THE LINKAGE BETWEEN ECONOMIC DEVELOPMENT AND INCOME DISTRIBUTION IN MIST COUNTRIES: PANEL ARDL ANALYSIS

MIST Ülkelerinde Ekonomik Kalkınma ve Gelir Dağılımı İlişkisi: Panel ARDL Analizi

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Abstract

Economic development and income distribution are central issues in economics, with their relationship being critical for sustainable development. Imbalances in income distribution can slow economic growth and reduce societal welfare. Thus, development policies should prioritize not just growth but also equitable income distribution. A balanced income distribution enhances social acceptance and ensures the sustainability of development. This study examines the relationship between economic development and income distribution in MIST countries (Mexico, Indonesia, South Korea, and Turkey) from 1990 to 2022, as classified by economist Jim O'Neill. Using a panel ARDL model, the findings show that economic development reduces income inequality. However, industrialization, a marker of technological progress, tends to increase inequality. These insights have significant policy implications. To mitigate income inequality, MIST countries should emphasize the three pillars of economic development: education, health, and growth. Policymakers must reassess industrialization strategies, promoting renewable energy while addressing inequality. Subsidies to non-renewable sectors and improved vocational training for unskilled labor can reduce the dual economic structure created by technological advancements. By implementing vocational programs and orientation initiatives, governments can limit the adverse effects of industrialization on unskilled workers, ensuring more equitable growth.

Öz

Ekonomik kalkınma ve gelir dağılımı, ekonomide merkezi konulardır ve aralarındaki ilişki sürdürülebilir kalkınma için kritik öneme sahiptir. Gelir dağılımındaki dengesizlikler ekonomik büyümeyi yavaşlatabilir ve toplumsal refahı azaltabilir. Bu nedenle, kalkınma politikaları sadece büyümeye değil aynı zamanda adil gelir dağılımına da öncelik vermelidir. Dengeli bir gelir dağılımı toplumsal kabulü artırır ve kalkınmanın sürdürülebilirliğini sağlar. Bu çalışma, ekonomist Jim O'Neill tarafından sınıflandırılan MIST ülkelerinde (Meksika, Endonezya, Güney Kore ve Türkiye) 1990-2022 yılları arasında ekonomik kalkınma ve gelir dağılımı arasındaki ilişkiyi incelemektedir. Panel ARDL modeli kullanılarak elde edilen bulgular, ekonomik kalkınmanın gelir eşitsizliğini azalttığını göstermektedir. Bununla birlikte, teknolojik ilerlemenin bir göstergesi olan sanayileşme, eşitsizliği artırma eğilimindedir. Bu görüşler önemli politika çıkarımlarına sahiptir. Gelir eşitsizliğini azaltmak için MIST ülkeleri ekonomik kalkınmanın üç ayağına vurgu yapmalıdır: eğitim, sağlık ve büyüme. Politika yapıcılar sanayileşme stratejilerini yeniden değerlendirmeli, eşitsizliği ele alırken yenilenebilir enerjiyi teşvik etmelidir. Yenilenemeyen sektörlere yönelik sübvansiyonlar ve vasıfsız işgücüne yönelik mesleki eğitimin iyileştirilmesi, teknolojik ilerlemelerin yarattığı ikili ekonomik yapıyı azaltabilir. Hükümetler mesleki programlar ve oryantasyon girişimleri uygulayarak sanayileşmenin vasıfsız işçiler üzerindeki olumsuz etkilerini sınırlayabilir ve daha adil bir büyüme sağlayabilir.

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1. Introduction

Economic development is a complex and multidimensional process encompassing various aspects, characteristics, and objectives. While traditional measures, such as economic growth, remain significant, they do not fully capture other critical dimensions of development, such as reducing poverty, inequality, and unemployment (Seers, 1979). Broader development objectives include improving education, enhancing health and nutrition standards, promoting environmental sustainability, ensuring equal opportunities, expanding individual freedoms, and enriching cultural experiences (World Bank, 1991: 4). To maintain conceptual clarity, it is essential to distinguish between economic development and the broader concept of development, which incorporates non-economic values and goals. The additional objectives are better aligned with this broader perspective.

Economic development can be described as improving society's living standards in areas such as education and healthcare, along with enhancing the overall income level. While economic growth and economic development are occasionally used synonymously in economic theory, the concept of economic development encompasses a significantly broader scope. Therefore, a country's high per capita income does not reflect that country's development alone. In the literature, the phenomenon of development is generally measured through the HDI (Human Development Index) prepared by the UNDP (United Nations Development Programme). HDI is a measurement prepared by taking the geometric mean of life expectancy, education, and income index sub-indicators.

Although economic growth and economic development are sometimes treated as interchangeable terms in economic theory, economic development covers a much wider scope. Income distribution can be expressed as the distribution of the income obtained as a result of the goods and services produced in a country to the society (Kuştepeli and Halaç, 2004: 144). The widely used criterion to measure fairness in income distribution is the "Gini coefficient". The Gini coefficient, derived from the Lorenz curve, ranges between 0 and 1. When the Gini coefficient is close to 1, it means that the equality in the income distribution decreases, and when it approaches 0, the equality in the income distribution increases.

Traditional development theory argues that the development process does not start at the same time in all areas of the economy, and therefore balanced development is not realistic (Lewis, 1976: 26). Accordingly, economies realize their growth by using more advanced production techniques. However, only a limited number of labor forces can be transferred to advanced production techniques, while others may be left behind while waiting their turn (Lydall, 1977: 13-14). Development moves by expanding the "modern sector" using advanced production techniques. During this process, the labor force transitions from the traditional sector to the modern sector, leading to an increase in average incomes within the modern sector. As a result, although inequality is greater within the traditional sector, the overall level of inequality initially rises and then falls as the modern sector expands (Gagliani, 1987: 315). Because the development process necessitates the expansion of certain modern sectors, an inverted U-shaped relationship may form between per capita income and income inequality.

Kuznets (1955) examined the link between economic development and income inequality by drawing a distinction between the rural population and those living in urban areas. At the early stages of development, income inequality rises, and after reaching a certain point, it begins to decline. According to Kuznets, while the incomes of the labor force in the agricultural sector are

lower than those in the industrial sector, they are distributed more equally than in the industrial sector. As a result, the movement of labor from the agricultural sector to the industrial sector raises individual incomes but also results in greater inequality. Swamy (1967), Knight (1976), Robinson (1976), and Fields (1980) have extended this version using sectoral shifts and various distribution indices.

Lewis (1976) has suggested some possibilities that urban development can reduce incomes in the traditional sector. These are the destruction of traditional trade through product-price or wage competition, geographic polarization, and acceleration of population growth due to a decrease in mortality. However, governments can take action to prevent most, if not all, of these negativities. The share of profits and rents in the urban sector is likely to increase at first. However, after a threshold, the expansion of the middle-income group and the tightening of the labor market will put downward pressure on income inequality.

Economic development is not a concept that can be measured only by economic growth or gross domestic product (GDP). As a multidimensional process, development encompasses elements such as welfare, education, health, employment, political participation, governance, social relations, and environment, which directly affect the quality of life of individuals. These elements reveal that development should be evaluated in a broader framework. The HDI, one of the most common indicators used to measure economic development, reflects this multidimensional approach. HDI is a measure that takes education, health, and income levels together. Therefore, in addition to GDP, it also includes other critical factors affecting the welfare of individuals. This index, first developed by Amartya Sen and Mahbub ul Haq in 1990, allows for a more holistic analysis of economic development.

Based on these recent developments, there is an increasing number of articles discussing the effects of economic growth on income distribution. However, there has been relatively little progress in understanding the effects of economic development on income distribution. In the study, the relationship between economic development and income distribution was analyzed for MIST countries (Mexico, Indonesia, South Korea, and Türkiye). MIST countries stand out in terms of economic development. The common features of these four countries are; having a large population, having a GDP equivalent to more than 1% of the global economy, and being members of the G-20. Figure 1 shows the course of economic development and income distribution in MIST countries. In the context of the research, we address the question of whether there is a relationship between economic development and income distribution.
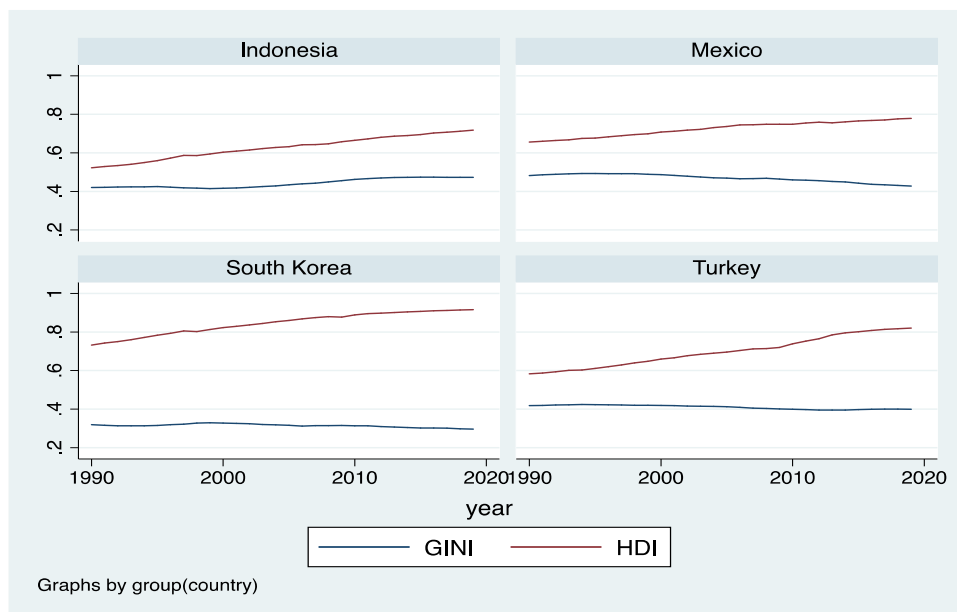
Figure 1. Economic Development and Income Distribution in MIST Countries (1990-2022)
Source: Compiled from Harvard University and United Nations data.

In the study, first of all, the empirical literature explaining the relationship between economic development and income distribution will be discussed. Next, the data and method part will be presented. Lastly, the findings of the econometric analysis will be evaluated.

2. Literature Review

The relationship between economic growth and income distribution is a frequently discussed topic in the economics literature. It is seen that the concept of economic growth is discussed together with the concepts of income distribution, inequality in income distribution, human development index, financial development and rural development (Kılıç and Gökçeli, 2024; Batmaz et al., 2023; Opuala et al., 2023; Uche et al., 2024; Gonese et al., 2023; Wang et al., 2023). Income inequality and economic development have always been an important topic of debate for both economists and policymakers. These two concepts are also critical for economic sustainability. In the literature, there are many studies on the relationship between economic development and income inequality. In this context, the theory of economic development by Kuznets (1955) is recognized as one of the pioneering studies making a significant contribution to the literature on inequality and development. According to this hypothesis, known as the Kuznets curve, income inequality increases in the initial stages of economic development, while inequality tends to decrease when a certain level is reached. This theory has been one of the main approaches aiming to explain inequality dynamics in development processes.

After Kuznets (1955), studies similar to the framework of our study have investigated the relationship between economic development and income distribution using different methods.

Deininger and Squire (1998) explain the relationship between economic growth and income inequality through political processes. According to this approach, the median voter shapes income distribution policies through political mechanisms. Tribble (1999), on the other

hand, expresses this relationship with two turning points and defines the Kuznets curve as an S-curve rather than an inverted-U shape. While the first turning point represents the transition from the agricultural sector to the industrial sector at lower levels of economic development, the second turning point represents the transition from the industrial sector to the service sector at a more advanced stage of development. In this framework, the cubic function is used to explain the S-curve hypothesis. In order to test the Kuznets hypothesis, US time series data for the period 1947-1990 were analyzed. The results showed that the relationship between income inequality and economic growth is consistent with the S-curve hypothesis. Accordingly, while income inequality increases in the initial stages of economic development, it then tends to decrease and increases again with advanced development. Using a different methodology, List and Gallet (1999) also obtained findings supporting this S-curve hypothesis. Human development stands out as both a tool and the ultimate goal of the development process. In this context, human development contributes to the formation of human capital by increasing the levels of knowledge, skills, creativity, and productivity of individuals. This approach refers to the empowerment of individuals to take an active role in improving their living conditions, i.e. the realization of human potential through the expansion of their capabilities and opportunities for choice. The main objective of human development within a macroeconomic policy framework is to ensure that economic growth is directly reflected in the living standards of individuals.

Although economic growth is recognized as a necessary condition for human development, it is not sufficient on its own. Therefore, it is emphasized that the focus should not only be on quantitative growth but also on qualitative growth. The human development approach aims to bring together economic growth and the quality of life of individuals, noting that the relationship between economic growth and human development is not direct. In this framework, improving the capabilities of individuals, increasing their participation in economic growth, and assessing the extent to which they benefit from the gains derived from the growth process are among the main priorities of human development (Griffin and McKinley, 1994). Different studies have examined the relationship between human development and income inequality in various dimensions. Özden et al. (2022) analyzed the relationship between income inequality, human development, urbanization, and female employment rate in MIST countries between 1990 and 2019 using the support vector regression method and found that these variables had improving effects on income distribution. Similarly, Avcı (2022) analyzed the effects of income inequality, education, and health expenditures on human development in Turkey for the period 2000-2019. The findings show that education expenditures and income inequality do not have a significant effect, while health expenditures have a negative impact on human development. Ngoc and Hai (2022), in their analysis with the wavelet method for the period 1978-2019 in Singapore, found that human development decreases income inequality at medium frequency, but developments in tourism have an increasing effect on inequality. Bucak and Saygılı (2022) examined the relationship between trade openness, income inequality, and HDI in the 2004-2016 period covering 15 OECD countries and found that an increase in human development reduces income inequality according to the results of panel cointegration analysis. In addition, causality analysis showed that there is a unidirectional causality from human development to income inequality.

In recent years, the concept of economic development has been discussed with the concept of sustainable development, carbon footprint, ecological transformation and technological development (Banna et al., 2020; Cetin et al., 2021; Mahalik et al., 2021; Wang et al., 2021;

Afshan and Yagoop, 2022; Handayani et al., 2022; Hossain et al., 2022; Khanal et al., 2022; Li et al., 2022; Mehrjo et al., 2022; Uzar and Eyuboglu, 2023; Abate et al., 2024; Jula et al., 2024).

In the literature, technological development is accepted as one of the most important determinants of income inequality. In the studies, it is seen that many variables are included in the model as a proxy for technological development. Acemoglu et al. (2001) found that skill-based technical change had a direct positive effect on income inequality. Mehic (2018) found that industrial employment negatively affects income inequality and that middle-income people are the biggest burden in terms of inequality increases. Le et al. (2020) and Lee et al. (2022) found that industrialization has a negative effect on income inequality. Kharlamova et al. (2018) revealed that technological development reduces income inequality in some countries and increases it in others, and they determined that this effect varies according to the size of the country and the level of development. In the academic literature, studies on the relationship between sustainability, carbon emissions, energy consumption, and economic development show that these factors interact with each other. In general, it is emphasized that economic development leads to an increase in energy consumption, which in turn increases carbon emissions and has negative impacts on environmental sustainability. However, the use of renewable energy sources and the adoption of energy efficiency technologies are considered important strategies that contribute to both reducing carbon emissions and achieving sustainable development goals (Akadiri et al., 2020; Chandio et al., 2021; Khan et al., 2021; Ali, 2022; Shakoor et al., 2023). Moreover, some studies reveal that there is a bidirectional causality relationship between energy consumption and economic growth, suggesting that energy policies should be designed without adversely affecting economic growth. In this context, the transition to renewable energy, reduction of carbon footprint, and transition to a green economy is suggested as a critical pathway to ensure both environmental sustainability and support long-term economic development (Tangworachai et al., 2023; Artekin and Kalayci, 2024).

A review of the literature on the MIST countries (Mexico, Indonesia, South Korea, Turkey), which constitute the sample of the study, reveals that there are studies that address financial markets in MIST countries, focus on stock price forecasting, and address the link between energy consumption and sustainable economic development (Pao et. al., 2014; Danis et. al., 2015; Gemici and Polat, 2018; Sevinç, 2022). A review of the literature on the MIST countries (Mexico, Indonesia, South Korea, Turkey), which constitute the sample of the study, reveals that there are studies that address financial markets in MIST countries, focus on stock price forecasting, and address the link between energy consumption and sustainable economic development (Pao et. al., 2014; Danis et. al., 2015; Gemici and Polat, 2018; Sevinç, 2022). We believe that this study will contribute to the literature by analyzing the relationship between economic development and income distribution in MIST countries.

3. Data and Methodology

3.1. Data

In this study, the relationship between human development and income inequality was examined for MIST countries (Mexico, Indonesia, South Korea and Türkiye) between 1990 and 2022. In regressions, economic development is measured by Gross Domestic Product per capita and also by the HDI in the literature. Gross Domestic Product and HDI are explained in this

section. Gross Domestic Product: It is measured based on different approaches such as production, expenditure and income. According to the production approach, it is the monetary value of final goods and services produced in a country at a given time. HDI: It is used to measure development. HDI is a composite index measuring human development, which is a long and healthy life, knowledge, and a good standard of living. The main explanatory variable is GINI. Industry value added (IND) and urbanization (URB) are included in the model as instrumental variables. Definitions and resources of the variables are given in Table 1 and descriptive statistics in Table 2 below.

Table 1. Definitions and Resources of Variables

Variable	Definition	Resource
GINI	GINI coefficient	Standardized World Income Inequality Database
HDI	Human development index	United Nations
IND	Industry value added (current USD)	World Bank, World Development Indicators
URB	Urban population	World Bank, World Development Indicators

The number of observations is 132 for all variables. The minimum value of the HDI variable is 0.526, the maximum value is 0.929 and the mean value is 0.734. The minimum value of the GINI variable is 0.301, the maximum value is 0.512 and the mean value is 0.416. The minimum of the IND variable is 4.18e+10 and the maximum is 5.90e+11. The URB variable has a minimum value of 3.17e+07 and a maximum value of 1.60e+08.

Table 2. Descriptive Statistics

Variable	Observation	Mean	Std. Dev.	Min	Max
GINI	132	0.4160682	0.0580817	0.301	0.512
HDI	132	0.7349091	0.0995522	0.526	0.929
IND	132	2.50e+11	1.51e+11	4.18e+10	5.90e+11
URB	132	6.93e+07	3.31e+07	3.17e+07	1.60e+08

3.2. Econometric Methodology

As in time series, the stationarity of variables is important in panel data analysis. In order for the analysis results to be consistent and unbiased, the series must be made stationary. Unit root tests are applied to test the stationarity of the series. In the analysis, Levin et al. (2002) panel unit root test (LLC) was preferred. The LLC panel unit root test assumes that all units have the same autoregressive parameter (ρ). In addition, the constant and trend parameters vary by unit. The LLC test is based on Augmented Dickey Fuller (ADF) regression;

$$\Delta Y_{it} = \rho Y_{it-1} + \sum_{L=1}^{\rho_i} \theta_{iL} \Delta Y_{it-L} + \alpha_{mi} d_{mt} + \varepsilon_{it} \quad m = 1, 2, 3 \tag{1}$$

where d_{mt} represents the vector of deterministic variables and a_{mi} represents its parameters. The null hypothesis of the test is established as "panels contain unit roots". If the t-statistic value is

greater than the table value, the null hypothesis is rejected and the series is accepted to be stationary.

After the panel unit root test, the relationship between the variables is estimated. After the panel unit root test, the relationship between the variables is estimated. Since some of the variables are stationary at the level and some become stationary when their first differences are taken, the panel ARDL method can be applied.

The determinants of GINI in MIST countries are assessed with the panel ARDL framework. The following estimators are used in the long-term ARDL models: the DFE (dynamic fixed effect) estimator (Weinhold, 1999) and the PMG (pooled mean group) estimator (Pesaran et al., 1999). The PMG estimator restrains the long-term coefficients to be the same but allows slope coefficients and short-term coefficients to vary across groups. The general ARDL (p, q1,…,qk) can be derived as an error correction estimator that captures short- and long-term effects;

$$\Delta GINI_{i,t} = ECT_{i,t} + \sum_{j=1}^{p-1} \vartheta_j^i \, \Delta GINI_{i,t-j} + \sum_{j=0}^{q-1} \theta_j^i \Delta X_{i,t-j} + \varepsilon_{i,t} \qquad (2)$$

i and t in Equation (5) represent the unit and time dimensions, respectively. Δ is the first difference operator and ECT is the error correction term. $X_{i,t}$ is a vector of the independent variable (HDI, IND, and URB), ϑ_j^i and θ_j^i are the dependent and independent variable short-run coefficients, respectively. On the other hand, $\varepsilon_{i,t}$ represents the error term.

4. Findings

First, a panel unit root test was applied to test the stationarity of the variables. Table 3 reports the panel unit root test results. According to the findings, GINI and URB have a unit root process at the level but become stationary at the first difference. This indicates that they are integrated of I(1) process. HDI and IND variables are stationary at level I(0).

Table 3. Levin, Lin and Chu Test Results

Variable	Level		First Difference	
	Constant	**Constant and Trend**	**Constant**	**Constant and Trend**
GINI	0.2430 (0.5960)	-1.2470 (0.1062)	-6.6944 (0.0000)***	-5.5889 (0.0000)***
HDI	0.6377 (0.7382)	-1.6820 (0.0463)**	-3.0982 (0.0010)***	-2.1038 (0.0177)**
IND	-0.4423 (0.3291)	-1.7710 (0.0383)**	-4.3454 (0.0000)***	-3.4114 (0.0003)***
URB	-1.2869 (0.0991)*	-0.9990 (0.1589)	-1.6974 (0.0448)**	-1.9553 (0.0253)**

Since the variables are stationary at different degrees, the panel ARDL approach is adopted in this study. The panel ARDL approach (DFE and PMG) is more appropriate than traditional cointegration techniques because the dependent and independent variables are a mixture of I(0) and I(1) (Pesaran et al., 2001). The Hausman test was used to determine the estimator. According to the Hausman test results, the PMG estimator outperforms the DFE estimator. Table 4 displays the ARDL test results.

Since the ECT coefficient is statistically significant, it is understood that there is a stable long-term relationship between GINI and the independent variables. The findings reveal that HDI is negatively and URB is positively correlated with GINI, with a statistical significance level of 1%. IND does not have a significant coefficient.

Table 4. Panel ARDL Estimations

Variable	DFE	PMG
ECT	-0.0756582 (0.085)*	-0.3169646 (0.025)**
HDI	-0.027498 (0.950)	-0.1937699 (0.007)***
IND	-1.44e-13 (0.531)	4.69e-14 (0.410)
URB	1.55e-09 (0.210)	1.40e-09 (0.008)***
C	0.0368552 (0.219)	0.1641865 (0.045)**
DFE vs PMG	0.15 (0.7022)	
Unit	4	
Observation	124	

Note: ***, **, * denote the statistical significance at 1%, 5% and 10% levels, respectively.

5. Conclusion

The linkage between economic development and income distribution is frequently discussed in the economics literature. Especially in developing countries, the question of how income distribution is affected as the level of economic development rises frequently comes to the fore. Some of the studies have argued that economic development has a positive effect on income distribution, while others have concluded that it has a negative effect.

When the literature is examined, it is seen that there are many studies on the Kuznets hypothesis and most of these studies measure economic development with gross domestic product. In this study, economic development is measured by Gross Domestic Product per capita and economic development is also measured by HDI.

In the study, MIST countries were taken as samples in order to analyze the relationship between economic development and income distribution. The common features of these four countries are that they have a large population, have a GDP equivalent to more than 1% of the global economy, and are members of the G-20. Utilizing the MIST countries during the period 1990-2022 and the ARDL panel approach, this study explores the nonlinear relationship between economic development and income inequality. Also, IVA and URB are included in the model as control variables. Since industrial development is also an important determinant of income inequality, the IND variable is also included in the model as a control variable. In this context, the aim of the study is to provide a comprehensive analysis of the relationship between economic development and income inequality.

The study reveals first that economic development reduces income inequality. Second, the increase in industrialization, which is an indicator of technological development, increases income inequality. The findings of the study offer important implications for policy formulation.

Increasing the level of economic development in MIST countries can help reduce income inequality. Considering that economic development has three pillars, it is important to increase education, health, and economic growth efforts to reduce income inequality. On the other hand, industrialization should reassess its claim in the context of income inequality. Thus, policymakers can stimulate renewables while compensating for losses. In addition, governments can offer subsidies for non-renewables to prevent a dual economy. Finally, measures can be taken to increase the qualifications of the unskilled workforce in order to prevent the dual structure created by industrialization. Policymakers can limit the negative effects of technology on unskilled workers through processes such as vocational qualification training and orientation programs.

Declaration of Research and Publication Ethics
This study which does not require ethics committee approval and/or legal/specific permission complies with the research and publication ethics.

Researcher's Contribution Rate Statement
The authors declare that they have contributed equally to the article.

Declaration of Researcher's Conflict of Interest
There is no potential conflicts of interest in this study.

References

Abate, T.W. and Wendimnew Sitotaw, K. (2024). Analysing the nexus between income inequality and economic growth in Ethiopia: Using the non linear auto regressive distributed lag model. *Cogent Social Sciences*, 10(1), 2328748. https://doi.org/10.1080/23311886.2024.2328748

Acemoglu, D., Aghion, P. and Violante, G. (2001). Deunionization, technical change and inequality. *Carniege-Rochester Conference Series Public Policy*, 55(1), 229-264. https://doi.org/10.1016/S0167-2231(01)00058-6

Afshan, S. and Yaqoob, T. (2022). The potency of eco-innovation, natural resource and financial development on ecological footprint: A quantile-ARDL-based evidence from China. *Environmental Science and Pollution Research*, 29(33), 50675-50685. https://doi.org/10.1007/s11356-022-19471-w

Akadiri, A.C., Gungor, H., Akadiri, S.S. and Bamidele-Sadiq, M. (2020). Is the causal relation between foreign direct investment, trade, and economic growth complement or substitute? The case of African countries. *Journal of Public Affairs*, 20(2), e2023. https://doi.org/10.1002/pa.2023

Artekin, A.Ö. and Kalayci, S. (2024). Comparative analysis of Gini coefficient, GDP, energy consumption, and transportation modes on CO_2 using NARDL (Nonlinear Distributed Lag Autoregressive Model) for the USA. *Sustainability*, 16(20), 9030. https://doi.org/10.3390/su16209030

Avcı, B.S. (2022). Türkiye'de kamu eğitim ve sağlık harcamaları ile gelir eşitsizliğinin insani kalkınma üzerine etkisi. *Uluslararası Yönetim İktisat ve İşletme Dergisi*, 18(4), 1069-1088. https://doi.org/10.17130/ijmeb.1030258

Banna, H., Masud, M.M. and Rodrigo, S.K. (2020). How does economic growth impact on income inequality across ethnic groups in Malaysia? *Poverty & Public Policy*, 12(4), 397-420. https://doi.org/10.1002/pop4.293

Batmaz, O., Çıtak, F. and Kamal, M.A. (2023). Revisiting the relationship between income inequality and CO_2 emissions in the USA: New evidence from CS-ARDL model. *International Journal of Global Warming*, 30(1), 81-102. https://doi.org/10.1504/IJGW.2023.130494

Bucak, Ç. and Saygılı, F. (2022). The relationship between trade openness, income inequality and human development: A panel data analysis. *Ege Strategic Research Journal*, 13(2), 23-41. https://doi.org/10.18354/esam.1089120

Cade, B.S. and Noon, B.R. (2003). A gentle introduction to quantile regression for ecologists. *Frontiers in Ecology and the Environment*, 1(8), 412-420. https://doi.org/10.1890/1540-9295(2003)001[0412:AGITQR]2.0.CO;2

Cetin, M., Demir, H. and Saygin, S. (2021). Financial development, technological innovation and income inequality: Time series evidence from Turkey. *Social Indicators Research*, 156(1), 47-69. https://doi.org/10.1007/s11205-021-02641-7

Chandio, A.A., Jiang, Y., Akram, W., Adeel, S., Irfan, M. and Jan, I. (2021). Addressing the effect of climate change in the framework of financial and technological development on cereal production in Pakistan. *Journal of Cleaner Production*, 288, 125637. https://doi.org/10.1016/j.jclepro.2020.125637

Danis, H., Demir, E. and Bilgin, M.H. (2015). Conditional jump dynamics in stock returns: Evidence from MIST stock exchanges. *The Singapore Economic Review*, 60(01), 1550005. https://doi.org/10.1142/S0217590815500058

Deininger, K. and Squire, L. (1998). New ways of looking at old issues: Inequality and growth. *Journal of Development Economics*, 57, 259-287. https://doi.org/10.1016/S0304-3878(98)00099-6

Gagliani, G. (1987). Income inequality and economic development. *Annual Review of Sociology*, 13, 313-334. https://doi.org/10.1146/annurev.so.13.080187.001525

Gemici, E. and Polat, M. (2018). Random walk hypothesis in MIST stock markets. *Eskişehir Osmangazi University Journal of Economics and Administrative Sciences*, 13(1), 129-142. Retrieved from https://dergipark.org.tr/en/pub/oguiibf

Gonese, D., Tsegaye, A., Khumalo, S.A. and Kapingura, F. M. (2023). Trade openness and non-income poverty in Southern African Development Community (SADC) countries: A panel Autoregressive Distributive Lag (ARDL) analysis. *Cogent Economics & Finance*, 11(2), 2242668. https://doi.org/10.1080/23322039.2023.2242668

Griffin, K. and McKinley, T. (1994). *Implementing a human development strategy*. London: Palgrave Macmillan.

Handayani, B.D., Yanto, H., Pujiati, A., Ridzuan, A.R., Keshminder, J.S. and Shaari, M.S. (2022). The implication of energy consumption, corruption, and foreign investment for sustainability of income distribution in Indonesia. *Sustainability*, 14(23), 15915. https://doi.org/10.3390/su142315915

Hossain, M.E., Rej, S., Saha, S.M., Onwe, J.C., Nwulu, N., Bekun, F.V. and Taha, A. (2022). Can energy efficiency help in achieving carbon-neutrality pledges? A developing country perspective using dynamic ARDL simulations. *Sustainability*, 14(13), 7537. https://doi.org/10.3390/su14137537

Khan, I., Hou, F., Irfan, M., Zakari, A. and Le, H.P. (2021). Does energy trilemma a driver of economic growth? The roles of energy use, population growth, and financial development. *Renewable and Sustainable Energy Reviews*, 146, 111157. https://doi.org/10.1016/j.rser.2021.111157

Khanal, A., Rahman, M.M., Khanam, R. and Velayutham, E. (2022). The role of tourism in service sector employment: Do market capital, financial development and trade also play a role? *PLoS ONE*, 17(8), e0270772. https://doi.org/10.1371/journal.pone.0270772

Kharlamova, G., Stavytskyy, A. and Zarotiadis, G. (2018). The impact of technological changes on income inequality: The EU states case study. *Journal of International Studies*, 11(2), 76-94. doi: 10.14254/2071-8330.2018/11-2/6

Kılıç, R. and Gökçeli, E. (2024). A new perspective on income inequality through the human development index. *Kafkas University Journal of Economics and Administrative Sciences Faculty*, 15(29), 214-242. https://doi.org/10.36543/kauiibfd.2024.009

Knight, B. (1976). Explaining income distribution in less developed countries: A framework and an agenda. *Oxford Bulletin of Economics and Statistics*, 38, 161-177. doi:10.1111/j.1468-0084.1976.mp38003002.x

Kuştepeli, Y. ve Halaç, U. (2004). Türkiye'de genel gelir dağılımının analizi ve iyileştirilmesi. *Dokuz Eylül Üniversitesi Sosyal Bilimler Enstitüsü Dergisi*, 6(4), 143-160. Erişim adresi: https://dergipark.org.tr/tr/pub/deusosbil

Kuznets, S. (1955). Economic growth and income inequality. *The American Economic Review*, 45, 1-28. Retrieved from https://www.aeaweb.org/

Le, T., Nguyen, C., Su, T. and Tran-Nam, B. (2020). The Kuznets curve for export diversification and income inequality: Evidence from a global sample. *Economy Analysis and Policy*. 65, 21-39. https://doi.org/10.1016/j.eap.2019.11.004

Lee, C., Yuan, Z. and Ho, S. (2022). How does export diversification affect income inequality? International evidence. *Strategic. Change and Economy Dynamics*, 63, 410-421. https://doi.org/10.1016/j.strueco.2022.06.010

Lewis, A. (1976). *Development and distribution*. London: Macmillan.

Li, N., Ulucak, R. and Danish. (2022). Turning points for environmental sustainability: The potential role of income inequality, human capital, and globalization. *Environmental Science and Pollution Research*, 29(27), 40878-40892. https://doi.org/10.1007/s11356-021-18223-6

List, J.A. and Gallet, C.A. (1999). The Kuznets curve: What happens after the inverted-u. *Review of Development Economics*, 3(2), 200-206. https://doi.org/10.1111/1467-9361.00061

Lydall, H. (1977). *Income distribution during the process of development* (ILO Research Working Paper No. 52). Retrieved from https://webapps.ilo.org/public/libdoc/ilo/1977/77B09_179_engl.pdf

Mehic, A. (2018). Industrial employment and income inequality: Evidence from panel data. *Structural Change Economy Dynamic*, 45, 84-93. https://doi.org/10.1016/j.strueco.2018.02.006

Mehrjo, A., Satari Yuzbashkandi, S., Eskandari Nasab, M.H. and Gudarzipor, H. (2022). Economic complexity, ICT, biomass energy consumption, and environmental degradation: Evidence from Iran. *Environmental Science and Pollution Research*, 29(46), 69888-69902. https://doi.org/10.1007/s11356-022-20689-x

Ngoc, B.H. and Hai, L.M. (2022). Time-frequency nexus between tourism development, economic growth, human capital, and income inequality in Singapore. *Applied Economics Letters*, 31(4), 259-264. https://doi.org/10.1080/13504851.2022.2130865

Opuala-Charles, S., Omoke, P.C. and Uche, E. (2023). The dynamic role of financial development in analyzing the N-shaped tourism-led growth hypothesis in Mauritius. *Journal of the Knowledge Economy*, 14(4), 4903-4928. https://doi.org/10.1007/s13132-022-01048-0

Özden, E., Gültekin, Ö.F. and Bayramoğlu, T. (2022). An analysis on the relationship between income distribution and human development with panel data and machine learning. *Gaziantep University Journal of Social Sciences*, 21(2), 564-582. https://doi.org/10.21547/jss.883079

Pao, H.T., Li, Y.Y. and Fu, H.C. (2014). Clean energy, non-clean energy, and economic growth in the MIST countries. *Energy Policy*, 67, 932-942. https://doi.org/10.1016/j.enpol.2013.12.039

Pesaran, H., Shin, Y. and Smith, R.J. (2001). Bounds testing approaches to the analysis of level relationships. *Journal of Applied Econometrics*, 16, 289– 326. https://doi.org/10.1002/jae.616

Pesaran, M.H., Shin, Y. and Smith, R.P. (1999). Pooled mean group estimation of dynamic heterogeneous panels. *Journal of the American statistical Association*, 94(446), 621-634. https://doi.org/10.1080/01621459.1999.10474156

Robinson, S. (1976). A note on the u hypothesis relating income inequality and economic development. *The American Economic Review*, 66, 437-440. Retrieved from https://www.jstor.org/

Seers, D. (1979). The meaning of development, with a postscript. In D. Lehmann (Ed.), *Development theory: Four critical studies* (pp. 9–30). London: Cass.

Sevinç, D. (2022). Volatility spillovers among MIST stock markets. *Data Science in Finance and Economics*, 2(2), 80-95. doi: 10.3934/DSFE.2022004

Shakoor, A. and Ahmed, R. (2023). The environmental sustainable development goals and economic growth: An empirical investigation of selected SAARC countries. *Environmental Science and Pollution Research*, 30(54), 116018-116038. https://doi.org/10.1007/s11356-023-30483-y

Swamy, S. (1967). Structural changes and the distribution of income by size: The case of India. *Review of Income and Wealth*, 12, 155-174. https://doi.org/10.1111/j.1475-4991.1967.tb00738.x

Tangworachai, S., Wong, W.K., and Lo, F.Y. (2023). Determinants of water consumption in Thailand: Sustainable development of water resources. *Studies in Economics and Finance*, 40(5), 950-970. https://doi.org/10.1108/SEF-06-2022-0310

Tribble, R. (1999). A restatement of the s-curve hypothesis. *Review of Development Economics*, 3(2), 207-214. https://doi.org/10.1111/1467-9361.00062

Uche, E., Koyama, T.C.B. and Ngepah, N. (2024). Globalization—inequality nexus in the US and UK: A multi-dimensional perspective. *Annals of Financial Economics*, 19(01), 2450001. https://doi.org/10.1142/S2010495224500015

Uzar, U. and Eyuboglu, K. (2023). Does income inequality increase the ecological footprint in the US: Evidence from FARDL test? *Environmental Science and Pollution Research*, 30(4), 9514-9529. https://doi.org/10.1007/s11356-022-22844-w

Wang, L.M., Wu, X.L. and Chu, N.C. (2023). Financial development, technological innovation and urban-rural income gap: Time series evidence from China. *PLoS ONE*, 18(2), e0279246. https://doi.org/10.1371/journal.pone.0279246

Wang, Y., Uddin, I. and Gong, Y. (2021). Nexus between natural resources and environmental degradation: Analysing the role of income inequality and renewable energy. *Sustainability*, 13(15), 8364. https://doi.org/10.3390/su13158364

World Bank. (1991). *World development report 1991: The challenge of development.* Washington, D.C.: World Bank.