogeneity of the estimated parameters. The inter-quantile tests are developed to examine whether the differences among the estimated coefficients are significant across quantiles. Wald tests are used to examine slope equality across quantiles, as suggested by Koenker and Bassett (1982). The variance-covariance matrixes of the corresponding coefficients are obtained via the bootstrap procedure. The results of the test of equality of the coefficients and suggest that there is some evidence of slope inequality as the null of parameter homogeneity can be rejected at the 5% level for the 20th vs 80th quantile. Heterogenous impact explains, while 20th as lowest quantile different from quantile at a higher level at 80th quantile.

The economic globalisation index can be separated into two parts: trade and financial globalisation. As a result, the next logical step is to investigate the effects of both financial and trade factors separately. The results of quantile regressions using the trade and financial globalisation index are shown in Table 4.2. The results of the pooled OLS estimate are also provided for reference. The result indicates that the KOFTRI (Trade Globalization) coefficient is negative and significant, implying that trade globalisation is detrimental to nations. However, the results of KOFFI (Financial Globalization) show that it is beneficial to growth (Wei & Wu, 2001; Cabral et al., 2016; Munir & Bukhari, 2020;). Furthermore, all other coefficients are statistically significant at the standard level. The result of quantile regression reveals that the coefficients on KOFTRI are all negative across different quantiles with a bigger magnitude at the lower quantiles.

Further test on slope equality suggests that the null can be rejected at the 5% level. This implies that the negative impacts are stronger at the lower quantiles, which suggests that trade globalisation has actually widened the income gap. Trade reduces more unequal income in the low-level income group than high-level income group. In this condition, trade with high-income level worsens income distribution in developing countries supported the previous result by Meshi & Vivarelli (2009), support the hypothesis that technological differentials and the skill-biased nature of new technologies may be important factors in shaping the distributive effects of trade.

Table 4.1: Quantile regression estimation (Economic globalisation).

VARIABLES	(1) OLS	(2) q10	(3) q20	(4) q30	(5) q40	(6) q50	(7) q60	(8) q70	(9) q80	(10) q90	20 vs 80
lhci	2.609*** (0.170)	2.327*** (0.213)	2.268*** (0.227)	2.469*** (0.235)	2.579*** (0.233)	2.577*** (0.261)	2.603*** (0.306)	2.784*** (0.255)	2.662*** (0.249)	2.869*** (0.318)	0.023
lgci	0.393*** (0.0567)	0.507*** (0.0942)	0.565*** (0.108)	0.429*** (0.104)	0.366*** (0.0965)	0.374*** (0.0775)	0.369*** (0.0766)	0.404*** (0.0823)	0.384*** (0.109)	0.265* (0.146)	0.026
pop	0.404*** (0.0677)	0.476*** (0.0945)	0.380*** (0.115)	0.384*** (0.109)	0.282** (0.111)	0.301** (0.107)	0.252** (0.113)	0.357*** (0.114)	0.457*** (0.108)	0.387*** (0.0989)	0.057
KOFEC	0.491*** (0.160)	0.589** (0.214)	0.602** (0.245)	0.486*** (0.266)	0.409*** (0.278)	0.411*** (0.283)	0.365*** (0.349)	0.381*** (0.353)	0.229** (0.371)	0.101*** (0.493)	0.032
Constant	3.860*** (0.631)	3.148*** (0.830)	3.110*** (1.000)	3.873*** (1.152)	4.475*** (1.240)	4.419*** (1.223)	4.682*** (1.444)	3.836** (1.498)	2.479 (1.598)	4.122* (2.163)	
R-squared	0.977										

Note: The table reports the quantile estimates and the numbers in parentheses indicate the bootstrapped standard errors. ** significant at 1% ***significant at 5% *significant a

Table 4.2: Panel quantile regression estimation (Trade globalisation; financial globalisation).

VARIABLES	(1) OLS	(2) q10	(3) q20	(4) q30	(5) q40	(6) q50	(7) q60	(8) q70	(9) q80	(10) q90	20 vs 80
lhci	2.975*** (0.136)	3.163*** (0.223)	3.009*** (0.213)	3.018*** (0.204)	2.882*** (0.250)	2.845*** (0.286)	3.192*** (0.297)	3.114*** (0.274)	3.121*** (0.306)	3.141*** (0.353)	0.039
lgci	0.283*** (0.0582)	0.289*** (0.0607)	0.301*** (0.0503)	0.302*** (0.0565)	0.342*** (0.0666)	0.340*** (0.0784)	0.250** (0.112)	0.284** (0.112)	0.260 (0.159)	0.0415 (0.178)	0.027
pop	0.345*** (0.0707)	0.235*** (0.0478)	0.269*** (0.0516)	0.258*** (0.0812)	0.245*** (0.0730)	0.279** (0.114)	0.302 (0.188)	0.339* (0.182)	0.385* (0.204)	0.326* (0.179)	0.042
KOFTRI	-0.137 (0.117)	-0.336* (0.164)	-0.243 (0.167)	-0.253 (0.181)	-0.155 (0.212)	-0.0594 (0.266)	-0.239 (0.320)	-0.218 (0.312)	-0.0266 (0.336)	-0.0687 (0.335)	0.046
KOFFI	0.423*** (0.116)	0.409*** (0.0981)	0.471*** (0.0673)	0.473** (0.169)	0.510*** (0.162)	0.490** (0.176)	0.543* (0.276)	0.470 (0.341)	0.0689 (0.425)	0.0291 (0.475)	0.034
Constant	4.854*** (0.663)	5.664*** (0.990)	5.084*** (0.893)	5.127*** (0.952)	4.590*** (1.095)	4.285*** (1.460)	4.805** (2.070)	4.910** (2.007)	5.755** (2.174)	5.854** (2.170)	
R-squared	0.980										

Note: The table reports the quantile estimates and the numbers in parentheses indicate the bootstrapped standard errors. ***significant at 1% **significant at 5% *significant at 10

5. CONCLUSION

This study is an extension of a previous study that claimed globalisation increased income inequality in Turkey. As a developing country, Turkey faces the challenge of worsening unequal distribution, in division of high-income and low-income levels. This finding provides a thorough explanation for each quantile response from the income distribution. It was determined that the impact of globalisation on the low-income level is greater than the impact on the high-income level in Turkey. In rapidly growing unequal distribution, the income gap between low and high-income levels even in decline. Thus, Turkey's government should pay greater attention to the low-income group in order to mitigate the negative effects of globalisation. As well as a policy recommendation, it is recommended that Turkey's governments to reform and welcome globalisation activities such as trade and FDI. Due to this suggestion, Turkey is highly recommended to well prepare training workers, education platforms and tariff deregulations. In sum, foreign financing and integration with the international capital markets will increase the productive capacity in the low-level income group.

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