



## **Analyzing the Effects of Fiscal Policy on Income Distribution: A Comparison between Developed and Developing Countries**

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### **ABSTRACT**

The study examines the effect of fiscal policy on income distribution in developed and developing countries. The study analyzes the explanatory power of tax and transfers on income inequality in 17 developing and 30 developed countries in between 1990 and 2014 by using linear panel data estimation techniques. According to the findings, tax revenues decrease income inequalities in developing countries while social benefits decrease income inequality in developed countries. Also, the economic growth has negative impact on income distribution in developing countries whereas the economic growth and inflation have positive impact on income distribution in developed countries.

**Keywords:** Fiscal Policy, Income Distribution, Tax and Expenditure Policy

**JEL Classifications:** D63, D31, H20

### **1. INTRODUCTION**

Nowadays equalities in income distribution have become an important research topic of modern macroeconomics. Even in countries taking place within the group of developed ones where welfare state applications are common, some deterioration has been experienced in distribution indicators. Studies analyzing OECD countries determine that while the Gini coefficient was 0.29 in the mid-1980's, it has increased to 0.32 in 2011/12 (OECD, 2012). Apart from a few exceptions in developing countries, income distribution inequalities—which are already higher than developed countries—continue to increase.

The deterioration in income distribution might arise from the distribution of income in factor markets and/or from the redistribution of income with the fiscal policy. Especially the fact that states have lost their elasticity in using the fiscal policy during the globalization process is argued to decrease the redistribution power of the state as an actor which decreases the income inequalities of the market. The deterioration effect of other factors on income distribution such as growth, inflation and unemployment, has become an important discussion topic especially following the global recession.

On the other hand, the reasons exclusive to developing countries in terms of the inequalities in income distribution shall also not be disregarded. The main characteristics differentiating developing countries from developed ones with regards to inequalities in income distribution are the narrow tax base of these countries, the low level of unregistered employment as well as the low level of social transfer.

In this study, the effects of fiscal policy on income distribution are explained through a comparison made between developed and developing country groups. It is seen that studies conducted in this subject focus mostly on developed countries. The fact that a limited number of studies have been conducted in developing countries unlike the group of developed countries might be explained with the lack of data. The purpose of this study is to determine similar factors explaining income inequality in both country groups and to distinguish the different ones according to their significance level. In this framework, the study has contributed to the studies as comparing the distributional effects of taxes and expenditures in developed and developing countries. The current study differs from the previous studies in terms of revised data set and the analysis of multiple variables. In this study, the direct effects of taxes and expenditures on income distribution have been discussed while the indirect effects of

government policies through changes made in relative prices and in household behaviors have been disregarded.

The second and third section of the study reveal the theoretical and empirical literature. In the fourth section, the model and data have been analyzed. In the last section, the evaluation and conclusions of the study take place.

## 2. THE THEORETICAL LITERATURE

According to Kuznets (1955), the two important factors affecting the gross income distribution are savings and economic growth. As to him, while income inequalities increase during the first phases of economic growth, income distribution tends to get even fairer as economic growth continues and the country gets further developed. The increase of the Gini coefficient in developing countries is explained in this context. In addition to a wide literature concerning the validity of the relationality named inverted-U, counter studies also exist. Bourguignon and Morrison (1990) point out that the importance of income factors decrease when variables such as the education level are incorporated. More important are the increases in the inequality levels of many developed countries such as the USA and England, experienced in the recent period.

Nowadays, the role of regional economic development- based on trade, technological change and interregional wage differentials-on income distribution inequalities is being analyzed. Especially in developed countries, the role of wage differentials in explaining income distribution inequality is appreciated to be important. Atkinson (1997) points out that in England, there are clear findings on the differences related to the distribution of wages. While real earnings increased by 11% in the lowest income bracket between the years 1979-1995 in England, they increased by 50% in the highest income bracket. In addition to the increased differential experienced between the earnings of the employed population in this country, the increasing importance of self-employment as well as the increasing number of households having no employment income take place among factors affecting the deterioration in income distribution. With regards to those who are not employed, social security is the main source of income. At this stage, the distributional effect of the state comes into play, expressed as the difference between the market income and the income after taxes and transfers. Until the first half of the 1980s, the Gini coefficient of the market income increased sharply while coefficients of incomes obtained after taxes and transfers had a milder increase. After 1984, an exact opposite situation has been experienced. According to Atkinson (1997), the striking decrease occurring in the re-distribution effect of transfers and direct taxes after this date, is the result of political changes that have contributed to income inequality.

Indeed, the role played by the state in re-distributing the income and contributing to development during the 1950s and 1960s has undergone a radical change starting from the 1970s. Theories defining the redistributive interventions of the state as an inefficiency area have a significant impact lying at the bottom of this change. During this period, theories of Laffer and Laviatan suggesting that high tax rates dissuade economic activities

have especially gained wide currency. With Musgrave (1959), the economic interventions of the state, which were valid until the 1970s, had become a part of the theory under the famous stabilization, allocation and distribution branches of government. Here, allocation efficiency and distributive justice are defined as the conflicting areas between the purposes of the state. During the last years, it has been suggested that redistribution and efficiency might not always be conflicting, that in other words, there might not be a trade-off between them. Boadway and Keen (2000) explain situations where redistribution might in fact be efficiency-enhancing in the economic process. Especially, those are aid programs devoted to poor people and Pareto improvements creating efficiency gains in social security.

Recently, tax and expenditure programs that might enhance the related efficiency and their regional and territorial differences are being modeled. When we consider this situation together with the approach arguing that the redistributive effects of taxes and transfers depend on their magnitude, composition and the progressive nature of each component; the necessity of analysis based on multi-factors becomes evident.

## 3. THE EMPIRICAL LITERATURE

The magnitude of the redistributive interventions of the state and the mechanisms used in this respect are the areas where empirical studies concentrate. In OECD countries, it has been calculated that the inequality after taxes and transfers was 25% lower than the inequality before taxes and transfers at the end of the 2000s for the OECD average (OECD, 2012). 3/4 of the decrease in the inequality is explained by transfers while the rest is explained by direct taxes towards households (Joumard and Pisu, 2012; OECD, 2012). Especially cash transfers constitute the most important item leading to a decrease in the inequality (about 19%) measured as the decrease in the market income concentration before and after transfers. Payments made to pensioners have the highest share in cash transfers. During the studies, the reasons explaining the limited redistributive effect of taxes have been mentioned as the use of consumption taxes and social security payments instead of progressive income tax, the limited progressivity of the tax tariff and the fact that tax expenditures provide advantage over high income families.

Similarly, Bastagli et al. (2008) put forth that the redistributive effect of the fiscal policy was getting realized in terms of the expenditures and transfers of the budget. According to Prasad (2008), a strong and negative relation exists between social transfer expenditures and inequality in developed countries. More than half of the redistributive effects of social transfers (80% in Switzerland and 70% in Germany) derive from pension benefits.

Niehues (2010) analyzed the social expenditure categories that are effective in decreasing income inequality for the EU countries. According to this study, social benefits are not an effective category of social expenditures for decreasing income inequality while payments related to social security, such as unemployment and pension payments seem to be more efficient. On the other hand, it has been determined that mean-tested benefits have an increasing

effect on income inequality emerging after tax and expenditures and not a decreasing effect.

Fuest et al. (2010) analyzed the effects of the tax and benefit system on income distribution in the EU countries based on the sequential accounting approach and the factor source decomposition approach. According to the first approach, social benefits are the most important factor on inequality. As to the second approach, social benefits are negligible and sometimes they have a slightly positive effect on inequality. Here taxes and social contributions are the most important factors contributing to the decrease of inequality. Authors explain this opposite result with the different normative focus points of these two approaches and especially argue that social benefits have objectives different than redistribution.

Gregorio (2002) examined the effect of education and social expenditures on income distribution between 1960 and 1990 in African, Asian, Latin American and OECD countries. The findings of the study reveal that education and social expenditures have an improving effect on income distribution. Nevertheless, in addition to these items, income factors also play a moderate role in explaining the differences among countries and these variables cannot explain the major part of the inequality among countries.

On the other hand, Prasad (2008) made a comparison between six Latin American countries and the OECD countries with regards to the effect of taxes and expenditures on income inequality. According to this study, income inequality only decreased by 1.4 points through taxes and expenditures in Latin American countries while it decreased by 16 points in OECD countries. The contribution of direct taxes to inequality has only been a decrease of 0.6% in the Gini coefficient. Indirect taxes such as the value added tax, customs duties and import tariffs have increased income inequality by 0.5 points.

In another study (Mahler and McKeever, 2009) a comparison has been conducted between market income inequality and disposable income inequality in more than 100 developed and less-developed countries for a period of 25 years. According to this study, the Gini coefficient of the market income increased by 68 Gini points since 1980 while it increased 38 points after the state intervention. These results reveal that the redistribution policies of the state do not progress at the same level with the market income increase. Furthermore, while the market income increases by 64 point in developed countries and by 70 points in developing countries, the ratios are respectively 26 and 44 following the state intervention. This situation shows that in comparison to developed countries, the state is more efficient in redistribution in developing countries.

In a study conducted over 150 developed and developing countries between the years 1970 and 2009, Martinez-Vazquez et al. (2012) examined the tendency of the tax and expenditure policy in changing the inequality trends. Authors presented findings on the redistributive effects of especially health, education, housing and social security expenditures. Taxes have a very low redistributive effect, especially in developing countries. Finally, as mentioned earlier, the study points out that financial instruments based on

expenditures are more efficient in decreasing income inequality, compared to the financial instruments taking place at the income side of the budget.

Cevik and Correa-Caro (2015) analyzed the effects of the fiscal policy on income distribution in China, BRIC countries together with 30 developing countries. In contradiction to other studies, in this analyze it has been determined that while public expenditures had an aggravating effect on income distribution in those countries, taxation had an improving effect. While the redistribution effect of the fiscal policy was stronger in China in comparison to BRIC and other developing countries, this effect had not been found strong enough so as to compensate the income distribution aggravating effect of other influential factors.

To conclude, the limited number of comparative analyses made between countries on the income inequality decreasing effects of fiscal policy has reached different results. For instance when OECD countries are compare with Latin American countries, it is observed that this effect is rather low in Latin American countries. As this comparison is made between with less-developed countries, the effect seems to be low in developed countries. Compared to taxes, transfers seem to be a more effective tool of the fiscal policy in decreasing income distribution inequalities. In developed countries, more than half of the redistribution effect of social transfers takes its source from pension benefits. In developing countries, social transfer mechanisms redistributing income in a systematic manner are more limited.

#### 4. THE DATA AND MODEL

The multivariate framework includes Gini<sub>market</sub> and Gini<sub>net</sub> coefficients, nominal GDP growth rate, annual inflation rate, total unemployment rate, central government tax revenue in current US dollars, central government social contributions in current US dollars, central government interest expense in current US dollars, central government subsidies in current US dollars and central government social benefits in current US dollars of 17 developing and 30 developed countries<sup>1</sup>. The data for Gini coefficients were attained from the Standardized World Income Inequality Database (SWIID Version 5.1) of Solt. GDP growth, inflation and unemployment data were obtained from the World Bank-World Development Indicators database. The data for all fiscal/financial variables were gathered from the IMF-Government Finance Statistics database. The data set covers the period 1990-2014 and variables excluding Gini<sub>market</sub>, Gini<sub>net</sub>, GDP growth, inflation and unemployment are in natural logarithms. All the fiscal/financial variables include social security funds.

<sup>1</sup> The notations “developing and developed” exactly reflect the IMF’s classification. The developing countries are Belarus, Bolivia, Brazil, Bulgaria, Costa Rica, Croatia, Egypt, Georgia, India, Indonesia, Iran, Moldova, Peru, Romania, South Africa, Thailand and Uruguay. The developed countries are Australia, Austria, Belgium, Canada, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Iceland, Ireland, Israel, Italy, South Korea, Latvia, Lithuania, Luxemburg, Netherlands, Norway, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland, England and the USA.

The effects of government intervention on income inequality in selected country groups were investigated by using a linear panel data model that can be formulated in the following manner:

$$Y_{i,t} = c_{i,t} + \alpha Growth_{i,t} + \beta Inf_{i,t} + \delta Unemp_{i,t} + \sigma Tax_{i,t} + \phi Cont_{i,t} + \theta Int_{i,t} + \psi Sub_{i,t} + \eta Benef_{i,t} + \varepsilon_{i,t}$$

Where  $Y$  is the vector of dependent variables (i.e. Gini\_net and the difference between Gini\_net and Gini\_market (hereafter, Gini\_diff)),  $Growth$  is the rate of nominal GDP growth,  $Inf$  is annual inflation rate,  $Unemp$  is total unemployment rate,  $Tax$  is central government tax revenue,  $Cont$  is central government social contributions,  $Int$  is central government interest expense,  $Sub$  is central government subsidies,  $Benef$  is central government social benefits,  $c$  is constant and  $\varepsilon$  is serially uncorrelated error term.

### 5. THE METHODOLOGY

In this study, estimation of the constructed model was done by using linear panel data estimation techniques. The ordinary least squares (OLS), the fixed-effects model (FEM) and the random-effects model (REM) can be followed for the estimation of linear panel equations. Since the OLS ignores the unobservable effects which are one of the most important components of panel data analysis, FEM or REM is generally utilized for the estimation. However, the existence of cross-sectional dependence (CD) and unit root in data should be checked before the estimation.

The CD is an important problem for the panel data econometrics. High degrees of globalization or cross-unit relations may give rise to the existence of this problem. In case of panel data which is CD, the estimation results generally become inconsistent and upward-biased (Bai and Kao, 2006). So, it is important to test the existence of CD before the analysis.

This study utilizes the CD test which was developed by Pesaran (2004) for investigating the existence of CD. Under the null hypothesis of no CD, this statistic is asymptotically distributed as standard normal and efficient for the case of large  $N$  and small  $T$ . The CD test statistic proposed by Pesaran (2004) is as follows:

$$CD = \sqrt{\frac{2T}{N(N-1)} \left( \sum_{i=1}^{N-1} \sum_{j=i+1}^N \hat{\rho}_{ij} \right)}$$

Where  $T$  is time interval,  $N$  is the number of cross-sections, and  $\hat{\rho}_{ij}$  is pair-wise correlation between cross-sections.

In addition to cross-sectional dependency, it is necessary to ensure that the variables under consideration are stationary. In this context, the panel unit root test developed by Im et al. (2003) (hereafter, IPS) was executed to the data. The IPS test assumes that the persistence parameters of the autoregressive process vary freely across cross-sections.

If the purpose of the panel analysis is to obtain a general result by using the data of randomly selected units from the whole sample, the REM is an appropriate choice. However, if the aim is to reach a

general result by employing the data of a fixed group, the suitable model is FEM (Baltagi, 2005). In this study, since the considered sample is randomly selected, the REM theoretically seems to be the proper choice.

The usage of REM requires no correlation between unobservable effects and explanatory variables. Hausman (1978) and Hausman-Taylor (1981) developed a test statistic (i.e. Hausman test) which shows the estimator of REM (feasible generalized least squares) is unbiased and consistent under the null of no correlation between unobservable effects and explanatory variables. If the null hypothesis is rejected, then the estimator of FEM (within estimator) should be used. In this study, Hausman test statistic was used for the determination of the correlation between unobservable effects and explanatory variables.

Panel data analysis accommodates two unobservable effects which should be investigated before the estimation. These are group and time effects. Breusch and Pagan (1980) developed LM statistics in order to test the existence of group and time effects in REM (Green, 2003).  $LM_1$  statistic tests the significance of group effects under the null of no group effects and  $LM_2$  statistic tests the significance of time effects under the null of no time effects. If one of the null of  $LM_1$  or  $LM_2$  is rejected, the model is one-way REM; on the other hand, if both the nulls of  $LM_1$  and  $LM_2$  are rejected then the model takes the form of two-way REM. Considered test statistics are formulated as follows (Baltagi, 2005):

$$LM_1 = \frac{NT}{2(T-1)} \left[ 1 - \frac{u'(I_N \otimes J_T)u}{u'u} \right]^2 \sim \chi^2$$

$$LM_2 = \frac{NT}{2(N-1)} \left[ 1 - \frac{u'(J_N \otimes I_T)u}{u'u} \right]^2 \sim \chi^2$$

The existence of group and time effects in FEM is evaluated by an ANOVA-F statistic which was developed by Moulton and Randolph (1989). This F-statistic tests the significance of group and time effects under the nulls of no group and no time effects. The formulation of considered F-statistic is as follows (Baltagi, 2005):

$$F = \frac{\gamma' MD(D' MD) - D' M \gamma / (p-r)}{\gamma' G \gamma / \left[ NT - (k+p-r) \right]}$$

One of the most important diagnostics in econometric studies is to determine whether there exists serial correlation in the data. Wooldridge (2002) proposed an AR(1) serial correlation test under the null hypothesis of no serial correlation. The test is applied by regressing the residuals from the OLS estimation of first-differenced variables on the lagged residuals. If the residuals from this estimation have an autocorrelation coefficient of  $-0.5$ , then the null hypothesis cannot be rejected. The study employed a Wald test ( $F_{AR(1)}$ ) developed by Drukker (2003) for this matter.

Another important diagnostic which should be taken into account in panel data studies is to check the existence of multicollinearity. For this purpose, variance inflation factor (VIF) was utilized. If the estimated VIF is smaller than 10, multicollinearity is not

an important problem; if it exceeds 10, then it could be serious problem. In case the value which is over 10, probability of VIF that is measured as  $(1/VIF)$  should be evaluated. If the probability is smaller than 0.01, there is no multicollinearity among explanatory variables, otherwise there exists (Gujarati, 2004).

The last diagnostic that was considered in the study is about the existence of heteroscedasticity. Standard error component of the established model assumes that the regression disturbances are homoscedastic with the same variance across time and groups. When heteroscedasticity is present, homoscedastic disturbances will result in consistent but inefficient coefficients and biased standard errors (Baltagi, 2005). The heteroscedastic models assume that the variances of the error terms change between cross-sectional units and this difference is not accounted for by variables. Breusch and Pagan (1979) proposed a test statistic ( $BP_h$ ) under the null of homoscedasticity for testing the existence of heteroscedasticity in error terms. This test statistic uses the residuals from the OLS estimation. If we expect heteroscedasticity to exist in error terms in the REM or FEM cases, then the statistic based on the OLS estimation may also be used in the both models. Once the heteroscedasticity is detected, one possible way to correct heteroscedastic bias in the variance-covariance matrix is to use the White's estimator (Erdem and Tugcu, 2011).

## 6. FINDINGS

The existence of CD was checked and results were reported in Table 1. Accordingly, either for developed or for developing

**Table 1: Cross-sectional dependence test results**

Dependent variables	CD test for developed group	CD test for developing group
Gini_diff	1.766 (0.07)	2.090 (0.03)
Gini_net	-0.093 (0.92)	1.046 (0.29)

Numbers in parentheses are P values

**Table 2: Unit root test results**

Variables	Developed group		Developing group	
	Constant	Constant+Trend	Constant	Constant+Trend
Gini_diff	-2.879 (0.00)	-3.200 (0.00)	0.064 (0.52)	-3.180 (0.00)
Gini_net	-2.207 (0.01)	-1.877 (0.03)	-0.780 (0.21)	-0.783 (0.21)
Growth	-9.944 (0.00)	-8.035 (0.00)	-8.260 (0.00)	-4.988 (0.00)
Inf	-26.655 (0.00)	-20.007 (0.00)	-174.278 (0.00)	-157.151 (0.00)
Unemp	-4.259 (0.00)	-1.878 (0.03)	-3.850 (0.00)	-2.749 (0.00)
Tax	-5.884 (0.00)	-3.104 (0.00)	-1.247 (0.10)	-2.878 (0.00)
Cont	-11.566 (0.00)	-9.004 (0.00)	-3.793 (0.00)	-5.713 (0.00)
Int	1.134 (0.87)	-2.939 (0.02)	-0.291 (0.38)	-7.130 (0.00)
Sub	-1.178 (0.11)	-3.167 (0.00)	-11.191 (0.00)	-10.915 (0.00)
Benef	-1.963 (0.02)	-3.518 (0.00)	-3.686 (0.00)	-1.608 (0.05)
$\Delta$ Gini_diff	-12.051 (0.00)	-9.846 (0.00)	-5.164 (0.00)	-5.287 (0.00)
$\Delta$ Gini_net	-9.875 (0.00)	-7.413 (0.00)	-8.214 (0.00)	-5.562 (0.00)
$\Delta$ Growth	-18.200 (0.00)	-13.619 (0.00)	-17.209 (0.00)	-14.411 (0.00)
$\Delta$ Inf	-32.269 (0.00)	-28.269 (0.00)	-297.014 (0.00)	-336.667 (0.00)
$\Delta$ Unemp	-13.149 (0.00)	-10.422 (0.00)	-16.803 (0.00)	-13.693 (0.00)
$\Delta$ Tax	-16.356 (0.00)	-14.482 (0.00)	-10.794 (0.00)	-9.346 (0.00)
$\Delta$ Cont	-23.185 (0.00)	-17.987 (0.00)	-19.465 (0.00)	-19.317 (0.00)
$\Delta$ Int	-12.365 (0.00)	-9.714 (0.00)	-19.158 (0.00)	-15.989 (0.00)
$\Delta$ Sub	-16.565 (0.00)	-14.205 (0.00)	-9.204 (0.00)	-6.225 (0.00)
$\Delta$ Benef	-14.125 (0.00)	-10.379 (0.00)	-11.285 (0.00)	-10.634 (0.00)

$\Delta$  is first-difference operator. Numbers in parentheses are P values

countries, there is no statistically significant CD problem at 1% level of significance.

As mentioned, the IPS test was utilized for investigating the existence of unit root in data. Results reported in Table 2 indicated that most of the variables are level-stationary. Besides, all variables are first-difference stationary.

After completing the CD and unit root analyses, the constructed model was estimated by using appropriate estimation techniques and results were presented in Table 3. First of all, at 1% level of significance, the Hausman test statistics showed that models except the one with the dependent variable Gini\_diff for developing country group should be estimated by using the random effect model. And, it is proved by the statistics that the models except the one with the dependent variable Gini\_diff for developed country group contain both statistically significant group and time effects. The existence of heteroscedasticity in the model with the dependent variable Gini\_net for developing group was corrected by utilizing the cross section covariance method of White, and the existence of serial correlation in all models was corrected by incorporating the AR(1) process to the estimations. Finally, the VIF statistics indicated that multicollinearity is not a problem for any of the estimations.

According to the estimated coefficients for developed country group, when the dependent variable is Gini\_diff; inflation and interest expense were found as the statistically significant factors that decrease the Gini coefficient, whereas economic growth, unemployment, tax revenue and social benefits increase it. Among the variables with positive coefficient, social benefit has the largest magnitude. Other coefficients were not found to be statistically significant. When the dependent variable is Gini\_net; inflation, interest expense and subsidies were found as the statistically significant variables that decrease the Gini coefficient. All other variables have statistically insignificant coefficients.

**Table 3: Results of the estimation**

Variables	Coefficients and test statistics			
	Developed group		Developing group	
	Gini_diff	Gini_net	Gini_diff	Gini_net
Independent variables				
Growth	0.028 (0.03)	-0.001 (0.93)	0.007 (0.41)	0.030 (0.07)
Inf	-0.043 (0.04)	-0.026 (0.05)	-0.001 (0.50)	0.001 (0.44)
Unemp	0.089 (0.00)	0.031 (0.12)	0.036 (0.18)	-0.029 (0.55)
Tax	0.373 (0.08)	-0.136 (0.32)	0.360 (0.05)	-0.962 (0.09)
Cont	-0.018 (0.81)	-0.036 (0.44)	-0.029 (0.23)	-0.115 (0.01)
Int	-0.405 (0.07)	-0.256 (0.07)	-0.010 (0.86)	0.006 (0.95)
Sub	-0.217 (0.14)	-0.306 (0.00)	0.011 (0.46)	-0.037 (0.20)
Benef	2.435 (0.00)	-0.195 (0.60)	-0.244 (0.17)	0.131 (0.59)
Diagnostics				
Hausman	18.746 (0.02)	12.939 (0.11)	26.891 (0.00)	14.292 (0.07)
LM <sub>1</sub> /F <sub>group</sub>	2267.327 (0.00)	3965.898 (0.00)	58.122 (0.00)	1927.332 (0.00)
LM <sub>2</sub> /F <sub>time</sub>	1.480 (0.22)	6.613 (0.00)	2.826 (0.00)	4.813 (0.02)
BP <sub>h</sub>	28.49 (0.00)	9.46 (0.00)	44.15 (0.00)	0.17 (0.67)
F <sub>AR</sub>	77.262 (0.00)	301.376 (0.00)	19.078 (0.00)	196.645 (0.00)
VIF	1.26	1.26	1.16	1.16

Numbers in parentheses are P values. VIF: Variance inflation factor

Estimates for developing country group indicated that, when the dependent variable is Gini\_diff; only tax revenue was found as a statistically significant factor that increases the Gini coefficient. All other variables have statistically insignificant coefficients. When the dependent variable is Gini\_net; economic growth was seen as the single statistically significant factor that increases the Gini coefficient, whereas tax revenue and social contributions decrease it. Among the variables with negative coefficient, tax revenue has the largest magnitude. All other variables have statistically insignificant coefficients.

## 7. DISCUSSION AND CONCLUSION

In this study, the factors that are supposed to be effective on income distribution have been analyzed by treating on a comparative basis of the developed and the developing countries. As distinct from the other studies, the current study makes a research on factors that are effective in diminishing inequalities by the state by establishing an analysis on the Gini-net coefficient as well as on the difference between the market Gini coefficient and the Gini coefficient obtained after state intervention. Furthermore, in addition to indicators related to taxes and expenditures, the study also takes into consideration macroeconomic factors that are important for developing countries such as growth, inflation and unemployment.

The study reaches a common conclusion with the studies mentioned before in that social benefits are the most important item that increases inequality differences in pro and post government intervention in developed countries. Similarly, as indicated in other studies, the study evidences that tax revenues have a positive impact on income distribution, although not as much as social benefits. As a conclusion expected in this country group, interest expenditure is a variable effecting positively of the Gini-net. In this study, it has been found that subsidies have an decreasing effect in income inequality, which had not been analyzed in the previous studies.

The study is in parallel with the study of Cevik and Correa-Caro (2015) in that tax revenues have an improving impact on income

distribution in developing countries with regards to both Gini-diff and Gini-net. Furthermore, social security payments also create a diminishing impact on inequalities. It has been noted that transfers, interest expenditures and subsidies, which fall into the expenditure side of the finance policy in developing countries, do not have a significant explanatory power. This conclusion is consistent with the literature arguing that the re-distributional effect of social transfers is limited in developing countries (Joumard and Pisu, 2012; OECD, 2012; Martinez-Vazquez et al., 2012). On the other hand, this aspect suggests that other factors are effective in explaining income distribution inequality in the related country group, the progressive tax rates coming in the first place. These factors could not be analyzed in the study, due to restricted data. Further studies that take into consideration other data resources as well as different estimation techniques possibly extend the scope and results of current study.

Besides, the results indicate that the redistributive impact of the state is more effective in developed countries compared to developing countries in terms of growth, social benefits and interest expense.

With regards to macroeconomic factors, inflation is an effective factor in both kinds of Gini coefficients in developed countries. Similarly, economic growth and unemployment have a positive effect on income distribution in this country group. On the other hand, as to developing countries, economic growth is an important factor increasing inequalities, which points out that there is necessity to design a policy that considers income distribution in developing countries. The results of the study suggest that the quantity and quality of the social benefits, such as the implementation of benefits that target low income groups, is one of the most effective ways of reducing inequality in developing countries.

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