

The Structure of Income Distribution and Its Impact on Economic Growth in Jordan

2025

دورية محكمة مختصة بالدراسات الإعلامية والسياسية والعلوم المتفرعة
عنها - الأردن - السنة الرابعة نيسان 2025، مج4، ع1

Qaaf Journal for Media Studies and Political Science



اصدارات
قراءات



تقارير دولية
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دراسات
بحوث

The Structure of Income Distribution and Its Impact on Economic Growth in Jordan in (1980- 2023): An Econometric Analysis

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تاريخ التسليم: 2025/07/15

تاريخ القبول: 2025/08/06

تاريخ النشر: 2025/08/26

مج 4، ع 1، ص 4-18

(ISSN-L): 2958-0749

Abstract

The study analyzed the structure of income distribution and its impact on economic growth in Jordan from 1980 to 2023. It tested the hypothesis that a long-term equilibrium relationship exists between the independent variables and economic growth using the ARDL approach. The results showed that the F statistic of 2.88 was less than the tabular value at significance levels of 1%, 2.5%, 5%, and 10% for two lag periods. This indicated that the null hypothesis, suggesting no joint integration between the variables, was accepted, and the alternative hypothesis was rejected. The findings highlighted a negative impact of changes in the share of the top 1% on economic growth, while changes in the share of the top 10% and bottom 50% had a positive impact. Additionally, human capital negatively affected economic growth. The Error Correction Model (ECM) results suggested that short-run deviations from equilibrium could be corrected to restore long-run equilibrium. The error correction term (ECT) was statistically significant at the 5% level and carried a negative sign, indicating a tendency toward correction of imbalances in the long run.

Keywords: income distribution, economic growth, Kuznets, ARDL autoregressive distributed lag model.

INTRODUCTION

An important topic of investigation is the connection between income inequality and economic development. This connection has received extensive theoretical and empirical attention in the economics literature. The interaction that seeks to increase economic growth while at the same time decreasing inequality is very critical. However, economists do have different opinions about the nature of the interaction between these two variables. Traditionally, economists have argued that economic growth is a major cause of income inequality. This view is based on the works of classical economists like Marx (1867) and Malthus (1798), and it also refers to Kuznets (1955) and subsequent interpretations of the Kuznets curve, Afan (2023)⁽¹⁾. On the other hand, Dollar et al. (2015)⁽²⁾ found no relationship between equality in incomes and growth. They suggested that some policies to promote equality may promote growth; still, others may have the opposite impact. Assaf (2016) investigated the relationship between growth and income distribution in Jordan⁽³⁾. The study used the least squares method. It established that final consumption drives economic activity. This, in turn, results in higher economic growth. Particularly, an increase of one unit in final consumption leads to a 1.59-point increase in GDP. Also, a one-unit rise in government consumption increases GDP by 0.88 points. A population increase by 1 million has the same effect on GDP.

THE RESEARCH PROBLEM AND QUESTION:

One of the problems this study in Jordan is imbalanced income distribution. It is also too concentrated in a tiny elite rather than equitably distributed. That inequitable distribution carries major economic, social, environmental, and other implications. Jordan Economy: The Jordanian economy is poor. Therefore, income distribution matters a lot to many parts of the national economy. It goes on to lead to the following research questions:

- How has the Jordanian economy's income distribution changed from 1980 to 2023?

- How does income distribution affect growth in Jordan during this period?

IMPORTANCE OF THE STUDY:

This is an important study because it deals with a very important issue in theoretical and empirical economics: the relationship between income distribution and economic growth. In the case of the Jordanian economy, this relationship is rather complex, with significant implications. The importance of the subject is relevant not only to policymakers but also to the public, as the understanding of the relationship between income distribution and economic growth is crucial for formulating appropriate economic policies. This kind of understanding will be important in addressing the problems of inequality and in promoting sustainable development in Jordan.

STUDY OBJECTIVES

The research undertaking aims to achieve the following goals:

- To investigate the effect of income distribution on economic growth in Jordan.
- To examine the relationship between income distribution and economic growth in Jordan for the study period.

STUDY HYPOTHESES

- Income distribution has a significant effect on long-term economic growth.
- Income distribution positively influences economic growth in Jordan during the study period.

STUDY METHODOLOGY

The study adopts a quantitative approach that involves the application of the Autoregressive Distributed Lag (ARDL) model to test its hypotheses and achieve its objectives. To this end, the model is applied to find out if there is a long-run relationship between the independent variables, which represent the distribution of income in the Jordanian economy, and the dependent variable, economic growth, over the period of analysis. The study has two main parts as follows:

1. The Interconnection of Inequality, Income Distribution, and Economic Growth: Theoretical Frameworks and Empirical Investigations.

The examination of inequality in relation to economic growth has emerged as a pivotal subject within the realm of economic theory. The investigation into the correlation between inequality and growth can be classified into three separate phases. In the initial

(1) Affan, Manal. (2021). The Impact of Income Inequality on Economic Growth in Egypt: An Analytical Study of the Most Important Channels Through Which Inequality Affects Growth. *Journal of the Faculty of Economics and Political Science*, 22(4), 7-40. doi: 10.21608/jpsa.2021.199914

(2) Dollar, D., Kleineberg, T., Kraay, A., & Guriev, S. (2015). Growth, inequality and social welfare: cross-country evidence. *Economic Policy*, 30(82), 335-377. <https://www.jstor.org/stable/26566826>.

(3) Assaf. Ahmad Aref. (2016). Income Inequality and its Impact on Economic Growth: Evidence from Jordan. *European Journal of Business and Management* www.iiste.org. ISSN 2222-1905 (Paper) ISSN 2222-2839. Vol.8, No.6.

phase, as suggested by Kuznets (1955)⁽⁴⁾, it was posited that economic growth initially results in a rise in inequality; however, as development continues, there is a tendency for inequality to diminish over time.

The hypothesis known as the Kuznets Curve suggests that the relationship between economic growth and income inequality follows an inverted U-shaped pattern whereby inequality increases in the earlier stages of economic development but decreases later in the process as the economy develops. However, following stagnation in growth in many countries, there was a shift in emphasis toward the negative consequences of inequality on economic growth, particularly when inequality became a prominent indicator of growth stagnation in the Latin American countries. This shift brought about the second generation of research, which focused on examining the adverse impact of inequality on growth. Leading studies of this era include those by Alesina and Rodrik (1994)⁽⁵⁾, Clarke (1995)⁽⁶⁾, and Aghion et al. (1999)⁽⁷⁾, which have looked at how substantial inequality can hinder economic growth by weakening social cohesion, lessening investment in human capital, and limiting access for the broad population.

Persson and Tabellini (1991)⁽⁸⁾ emphasized the importance of understanding the influence of income inequality on economic growth since it is fundamental to determining whether the distribution of income matters for the rate of economic growth across countries or whether it is not a significant determinant of growth. This study is particularly relevant given the large body of economic literature dealing with the topic, not to mention the historical emphasis on the inverse relationship—that is, the impact of economic growth on income inequality. Their study pointed out the need for further exploration of the potential influence of income inequality on the growth trajectories of economies.

The danger of inequality lies in its ability to perpetuate intergenerational transmission of

advantage and privilege, and the persistence of social divisions based on race, gender, and other forms of relative disadvantage. These factors can lower economic efficiency, even if they do not necessarily limit social mobility. Also, high levels of intergenerational inequality may act as a brake on economic growth by potentially hindering rather than facilitating growth (Breen, 1997)⁽⁹⁾.

In a related context, the relationship between inequality and economic growth goes beyond purely economic considerations to encompass social dimensions. Castelló and Doménech (2002)⁽¹⁰⁾ highlighted the role of human capital as being of great importance in this relationship.

Furthermore, Castelló-Climent (2010)⁽¹¹⁾ found that, *ceteris paribus*, greater inequality in human capital is associated with higher fertility rates and lower life expectancy. These factors, therefore, hinder the accumulation of human capital, thus further hindering economic growth and development. Günther (2007)⁽¹²⁾ modeled education as an important variable that simultaneously influences both economic growth and income inequality. However, his study found that an increase in educational attainment does not always lead to a reduction in inequality.

In addition, Korzeniewicz and Moran (2005)⁽¹³⁾ emphasized the role of formal institutions and rules in determining the relationship dynamics between inequality and economic growth. Nigar (2015)⁽¹⁴⁾ further hypothesized that a more equal society reinforces the positive impact of institutions on economic growth. Conversely, Michálek and Výboštok (2019)⁽¹⁵⁾ found that while economic growth is generally associated with a reduction in poverty, increasing income inequality, at the same time, increases the level of poverty.

(4) Kuznets, M. (1955). Economy growth and income inequality. *American Economic Review*, 45(1), 1–28.

(5) Alesina, A., & Rodrik, D. (1994). Distributive politics and economic growth. *The Quarterly Journal of Economics*, 109(2), 465–490. <https://doi.org/10.2307/2118470>.

(6) Clarke, G. R. (1995). More evidence on income distribution and growth. *Journal of Development Economics*, 47(2), 403–427. [https://doi.org/10.1016/0304-3878\(94\)00069-0](https://doi.org/10.1016/0304-3878(94)00069-0).

(7) Aghion, P., Caroli, E., & García-Peñalosa, C. (1999). Inequality and Economic Growth: The Perspective of the New Growth Theories. *Journal of Economic Literature*, 37(4), 1615–1660. <http://www.jstor.org/stable/2565487>.

(8) Torsten Persson & Guido Tabellini, 1991. "Is Inequality Harmful for Growth? Theory and Evidence," NBER Working Papers 3599, National Bureau of Economic Research, Inc.

(9) Breen, R. (1997). Inequality, Economic Growth and Social Mobility. *The British Journal of Sociology*, 48(3), 429–449. <https://doi.org/10.2307/591139>.

(10) Castelló, A., & Doménech, R. (2002). Human Capital Inequality and Economic Growth: Some New Evidence. *The Economic Journal*, 112(478), C187–C200. <http://www.jstor.org/stable/798367>.

(11) Castelló-Climent, A. (2010). Channels through Which Human Capital Inequality Influences Economic Growth. *Journal of Human Capital*, 4(4), 394–450. <https://doi.org/10.1086/659338>.

(12) Günther Rehme. (2007). Education, Economic Growth and Measured Income Inequality. *Economica*, 74(295), 493–514. <http://www.jstor.org/stable/4541548>.

(13) Korzeniewicz, R. P., & Moran, T. P. (2005). Theorizing the Relationship between Inequality and Economic Growth. *Theory and Society*, 34(3), 277–316. <http://www.jstor.org/stable/4501725>.

(14) Nigar, N. (2015). The Composite Impact of Institutional Quality and Inequality on Economic Growth. *The Pakistan Development Review*, 54(4), 779–791. <http://www.jstor.org/stable/43831363>.

(15) Michálek, A., & Výboštok, J. (2019). Economic Growth, Inequality and Poverty in the EU. *Social Indicators Research*, 141(2), 611–630. <https://www.jstor.org/stable/48704080>.

Based on the above discussion, the relationship between inequality and economic growth in the empirical studies can be divided into two main trends: The first trend found is the negative relationship between inequality and economic growth.

The studies conducted by Panizza (2002)⁽¹⁶⁾ and Amarante (2008)⁽¹⁷⁾ provide significant knowledge about the Latin American context. Moreover, the study by Lechheb, Ouakil, and Jouilil (2019)⁽¹⁸⁾ points out a negative association between income inequality—assessed using the Gini index—and economic growth, represented by GDP. Similarly, Tabassum and Majeed (2008)⁽¹⁹⁾ performed an analysis using a sample of 69 developing countries and found that the deficiency of strong credit markets in low-income countries is one of the major reasons that intensifies the strong negative relationship between inequality in income and economic growth. While the direct relationship between economic growth and income inequality might be positive, their research shows that, in the long run, rising income inequality slows down economic growth. Moreover, the study highlights that increased investments in physical and human capital, better trade liberalization, and higher government spending all have statistically significant effects in promoting economic growth and reducing inequality.

Ostry, Loungani, Berg, and Stiglitz (2019)⁽²⁰⁾ also demonstrated that inequality has an adverse effect on economic growth. Elaborating on this discovery, Erman and te Kaat (2019)⁽²¹⁾ performed an analysis of 86 countries and found that an unequal distribution of income boosts the growth rates of physically capital-intensive industries but at the same time also reduces the growth rates of human capital-intensive industries. This phenomenon is attributed to a decrease in human capital and increased physical capital accumulation.

(16) Panizza, U. (2002). Income Inequality and Economic Growth: Evidence from American Data. *Journal of Economic Growth*, 7(1), 25–41. <http://www.jstor.org/stable/40216052>.

(17) Amarante, V. (2008). Growth and Inequality in Latin America. In S. Klasen & F. Nowak-Lehmann (Eds.), *Poverty, Inequality and Migration in Latin America* (NED-New edition, pp. 21–58). Peter Lang AG. <http://www.jstor.org/stable/j.ctv9hj9fz.4>.

(18) Lechheb, H., Ouakil, H., & Jouilil, Y. (2019). Economic Growth, Poverty, and Income Inequality: Implications for Lower- and Middle-Income Countries in the Era of Globalization. *The Journal of Private Equity*, 23(1), 137–145. <https://www.jstor.org/stable/26864455>.

(19) Tabassum, A., & Majeed, M. T. (2008). Economic Growth and Income Inequality Relationship: Role of Credit Market Imperfection. *The Pakistan Development Review*, 47(4), 727–743. <http://www.jstor.org/stable/41261250>.

(20) Ostry, J. D., Loungani, P., Berg, A., & Stiglitz, J. E. (2019). *INEQUALITY AND SUSTAINED GROWTH. In Confronting Inequality: How Societies Can Choose Inclusive Growth* (pp. 25–36). Columbia University Press. <http://www.jstor.org/stable/10.7312/ostr17468.7>.

(21) Erman, L., & te Kaat, D. M. (2019). Inequality and growth: industry-level evidence. *Journal of Economic Growth*, 24(3), 283–308. <https://www.jstor.org/stable/48700558>.

The second trend: the positive relationship between income inequality and economic growth.

Several empirical studies, including the work of Hoffmann, Lee, and Lemieux (2020)⁽²²⁾, have suggested a positive relationship between income inequality and economic growth. In a study by Litschig and Lombardi (2019)⁽²³⁾, the impact of initial income inequality on subsequent per capita income growth was assessed using subnational data from Brazil covering the period 1970–2000. After controlling for initial per capita income and other standard factors, the study found that subnational regions where a larger share of income is allocated to the middle quintile, at the expense of the bottom quintile, experience faster growth. In contrast, regions where a greater proportion of income is directed to the top quintile, to the detriment of the middle quintile, do not exhibit any increase in growth.

2. Changes in Global Inequality since 1980 to Date

During this period, there has been a significant rise in income inequality in most parts of the world, including advanced economies and a broad spectrum of developing countries. These increasing gaps in income have affected two fundamental concepts in income distribution: functional and personal income distribution. The functional distribution pertains to the division of national income between various forms of remuneration, specifically wages and salaries, alongside profits derived from capital. Conversely, the personal income distribution addresses the apportionment of income across households or individuals, which includes earnings from diverse origins such as labor (encompassing self-employment), capital investments, as well as private and public transfers. The above transfers, including remittances, social security benefits, and social assistance programs, have a profound effect on the income distribution in any society⁽²⁴⁾.

(22) Hoffmann, F., Lee, D. S., & Lemieux, T. (2020). Growing Income Inequality in the United States and Other Advanced Economies. *The Journal of Economic Perspectives*, 34(4), 52–78. <https://www.jstor.org/stable/26940890>.

(23) Litschig, S., & Lombardi, M. (2019). Which tail matters? Inequality and growth in Brazil. *Journal of Economic Growth*, 24(2), 155–187. <https://www.jstor.org/stable/48700552>.

(24) Berg, J. (2015a). "Labour market institutions: the building blocks of just societies," Chapters, in: Janine Berg (ed.), *Labour Markets, Institutions and Inequality*, chapter 1, pages 1–36, Edward Elgar Publishing.

The World Social Report 2020 (United Nations, 2020)⁽²⁵⁾ highlights a sharp rise in income inequality found in most developed countries, as well as some middle-income countries, such as China, which is known to be the fastest-growing economy in the world. It also states that more than 70 percent of the world's population is experiencing rising inequality, which exacerbates social gaps and harms both economic and social development. The rising gap poses risks to social cohesion and undermines efforts for a more inclusive and sustainable form of growth. Despite the limitations associated with global inequality data, which may have adverse effects on economies and societies, there has been recent progress through the creation of the Standardized World Income Inequality Database (SWIID).

The database contains comparable measures of disposable and market income inequality for 198 countries, with the maximum possible number of years from 1960 to date. Moreover, SWIID provides information on absolute and relative redistribution, which enhances knowledge of global income inequality (Frederick, 2020)⁽²⁶⁾.

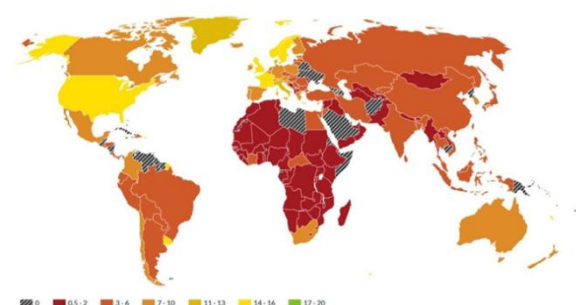
The World Inequality Lab⁽²⁷⁾ also provides a detailed database with global inequality data for 173 countries, which together cover 97% of the world's population, or about 7.5 billion people.

According to the data, Latin America and the Middle East are the regions with the highest levels of inequality in the world. In those regions, the richest 10% of the income distribution holds 54% and 56% of the average national income, respectively. Within Latin America, while inequality has declined in a number of countries, others have seen inequality persist or increase, reflecting the uneven progress made in reducing income inequality in the region as a whole⁽²⁸⁾. In the Middle East, states in the Gulf, including Bahrain, Kuwait, Oman, Qatar, the United Arab Emirates, and Saudi Arabia, show extreme and very unequal distributions of wealth, which have also been mostly constant since the 1990s. In Africa, on the other hand, it is the world's second most unequal region where the

richest 10% of the population receives half of the total national income. Contrary to common assumptions, the inequality levels in Africa are not exceptional; they rather closely resemble those found in Latin America and the Middle East, thus underlining the pervasive nature of income inequalities across these regions. Extreme inequality persists in countries with a history of discrimination, extremism, and racial inequality, such as South Africa, which is the most unequal country in the region. In 2019, the top 10% of households in South Africa controlled an estimated 65% of the national income. In fact, persistence of inequality in such countries could be attributed to factors such as the lack of land ownership reforms, the absence of comprehensive social security systems, and failure in implementing progressive tax policies, all of which have contributed to the rise in income inequalities (World Inequality Lab, 2021)⁽²⁹⁾.

Europe is still the most equal region of the world, and the top 10% of the population in this region holds 35% of the average national income in 2019. Australia at 35% and New Zealand at 37% globally show much less inequality in their incomes compared to Canada at 43% and the United States at 45%. In the 1990s and 2000s, inequality dramatically rose in both countries; however, it has stabilized in China and has continued to rise in India. This suggests a domestic economic strategy where lower inequality could lead to more rapid poverty alleviation and sustained economic progress. Russia is a dramatic example to the contrary: in 2019, the top 1% of earners garnered 20% of national income a share like that earned by half the population while the share of the top 10% jumped to 46%, reflecting a dramatic increase in inequality (World Inequality Lab, 2021).

Figure (1) World map of the Inequality and Transparency Index in 2020



Source: World Inequality Lab, 2021, Global Inequality Data – 2020 update, <https://wid.world/news-article/2020-regional-updates/>.

(25) United Nations.(2020). The World Social Report 2020, INEQUALITY IN A RAPIDLY CHANGING WORLD, United Nations publication. eISBN 978-92-1-004367-0.

(26) Frederick.S (2020). "Measuring Income Inequality Across Countries and Over Time: The Standardized World Income Inequality Database." Social Science Quarterly 101(3):1183-1199. SWIID Version 9.1, May.

(27) World Inequality Lab. (2021). Global Inequality Data – 2020 update, <https://wid.world/news-article/2020-regional-updates/>.

(28) Chile, Mexico and Brazil are the three most unequal countries in the region, with the top 10% capturing 60%, 58% and 57% of average national income (2019) respectively. Data show a decline in inequality since 2000 in Ecuador, Argentina and Uruguay, where the top 10% captured 38%, 40% and 42% of national income (2019) respectively.

(29) Yonzan, N. Lakner C and Mahler. D G.(2021). Is COVID-19 increasing global inequality? World Bank Blogs, October 07. <https://blogs.worldbank.org/opendata/covid-19-increasing-global-inequality>.

And in 2020, the upper 20% of earners in the population lost about 5% expected income on average, while the lowest 20% saw a bit more than that decline to about 6%⁽³⁰⁾. However, the COVID-19-driven income inequality is expected to further increase in 2021. Estimates indicate that the richest 20% will recover only half of their lost income of 2020, while the poorest 20% will lose an additional 5% of their income.

The phenomenon points to the growing gap in the economic consequences of the pandemic, where the rich are likely to recover faster than those at greatest risk. It has been widely posited that a pandemic of the nature currently being experienced would have a more severe effect on economically weaker regions as opposed to the more affluent areas. Also, the rise in population-weighted inequality across countries can be traced to the divergent economic paths taken by China and India. While China saw a rise in income levels in 2020, the income in India fell sharply, which further increased the inequality gap between the two countries and impacted broader global trends in inequality⁽³¹⁾.

Another classification of government systems, in relation to their efforts in closing the gap between the rich and the poor, is through the Commitment to Reducing Inequality (CRI)⁽³²⁾ Index. It relies on three main pillars: social spending, progressive taxation systems, and labor rights. According to the index, Norway, Denmark, and Germany are leading the charge in fighting inequality with very high commitments in their social policy systems, tax policies, and labor protections. Conversely, countries such as South Sudan, Nigeria, and Bahrain show the least effort to address inequality, an implication of low engagement in these areas (Oxfam International, 2021). This is schematically represented through Figure 2 on the next page, which groups countries' efforts to address inequality into four levels: good, medium, low, and none.

In 2020, an estimated 8.8 percent of total working hours were lost, equivalent to the annual working hours of 255 million full-time workers. This huge

reduction in employment outcomes led to a sharp global decline in labor income. Specifically, global labor income defined as income from formal or informal work for wages or profit, excluding government transfers or benefits decreased by 8.3 percent in 2020 compared with a scenario without the pandemic and the associated working time loss. The decline is equivalent to a loss of almost US\$3.7 trillion using 2019 market exchange rates, or 4.4 percent of global GDP in 2019 (Figure 1.5). The expected decline in labor income is supposed to continue, with a predicted fall of around 5.3%, corresponding to US\$1.3 trillion in the first two quarters of 2021. Moreover, the impact of such losses has not been even across all regions, showing a much larger drop in labor income within both the Americas and Africa (ILO, 2021b)⁽³³⁾.

Figure (2) Global Efforts to Combat Inequality



Source: Oxfam International. (2021). COMMITMENT TO REDUCING INEQUALITY INDEX 2020, <https://www.inequalityindex.org>.

In between 2019 and 2020, the world has seen a rise in people living in extreme poverty those earning less than \$1.90 a day, measured in purchasing power parity terms by 31 million, pushing the rate of working extreme poverty to 7.8% against 6.6% in 2019. Over the same period, the number of people classified as moderately poor, defined as those earning between US\$1.90 and US\$3.20 a day in terms of purchasing power parity, rose by about 77 million, bringing the middle-level working poverty rate to 14.2%, up from 11.4% in 2019. These trends, which show a significant deterioration in working conditions, have reversed the gains made in poverty reduction. The current rate of extreme working poverty is today roughly equivalent to that registered in 2015. (ILO, Op. Cit., p. 28).

(30)Yonzan, N. Lakner C and Mahler. D G.(2021). Is COVID-19 increasing global inequality? World Bank Blogs, October 07.

<https://blogs.worldbank.org/opendata/covid-19-increasing-global-inequality>.

(31) Deaton, A. (2021). COVID-19 AND GLOBAL INCOME INEQUALITY, NBER WORKING PAPER SERIES, Working Paper 28392, NATIONAL BUREAU OF ECONOMIC RESEARCH, February.

(32) ILO.(2021b). World Employment and Social Outlook 2021: Trends 2021. Report. June. Print: 9789220319581[ISBN].p15. https://www.ilo.org/global/research/global-reports/weso/trends2021/WCMS_795453/lang-en/index.htm

(33) The Heritage Foundation. (2023). Jordan's economic freedom. <https://www.heritage.org/index/country/jordan>.

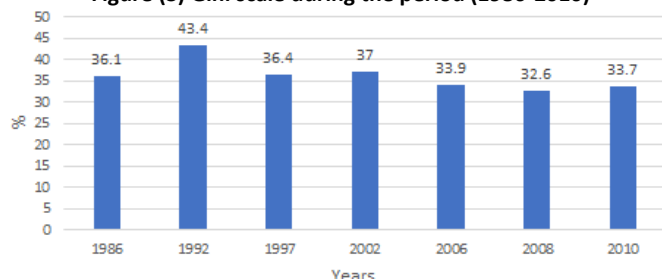
3. Analysis of developments in the income distribution structure in Jordan during the study period.

The Kingdom of Jordan, which has been independent since 1946, is a constitutional monarchy with limited natural resources. King Abdullah II, who has reigned since 1999, presides over a small economy largely supported by foreign loans, international aid, and remittances from migrant workers. In 2000, Jordan became a member of the World Trade Organization and entered into a free trade agreement with the United States. In October 2020, King Abdullah II appointed Bisher Al-Khasawneh as prime minister, with a focus on economic reform and the implementation of a realistic budget. However, regional conflicts, particularly in Iraq and Syria, have disrupted Jordan's economy and trade, while the presence of over 1.3 million refugees has further strained the nation's already limited resources (The Heritage Foundation, 2023)⁽³⁴⁾.

The Jordanian economy faces significant challenges related to income inequality, a complex and multidimensional issue. Over the years, income inequality has remained relatively stable at a moderate level when assessed using common measures such as the Gini index, which ranges from 0 to 100.

According to Hendy et al. (2023)⁽³⁵⁾, the Gini index has fluctuated over time, reflecting shifts in inequality levels. In 1986, the index stood at 36.1, but inequality increased to 43.4 in 1992. The index then decreased to 36.4 in 1997, indicating a slight improvement in equality. Despite a minor increase to 37 in 2002, the Gini index fell to 33.9 in 2006 and 32.6 in 2008, signaling a reduction in inequality. However, it rose again by one full point to 33.7 in 2010, which remains the most recent data available from the World Bank database, as illustrated in the following figure.

Figure (3) Gini scale during the period (1986-2010)



Source: Prepared by the researcher based on the World Bank database 1987-2010.

(34) The Heritage Foundation. (2023). Jordan's economic freedom.

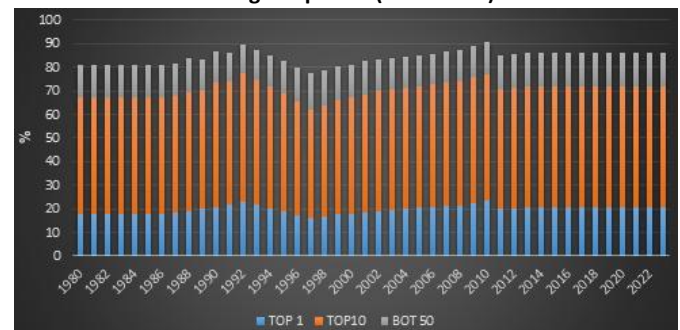
<https://www.heritage.org/index/country/jordan>.

(35) Rana Hendy , Racha Ramadan and Reham Rizk. (2023). Inequality of income and education in Jordan. Economic Research Forum (ERF). JUNE 10.

<https://theforum.erf.org.eg/2021/07/13/inequality-income-education-jordan/>.

Jordan's Gini Coefficient Index is 51.6 and was most recently measured in 2019. However, other measures reveal higher levels of income inequality. Figure 4 illustrates the structure of income distribution in the Jordanian economy from 1980 to 2021. The data reveals a stark disparity in income distribution: 50% of the population receives only 14.4% of the total income, while the top 1% captures 17.1% of the income. Additionally, the top 10% of the population receives nearly half of the total income, amounting to 48.4%, based on 2021 data. This highlights the significant concentration of income at the top of the distribution, emphasizing the persistent issue of income inequality in the country.

Figure (4) shows the income distribution structure in Jordan during the period (1980-2023)



Source: Prepared by the researcher based on the World Equality Database.

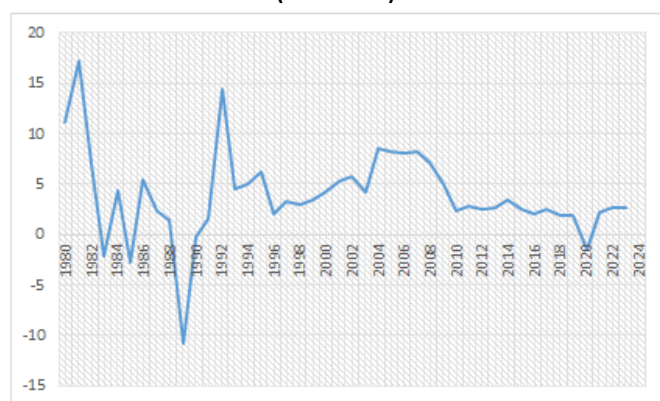
In 1980, as illustrated in the figure above, the distribution of income in Jordan was highly skewed. The bottom 50% of the population received only 14% of the total income, while the top 1% captured 16.8% of the income, and the top 10% received nearly half of the income, at 47.7%. This distribution suggests that income inequality has remained relatively unchanged over the past four decades. In fact, the income distribution has remained largely consistent, with a persistent concentration of wealth among the wealthiest segments of society.

In 2018, the poverty headcount index at the national poverty line, which represents the percentage of the population living below the poverty threshold, was recorded at 15.7%, according to World Bank data. The Jordanian economy has experienced significant growth since the early 1960s, driven by several factors, with the most notable being stable leadership and a relatively liberal socio-political and economic climate. This stability created an environment conducive to economic development. However, in the second half of the 1980s, Jordan faced an economic recession and

challenges related to financing public debt. Despite these difficulties, the country's progress in social and economic development did not reach its full potential until the early 1990s (Abu Jaber, 1990)⁽³⁶⁾.

Figure 5 illustrates the annual development of GDP growth from 1980 to 2023, highlighting key trends in the Jordanian economy. The data reveals that the growth rate began to decline during the 1980s, with negative growth recorded at the onset of the 1990s. Despite this, the economy quickly recovered and returned to positive growth rates. The growth rate peaked at 18.2% in 1981, compared to 10.7% in 1989, indicating significant fluctuations in economic performance during that period. From 1993 to 2023, the GDP growth rate generally followed a positive and more stable trajectory, with consistent growth in all years except for 2020, when the economy contracted by 1.6% due to the impact of the COVID-19 pandemic.

Figure (5) GDP growth trend in Jordan during the period (1980-2023)



Source: Prepared by the researcher based on the World Bank database.

1- Assessing the impact of income distribution on economic growth using the Autoregressive Distributed Lag (ARDL) model.

The Autoregressive Distributed Lag (ARDL) model is an advanced econometric technique used for the estimation of models involving time series data. It is particularly valuable for investigating the cointegration relationship between two-time series, irrespective of whether they are integrated at the same order, specifically $I(0)$ or $I(1)$. Cointegration is tested within the ARDL framework using the "Bounds Test" methodology, as introduced by Pesaran et al. (2001). This method combines the Autoregressive (AR) model with the Distributed Lag (DL) model, where the time

series is expressed as a function of its lagged values and the lagged values of the explanatory variables, with the latter delayed by one or more periods (Idriush, 2013). The ARDL approach offers several advantages over traditional methods for testing joint integration, with the following key benefits:

1. The ARDL model can be applied regardless of whether the variables under investigation are integrated of order $I(0)$, $I(1)$, or exhibit different levels of integration, if none of the variables are integrated of order $I(2)$. This flexibility allows the ARDL approach to be used even when the variables in the model have differing integration orders, making it particularly useful in situations where the integration order is not uniform across all variables in the analysis.
2. The ARDL method is especially effective when applied to small sample sizes, producing efficient results even with a limited number of observations. This contrasts with many traditional cointegration tests, which generally require larger sample sizes to yield reliable and efficient outcomes.
3. The ARDL method allows for the simultaneous estimation of both short-run and long-run relationships within a single equation, rather than necessitating separate equations for each. As introduced by Pesaran et al., this approach facilitates the joint estimation of the parameters of the independent variables across both time horizons. The resulting parameter estimates are unbiased, reliable, and more accurate than those produced by traditional methods for detecting cointegration.

The relationship between the structure of income distribution and economic growth in Jordan is analyzed by testing the hypothesis that no long-term equilibrium relationship exists between these two variables. This section outlines the sources of the data used and presents an initial analysis, which includes conducting unit root tests to assess the stationarity of the study variables. Additionally, a joint integration test is performed to investigate the potential existence of a long-term equilibrium relationship between the variables. Table 1 provides a comprehensive description of the variables along with their respective sources.

(36) Kamel Abu Jaber. 1990. Income Distribution In Jordan.
DOI: <https://doi.org/10.4324/9780429044557>.

Table (1) Description of model variables and sources

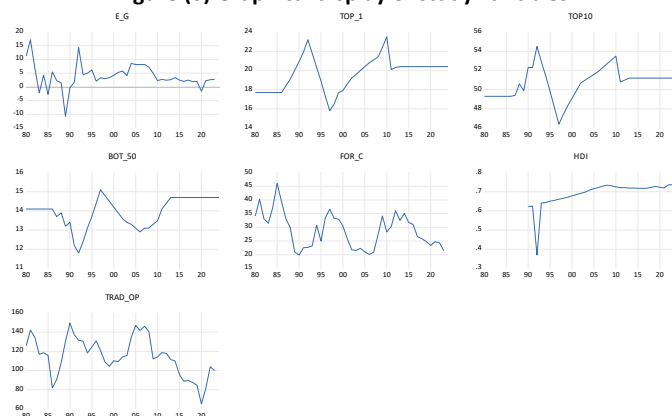
Variable	Source
Income Distribution	Global Inequality Database
Share of the Top 1%, Top 10%, and Top 50%	World Bank
Human Capital Index	United Nations
Physical Capital Accumulation Index	World Bank
Trade to GDP Ratio	World Bank

Source: Prepared by the researcher.

3.1 Graphical Presentation of the Study Variables:

Figure 7 illustrates the pronounced fluctuations in the variables under study economic growth rate, income distribution variables (the share of the top 10%, 10%, and 50%), the value of human capital, and the trade-to-GDP ratio-highlighting the increases and decreases observed from one year to the next.

Figure (6) Graphical display of study variables



Source: Prepared by the researcher based on E-VIEWS 12 program.

3.2 Unit Root Tests: As shown in Table 2, the variables of economic growth, the share of the top 1%, the top 10%, and the middle 50% are stationary at the level. In contrast, the variables related to human capital, capital accumulation to GDP, and the trade-to-GDP ratio are not stationary at the level. However, after taking the first difference, these variables become stationary, indicating that some variables are stationary at the level, while others are stationary at the first difference. Therefore, the ARDL methodology will be employed to determine cointegration, given the differences in the integration order of the time series under study, whether of order $I(0)$ or $I(1)$, and the confirmation that no variable is integrated of order $I(2)$. In other words, the nature of the data itself necessitated the use of the ARDL model, which is particularly well-suited for handling time series with different integration orders.

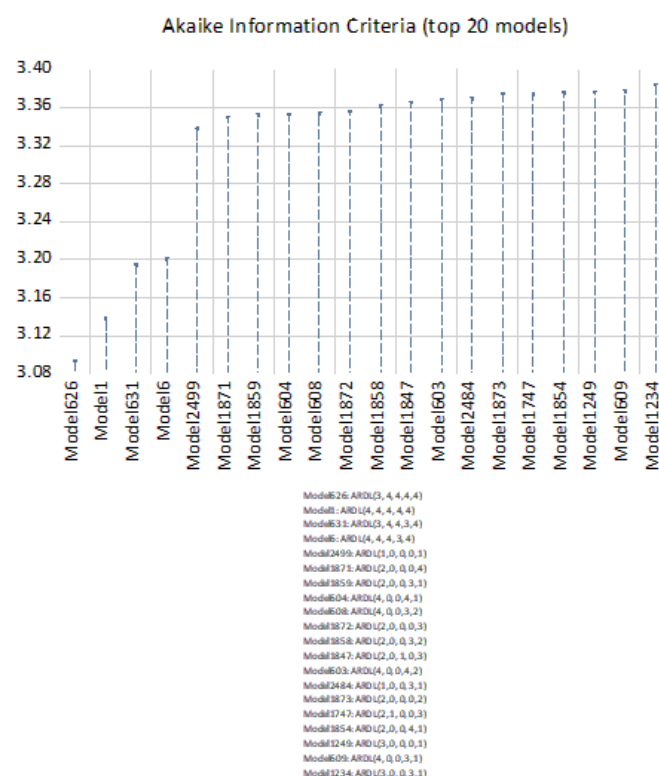
Table No. (2): Results of the Unit Root Test Using the Augmented Dickey-Fuller (ADF) Test

Variable	Lag Period	Calculated ADF Statistic	p-value	Comment
Ln EG	0	-4.494779	0.0008	The series is stationary at the level.
Ln LTOP 1	0	-3.684403	0.0079	The series is stationary at the level.
Ln LTOP 10	0	-3.813047	0.0058	The series is stationary at the level.
Ln LBOT 50	0	-3.551951	0.0115	The series is stationary at the level.
Ln FOR C	0	-6.581722	0.0000	The series is not stationary at the level and was re-tested to become stationary at the first difference.
Ln HDI	0	-4.400369	0.0000	The series is not stationary at the level and was re-tested to become stationary at the first difference.
Ln Trad OP	0	-5.306910	0.0001	The series is not stationary at the level and was re-tested to become stationary at the first difference.

Source: Prepared by the researcher based on E-VIEWS 12 program.

3.3 Estimation of ARDL Model Results and Cointegration Test:

Figure No. (7) illustrates that the model (2, 0, 2, 4, 0, 2, 4) exhibits the lowest value for the (AIC), indicating that it is the most optimal model.



Source: Prepared by the researcher based on E-VIEWS 12 program.

Table No. (3): Estimation of the Distributed Lag Autoregressive Model⁽³⁷⁾

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
E_G(-1)	0.348989	0.345564	1.009911	0.3515
E_G(-2)	-0.234541	0.336129	-0.697770	0.5114
E_G(-3)	-2.158961	0.733648	-2.942777	0.0259
TOP_1	-16.23767	4.941978	-3.285662	0.0167
TOP_1(-1)	6.794028	3.453382	1.967355	0.0967
TOP_1(-2)	-0.072642	1.596059	-0.045513	0.9652
TOP_1(-3)	-16.01464	5.657120	-2.830881	0.0299
TOP_1(-4)	-9.378255	3.921017	-2.391791	0.0539
TOP10	29.53553	9.549840	3.092777	0.0213
TOP10(-1)	-9.599179	5.029801	-1.908461	0.1049
TOP10(-2)	-2.062284	2.507100	-0.822578	0.4422
TOP10(-3)	12.91788	4.863834	2.655904	0.0377
TOP10(-4)	11.08198	4.629857	2.393589	0.0538
BOT_50	28.32058	11.19294	2.530218	0.0447
BOT_50(-1)	-13.94507	6.717453	-2.075947	0.0832
BOT_50(-2)	-0.138238	4.005178	-0.034515	0.9736
BOT_50(-3)	-12.64347	5.774589	-2.189501	0.0711
BOT_50(-4)	3.732254	3.564437	1.047081	0.3354
HDI	-164.7037	155.3218	-1.060404	0.3298
HDI(-1)	-436.5694	137.6133	-3.172435	0.0193
HDI(-2)	127.9471	51.27308	2.495405	0.0468
HDI(-3)	-18.69702	12.26027	-1.525009	0.1781
HDI(-4)	72.06096	24.57278	2.932552	0.0262
C	-1199.713	419.7141	-2.858405	0.0289
R-squared	0.952335	Mean dependent var		3.932000
Adjusted R-squared	0.769618	S.D. dependent var		2.377912
S.E. of regression	1.141353	Akaike info criterion		3.092867
Sum squared resid	7.816115	Schwarz criterion		4.213825
Log likelihood	-22.39301	Hannan-Quinn criter.		3.451471
F-statistic	5.212087	Durbin-Watson stat		2.913707
Prob(F-statistic)	0.024012			
*Note: p-values and any subsequent tests do not account for model selection.				

Source: Prepared by the researcher based on E-VIEWS 12 program

3.4 Bond's Test for the Long-Term Relationship Between the Study Variables:

Four lag periods were selected to determine cointegration through the Bounds test, based on the data criteria (SIC, HQ, AIC). This was done by specifying a maximum of four lag periods for each of the variables, which resulted in an F-statistic value of (2.888110), as shown in Table 4. This value exceeds the critical value at significance levels of 1%, 2.5%, 5%, and 10% for two lags, indicating it is above the minimum critical value. Consequently, the null hypothesis, which posits the absence of No cointegration among the

variables, is accepted, and the alternative hypothesis, suggesting the presence of cointegration among the study variables, is rejected. This does not support the study's hypothesis, which posits a long-term equilibrium relationship between the economic growth rate (as the dependent variable) and the share of the top 1%, 10%, and the middle 50% of income, human capital during the period (1980-2023).

Table No. (4): Results of the Bound Test for Cointegration

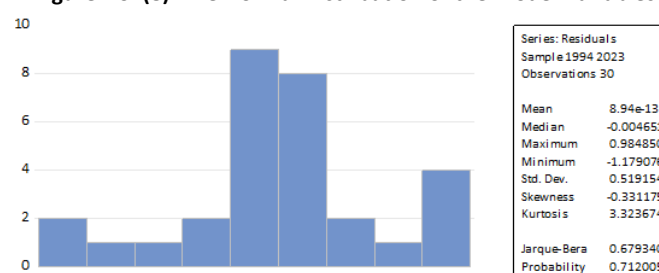
Calculated F-Statistic	Critical Values	Significance Level 10%	Significance Level 5%	Significance Level 2.5%	Significance Level 1%
(2.888110)	Lower Bound I(0)	2.2	2.56	2.88	3.29
	Upper Bound I(1)	3.09	3.49	3.87	4.37

Source: Prepared by the researcher using EViews 12 software.

3.5 Diagnostic Tests for the Model:

3.5.1 Normality Test: Figure 3 illustrates that the estimated model follows a normal distribution. Additionally, the results of the Jarque-Bera test show that its p-value is greater than 5%, thereby allowing the acceptance of the hypothesis that the residuals are normally distributed.

Figure No. (8): The Normal Distribution of the Model Variables



Source: Prepared by the researcher using EViews 12 software.

3.5.2 Heteroscedasticity Test: Several tests are available to detect the issue of heteroscedasticity. In this study, the researcher employed the Breusch-Pagan-Godfrey test, which indicated no evidence of heteroscedasticity. The tabulated value exceeded the calculated value for both tests, and the significance level was greater than 5%, suggesting that the residuals are homoscedastic.

Table No. (5): Results of the Heteroscedasticity Test: Breusch-Pagan-Godfrey

Heteroskedasticity Test: Breusch-Pagan-Godfrey			
Null hypothesis: Homoskedasticity			
F-statistic	0.861232	Prob. F(23,6)	0.6395
Obs*R-squared	23.02551	Prob. Chi-Square(23)	0.4593
Scaled explained SS	1.070075	Prob. Chi-Square(23)	1.0000

Source: Prepared by the researcher using EViews 12 software.

(37)Dependent Variable: E_G, Method: ARDL, Date: 01/28/25 Time: 17:34, Sample (adjusted): 1994 2023, Included observations: 30 after adjustments, Maximum dependent lags: 4 (Automatic selection), Maximum dependent lags: 4 (Automatic selection), Model selection method: Akaike info criterion (AIC), Dynamic regressors (4 lags, automatic): TOP_1 TOP10 BOT_50 HDI, Fixed regressors: C, Number of models evaluated: 2500, Selected Model: ARDL(3, 4, 4, 4, 4).

Table No. (6): Results of the Heteroscedasticity Test: Harvey

Heteroskedasticity Test: Harvey			
Null hypothesis: Homoskedasticity			
F-statistic	1.279766	Prob. F(23,6)	0.4069
Obs*R-squared	24.92022	Prob. Chi-Square(23)	0.3544
Scaled explained SS	46.97151	Prob. Chi-Square(23)	0.0023

3.5.3 Serial Correlation LM Test for Residuals: The results above indicate that the estimated model is free from serial correlation of higher-order residuals, as tested using the Breusch-Godfrey test at the first degree. The p-value (0.7239) was greater than the 0.05 significance level, leading to the rejection of the hypothesis of serial correlation in the residual series. Additionally, the calculated values of the Lagrange Multiplier (LM) test were lower than the critical value of (0.326979), further supporting the absence of serial correlation in the residuals.

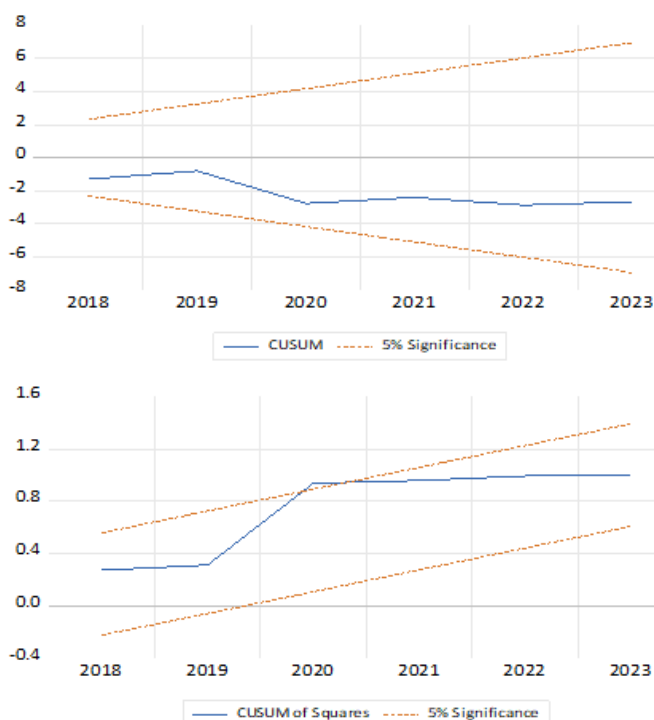
Table No. (7): Autocorrelation Test for Residuals

Breusch-Godfrey Serial Correlation LM Test:			
Null hypothesis: No serial correlation at up to 2 lags			
F-statistic	0.326979	Prob. F(2,27)	0.7239
Obs*R-squared	0.804029	Prob. Chi-Square(2)	0.6690

Source: Prepared by the researcher using EViews 12 software.

3.5.4 Structural Stability Test for the Model: As shown in Figure 10, the estimated coefficients of the ARDL model exhibit structural stability over the study period. This confirms the stability of the study variables and the coherence within the model. The graphical representation of the test statistics for the two tests conducted on this model falls within the critical boundaries at the 5% significance level, further supporting the model's stability.

Figure No. (9): Structural Stability Test for the Model



Source: Prepared by the researcher using EViews 12 software.

Table No. (8): Estimation of Model Parameters in the Long Run

Levels Equation				
Case 2: Restricted Constant and No Trend				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
TOP_1	-11.46626	1.900689	-6.032685	0.0009
TOP10	13.75390	2.365134	5.815271	0.0011
BOT_50	1.749394	0.949078	1.843257	0.1149
HDI	-137.9406	34.41957	-4.007623	0.0071
C	-394.0575	75.95827	-5.187815	0.0020

Source: Prepared by the researcher using EViews 12 software.

Given that the calculated F-Bounds statistic confirms the existence of a cointegrating relationship, it is essential to estimate the long-run relationship for the equations. Consequently, the following equation can be derived:

$$EC = E_G - (-11.4663*TOP_1 + 13.7539*TOP10 + 1.7494*BOT_50 - 137.9406 *HDI - 394.0575)$$

The findings reveal that some variables are statistically significant, while others are not. The effects of the significant variables on economic growth are explained as follows:

- Negative impact of changes in the share of top 1%:** A one-unit increase in the share of the top 1% leads to a decrease in economic growth by 11.46 units, indicating an inverse relationship.
- Positive impact of changes in the share of top 10%:** A one-unit increase in the share of the top 10% results in an increase in economic growth by 13.7 units, indicating a positive relationship.
- Positive impact of changes in the share of the middle 50%:** A one-unit increase in the share of the middle 50% leads to a decrease in economic growth by 1.7 units, suggesting an inverse relationship.
- Negative impact of human capital:** A one-unit increase in human capital leads to a significant increase in economic growth by 137 units, demonstrating a strong positive relationship.

These results suggest that while certain factors, such as the share of the top 1% and middle 50%, have negative impacts on economic growth, others, like human capital.

Step Four of the ARDL Test:

In the presence of a long-term equilibrium relationship, the next step is to estimate both the long-run and short-run parameters of the independent variables within the framework of the Error Correction Model (ECM)⁽³⁸⁾. If the time series are not stationary individually but exhibit cointegration as a group, the Error Correction Model (ECM) becomes the most suitable approach for estimating the relationship between them. The ECM incorporates both the long-term relationship (through lagged variables) and the short-term dynamics (by including the differences in the time series). As a result, the ARDL technique is applied to capture both dimensions of the relationship, as shown in the following table:

Table No. (9): Error Correction Model (ECM)⁽³⁹⁾

Cointegrating Eq:	CointEq1					
E_G(-1)	1.000000					
TOP_1(-1)	4.795930					
	(1.36750)					
	[3.50707]					
TOP10(-1)	-1.885733					
	(1.47394)					
	[-1.27938]					
BOT_50(-1)	4.855751					
	(0.47071)					
	[10.3159]					
HDI(-1)	-196.1057					
	(5.65975)					
	[-34.6492]					
FOR_C(-1)	-0.424162					
	(0.07491)					
	[-5.66242]					
C	75.32777					
Error Correction:	D(E_G)	D(TOP_1)	D(TOP10)	D(BOT_50)	D(HDI)	D(FOR_C)
CointEq1	-0.064228	-0.065448	-0.068021	0.020787	0.002635	0.057169
	(0.06032)	(0.01742)	(0.01564)	(0.00676)	(0.00017)	(0.12081)
	[-1.06486]	[-3.75626]	[-4.34848]	[3.07412]	[15.7791]	[0.47322]
D(E_G(-1))	-0.457889	0.047673	0.059311	-0.038992	-0.000404	0.020658
	(0.25960)	(0.07499)	(0.06732)	(0.02910)	(0.00072)	(0.51996)
	[-1.76383]	[0.63572]	[0.88097]	[-1.33978]	[-0.56136]	[0.03973]
D(E_G(-2))	-0.259543	-0.006064	-0.047022	0.008569	-0.000831	0.349743
	(0.25958)	(0.07499)	(0.06732)	(0.02910)	(0.00072)	(0.51992)
	[-0.99985]	[-0.08087]	[-0.69849]	[0.29447]	[-1.15639]	[0.67268]
D(TOP_1(-1))	-0.481943	-1.655548	-1.379468	0.216810	-0.014646	-1.156434
	(1.61942)	(0.46781)	(0.41998)	(0.18155)	(0.00448)	(3.24356)
	[-0.29760]	[-3.53896]	[-3.28463]	[1.19422]	[-3.26618]	[-0.35653]
D(TOP_1(-2))	0.114893	-0.957741	-0.866480	0.100540	-0.001676	1.994089
	(1.72369)	(0.49793)	(0.44702)	(0.19324)	(0.00477)	(3.45241)
	[0.06666]	[-1.92346]	[-1.93835]	[0.52029]	[-0.35123]	[0.57759]
D(TOP10(-1))	0.306217	1.063295	0.905867	-0.150048	0.012611	2.394187
	(2.00716)	(0.57981)	(0.52053)	(0.22502)	(0.00556)	(4.02018)
	[0.15256]	[1.83386]	[1.74027]	[-0.66683]	[2.26907]	[0.59554]
Determinant resid covariance (dof adj.)	4.03E-08					
Determinant resid covariance	1.09E-09					
Log likelihood	55.88327					
Akaike information criterion	2.201079					
Schwarz criterion	6.364268					
Number of coefficients	90					

Source: Prepared by the researcher using Eviews 12 software.

(38) The Error Correction Model (ECM) has two main significance points. The first is that it estimates the short-run coefficients, while the second is the error correction term (ECT), represented by the coefficient γ in the previous equation, also referred to as the speed of adjustment. This coefficient measures the rate at which disequilibrium in the short run is corrected towards equilibrium in the long run. For this to provide evidence of stability in the long-term relationship, the coefficient must be statistically significant and negative, as it indicates the rate at which the short-run relationship adjusts towards the long-run equilibrium (i.e., it confirms that the error correction mechanism is present in the model).

(39) Vector Error Correction Estimates, Date: 01/28/25 Time: 18:12, Sample (adjusted): 1993 2023, Included observations: 31 after adjustments, Standard errors in () & t-statistics in [].

The results of the **Error Correction Model (ECM)** in the table above suggest that short-run errors can be corrected, allowing the system to return to its long-run equilibrium position. Since the error correction term (ECT) is statistically significant at the 5% significance level and has a negative sign, it confirms the existence of a long-term equilibrium relationship between the variables. The value of the ECT is -0.064228, which indicates that any short-run shock to the system will be corrected within approximately six months, as the system adjusts back to its long-run equilibrium at this rate.

Results:

The study aimed to analyze the structure of income distribution and its impact on economic growth in Jordan from 1980 to 2023. The hypothesis tested in the study posited the existence of a long-term equilibrium relationship between the independent variables and the dependent variable, economic growth. To test this hypothesis, the Autoregressive Distributed Lag (ARDL) model was employed. The Jordanian economy is classified as a low-middle-income economy, characterized by significant income inequality. The income distribution structure over the period (1980–2023) revealed that 50% of the population receives only 14.4% of the total income, while the top 1% captures 17.1%, and the top 10% account for nearly half of the income (48.4%), according to 2021 data. This distribution is almost identical to the one observed in 1980, suggesting that no significant progress has been made in reducing income inequality, and the situation has remained largely unchanged for four decades.

The study hypothesis was tested, and the results showed that the value of the F statistic, which is equal to 2.88, is less than the tabular value at the significance levels of 1%, 2.5%, 5%, and 10% for two lag periods. This indicates that the calculated F statistic is higher than the minimum critical value, and thus the null hypothesis, which indicates the absence of joint integration between the variables, is accepted, and the alternative hypothesis, which confirms the existence of joint integration between the study variables, is rejected.

This finding confirms the study's hypothesis, which posited the existence of a long-term equilibrium relationship between the economic growth rate (as the dependent variable) and the share of the top 1%, top

10%, and middle 50% of income, human capital, capital accumulation as a ratio to GDP, and during the period from 1980 to 2023.

The results of the Error Correction Model (ECM), as presented in the table above, suggest that short-run deviations from equilibrium can be corrected to restore the long-run equilibrium. The error correction term (ECT) is statistically significant at the 5% significance level and carries a negative sign, confirming the existence of a long-term equilibrium relationship. The value of the ECT is -0.06, indicating that any short-run shock will be adjusted within approximately four months.

The findings regarding the impact of income distribution structure on economic growth in Jordan during the period 1980-2021 reveal the following key relationships:

- A. Negative impact of changes in the share of top 1%: A one-unit increase in the share of the top 1% leads to a decrease in economic growth by 11.46 units, indicating an inverse relationship.
- B. Positive impact of changes in the share of top 10%: A one-unit increase in the share of the top 10% results in an increase in economic growth by 13.7 units, indicating a positive relationship.
- C. Positive impact of changes in the share of the middle 50%: A one-unit increase in the share of the middle 50% leads to a decrease in economic growth by 1.7 units, suggesting an inverse relationship.
- D. Negative impact of human capital: A one-unit increase in human capital leads to a significant increase in economic growth by 137 units, demonstrating a strong positive relationship.
- E. These results suggest that while certain factors, such as the share of the top 1% and middle 50%, have negative impacts on economic growth, others, like human capital.

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Table No. (9): Study Variables during the Period (1980-2023)

	GDP Growth Rate (% Annually)	Top 1% Share	Top 10% Share	Middle 50% Share	HDI
1980	11.18	17.7	49.3	14.1	NA
1981	17.18	17.7	49.3	14.1	NA
1982	7	17.7	49.3	14.1	NA
1983	-2.2	17.7	49.3	14.1	NA
1984	4.3	17.7	49.3	14.1	NA
1985	-2.7	17.7	49.3	14.1	NA
1986	5.5	17.7	49.3	14.1	NA
1987	2.3	18.4	49.4	13.7	NA
1988	1.46	19.1	50.6	13.9	NA
1989	-10.73	20	49.9	13.2	NA
1990	-0.27	20.9	52.3	13.4	0.622
1991	1.61	21.9	52.3	12.2	0.625
1992	14.35	23.2	54.5	11.8	0.37
1993	4.49	21.8	52.9	12.4	0.641
1994	4.97	20.3	51.4	13.1	0.644
1995	6.2	18.9	49.8	13.7	0.651
1996	2.09	17.3	48.1	14.4	0.655
1997	3.31	15.8	46.4	15.1	0.661
1998	3.01	16.5	47.4	14.8	0.666
1999	3.39	17.7	48.3	14.5	0.671
2000	4.25	17.9	49.1	14.2	0.678
2001	5.27	18.6	49.9	13.9	0.685
2002	5.78	19.2	50.7	13.6	0.692
2003	4.16	19.6	51	13.4	0.698
2004	8.57	20	51.3	13.3	0.709
2005	8.15	20.4	51.6	13.1	0.716
2006	8.1	20.8	51.9	12.9	0.722
2007	8.2	21.1	52.3	13.1	0.729
2008	7.2	21.4	52.7	13.1	0.734
2009	5.02	22.4	53.1	13.3	0.731
2010	2.3	23.5	53.5	13.5	0.725
2011	2.74	20.1	50.8	14.1	0.721
2012	2.43	20.3	51	14.4	0.721
2013	2.61	20.4	51.2	14.7	0.719
2014	3.4	20.4	51.2	14.7	0.719
2015	2.5	20.4	51.2	14.7	0.718
2016	2	20.4	51.2	14.7	0.718
2017	2.5	20.4	51.2	14.7	0.718
2018	1.92	20.4	51.2	14.7	0.723
2019	1.93	20.4	51.2	14.7	0.727
2020	-1.57	20.4	51.2	14.7	0.723
2021	2.23	20.4	51.2	14.7	0.72
2022	2.6	20.4	51.2	14.7	0.736
2023	2.7	20.4	51.2	14.7	0.736

Source: Prepared by the researcher based on the World Bank Database and the Global Inequality Database.