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اسم الكاتب: زهراء خليل علي، مفيد ذنون يونس الملا ذنون
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Research Paper

Gender Equality in Education and Income Inequality in Middle-Income Countries

Zahraa K. Ali[1]; Mufeed D.Y. Almula-Dhanoon[2]
College of Administration and Economics - University of Mosul- Iraq

Corresponding author: Zahraa Khalil Ali, College of Administration and Economics - University of Mosul- Iraq
Zahraa4khalil7@gmail.com

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Abstract
The research aims to explore the effect of gender equality in education (measured by the ratio of the average years of female schooling to the average years of male schooling) on income distribution (measured by the income share held by the poorest 40% as a ratio of the income share held by richest 20%) in middle-income countries. Other explanatory variables that were used in the analysis are per capita GDP (PPP), unemployment rate, and population growth rate. Panel data from 19 middle-income countries for the period from 2000 to 2020 has been used. Fixed Effects Model and Seemingly Unrelated Regression Model (SURs) technique were applied to estimate the effect of gender equity in education and other explanatory variables on income distribution. Empirical evidence revealed that gender equity in education plays an important distributive role in favor of the poor. Per capita, GDP has a non-linear effect on income distribution. Unemployment rate and population growth have a distributive effect on the interest of the poor. The policy implications deduced are that income inequality can be reduced by narrowing the gender gap in education.

Keywords:
Gender Equality; Income Distribution; Surs, Middle Income Countries.

ورقة بحثية

المساواة بين الجنسين في التعليم وعدم المساواة في الدخل في البلدان ذات الدخل المتوسط

زهراء خليل علي[1]؛ مفيد ذنون يونس الملا ذنون[2]

جامعة الموصل، كلية الإدارة والاقتصاد، قسم الاقتصاد

المؤلف المراسل: زهراء خليل علي، جامعة الموصل، كلية الإدارة والاقتصاد، قسم الاقتصاد
Zahraa4khalil7@gmail.com

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المستخلص

يهدف البحث إلى استكشاف أثر المساواة بين الجنسين في التعليم (مقاسة بنسبة متوسط سنوات تعليم الإناث إلى متوسط سنوات تعليم الذكور) على توزيع الدخل (مقاسة بحصة الدخل التي يحتفظ بها أفقر ٤٠٪ كنسبة حصة الدخل التي يحتفظ بها أغنى ٢٠٪) في البلدان ذات الدخل المتوسط. المتغيرات التفسيرية الأخرى التي تم استخدامها في التحليل هي نصيب الفرد من الناتج المحلي الإجمالي (PPP) ، ومعدل البطالة ومعدل النمو السكاني. تم استخدام بيانات لوحة من ١٩ دولة متوسطة الدخل للفترة من ٢٠٠٠ إلى ٢٠٢٠ . تم تطبيق نموذج التأثيرات الثابتة وتقنية نموذج الانحدار غير المرتبط على ما يبدو (SURs) لتقدير تأثير المساواة بين الجنسين في التعليم والمتغيرات التفسيرية الأخرى على توزيع الدخل. كشفت الأدلة التجريبية أن المساواة بين الجنسين في التعليم تلعب دور توزيعي مهم لصالح الفقراء. نصيب الفرد من الناتج المحلي الإجمالي له تأثير غير خطي على توزيع الدخل. معدل البطالة والنمو السكاني لهما تأثير توزيعي ضد مصلحة الفقراء. الآثار السياسية المستخلصة هي أنه يمكن الحد من عدم المساواة في الدخل عن طريق تضييق الفجوة بين الجنسين في التعليم.

الكلمات الرئيسة:

المساواة بين الجنسين؛ توزيع الدخل؛ الدول ذات الدخل المتوسط

مجلة

تنمية الرافدين

***(TANRA):* مجلة علمية، فصلية، دولية، مفتوحة الوصول، محكمة.**

المجلد (٤٢)، العدد (١٣٨))،
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1. Introduction:

Middle-income countries face the problem of growing income inequality. Issues of inequality and redistribution began to dominate academic and political discussions, leading to divergent interpretations of the causes and consequences of distribution. From these discussions various opinions emerged about what the state could and could not do in promoting collective well-being.

One of the three most important groups in which poverty is clearly concentrated are women. Targeting poverty through economic policies should focus on the places where it is concentrated, especially among women. One way to achieve this is through educational empowerment of women. (Todaro & Smith, 2012, 252-255)

On the other hand, developments in recent decades have produced new adoptions in the framework of sustainable development, among which the most important is achieving gender equality and providing quality education, which was adopted by the United Nations among the Sustainable Development Goals (Goals 4 and 5).

Human capital is important to a country's economic growth. The education inequality can be one of the reasons for income inequality. Policy makers are more interested in studying the effect of education inequality on income inequality. There is a growing literature on the negative relationship between gender inequality in education and income distribution. (Kanwal and Munir, 2015, 2)

Little is known with certainty about the effect of gender inequality on income inequality. Hence, further analysis is required to understand the effects of gender equality on income equality. (Baloch et al, 2018, 4)

Most empirical research links women's empowerment with economic growth and development, but only a few have linked women's empowerment to income distribution. Therefore, the importance of this research is that economic policies aimed at reducing inequality may not pay attention to the role that women's empowerment can play in favor of income redistribution. The research aims to measure the impact of gender equality in education on income distribution in middle-income countries. The addition presented by the research is its attempt to shed light on the potentials provided by the Gender equality in education on the income distribution in middle-income countries, as well as the adoption of a different measure of income distribution represented in the ratio of the income share of the poorest 40% to the income share of the richest 20%. Because the use of the Gini scale, which was adopted in the previous empirical researches, has many doubts about its validity, because each single value of the Gini index may represent different distributions of income. The research hypothesis is that gender equality in education is important factor in reducing income inequality.

After the introduction, the research will be divided as follows: Section 2 presents the relevant literature, Section 3 is concerned with describing the data and methodology, Section 4 provides an analysis of women's educational empowerment

and income distribution in a group of middle-income countries,section 5 presents the empirical findings and analysis, we conclude in Section 6.

2. Relationship of Gender Equality in Education and Income Distribution-Review of Relevant Literature:

Recent literature has highlighted the importance of women empowerment in income distribution. Gender disparity in access to educational opportunities is closely related to increase income inequality. (Christian Gonzales,2015, 7) Income inequality and gender gaps are linked through gender wage gaps, differential fertility rates, and gender labor force participation rates that are likely to exacerbate income inequality and impede more equal income distribution. Hence, the gender inequality in education is reflected in the income inequality through several channels:

Gender inequality in education is related to the wage differential between men and women, and this is directly reflected in the increase in the income inequality. On the other hand, gender inequality in education leads to different rates of participation in the labor force and then gender disparity in income, which exacerbates income inequality. (Baloch et al, 2018, 4)

Gender inequality in education is one of the most important brakes in preventing low child mortality, fertility, and malnutrition and thus reducing educational returns for future generations. Which is reflected in the restructuring of the functional distribution of income in favor of wages, which is the main source of income for the poor. In addition, it is poor families that are characterized by high fertility rates, which contributes to keeping them within the circle of poverty and thus increasing the income inequality. (Abu-Ghaida and Klasen, 2004, 2; Odusola et al, 2017, 207-209; World Bank, 2020, 6)

Higher educational levels increase the likelihood of obtaining employment in the formal sector rather than employment in the informal sector or remaining unemployed. Gender inequality in education lowers economic efficiency by excluding women from educational attainment, skills acquisition, and access to higher levels of education. This limits the supply of skilled women, which leads to high rates of unemployment among women, and they have to work in marginal, low-paid jobs that do not require skills in the service sector and the agricultural sector. The lower wages of women compared to men is one of the sources of income inequality in the society. (Costa et al, 2009, 2)

Helping women participate fully in the economy not only boosts growth, it also diversifies economies, reduces income inequality, and reduces demographic shifts. In many countries, restrictions such as discriminatory laws, a lack of legal protections, unfavorable social norms, and a lack of access to real and financial assets crippled women, hampering economies. (Kabir and Hussain, 2019, 145)

Experimentally, there is a lot of research that deals with the relationship of women's empowerment to economic development. But only a few researchers have discussed the impact of women's empowerment on income distribution.

(Baloch et al, 2018) used panel data from 103 countries for the period 2006-2013, and the (Sys-GMM) method to explore the link between empowerment and income distribution. It is found that through gender equality and its sub-indicators, educational attainment and political empowerment, a desirable effect in income distribution can generally be ensured, indicating that through higher gender equality there is a decrease in income inequality. they were found that educational empowerment is the most important variable among other empowerment variables in its impact on income distribution.

The results of the fixed-effect model (Kanwal and Munir, 2015) showed that inequality in education and the average year of schooling have a positive and significant impact on income inequality in all South Asian countries. Findings on gender inequality indicate a positive relationship between gender inequality at the primary level of education, gender inequality at the tertiary level, and income inequality. Gender inequality at the secondary level of education has an inverse relationship with income inequality. Similarly, there is a direct relationship between gender inequality at the secondary education level, gender inequality at the higher education level and per capita income. But gender inequality at the primary level has an indirect relationship to per capita income. Moreover, there is a positive relationship between educational inequality and gender inequality at primary, secondary and tertiary levels. The level of primary and tertiary education has a negative effect and the secondary one has a positive and significant effect on income inequality. There is an inverse relationship between education inequality and per capita income but it has a significant impact on per capita income in all countries.

(Costa et al, 2009), through the use of micro-simulation techniques to analyze the impact of different aspects of gender inequality on household income distribution, in terms of income growth, poverty levels and inequality, found that gender inequality is important not only for women but for everyone in society, especially the poor. Eliminating gender inequality would lead to higher household incomes and lower poverty and inequality. However, these results may vary in different countries and according to each aspect of gender inequality under consideration.

Although correlations do not reflect causation, (Mesa, 2007) regional data on Gini education and income coefficients confirm that education inequality and income inequality are positively correlated.

3. Data and Methodology:

The research relied on panel data for nineteen middle income countries that the required data for analysis for the period (2000-2020) are available, these countries are (Argentina, Armenia, Belarus, Brazil, Colombia, Costa Rica, El Salvador, Georgia,

Honduras, Indonesia, Kyrgyzstan, Moldova, Panama, Paraguay, Peru, Russia, Thailand, Ukraine, and Uruguay). Data were collected based on the International Development Indicators database issued by the World Bank. (World Bank, 2021, on line data) and UNDP Human Development Data (UNDP, Human Development Data Center, 2021).

Fixed Effects Model and Seemingly Unrelated Regression Model (SURs), was used to investigate the effect of educational empowerment on income distribution. There are many variables affecting income distribution that are categorized into macroeconomic variables, political economy variables, and demographic variables. (Deyshappriya, 2007, 4-6)

The regression model has been designed to take into consideration, in addition to the effect of gender equality in education, the effect of other variables, namely, per capita GDP (PPP), square per capita GDP (PPP), unemployment rate, and population growth rate. Model (1) represents the regression equation:

$$Y_{it} = \beta_0 + \sum_{i=1}^{n} \sum_{j=1}^{k} \beta_j X_{it} + \mu_{it} \quad \ldots. (1)$$

Where: j = 1,2,3, ... k, number of explanatory variables, i: cross-section, n: number of cross-sections t: length of time, μ: error term.

Y= Dependent variable: Income distribution

∑Xi: Explanatory variable matrix which contain the following variables:

X1= Gender equality in education

X2= per capita GDP (PPP) (constant 2017 international $)

X3= $(X2)^2$ = Square per capita GDP (PPP)

X4= Unemployment rate (ILO estimate)

X5= Population growth

Description of the Model Variables:

Income Distribution**:** The common measure of income inequality can be derived from a comparison the share of the richest 20% of income with the share of the poorest 40% of income. (Todaro, 2012, 219) Therefore, we adopted the criterion of the income share held by poorest 40% as a ratio of the income share held by richest 20%. An increase in this ratio reflects a more equitable distribution of income, while its decrease indicates an increase in income inequality.

Gender Equality in Education: Measured as, average years of schooling for female as a ratio of average years of schooling for male. Education is seen as preparing manpower to get jobs. The higher the education, the more skills an individual has and the better job he can get, and thus the higher his income. Improving females' opportunities to access educational opportunities and acquire skills is the main gateway to entering the labor market and obtaining income, thus achieving greater equality in the distribution of income. So, it is expected that educational empowerment will have a positive impact on income distribution. (Kanwal and Munir, 2015, 2; Baloch et al, 2018, 5)

Per capita GDP (PPP): Per capita GDP (PPP) is related to the level of economic development. The relationship between economic development and income distribution is related to the dialectic of employment flexibility versus productivity gains. Economic development may be a source of reducing income inequality if its benefits are spilled over the poor by providing more jobs. But it can enhance the income inequality if its benefits are limited to a small class of the rich. (Nallari and Griffith, 2011, 272)

Square of per capita GDP (PPP): was used to take into account the possibility of changing the impact of economic development on income distribution with the continuation of economic development (Kuznets hypothesis). (Todaro, 2012, 235-236)

Unemployment Rate: Unemployment is one of the criteria for judging the health of an economy. It is likely that the poor are members of the labor force whose income is linked to the wages they receive for their work. High unemployment rates keep many people out of the labor market and thus cut off their incomes. On the other hand, high unemployment rates greatly reduce workers' wages due to the high demand for jobs in opposite to the offered job opportunities, a situation that makes workers in a weak bargaining position. The decrease in the wage share of income means a reduction in the share of the poor compared to the share of the rich, and thus greater disparity in the income distribution. Therefore, the impact of unemployment rate is expected to be negative on income distribution. (Deyshappriya, 2011, 11)

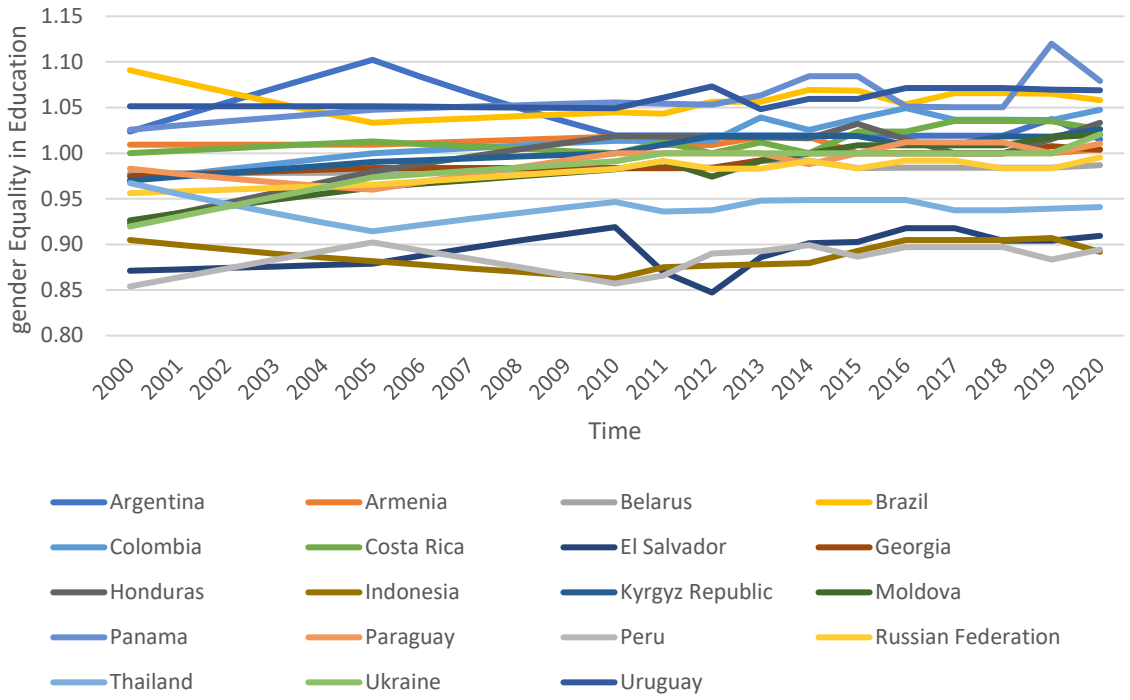
Population Growth Rate: Fertility difference between rich and poor families explains the relationship between fertility and income inequality. Poor families tend to have many children and invest too little in their children's education, thus increasing income inequality. On the other hand, lower fertility enhances female participation in the labor force, thereby increasing women's income and reducing gender inequality. (World Bank, 2020, 6) Rapid population growth can increase inequality by changing the income distribution between the wage and the returns of other production factors (profit, rent, and interest). Since income from profit, rent, and interest is distributed to a smaller number of people than labor income, a rapid rate of population growth will lead to a more uneven distribution of income over time. Hence income tends to skew in favor of profit, rent and interest. (Odusola et al, 2017, 207-209)

4. Gender equality in education and income distribution:

Figure (1) reflects the clear discrepancy between the middle-income countries in the amount achieved in the field of educational empowerment of women during the study period (measured by the average years of education for females as a percentage of the average years of education for males). It turns out that the highest rates of equity in education are 1.1 (i.e., 11 years of education for females compared to 10 for males), which represents an advanced level of equality in education. Other countries

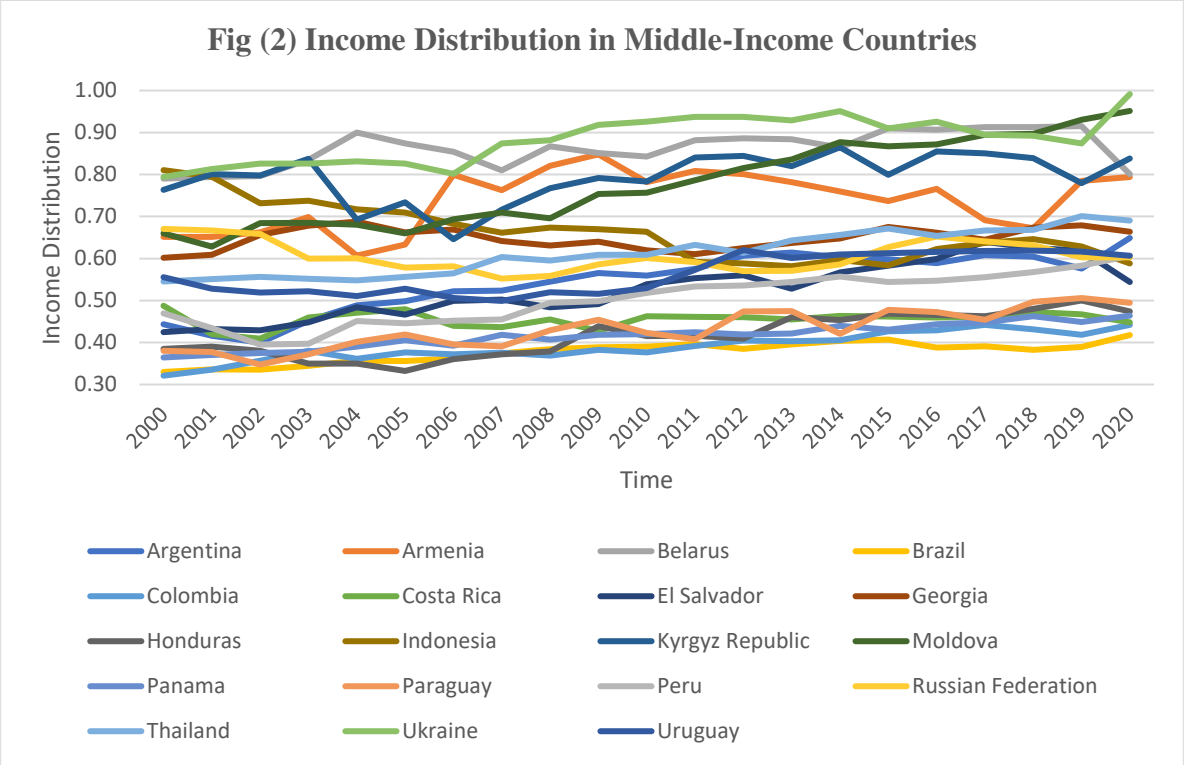
achieved a low level of equity in education. Where the lowest levels reached 0.83 (i.e., 8 years of education for females compared to 10 years for males). This reflects an important variance that explains the variance in income distribution in the middle-income countries.

Fig (1) Gender Equality in Education in Middle-Income Countries



Source: Researchers' work using Excel

On the other hand, income distribution in the middle-income countries clearly varied within, and between countries. Figure (2) shows a discrepancy in the income distribution (measured as the income share held by the poorest 40% as a proportion of the share held by the richest 20%) ranging from approximately 0.3 for the worst distribution to approximately 1 for the best distribution. This income disparity is explained by the gender equality in education, according to our research hypothesis.



Source: Researchers' work using Excel

5. Empirical Findings and Analysis:

5.1 Summary of Descriptive Statistics

Table 1 summarizes the descriptive statistics representing the mean, median, minimum and maximum values, and standard deviation of the dependent variable, the inequality in the income distribution (Y), and the independent variables; Gender equality in education (X1), Per capita GDP (PPP)(X2), square Per capita GDP (PPP) (X3), unemployment rate (X4), and population growth rate (X5).

The average of income inequality for the countries used in the empirical analysis was (0.59%) between 2000 and 2020, ranging from (0.32%) in Colombia in 2000 to (0.99%) in Ukraine in 2020, with a standard deviation of (0.17). This difference in income distribution is due to the different gender disparities in education, per capita GDP (PPP), unemployment rate, and population growth rate.

The average level of gender inequality in education was (0.99 %) for the period from 2000 to 2020. It was a minimum of (0.85 %) in El Salvador in 2012 and a maximum of (1.12 %) in Panama in 2019. With a standard deviation of (0.055).

The average value of the per capita GDP amounted to (12,727.15) for the period 2000 to 2020. The minimum value of this variable is (3078.909) in Kyrgyzstan in 2000, and the maximum value is (31432.11) in Panama in 2019. The variance from the average is (6104,340).

For the square per capita GDP, the average value is (1.99E+08) with minimum value (9479682.) in Kyrgyz Republic in 2000, and maximum value (9.88E+08) in Panama in 2019, and the standard deviation equal to (1.87E+08).

The average value of the unemployment rate was (7.74 %) from 2000 to 2020. The ratio ranged from a minimum value of (0.21 %) in Thailand in 2013 to a maximum value of (20.71 %) in Georgia in 2009. Standard deviation of (4.19).

The average population growth rate was (0.67 %) for the period 2000 to 2020. The minimum value of the variable was (-1.94 %) in Georgia in 2000 and the maximum value is (2.73) in Honduras in 2000 and the standard deviation was (0.89).

Table (1): Descriptive Statistics

	Y	X1	X2	X3	X4	X5
Mean	0.589942	0.986411	12727.15	1.99E+08	7.736842	0.675992
Median	0.581590	1.000000	11871.12	1.41E+08	7.160000	0.838839
Maximum	0.991506	1.120000	31432.11	9.88E+08	20.71000	2.734904
Minimum	0.321027	0.847222	3078.909	9479682.	0.210000	-1.944629
Std. Dev.	0.166420	0.055313	6104.340	1.87E+08	4.194976	0.886624
Observations	399	399	399	399	399	399

5.2 Unit Root Test

Table (2) shows the results of the unit root test that diagnoses the stationary of the model variables.

Table (2): Unit Root Test (Levin, Lin & Chu Test)

Variables	statistics	probability
Y	-1.68010	0.0465*
X1	-4.48113	0.0000*
X2	-3.99105	0.0000*
X3	-2.32468	0.0100**
X4	-2.64993	0.0040*
X5	-1.97893	0.0239**

(*) significant at (1%); (**) significant at (5%)

Table (2) and Figure (1) shows that all the variables are stationary at the level I(0), at (1%) and (5%), and this is indicated by the probability value (P-Value).

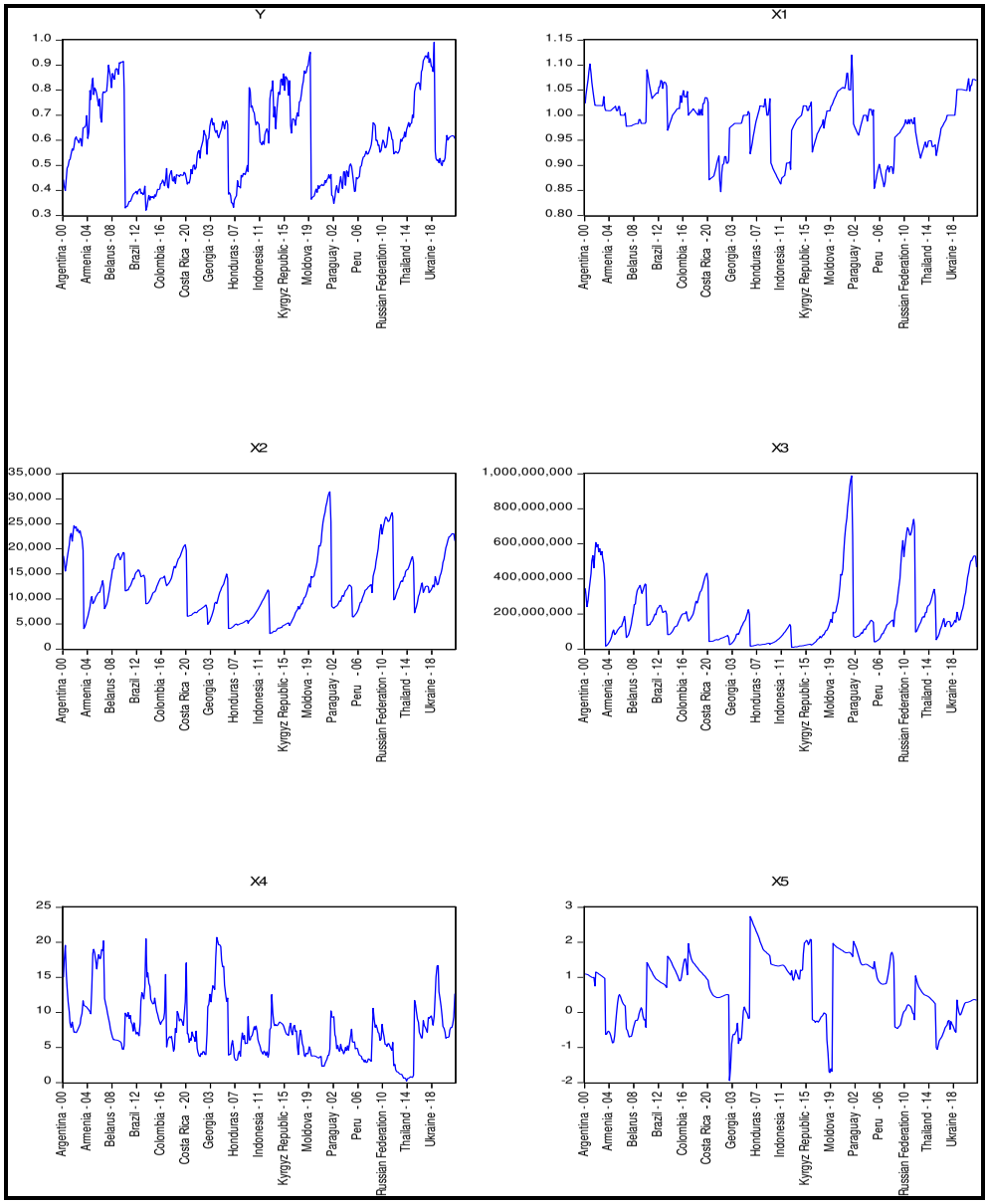


Figure 1: Direction of the variables over time

5.3 Estimation Results:

Using pooled regression, fixed effect and random effect models to regress income distribution inequality (the ratio of the share of the poorest 40% to the share of the richest 20%) on the explanatory variables represented by gender equality in education (average years of schooling for female as a ratio the average years of education for male), per capita GDP, square per capita GDP, unemployment rate, and population growth. The results are shown in Table (3).

Table (3) Model Estimation Results

Variables	Pooled Regression Model		Fixed Effects Model		Random Effects Model	
	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.
X1	0.021389	0.8817$^{N.S}$	0.313665	0.0284*	0.517268	0.0003*
X2	-1.93E-05	0.0000*	3.38E-06	0.4057$^{N.S}$	1.83E-05	0.0000*
X3	4.98E-10	0.0006*	-1.36E-10	0.1265$^{N.S}$	-3.47E-10	0.0000*
X4	-0.004322	0.0152*	-0.003010	0.0047*	-0.001972	0.0650**
X5	-0.131904	0.0000*	-0.019240	0.0086*	-0.026452	0.0004*
C	0.838085	0.0000*	0.300853	0.0403*	-0.050580	0.7075$^{N.S}$
F-statistic	64.57317		132.3967		33.97209	
Prob.	0.000000		0.000000		0.000000	
D.W	0.076573		0.519451		0.445726	

(*) significant at (1%); (**) significant at (5%); (N.S) not significant

The comparison between the models estimated through Fisher test and Hausman test shows that the best model is the fixed effects model.

The insignificance of some variables and the low Durbin-Watson values casts doubts on the validity of the results given by the models in Table (3). So, Seemingly Unrelated Regression Model (SURs) technique was used to ensure eliminating correlations between errors across cross-sections. Table (4) show (SURs) regression results.

Table (4): (SURs) Regression Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
X1	0.017395	0.008991	1.934632	0.0538**
X2	-1.92E-05	3.10E-07	-61.79856	0.0000*
X3	4.95E-10	7.83E-12	63.20391	0.0000*
X4	-0.004300	0.000153	-28.13726	0.0000*
X5	-0.131330	0.000960	-136.8098	0.0000*
C	0.840089	0.007745	108.4656	0.0000*
F-statistic	9846.607			
Prob(F-statistic)	0.000000			
D.W	1.915694			

(*) significant at (1%).

Table 4 shows that the estimated model reflects the significant effect of all variables at the 1% level. In addition to the significance of the entire model, where the probability value of the test (F) was (9846.607) with a probability of (0.0000), which confirms its significance at the (1%). The model does not suffer from the

problem of autocorrelation, this is evidenced by the value of the D.W. test. of (1.92), this value lies in the region of no autocorrelation.

The regression results in Table (4) show that the Gender equality in education (X1) has important distributive effects. An increase in female educational empowerment by one percentage point leads to an increase of (0.02) percentage points in the income distribution in favor of the poorest 40% as a ratio of the income share of the richest 20%. This is due to the increasing returns to education and skill-biased technological change. This result is important because redistributive policy makers are often not interested in empowering women educationally as a means of income distribution. The effect of gender equality in education is rather little bit large compared to the effect of other explanatory variables, with the exception of population growth.

Per capita GDP (PPP) (X2) negatively affects income distribution in the early stages of economic development due to the structural changes accompanying the launch of development. Where it was found that an increase in per capita GDP by one percentage point leads to a decrease in the share of the poorest 40% as a percentage as a ratio of the share of the richest 20% by (1.92E-05) percentage points. This effect is very weak, but it suggests that the outcome of economic development is not spilled over the poor in the form of job opportunities and additional incomes, but rather it is captured by a small class of the rich. But with the continuation of the development process, its impact on income distribution changes, as the effect of variable (X3) appears favorable to development on income distribution. Increasing per capita GDP by one unit improves income distribution by (4.95E-10) percentage points.

It was found that unemployment rate (X4) has a negative impact on the income share of the poor as a ratio of the share of the rich. Increasing unemployment rate as a percentage of the total labor force by one percentage point leads to a decrease in the share of the poor in income as a ratio of the share of the rich by (0.004300) percentage points. This result is consistent with the logic where it is likely that the main source of income for the poor is wages, and unemployment negatively affects the possibility of workers' access to wages, and reduces their bargaining power to obtain high wages due to the mismatch between the broad labor supply and low demand for it by the business sector, thus reduces the poor's share of income.

Population growth rate (X5) negatively affects the share of the poor as a ratio of the share of the rich. Increasing population growth by one percentage point leads to a reduction in the share of the poor as a ratio of the rich by (0.131330) percentage points. The effect of population growth is the greater among the other explanatory variables.

5.4 Multicollinearity Test:

Partial correlation analysis helps ensure that there is no linear multicollinearity among model variables that lead to spurious results. Table (5) displays the correlation matrix among the variables.

Figure (5): Partial Correlation Matrix

	Y	X1	X2	X4	X5
Y	1	-0.14	-0.11	0.09	-0.63
X1	-0.14	1	0.45	0.34	0.06
X2	-0.11	0.45	1	-0.09	-0.06
X4	0.09	0.34	-0.09	1	-0.28
X5	-0.63	0.06	-0.06	-0.28	1

The partial correlation matrix in Table 4 shows the relationship between the variables. It was found that there were no strong correlations between the variables, thus, the estimated model is free from the problem of multicollinearity.

5.5 Causality Test

As long as the variables are stationary at the level, the Granger causality test can be used. Table 6 shows the results of the causality test between gender equality in education and income distribution.

Table (6) Granger Causality Tests

The Direction of the relationship		Zbar-stat.	P	Optimal number of lags (AIC)
From	To			
X1	Y	5.07703	4.E-07*	4
Y	X1	0.68887	$0.4909^{N.S}$	4

(*) significant at (1%); (N.S) not significant

It appears from the results the possibility to accept the alternative hypothesis which says that gender equality in education causes income distribution and reject the null hypothesis. While it is not possible to reject the null hypothesis which says that the income distribution does not cause gender equality in education. In other words, the causal relationship between the two variables is one-way, and it goes from gender equality in education to income distribution. It means that appropriate method to income redistribution polices should start from fighting gender inequality in education, which in turn will reduce income distribution gap.

6. Conclusions:

The extracted results show that the Gender equality in education has a very important distributive role. More gender equality in education contributes to reducing

income inequality. The extent of the effect of gender equality in education compared to the effect of other explanatory variables is noteworthy. This suggests that increasing interest in achieving greater gender equality in education is in the interest of redistributive policies in middle-income countries.

Rapid population growth in middle income countries is still the most important obstacle facing income redistribution measures. The high rate of population growth necessarily leads to widen the income distribution gap. On the other hand, high unemployment rate plays a role in the redistribution of income against the interests of the poor in the middle-income countries.

Per capita GDP has a non-linear effect on income inequality. Economic development in its early stages leads to bad distributional effects, due to the structural changes in wages and the structure of required skills that accompany development. But in the long run, it will have a pro-poor effect and reduce the gap between the rich and the poor.

The causal relationship between gender equality in education and income distribution is one-way, from gender equality in education to income distribution. This suggests that income redistribution policies should focus on narrowing the gender gap in education and enabling women to access educational opportunities as one of the economic policy tools aimed at redistributing income.

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