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Küreselleşme ve Gelir Eşitsizliği: BRICS-T Ülkeleri Örneği
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Globalization and Income Inequality: Evidence from BRICS-T Countries

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Küreselleşme ve Gelir Eşitsizliği: BRICS-T Ülkeleri Örneği[1]

Öz

Gelir eşitsizliği geçtiğimiz otuz yıl boyunca, özellikle gelişmekte olan ülkelerde ciddi bir miktarda arttı. Artan gelir eşitsizliği, küreselleşmenin hızla yayılmaya devam ettiği dönem ile örtüşmektedir. Bu çalışma, BRICS-T ülkeleri için 1990-2015 dönemini kapsayan bir panel veri seti kullanarak gelir eşitsizliği (net-Gini endeksi ile ölçülen) ve küreselleşme (finansal ve ticaret değişkenleri ile ölçülen) arasındaki ilişkiyi incelemektedir. Standart hataları düzeltilmiş panel verileri yöntemi ile farklı birçok model tahmin edilmiştir. Çalışmanın bulguları ticari küreselleşmenin gelir eşitsizliği üzerinde anlamlı bir etkiye sahip olmadığı yönündedir. Bunun yanısıra, hisse senedi piyasası devir hızı oranı, toplam varlık ve yükümlülükler ve sermaye hesabı açıklığı aracılığıyla finansal küreselleşme 1990'dan beri bu ülkelerde gelir eşitsizliğinin artmasındaki itici güç olmuştur.

Anahtar Kelimeler: Gelir Eşitsizliği, Ticari Küreselleşme, Finansal Küreselleşme, Net Gini Endeksi, BRICS-T Ülkeleri

Globalization and Income Inequality: Evidence from BRICS-T Countries

Abstract

Income inequality has risen considerably since the 1990s, especially in developing countries and it has become a major source of concern. The increase in income disparities within countries has coincided with the expansion of globalization occurring as a result of increased cross-border flows of products, services, capital, and labor. The purpose of this study is to examine the relationship between income inequality and globalization using a panel dataset of BRICS-T countries over the 1990–2015 period. Income inequality is measured by net Gini index and globalization is measured by trade and financial variables. Several models are estimated by panel-corrected standard errors (PCSE) methodology. The findings indicate that trade openness' effect is insignificant, while financial globalization occuring through stock market turnover rate, total assets and liabilities and capital account openness has been the major force behind the income inequality in these countries since 1990.

Keywords: Income Inequality, Trade Globalization, Financial Globalization, Net Gini Index, BRICS-T Countries

Introduction

Income inequality has increased in most countries, especially in developing ones and this fact has taken a considerable attention in recent years. According to the Pew Research Center 2014 survey (PRC, 2014), at least 60 percent of the respondents globally see the disparity between poor and rich as a critical concern. Not surprisingly, the issue of income inequality and its causes have been one of the hotly debated topics by researchers and policymakers.

The liberalization of trade and finance contributed to the increase in the integration of product, labor, and capital markets internationally. In addittion to these improvements, rapid technological change has reduced the trade costs in goods and services by accelerating the international integration process. The integration of the former Soviet bloc countries to the world economy, liberalization of markets and technological improvements have integrated the world economy in an unprecendent level. However, all segments of the population have not benefited equally from

[1] This study is derived from Büşra Bahadır's MA thesis.

aggregate GDP growth and rising incomes related with globalization. Indeed, since the 1990s, income inequality has risen in most countries and regions, notably in developing countries. Since trade and financial integration have reached to unprecendent levels in this period, the debates on rising income inequality has mostly focused on the role of globalization on income inequality. The question of whether or not globalization is responsible for this rising income inequality within countries has been a debated issue by academic and policy circles.

It is generally an accepted view that BRICS-T countries (Brazil, Russia, India, China, South Africa and Turkey) have been affected from the globalization wave. The intensification of this globalization process is naturally impossible to deny. Statistics indicate that income inequality increased in most of the BRICS-T countries between 1990 and 2015. Identification of the relationship between globalization and income inequality in these major emerging countries is important as the determinants of income inequality have been one of the main concerns both for academic and political circles. This study investigates the assocation between the trade and financial globalization and income inequality using a panel dataset comprising BRICS-T countries from 1990 to 2015.

There are cross-country studies on the connection between globalization and income inequality for the countries that are in the BRICS-T countries group. However, the studies that examine the relationship for the panel of countries are very rare. This study adds to this literature by exploring a recent, novel and comprehensive dataset. Moreover, two different types (trade and financial) of globalization are considered and the effects of these two types are compared with each other.

The structure of the paper is as follows: Section 1 discusses the relevant theoretical and empirical background of the topic. Section 2 presents the dataset and variables used in the study and also covers the empirial methodology. Section 3 presents the findings. Finally, concluding remarks are discussed.

1. Literature Review

1.1 Theoretical Background

The basic economic theory behind the analytical relationship between income inequality and the liberalization of trade is the Stolper-Samuelson theorem. This theorem explains the relationship in a framework with two countries and two factors. While trade openness increases in developing countries through tariff reduction, this situation would increase the earnings of low-skilled workers and decrease the earnings of high-skilled worker. As a result, income inequality decreases. For a developed country which has relatively abundant high-skill factors, the inverse is valid indicating that income inequality increases by an increase in trade openness (Stolper and Samuelson, 1941).

According to the generally accepted trade theory called as Heckscher-Ohlin Stolper-Samuelson (HOSS), due to the specialization of trade on the sectors that use the abundant factor intensely, openness contributes to the country's relatively

abundant factor. Compared to the world economies, most of the developing countries are relatively unskilled labor-abundant while developed countries are relatively skilled labor-abundant. This fact makes developing countries comparatively more advantagous in the usage of unskilled labor. According to this theorem, developed countries specialize on the production of skilled labor-intensive goods, like machinery; while developing countries specialize on the production of unskilled labor-intensive goods, like textiles. This theorem simply implies that developing countries import skilled labor-intensive goods and they use trade barriers on the import of skilled labor-intensive products. Trade reforms which lead to the decline in protection decrease the price of the imported products which use skilled labor intensively. Earnings of skilled (unskilled) workers which are used in the import (export) sector decrease (increase). As a result of this process, an entire decline in the "within-country income inequality" occurs. (Stolper and Samuelson, 1941).

The other aspect of the globalization is financial liberalization. Foreign Direct Investment (FDI) is one of the commonly used indicators of financial liberalization. FDI is accepted as an important driver of economic growth but it may increase the wage inequality between skilled and unskilled labor and increase the regional inequality. (Bhandari, 2007). Theoretical literature generally uses the standard trade theory to explain the connection between FDI and income inequality. According to the general view, FDI affects a recipient developing country similarly to the HOSS theory. Both FDI and trade use the low-skilled labor abundantly in developing countries. As a result of this, increase in the demand of low-skilled labor increases their wages in developing countries and this leads to a decline in wage disparity and income disparity in the recipient developing country. Since developed country is the source of FDI, income inequality increases reversely. According to other views on the effect of FDI on income inequality (e.g. Beck et al., 2007), greater account liberalization may allow the poor to reach the financial resources easily. Thus, the income of the poor may increase more than the average and this increase induces a reduction in income inequality. Mundell (1957) points out that capital flows may raise the marginal productivity of workers in the recipient country. This leads to the rise in the income level of the poor workers and income gap narrows as a result. Figini and Gorg (1999) assert that FDI penetration may increase the demand for high-skilled labor at the first stage in developing countries but after less skilled workers capture the technological improvements, their income starts to increase in the long run by leading to a decrease in income inequality.

1.2 Empirical Background

Empirical studies investigating the relationship between globalization and income inequality exist widely. Similar to the theoretical studies, the empirical studies provide mixed results. The results of multi-country empirical works heavily depend on the measurement of the variables and model specification. Moreover, the development level of the countries plays an important role on the results obtained.

The studies finding a negative relationship between various aspects of globalization and income inequality can be listed as, Pavcnik et al. (2004), Goldberg and Pavcnik (2005), Milanovic (2005), Wei and Wu (2007), Bhandari (2007), Jensen and

Rosas (2007), Chintrakarn et al. (2012). On the other hand, the studies revealing a positive relationship between globalization and income inequality can be listed as Feenstra and Hanson (1996), Alderson and Nielsen (1999), Hanson and Harrison (1999), Barro (2000), Lipsey and Sjoholm (2001), Mah (2003), Goldberg and Pavcnik (2004), Milanovic and Squire (2005), Kray (2006), Lee (2006), Choi (2007), Nunnenkamp et al. (2007), Dreher and Gaston (2008), Zhang and Zhang (2009), Asteriou et al. (2014), Tridico (2017) and Dorn et al. (2018). Finally, the studies that do not support a significant association between income inequality and globalization are Chase- Dunn (1975), Edwards (1997), Li et al. (1998), Mah (2003), Vivarelli (2004), Mesci and Vivarelli (2009), Milanovic (2005) and Sylwester (2005).

There are cross-country studies on the association between income inequality and globalization for the countries that are in the BRICS-T countries group. However, the studies that examine the relationship for the panel of these countries are very rare. Çevik and Correa-Caro (2015), Mahesh (2016), Younsi and Bechtini (2018) and Wissem (2020) are some examples. Çevik and Correa-Caro (2015) finds statistically insignificant effect of trade openness on income distribution. Mahes (2016) uses trade openness as a proxy for globalization and and finds out that the increase in the share of trade within GDP worsens income distribution. Results of Younsi and Bechtini (2018) provide evidence for a U-shaped relationship between income inequality and globalization, whereas Wissem (2020) supports an inverted U-shaped relationship between income inequality and financial globalization. This study differs from those studies in the sense that it explores a recent, novel and comprehensive dataset. Moreover, two different types (trade and financial) of globalization are considered and the effects of these two types are compared with each other.

2. Data and Methodology

A panel dataset covering BRICS-T countries for the period 1990 to 2015[2] is used in this study. The net Gini index, derived from the Standardized World Income Inequality Database (SWIID), is used to measure income inequality. This database is created by Solt (2009) to attain the maximum level of harmonization possible using the Luxemburg Income Study as its standard[3]. This dataset has two important characteristics. First, it has the maximum comparability across countries. Second, it covers the most countries with the longest time span. The SWIID provides two types of Gini indices, one based on gross income and the other based on net income after transfers and taxes. It standardizes observations acquired from various sources using a custom missing-data multiple-imputation approach. This study focuses on the net Gini index which considers transfers and taxes and describes the income distribution among size-adjusted households. The cross-country evolution and heterogeneity of the net Gini index across BRICS-T countries and the years are presented in Figures A1-A3 in the Appendix.

[2] The time period is limited by the data availability.

[3] Gini index equals to 0 (100) in case of perfect income equality (inequality).

The variable of interest is globalization. Two types of globalization are considered: Trade globalization and financial globalization. Trade globalization is measured as the share of total trade in GDP. Financial globalization measures include foreign direct investment (measured as FDI inward stocks as precentage of GDP), stock market turnover rate, total assets and liabilities and capital account openness index (KAOPEN).

Several other covariates are added to adjust the model and control for their effects on income inequality. Those controls include high technology export as percentage of manufactured exports (a proxy for the technological change), the ratio of total private credit to GDP (a proxy for financial development of country), gross fixed capital formation, industrial share of employment, consumer price index, female labor force participation rate, GDP growth rate and logarithm of population size. Finally, a dummy variable is added, where the value 1 is given for the post-2008 period, to control for the effect of global financial crisis[4].

The following models are estimated by using panel-corrected standard errors (PCSE) fixed-effect methodology:

$$Gini_{it} = \beta_0 + \beta_1 Trade_{it} + \beta_2 FDI_{it} + \beta_k X_{it} + \mu_i + \varepsilon_{it} \quad (1)$$

$$Gini_{it} = \beta_0 + \beta_1 Trade_{it} + \beta_2 SMT_{it} + \beta_k X_{it} + \mu_i + \varepsilon_{it} \quad (2)$$

$$Gini_{it} = \beta_0 + \beta_1 Trade_{it} + \beta_2 TAL_{it} + \beta_k X_{it} + \mu_i + \varepsilon_{it} \quad (3)$$

$$Gini_{it} = \beta_0 + \beta_1 Trade_{it} + \beta_2 CAO_{it} + \beta_k X_{it} + \mu_i + \varepsilon_{it} \quad (4)$$

where i and t indicate country and time period, respectively. The dependent variable, Gini, is the net Gini index, Trade is trade globalization, SMT is stock market turnover rate, TAL is total assets and liabilities and CAO is capital account openness. X_{it} is the set of control variables explained in data description; μ_i represents the individual and country-specific time invariant fixed effects and ε_{it} is the standard error term.

The reason behind employing the PCSE methodology is that the panel model suffers from heteroskedasticity and cross-sectional dependency problems[5]. These problems lead to highly inaccurate standard erros of the ordinary least squares (OLS) estimators. In this case, The OLS parameter estimates should be kept, but the OLS standard errors should be replaced with PCSE, according to Beck and Katz (1995).

PCSE method is first suggested by Beck and Katz (1995). They proposed to estimate linear models of panel data by OLS and suggest to use the full N × N cross-

[4] Short definitions and sources of all variables and their summary statistics are presented in Table A1 and A2 in the Appendix.
[5] All series in the analysis are stationary.

sectional covariance matrix of the estimated parameters. Hoechle (2007) states that standard errors calculated with this methodology are accuracte due to the panel structure of the data. In PCSE, the parameters are estimated by either OLS or Prais–Winsten regression.

3. Results

Estimation results from different specifications arebpresented in Table 1. The dependent variable in all regressions is the net Gini index, and the variables of interest are trade globalization and financial globalization. All of the control variables described in the previous section are included in each specification.

The findings show that the coefficient estimates of trade globalization is insignificant in all specifications indicating that globalization that occurs through total trade does not have a significant effect on income inequality in BRICS-T countries. This finding is in accordance with the findings of Chase- Dunn (1975), Mah (2003), Milanovic (2005), Sylwester (2005), Dabla-Norris et al. (2015) and Çevik and Correa-Caro (2015). Moreover, Easterly (2001) and Stiglitz (2002) explain that the third wave of globalization does not give the expected results which is compatible with the HOSS theory predictions. Indeed, increasing trade do not automatically assure a decrease in within-country income inequality. This insignificant association might be due to the use of share of total trade in GDP as the globalization indicator, as the identification of the transmission mechanism between globalization and inequality might differ across exports and imports. Moreover, as Meschi and Vivarelli (2009) mentions, disaggregation of trade flows by the areas of origin and destination yields more insightful effects of the trade globalization on income inequality. The main reason behind this claim is that technological differences across trading partners is the main factor that determines trade openness' distributive effects.

Among the financial globalization measures, except for the effect of FDI, all variables have an equalizing effect on income distribution. This finding implies that as BRICS-T countries financially integrate more into the world economy, the income inequality declines. This result approves the hypothesis of Mundell (1957) stating that capital flows would increase the marginal productivity of workers in the recipient country and it would result in an increase of the income level of the poor workers and the income gap narrows as a result.

Table1: PCSE Fixed-Effects Models

	(1)	(2)	(3)	(4)
Total trade	-0.0083	-0.039	0.071	-0.033
	(0.032)	(0.031)	(0.043)	(0.031)
FDI	-0.048			
	(0.038)			
Stock market turnover		-0.011***		
		(0.003)		
Total assets and liabilities			-0.037***	
			(0.009)	
Capital account openness				-2.169***
				(0.485)
Constant	87.07***	86.39***	95.02***	95.37***
	(10.54)	(10.09)	(10.44)	(10.13)
Observations	147	146	142	145
R-squared	0.837	0.840	0.856	0.855
Number of pid	6	6	6	6

Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Conclusion

Since the 1980s, not only international trade has developed, but also financial flows between countries have increased with the third globalization wave. Income inquality has also increased in this period. There have been several studies that investigate the association between these two concepts, globalization and income inequality.

This study examines the relationship between income inequality (measured by the net Gini Index) and two types of globalization (trade and financial) for the BRICS-T countries from 1990 to 2015. Several models are estimated by panel-corrected standard errors (PCSE) methodology. Main findings indicate that the relationship between income inequality and trade globalization is insignificant. This insignificant association might be due to the use of share of total trade in GDP as the globalization indicator, as the identification of the transmission mechanism between globalization and inequality might differ across exports and imports. Moreover, as Meschi and Vivarelli (2009) mentions, disaggregation of trade flows by the areas of origin and destination yields more insightful effects of the trade globalization on income inequality. These two points constitute the most important avenues for future research. On the other hand, financial globalization has an equalizing effect on income inequality in this country group. This result approves the hypothesis of Mundell (1957): the marginal productivity of workers in the recipient country increases as a result of higher capital flows and this leads to an increase in the income level of the poor workers, thus the income gap narrows.

Appendix

Table A1: Definitions of Variables and Data Sources

Variable	Definition	Source
Net Gini Index	Gini index after taxes and transfers	SWIID
Total Trade	(Total exports + total imports) as % of total GDP	WDI
Foreign Direct Investment (FDI)	FDI Inward Stock as % of total GDP	UNCTAD
Stock Market Turnover Rate	Ratio of total value of shares to the average market capitalization	Global Financial Development Database
Total Assets and Liabilities	External assets plus liabilities as % of GDP	External Wealth of Nations Database, WEO Database
Capital account openness	The Chinn and Ito (2006) index	IMF's Annual Report on Exchange arrangements and Exchange restrictions
High Technology Exports	High technology exports as % of manufactured exports	WDI
Gross Fixed Capital Formation	Gros domestic fixed investment as % of GDP	WDI
Private Credit	Ratio of total private credits to GDP	Global Financial Development Database
GDP growth	Annual real GDP growth	WDI
Industrial employment	Share of indutrial emloyment as % of total employment	WDI
Female Labor Force Participation Rate	Economically active females (15+ years old) and as % of female population (15+ years old)	International Labor Organization Database (ILOSTAT)
Log (Population)	Logarithm of population size	WDI
Consumer Price Index	Annual average growth rate of consumer prices	World Economic Outlook

Table A2: Panel Descriptive Statistics

Variable		Mean	Std.Dev.	Min.	Max.	Observations		
Net Gini	overall	45.70	6.872	32.80	59.10	N	=	153
Index	between		6.992	39.17	57.74	N	=	6
	Within		2.330	38.32	49.20	T	=	25.50
Total	overall	42.15	15.26	15.16	110.6	N	=	156
Trade	between		11.99	22.60	54.85	N	=	6
	Within		10.59	13.55	97.87	T	=	26
Import	overall	20.47	7.117	6.962	48.25	N	=	156
	between		5.171	11.40	25.78	N	=	6
	Within		5.313	10.30	45.57	T	=	26
Export	overall	21.67	8.794	6.730	62.32	N	=	156
	between		7.368	11.19	31.69	N	=	6
	Within		5.639	3.253	52.30	T	=	26
GDP	overall	4.466	4.891	-14.53	14.23	N	=	156
Growth	between		3.291	0.726	9.748	N	=	6
	Within		3.851	-10.79	13.74	T	=	26
FDI	overall	15.39	11.07	0.0399	47.84	N	=	152
	between		7.468	6.120	27.76	N	=	6
	Within		8.643	-4.537	36.93	T-bar	=	25.33
Stock	overall	96.14	87.60	4.159	556.9	N	=	150
Market	between		58.71	22.11	181.1	N	=	6
Turnover	Within		69.24	-17.28	572.7	T-bar	=	25
Capital	overall	-0.883	0.706	-1.910	1.151	N	=	150
Account	between		0.474	-1.284	-0.0622	N	=	6
Openness	Within		0.573	-2.731	0.330	T-bar	=	25
Total	overall	87.33	42.58	29.12	234.1	N	=	147
Assets	between		31.26	52.42	128.1	N	=	6
Liabilities	Within		31.72	8.708	193.3	T	=	24.50
Private	overall	57.81	41.83	5.653	146.9	N	=	153
Credit	between		41.64	24.40	118.5	N	=	6
	Within		17.00	-2.974	96.50	T-bar	=	25.50
Gross	overall	24.77	7.674	14.39	45.51	N	=	156
Fixed	between		7.430	18.26	37.58	N	=	6
Capital	Within		3.548	11.75	33.16	T	=	26
Industry	overall	24.61	4.303	14.81	34.35	N	=	150
Employm.	between		4.221	18.64	29.48	N	=	6
	Within		1.888	20.27	30.32	T	=	25
Labor	overall	46.88	14.02	23.05	73.20	N	=	156
Force	between		14.90	28.15	68.38	N	=	6
Participat.	Within		3.199	37.89	52.76	T	=	26
Consumer	overall	77.40	343.0	-1.401	2948	N	=	153
Price	between		126.1	4.369	328.5	N	=	6
Index	Within		322.6	-247.9	2697	T-bar	=	25.50
Population	overall	1.119	0.683	-0.460	2.371	N	=	156
Growth	between		0.672	-0.0955	1.651	N	=	6
	Within		0.297	0.594	1.919	T	=	26
High	overall	9.339	7.049	1.000	30.84	N	=	156
Tech.	between		6.189	2.005	20.04	N	=	6
Export	Within		4.191	-5.584	20.14	T	=	26

Figure A1: The evolution of net Gini index

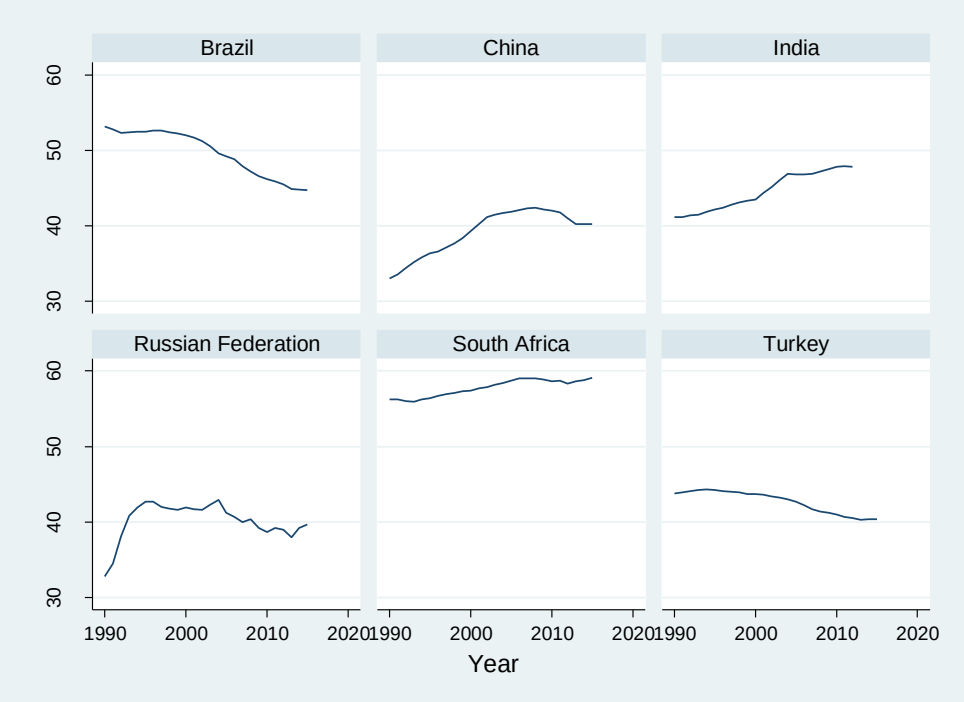


Figure A2: Heterogeneity of net Gini index across countries

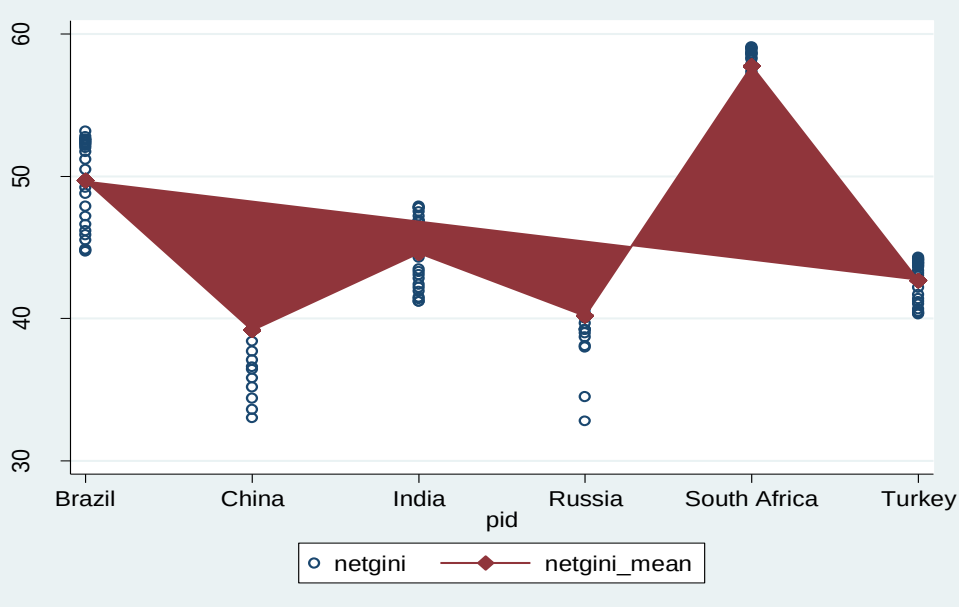
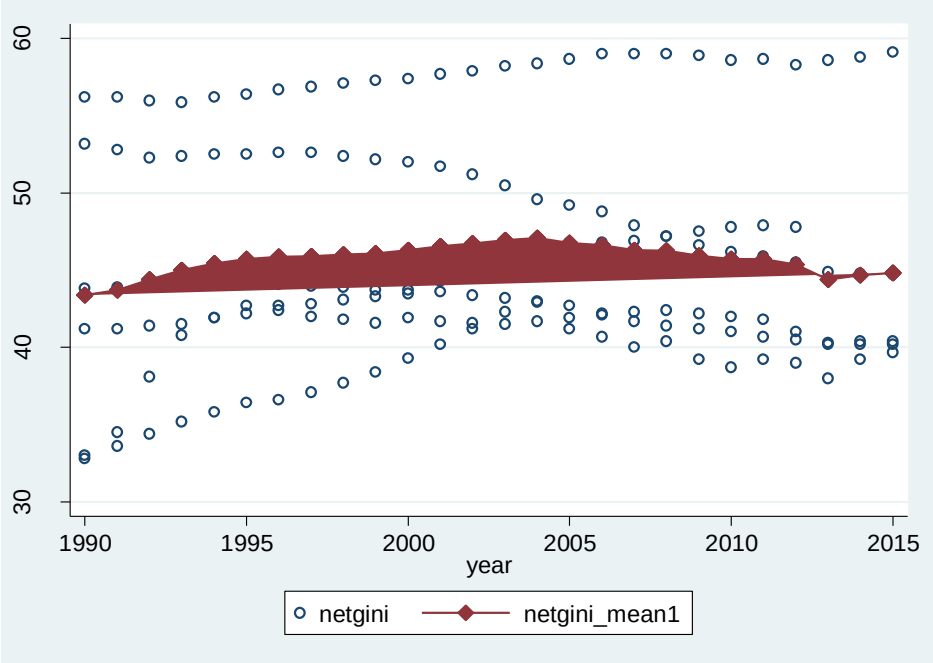


Figure A3: Heterogeneity of net Gini index across years



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