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RESEARCH ARTICLE

Urbanization and Urban-Rural Income Inequality in Latin America

Latin Amerika'da Kentleşme ve Kentsel- Kırsal Gelir Eşitsizliği

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ABSTRACT

After the pioneering work by Kuznets (1955), the relationship between urbanization and income inequality is among the topics frequently examined in the literature. However, the number of attempts focusing on this issue in the context of rural and urban income inequality is quite limited. Therefore, the aim of this study is to examine the relationship between urbanization and urban-rural income inequality in Latin America over the period 2000-2018. Panel quantile regression results reveal that urbanization reduces both rural and urban income inequality in all quantiles. In the Latin American context, policies that support urbanization should be implemented to reduce both rural and urban income inequality. Furthermore, causality results present evidence of a bidirectional causality between urbanization and both rural and urban income inequality.

Keywords: Urbanization, Income inequality, Panel quantile regression, Panel causality
JEL Classification: P25, R10, R13

ÖZ

Kuznets'in (1955) öncü çalışmasından sonra kentleşme ve gelir eşitsizliği ilişkisi literatürde sıkça incelenen konular arasında yer almaktadır. Ancak kırsal ve kentsel gelir eşitsizliği bağlamında bu konuya odaklanan çalışmaların sayısı oldukça sınırlıdır. Bu nedenle çalışmanın amacı, 2000-2018 döneminde Latin Amerika'da kentleşme ile kentsel-kırsal gelir eşitsizliği arasındaki ilişkiyi incelemektir. Panel kantil regresyon sonuçları, kentleşmenin tüm kantillerde hem kırsal hem de kentsel gelir eşitsizliğini azalttığını ortaya koymaktadır. Latin Amerika bağlamında, hem kırsal hem de kentsel gelir eşitsizliğini azaltmak için kentleşmeyi destekleyen politikalar uygulanmalıdır. Öte yandan, nedensellik sonuçları, kentleşme ile hem kırsal hem de kentsel gelir eşitsizliği arasında çift yönlü bir nedensellik olduğuna dair kanıtlar sunmaktadır.

Anahtar kelimeler: Kentleşme, Gelir eşitsizliği, Panel kantil regresyon, Panel nedensellik
JEL Sınıflaması: P25, R10, R13

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1. Introduction

The urbanization process causes changes in economic structures due to the reallocation of people and resources from agricultural activities to industrial activities. In other words, urbanization requires the spatial redistribution of those who quit farming for non-agricultural employment in developing countries. This process is directly related to increasing inequality as urban areas offer higher income opportunities than rural areas. (Ha, Le & Trung-Kien, 2019: p. 3; Zhu, Zhu & Xiao, 2019: p. 94). Contrary to this view, there are approaches that associate high urbanization with positive developments such as higher income, ease of access to services, and poverty reduction (Fay and Laderchi, 2005: p.19).

Through a variety of ways, urbanization can have varying consequences on income disparity. Urbanization, when properly planned, can reduce poverty and income inequality. This positive effect is realized as urbanization increases job opportunities and improves the quality of life by providing better health and education services. Also, through remittances, urbanization might potentially raise income in rural areas. Rural residents may receive additional income if urban settlers send money to their family members. Also, remittances can contribute to the development of non-agricultural activities in rural areas. Similarly, the savings, skills and experiences, entrepreneurial spirit, risk-taking attitudes, and urban connections brought by immigrants who return to rural areas can increase income in the rural areas by having an impact on non-agricultural activities. However, when urbanization is not planned properly, it can lead to congestion, increased crime rates, pollution, social exclusion, and increased income inequality. (WSR, 2020: p. 115; Wan, Zhang and Zhao, 2022: p. 5; Lall, Selod and Shalizi, 2006).

Kuznets (1955) argues that the structure of income distribution is determined by industrialization and urbanization in the transition from the agricultural sector to the industrial sector in developed economies. In other words, the transition from low-productivity agriculture in rural areas to high-productivity industrial sectors in urban areas has an impact on income distribution. In this context, as countries become urbanized, urbanization leads to higher income inequality

(Sulemana, Nketiah-Amponsah and Codjoe, 2019). Although there is no consensus on the relationship between urbanization and income inequality in the empirical literature, after the pioneering work of Kuznets (1955), there have been many studies in the literature dealing with urbanization and income inequality (e.g. Kanbur & Zhang, 1999; Fay and Opal, 2000; Annez and Buckley, 2009; Rodríguez-Pose & Tselios, 2009; Royuela, Veneri and Ramosi, 2014; Sagala, Akita and Yusuf, 2014; Chen, Glasmeier, Zhang, and Shao, 2016; Adams and Klobodu, 2019). The number of studies dealing with urbanization income inequality in the context of urban and rural income inequality is relatively less. These studies generally concentrate on the Chinese example (e.g. Lu and Chen, 2006; Wang, 2011; Lin and Chen, 2011; Li, Wang, Zhu and Zhao, 2014; Chen and Lin, 2014; Wu and Rao, 2017; Wang, Shao and Li, 2019; Zhong et al., 2022; Zhu, Zhu and Xiao, 2019, Yuan et al., 2020; Yao and Jiang, 2021; He and Zhang, 2022; Zhou and Shi, 2022).

This article contributes to the existing literature in four aspects:

i) It is noteworthy that the studies in the current literature are generally considered as rural-urban income disparity. Therefore, the first difference of the study from other studies is that the effect of urbanization on income distribution is discussed separately as rural and urban income inequality. It will be determined whether the effects of urbanization on rural and urban income inequality differ.

ii) Latin America is considered one of the most urbanized regions in the world. Urbanization rates have increased significantly since 1950. While 40% of the population of the region lived in cities in the 1950s, by 1990 this rate had reached 70%. Today, approximately 80% of the region lives in cities (Arsht, 2014: p.1; BBVA, 2017: p.2). Latin America is also one of the regions with the highest income inequality (Amarante, Galván and Mancero, 2016). Therefore, 12 Latin American countries will be discussed in this study. To the best of our knowledge, no other study handles the relationship between urbanization and urban and rural income inequality in Latin America with a comprehensive data set.

iii) The effects on rural and urban income inequality will be examined, taking into account variables such as trade openness, foreign direct investments, income per capita, inflation, and manufacturing value-added, which are found to have an impact on income inequality in the literature.

iv) Except for Zhong et. al. (2022), which found a negative relationship between urbanization and the rural-urban income gap in China, there is no study that deals with the relationship between urbanization and income inequality using the panel quantile regression method. In addition, in this study, this relationship will be discussed through both panel quantile regression and the panel causality test.

The remainder of the study is planned as follows: in the second part, the model and methodology will be introduced; in the third part, empirical findings will be evaluated. The study will end with a conclusion.

2. Economic Reforms in Latin America

A dramatic change in Latin America's development policies has taken place since 1980. It is increasingly acknowledged that the current model of state-directed import substitution for industrial transformation was unsustainable and needed to be replaced. However, for a long time decisions on how to substitute this model have been taken by various countries in the region. (Morley, Machado, and Pettinato, 1999: p.1). Especially after the 1982 debt crisis, important Neo-Liberal structural policy reforms have been carried out in many Latin American countries. These policies were realized in the form of liberalization of trade and capital flows, privatization of some public institutions, deregulation, free markets, assigning a greater role to markets, creating macro-economic stability, and regulations for reducing the negative effects of competitive capitalism and changing spending patterns of the society (Pattnyak: 1996: p.2; Escobar, 2010: p.8).

One common feature of all these reforms is that the internal economy becomes open to foreign competition. Secondly, the government's role in deciding how to

distribute resources and production across the economy is reduced. Thirdly, reduced distortions of private decision-making through the tax system (Morley, Machado and Pettinato, 1999: p.1).

The reforms undertaken in the 1980s and early 1990s by Latin America are impressive. Most countries are liberalizing their economies to compete internationally, setting up substantial stabilization programs and privatizing many state companies. The reforms started to show signs of success in 1992 as more and more countries began a recovery, with higher growth rates. In most countries, macroeconomic equilibrium has also been achieved; exports have increased substantially and productivity is growing significantly. Moreover, private foreign capital has poured into the region at a rapid rate since 1991 (Edwards, 1995: p. 7).

3. Urbanization Trends and Income Inequality in Latin America

In 1950, 40% of the region's population lived in cities, but by 1990 this had risen to 70%. Currently, Latin America is the largest urbanised country in the world with about 80 % of its population living in cities (Arsth, 2014).

In Latin America, the population became more urbanized, but in many ways, its rapid urbanisation was distorted by a shared condition of lack of development that these countries were experiencing. First, the migration of the Latin American rural population to cities was not a gradual process, but a rapid influx to a few receiving centres. In most countries, a single city served simultaneously as the political capital, the place of residence of the dominant classes, and the preferred site for industry. Secondly, the expansion of these big cities results in additional distortions as a result of the very unequal income distribution. With the advent of the automobile, the rich were able to escape the peasant crowds by moving to remote suburbs, and the city governments were forced to extend infrastructure to these areas by the power of elite politicians. Third, without the creation of sufficient capacities to absorb labor in new modernised agricultural holdings or urban industry, traditional agriculture has broken down in rural areas across most Latin American countries (Portes, 1989 : p. 7-8).

There are gaps in equity between large metropolitan regions and small cities and rural areas of Latin American countries. There's no less dramatic inequality in metropolitan areas. These inequalities in cities and regions are not necessarily urban problems, but it is a reflection of inequalities in the economy and an unequal division of labour between North and South as well as among Southern countries. (Angotti, 1996: p.12).

Latin America is the region with the highest income inequality in the world. The 1980s and 1990s were periods of increased income inequality in Latin America. A great change has taken place since 2000. Since then, Gini coefficients have been decreasing significantly. This has been mainly due to increases in the basic minimum wage and transfers of government funds, non-contributory retirement schemes and conditional cash transfers. This reduction of inequality also has been driven by labour earnings which are the main revenue source for households. A narrowing of the wage gap among skilled and unskilled workers has been a major factor for reducing income inequality (Amarante Galván and Mancero, 2016: p. 29; Segal, 2022: p. 1091). Since mid-2010 when commodity price collapse led to weak GDP growth, these medium-term developments have been destroyed. Despite significant decreases in the last two decades and a slow pace of inequality reduction since mid-2010, income inequalities have also continued to grow across the region. The levels of household income and consumption have been stagnant since around 2014 while satisfaction with living conditions has started to decline in the region (OECD, 2021).

Rural income inequality is higher than urban income inequality in Latin America. Thus, for economic, social, and political reasons, agriculture and rural sectors will continue to play an important role. Despite the high urbanization rate, agricultural and rural sectors continue to have strategic importance (WDI, 2022).

4. Model, Data, and Methodology

This paper analyzes the determinants of urban-rural income inequality in 12 Latin American countries (Bolivia, Brazil, Colombia, Costa Rica, Dominican

Republic, Ecuador, El Salvador, Honduras, Mexico, Panama, Paraguay, and Peru) for the period from 2000 to 2018. For this purpose, based on the study of Sulemana et al. (2019), the panel equations are constructed as follows:

$$GINIU_{it} = \alpha_0 + \beta_1 URB_{it} + \beta_2 GFCF_{it} + \beta_3 GDP_{it} + \beta_4 TRA_{it} + \beta_5 INV_{it} + \beta_6 INF_{it} + \beta_7 MANU_{it} + \varepsilon_{it} \quad (1)$$

$$GINIR_{it} = \alpha_0 + \beta_1 URB_{it} + \beta_2 GFCF_{it} + \beta_3 GDP_{it} + \beta_4 TRA_{it} + \beta_5 INV_{it} + \beta_6 INF_{it} + \beta_7 MANU_{it} + \varepsilon_{it} \quad (2)$$

where *i* and *t* denote countries (12 Latin American countries) and year (2000-2018), respectively. The dependent variable *GINIR* is the rural Gini index, while *GINIU* is the urban Gini index. Independent variables are the share of urban population in total population (*URB*), gross fixed capital formation (*GFCF*), the share of trade in GDP (*TRA*), consumer price index (*INF*), the share of foreign direct investment in GDP (*INV*), and manufacturing value added (*MANU*), respectively. The error term is symbolized by in both models. The most important constraint regarding the variables is that the rural and urban Gini index cannot be obtained for all Latin American countries. However, the available data had enough observations, making it possible to carry out the analysis. Table 1, represents indicators and data sources.

Table 1: Indicators and Data Sources

Variable	Indicator	Source
Income Inequality	Gini Index	World Bank (World Development Indicators)
Economic Growth	GDP per capita (constant 2010 US$)	World Bank (World Development Indicators)
Urbanization	Urban population (% of total population)	World Bank (World Development Indicators)
Trade	Trade (% of GDP)	World Bank (World Development Indicators)
Inflation	Inflation, consumer prices (annual %)	World Bank (World Development Indicators)
Foreign Direct Investment	Foreign direct investment, net inflows (% of GDP)	World Bank (World Development Indicators)
Manufacturing	Manufacturing, value added (% of GDP)	World Bank (World Development Indicators)

Table 2: Descriptive statistics

Variable	Mean	Median	Min.	Max.	Std. Dev.	Skewness	Kurtosis	Obs.
GINIR	0.534	0.539	0.477	0.565	0.020	-2.068	6.219	228
GINIU	0.533	0.540	0.477	0.552	0.020	-2.237	6.497	228
URB	1.851	1.848	1.685	1.952	0.058	-0.460	2.741	228
GFCF	0.546	0.533	0.492	0.642	0.034	0.469	2.314	228
GDP	3.695	3.716	3.204	4.079	0.244	-0.392	2.201	228
TRA	1.810	1.830	0.477	2.229	0.204	-1.237	9.774	228
INV	0.800	0.804	-0.300	1.283	0.172	-1.028	9.360	228
INF	0.878	0.864	0.355	1.996	0.203	1.140	7.940	228
MANU	1.239	1.259	0.943	1.404	0.093	-1.127	4.214	228

Table 2 illustrates descriptive statistics of the rural Gini index, urban Gini index, urbanization, gross fixed capital formation, GDP, Trade openness, inflation rate, foreign direct investments, and manufacturing value added. This table includes mean, median, minimum and maximum values, standard deviation, skewness, kurtosis and number of observations. Accordingly, *GINIU, GINIR, TRA, INV, INF*, and *MANU* are highly skewed because values of skewness statistics are different than zero and greater than one. Other variables have lower levels of skewness. Kurtosis values also indices that all series deviate from the normal distribution.
First of all, whether the series is stationary or not is analyzed with the unit root test adapted by Pesaran (2007). The basic equation for this test is as follows:

$$CIPS(N,T) = N^{-1} \sum_{i=1}^{N} (N,T) \tag{3}$$

This test addresses both cross-section dependence and slope heterogeneity. As a matter of fact, in this study, the method developed by Pesaran and Yamagata (2008) was applied to test slope heterogeneity. The null hypothesis of this test is of homogeneous slopes.

After the unit root test, the long-run coefficient estimation stage began. In this study, a panel quantile estimation approach was adopted to explain the relationship between rural and urban Gini index, urbanization, gross fixed capital formation, gross domestic product, trade openness, inflation rate, foreign direct investments, and manufacturing value added.

The panel quantile regression method is useful when there are outliers and skewed distributions. It also calculates slope effects for the model and considers unobservable heterogeneity. This approach allows for unobserved heterogeneity. Therefore, it separates the countries in the sample according to income inequality from each other according to low, medium and high inequality status. As a result, this method was adopted in the study because it is clearly more useful than OLS methods in detecting heterogeneous effects.

The basic equation of panel linear regression is as follows:

$$y_{it} = \alpha_i + \beta(q)x'_{it} + u_{it} \tag{4}$$

where the subscript i denotes the countries (i= 1, 2, …., 12), and the subscript t denotes the time dimension (T=2000, 2001, ….., 2018). y is the dependent variable, x represents all independent variables, and q corresponds to all quantiles of the conditional distribution. Koenker (2004) estimates equation (1) by solving the minimization problem:

$$min_{\alpha\beta} \sum_{k=1}^{K} \sum_{t=1}^{T} \sum_{i=1}^{N} w_k \rho_{qk}(y_{it} - \alpha_i - \beta(q_k)x'_{it}) \tag{5}$$

where wk denotes equally weighted quantiles which checks the relative effect of the τ quantiles on the estimation of the αi parameters. ρqk is the linear quantile loss function denoted by Koenker and Bassett (1982). This method is minimized the computational problem of forecasting a range of parameters by employing penalty terms (Albulescu et al., 2019; Khan, Khan and Binh, 2020, p. 862). This method is called penalized quantile regression. The form of this method is shown below (Koenker, 2004):

$$min_{\alpha\beta} \sum_{k=1}^{K} \sum_{t=1}^{T} \sum_{i=1}^{N} w_k \rho_{qk}(y_{it} - \alpha_i - \beta(q_k)x'_{it}) + \lambda P(\alpha) \tag{6}$$

where $p(\alpha) = \sum_{i=1}^{N} |\alpha_i|$ is the penalty considered. *i* implies each country, *T* is the index for number of observations per countries, *K* denotes quantiles, *x* stands for the matrix of explanatory variables, ρ_{qk} is the quantile loss function.

5. Empirical Findings

Slope heterogeneity was detected in both models applying the Pesaran and Yamagata (2008) test, and the CIPS unit root test considers the heterogeneity. The null hypothesis of the CIPS approach test refers to the existence of a unit root. The findings are presented in Table 3. The unit root test for the series is calculated for all deterministic components for the robustness of the results. Accordingly, while the *GINIR*, *GINIU, INV,* and *INF* are stationary while level, the others are stationary at the first difference.

Table 3: Unit root test results

	Intercept		Trend and Intercept		None	
Variable	**Level**	**1st Diff.**	**Level**	**1st Diff.**	**Level**	**1st Diff.**
GINIR	-3.320***	-5.233***	-3.741***	-5.325***	-2.857***	-5.200***
GINIU	-3.526***	-5.539***	-4.292***	-5.673***	-3.147***	-5.498***
URB	-1.701	-1.778	-2.646	-4.658***	1.103	-2.689***
GFCF	-1.787	-5.306***	-2.462	-5.719***	-1.482	-5.723***
GDP	-1.569	-4.824***	-1.802	-5.523***	-0.656	-5.534***
TRA	-1.189	-4.128***	-1.658	-4.260***	-0.621	-4.096***
INV	-2.804***	-5.481***	-3.113***	-5.892***	-2.906***	-5.807***
INF	-2.840***	-4.719***	-2.912**	-4.821***	-2.606***	-4.946***
MANU	-1.973	-3.581***	-1.831	-3.922***	-1.635	-3.788***
Pesaran and Yamagata (2012) Slope Homogeneity Test						
Model 1			**Model 2**			
Delta	2.218**		Delta	-2.082**		
Adj.-Delta	-3.058***		Adj.-Delta	-2.870***		

Note: *, ** and *** denotes 10%, 5% and 1% statistically significance level, respectively.

After determining that the series were stationary with the unit root test, the long-term coefficients were estimated. Table 4 shows the findings of the panel quantile regression. With this method, the conditional distributions of the dependent variable can be examined in more detail. These quantiles are examined in 5 different groups as follows: lower quantile (0.05, 0.10), middle-lower quantile (0.25), middle quantile (0.50), middle-upper quantile (0.75), and upper quantile (0.90).

Table 4: Panel quantile regression results

	MODEL 1 (Dep. Var.: GINIU)					
Var.	**0.05**	**0.10**	**0.25**	**0.50**	**0.75**	**0.90**
URB	-.3759281**	-.3124966***	-.0842909	-.0455051**	-.0464203***	-.031065***
GFCF	.3154385**	.3222095***	.0176821	-.0028069	.0010708	.025565**
GDP	.0648084**	.0340211*	.0089922	.005437	.0017213	-.0018246
TRA	.0453082	.0636186***	.0011832	-.0137121***	-.0182346***	-.0135362***
INV	.0403142	.0185716	.0064512	.0085248**	.0029516	.002099
INF	-.0632947**	-.03197*	1.82e-06	.0054129*	.0072378***	.0077195***
MANU	.0664255	.0137574	-.0013903	-.0055167	-.0153687**	-.0200264***
C	.6374828**	.6624142***	.6423513***	.6262516***	.6665486***	.6377394***
	MODEL 2 (Dep. Var.: GINIR)					
Var.	**0.05**	**0.10**	**0.25**	**0.50**	**0.75**	**0.90**
URB	-.3711036**	-.2804412**	-.0948912	-.062478***	-.0835955***	-.1350967***
GFCF	.3387735*	.2816053**	-.0290425	.010378	.0361819***	.0136992
GDP	.0696292*	.0054249	.0011308	-.0042079	.0014807	.0017574
TRA	.0591585	.0624459***	-.000214	.0000215	-.0042037	-.0192493***
INV	.0162342	.0108477	.01018	-.0003168	-.0020085	-.0006179
INF	-.055468*	-.0323095*	.004264	.0098482***	.0080039**	.0058633*
MANU	.0304216	-.033086	-.0152495	-.0279271***	-.0233138***	-.0322411***
C	.6285557*	.8000175***	.7303578***	.6919534***	.7049414***	.8544437***

Note: *, ** and *** denotes 10%, 5% and 1% statistically significance level, respectively.

First, urbanization reduces both rural and urban income inequality in all quantiles. However, this effect on urban Gini decreases as the level of inequality of the countries increases. Second, an increase in gross fixed capital formation leads to income inequality in lower quantile levels for both Gini indicators. Also, the same effect is observed in the first model at the 0.90 quantile level, while in the second model at 0.75 quantile level. The increase in economic growth causes income inequality at lower quantiles in first model and only 0.05 quantile level in the second model. Another result is that trade has a more pronounced effect on urban Gini than rural Gini, and this effect is particularly negative at medium and higher quantiles. It can be said that foreign direct investments have a statistically insignificant effect in both models. However, the coefficient of the variable is positive for urban Gini and negative for rural Gini. While inflation reduces income inequalities at lower quantiles, it increases at medium and higher quantile levels in both models. Finally, the increase in the manufacturing value added contributes

to the decline of both rural and urban Gini at medium and higher quantiles is significant.

In the study, the Granger panel causality test developed by Dumetriscu and Hurlin (2012) was also applied. This test does not require determining whether there was a cointegration relationship between the variables. Equation (7) shows the mathematical form of Dumitrescu and Hurlin (2012) panel causality test.

$$y_{it} = \alpha_i + \sum_{k=1}^{K} \gamma_i^{(k)} y_{i,t-k} + \sum_{k=1}^{K} \beta_i^{(k)} x_{i,t-k}\, \varepsilon_{it} \qquad (7)$$

In the equation, t (1.....T) and i (1.....N) represent the time dimension and each unit, respectively. x and y indicate two stationary variables observed for N units during the T period. K denotes the lag length and is the same for all cross sections. a_i represents individual effects that are assumed to be constant over the time period. and represent the regression slope coefficients and autoregressive parameters, respectively, which vary across groups (Dumitrescu and Hurlin, 2012: p. 1451).

Table 5: Dumitrescu-Hurlin panel non-causality test

Model 1			Model 2		
From	**To**	**Z-bar(Prob.)**	**From**	**To**	**Z-bar(Prob.)**
GINIU	URB	130.919(0.000)	GINIR	URB	54.928(0.000)
URB	GINIU	20.761(0.000)	URB	GINIR	8.287(0.000)
GINIU	GFCF	0.744(0.456)	GINIR	GFCF	-0.184(0.853)
GFCF	GINIU	-0.770(0.441)	GFCF	GINIR	1.452(0.146)
GINIU	GDP	3.397(0.001)	GINIR	GDP	0.704(0.481)
GDP	GINIU	16.351(0.000)	GDP	GINIR	6.787(0.000)
GINIU	TRA	2.109(0.034)	GINIR	TRA	1.527(0.126)
TRA	GINIU	2.840(0.004)	TRA	GINIR	1.107(0.268)
GINIU	INV	5.055(0.000)	GINIR	INV	5.175(0.000)
INV	GINIU	3.457(0.000)	INV	GINIR	1.438(0.150)
GINIU	INF	1.146(0.251)	GINIR	INF	-0.331(0.740)
INF	GINIU	2.077(0.037)	INF	GINIR	2.417(0.015)
GINIU	MANU	2.367(0.017)	GINIR	MANU	6.407(0.000)
MANU	GINIU	7.304(0.000)	MANU	GINIR	12.261(0.000)

Table 5 presents the results of the Dumitrescu and Hurlin (2012) causality analysis. In the case of Model 1, panel causality results indicate a bidirectional

causality between urban Gini and urbanization, GDP, trade, foreign direct investment and manufacturing. In addition, there is a unidirectional causality running from inflation to urban Gini. In the case of Model 2, however, a bidirectional causality is also detected between rural Gini and urbanization and manufacturing value added. Moreover, there is a unidirectional causality running from GDP to rural Gini, from rural Gini to foreign direct investment and from inflation to rural Gini.

6. Conclusion

Latin America is among the regions with the highest rate of urbanization and rural-urban income inequality. In this context, the main objective of this study is to examine the relationship between urbanization and income inequality in the context of rural and urban income inequality for 12 Latin American countries. To this end, this study utilizes the panel quantile regression and causality approach over the period 2000–2018.

The regression findings show that there is a negative relationship between urbanization and either urban- or rural-based income inequality in all quantiles. The empirical findings obtained from this study provide similar results to the studies by Lu and Chen (2006), Kanbur and Zhuang (2013) Ha, Le and Trung-Kien (2019), Wang, Shao and Li, 2019; Zhong et al., 2022. The fact that urbanization reduces urban income inequality can be explained by higher job opportunities, higher income, and the quality of education and health services. The negative relationship between urbanization and rural income inequality can be clarified by the economic resources such as flowing from the cities to the rural areas. In other words, the development of non-agricultural activities that increase the income of the rural people, especially through the transfer of remittances and savings to the rural areas can reduce income equality. In the Latin American context, policies that support urbanization should be implemented to reduce both rural and urban income inequality.

This study also examines the relationship between control variables such as fixed capital formation, foreign direct investment, GDP, trade openness, inflation,

manufacturing value added and rural and income inequality. An increase in fixed capital formation increases both rural and urban income inequality at lower quantiles. The dominance of large-scale companies appears to be the primary influencer of physical capital accumulation in Latin America (OECD, 2019: p. 16). To address income inequality, Latin American countries can adopt policies aimed at facilitating the financing of physical capital accumulation. These measures can specifically assist small and medium-sized enterprises facing challenges in securing funds for such purposes.

An increase in economic growth causes rural and urban income inequality at different quantile levels. With the increase in economic growth, new investment opportunities may arise for those who have the existing capital to invest in the economy. These new investment opportunities will increase income inequality by causing those who already have wealth to have a chance to increase their wealth (Alamanda, 2021: p.2-3).

There is a negative relationship between trade openness and income inequality at medium and higher quantiles. This negative relationship is more dominant in urban income inequality. The Heckscher-Ohlin and Stolper-Samuelson theory argues that trade liberalization reduces income inequality in developing countries. Trade liberalization through an increase in the relative demand for unskilled labor-intensive activities and thus for unskilled labor can reduce income inequality (Perry and Olarreaga, 2006: p. 2). The theorem also states that the real reward of the factor used intensively in the export sector will increase and the real reward of the factor used intensively in the import sector will decrease (Rosenfeld, 2019: p. 9). It can be said that free trade regulations, which started to be implemented in Latin America in the 1980s, reduce income inequality in line with the theory. The number of trade agreements promoting trade could be increased to reduce income inequality in Latin America.

Inflation reduces urban and rural income equalities income at lower quantiles. However, inflation increases both rural and urban income inequality at medium and high quantile levels. High inflation rates are one of the main macroeconomic

problems of Latin American countries. The rise in inflation rates increases the pressure on the purchasing power of disposable personal incomes of the poor. Especially when inflation based on the consumer price index is taken into account, the increase in food prices reduces the purchasing power of the vulnerable group. In this context, policies to reduce inflation should be implemented in order to reduce income inequality in Latin America. In addition, countries can implement social assistance programs to reduce the pressure of inflation on poor groups.

The increase in manufacturing value added reduces both rural and urban income inequality at medium and high quantile levels. Development in the industrial sector is likely to offer job opportunities that offer higher wage opportunities and increase the employment of skilled labor. Income inequality can be reduced by implementing productive employment-creating policies in Latin America.

The findings show that all variables used in the model have similar effects on rural and urban income inequality. In this context, policies aimed at reducing income inequality in Latin America should be supported by policies that reduce inflation and encourage urbanization, trade and the industrial sector.

We further investigate the causality between the variables under consideration using the Dumitrescu and Hurlin (2012) panel causality test. Analysis results reveal that there is a bidirectional causality between either urban- or rural-based Gini and urbanization. Panel causality results indicate a bidirectional causality between urban Gini and urbanization, GDP, trade, foreign direct investment and manufacturing.

Given the severe impact of the COVID-19 pandemic all over the world, researchers who wish to focus on this subject in the future may include the COVID-19 period in the analysis to see whether the results remain the same in the Latin American context where COVID-19 blow is one of the hardest.

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