Journal of Economics, Finance and Management (JEFM)
ISSN: 2958-7360
Vol. 3, No. 3, May 2024

Effectiveness of Moroccan public policies in promoting pro-poor growth

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Abstract: This study examines the impact of public policies on pro-poor growth in Morocco, focusing on five key areas. Using data from 2000 to 2022 and a robust least squares estimation methodology, the results show that public efforts to improve access to education, create jobs, redistribute income, promote financial inclusion, and enhance institutional quality all have a positive and significant impact on pro-poor growth. Improving access to education has a strongly positive effect on pro-poor growth, strengthening human capital and increasing productivity. Job creation shows a significant, albeit moderate, positive impact, highlighting the importance of investments in infrastructure and the labor market. Income redistribution through social and health expenditures also has a significant positive effect, improving the well-being of poor populations. Promoting financial inclusion shows a moderate positive effect, allowing disadvantaged populations to access financial services. The quality of institutions has a strongly positive impact, fostering political stability and transparency. Additionally, some control variables such as inflation and trade openness have a negative impact on pro-poor growth. High inflation erodes the purchasing power of poor households, and trade openness can exacerbate economic imbalances and inequalities. The management of public debt did not show a significant relationship with pro-poor growth in this model.

Keywords : Pro-Poor Growth; Public Policies; Education; Job Creation; Income Redistribution; Financial Inclusion; Institutional Quality.
JEL Classification: O12; O15; O18; I25; E24.

Digital Object Identifier (DOI): https://doi.org/10.5281/zenodo.11475809

1. Introduction

Inclusive and pro-poor economic growth has become a central objective for many developing countries, aiming to reduce inequalities and improve the well-being of the most vulnerable populations. In this context, the effectiveness of public policies plays a significant role in promoting pro-poor growth. This study explores the impact of various public efforts, including improving access to education, job creation, income redistribution, promoting financial inclusion, and enhancing institutional quality, on inclusive economic growth in Morocco. Education, as a pillar of human development, is widely recognized for its role in increasing human capital and economic opportunities, particularly for disadvantaged populations. Public investments in education can thus play a decisive role in reducing poverty and promoting inclusive growth. Similarly, public efforts for job creation, through investments in infrastructure and initiatives aimed at stimulating the labor market, are essential for providing income opportunities to the poor and contributing to more equitable economic growth.

Furthermore, income redistribution through social and health expenditure policies improves the well-being of the poor, thereby fostering inclusive economic growth. Promoting financial inclusion enables disadvantaged populations to access financial services, increasing their capacity to invest and participate in the economy. Finally, the quality of institutions, in terms of political stability, transparency, and administrative efficiency, creates a favorable environment for inclusive and pro-poor growth. This study uses data covering the period from 2000 to 2022 to analyze the impact of these various public efforts on pro-poor growth in Morocco. By examining the effects of each type of public effort, this research highlights the most effective levers for promoting economic growth that benefits everyone, particularly the most vulnerable populations.

2. Literature Review

Pro-poor growth is an economic concept that aims to ensure that the benefits of economic growth disproportionately favor the poor over the rich, contributing to poverty reduction and potentially reducing inequalities. Kakwani and Son (2003) introduced the Poverty Equivalent Growth Rate (PEGR) to measure this form of growth. They define pro-poor growth as growth that benefits the poor proportionally more than the rich, emphasizing the need for policies that promote dynamic redistribution in favor of the poor and align with progressive and shared growth. Abdala (2021) revisited the various definitions and measures of pro-poor growth by comparing relative and absolute approaches. The relative approach focuses on changes in wealth distribution, while the absolute approach focuses on the overall outcomes of growth on the well-being of the poor. Abdala advocates for a strong and absolute definition of pro-poor growth, suggesting the use of the "vast majority income" as an appropriate measure. He concludes that this approach is more effective for time series analyses and panel studies, as it captures both the income dimension and the redistribution aspect.

Doumbia (2018) proposed a long-term analysis of pro-poor growth using the income share of the poorest 20% as a measure of the pro-poor nature of growth. However, this measure has numerous missing data points for developing countries, limiting its applicability. McCulloch and Baulch (1999) proposed a pro-poor growth approach centered on reducing inequalities. For them, growth is pro-poor when inequality decreases or does not worsen during the growth process. This approach calls for static redistribution policies and the construction of a strong middle class to combat economic polarization. Son (2004) developed the poverty growth curve to measure pro-poor growth. He argues that growth is pro-poor when the poor benefit proportionally more from growth than other segments of the population. This strict and strong definition of pro-poor growth requires inclusive growth policies that maximize poverty reduction without being limited to income transfers. Ravallion (2004) emphasized the absolute improvement of the living conditions of the poor, regardless of changes in inequality. He highlighted the

pro-poor implications of growth in China, which reduced absolute poverty despite increasing inequality. Thus, overall, pro-poor growth can be defined as an economic growth model where the benefits are distributed in a way that proportionally favors the poor more than the rich. It aims to reduce poverty and inequalities by implementing dynamic and inclusive redistribution policies. This approach can be measured by indicators such as the Poverty Equivalent Growth Rate, the income share of the poorest segments, and the overall impact on the well-being of the poor, regardless of changes in inequality. By focusing on absolute and relative outcomes, pro-poor growth requires effective redistribution policies and the building of a strong middle class, while maximizing poverty reduction through inclusive growth strategies.

Paramasivan et al. (2014) highlighted that the Washington Consensus failed in the 1990s, which prompted the IMF and the World Bank to address issues of inequality and poverty through pro-poor growth. Adams (2003) contributed to this discussion by analyzing the relationship between economic growth and poverty over different periods and in various countries. He emphasized the importance of economic and redistribution policies to ensure pro-poor growth and effectively reduce poverty. Combining these perspectives, it is clear that policymakers must adopt inclusive growth approaches that create new economic opportunities and ensure an equitable distribution of these opportunities for all, especially the poor. Brys et al. (2016) examined how tax systems can support inclusive and pro-poor economic growth. Their study reevaluates equity considerations and highlights the importance of improved tax design to achieve these goals. Ichoku et al. (2009) analyzed the impact of demographic indices, the employment sector, and other macroeconomic factors on poverty. They recommend rural development programs and specific regional policies to combat poverty. Thus, policymakers must pay close attention to the design and implementation of equitable tax systems while implementing targeted strategies to ensure that economic growth benefits the most vulnerable populations.

Doumbia (2018) analyzed the role of good governance in promoting inclusive and pro-poor growth. She shows that growth is generally pro-poor, but not inclusive, with a decrease in the income share of the poorest. Birdsall and Londono (1997) studied the relationship between inequality of access to education and growth. They found that inequality of access to education slows growth and prevents many people from completing primary school, which generally has a higher social return than higher education. Ianchavichina and Lundstrom (2010) proposed an analytical framework for inclusive growth, focusing on the pace and pattern of growth. They identify the employability of the poor, the cost of capital, geography, and infrastructure as key elements. Policymakers must therefore ensure that access to education is equitable to promote inclusive and sustainable growth, while creating job opportunities and investing in infrastructure that directly benefits poor populations. Zaman and Ahmed (2008) examined the link between economic growth and poverty reduction in Pakistan. Their contribution highlights the need for pro-poor growth policies, emphasizing that economic growth alone does not guarantee sustainable poverty reduction. They stress the importance of an integrated approach that considers both economic growth and wealth redistribution. For policymakers, this means it is important to develop growth strategies that include redistribution mechanisms to ensure sustainable poverty reduction.

Hidayat et al. (2018) studied the determinants of inclusive economic growth in Yogyakarta, showing that factors such as household consumption, exports, investments, per capita income, and average years of schooling have a positive impact. Ravallion and Chen (1997) also explored this relationship, emphasizing that poverty reduction can be limited if growth is not pro-poor or if inequalities increase. For policymakers, this means that economic growth must be designed to directly benefit the poorest populations. Kakwani and Pernia (2000) defined pro-poor growth as growth that allows the poor to actively participate in and benefit from the growth process. They argue that inclusive growth involves reducing poverty and inequalities, highlighting the importance of productive employment, human

capacity development, and social safety nets. Ausat et al. (2023) indicate that the public sector plays a important role in providing necessary infrastructure and creating an environment conducive to economic growth that benefits the poor. Integrating these perspectives, it is clear that public policies must include skill development programs, social protection measures, and support for innovation and entrepreneurship to ensure that economic growth benefits the most vulnerable. Cutler et al. (2008) examined the relationship between public spending, particularly on health, and economic growth. Their results showed that government expenditures in areas such as health can contribute to increased economic growth by improving productivity and reducing mortality rates, which positively impacts poverty reduction.

Kappel et al. (2004) emphasize the importance of investing in the assets of the poor to support sustainable pro-poor growth, highlighting the role of such investment in the economic empowerment of the poor. They suggest that while immediate financial transfers increase the disposable income of the poor, investments in their assets are preferable for sustainable economic participation. Policymakers should therefore invest in health services and prioritize investments in the assets of the poor to improve productivity, support inclusive economic growth, and reduce poverty sustainably. Bruno et al. (1998) similarly examined the relationship between economic growth and poverty. Their results suggest that while economic growth can lead to poverty reduction, the extent of this reduction depends on the nature of the growth and income distribution. Policymakers must ensure that economic growth is equitably distributed to maximize its impact on poverty reduction. This conclusion aligns with Hidayat et al. (2018), who found that factors such as exports and investments can positively impact inclusive growth, while unemployment rates and imports have a negative impact. To maximize the benefits of economic growth, it is essential that policymakers encourage investments and innovation while ensuring that the benefits of growth are distributed equitably.

Kraay (2000) analyzes the impact of economic growth on the incomes of the poorest quintiles and finds that, in most cases, economic growth benefits the poor, but there are significant exceptions. Rijal et al. (2023) also studied public sector development strategies as a driver of economic growth, showing that public sector development is important for creating an environment conducive to sustainable and inclusive growth. Both studies highlight the importance of targeted policies to ensure that growth directly benefits the poorest segments of the population. Policymakers must therefore design appropriate strategies, particularly by investing in human capital, innovation, and public infrastructure. Gallup et al. (1998) examine the relationship between economic growth and poverty reduction, concluding that economic growth is generally beneficial for the poor, but results can vary significantly from country to country. Combining these perspectives, it becomes clear that policymakers must adapt their growth strategies to the specific contexts of their countries and prioritize investments in infrastructure, communication networks, and energy resources to maximize poverty reduction and promote inclusive growth. Saad-Filho (2010) examines the economic debates on the relationship between growth, poverty, and inequality, focusing on the policies of the World Bank and the Washington Consensus. He criticizes the notion of inclusive growth promoted by these institutions, arguing that policies must be rethought to better serve the goals of poverty and inequality reduction. Kraay (2000) echoes this criticism by recommending specific policies to make growth more inclusive and pro-poor. Policymakers must therefore reconsider traditional approaches to growth and design targeted strategies that take into account national contexts and the needs of the poorest populations, while investing in infrastructure and public sector development to create an environment conducive to sustainable and equitable growth.

3. Methodology

4.1 Model and Data

The effectiveness of Moroccan public policies in promoting pro-poor growth is a relevant research area considering the country's socio-economic landscape and development objectives. Morocco, like many developing countries, faces significant challenges in reducing poverty and inequalities despite stable economic growth. However, Morocco has managed to achieve several goals under the Millennium Development Goals (MDGs), such as Goal 1 (eradication of extreme poverty and hunger), and is actively pursuing the Sustainable Development Goals (SDGs), notably SDG 1 (no poverty), SDG 8 (decent work and economic growth), and SDG 10 (reduced inequalities), within the framework of its Vision 2030. The Moroccan government's commitment to improving the living conditions of its poorest populations and ensuring a more equitable distribution of the benefits of economic growth underscores the need to evaluate these policies. Studying these policies would help understand their actual impact and identify the most effective measures to promote inclusive and sustainable growth, aligned with the country's aspirations for social justice and human development. To address this central research question, we will study the following research hypotheses:

- H1: Public efforts to improve access to education have a significant positive impact on pro-poor growth.
- H2: Public efforts for job creation have a significant positive impact on pro-poor growth.
- H3: Public efforts for income redistribution have a significant positive impact on pro-poor growth.
- H4: Public efforts to promote financial inclusion have a significant positive impact on pro-poor growth.
- H5: Institutional quality has a significant positive impact on pro-poor growth.

The variables used are not directly available. We utilized the data from the available database to create indices that reflect public efforts in promoting pro-poor growth in Morocco, covering the period from 2000 to 2022, which have been quarterly adjusted. The study's model is given by the following formula:

$$PCGR = \beta 0 + \beta 1.PEEA + \beta 2.PEJC + \beta 3.PEIR + \beta 4.PEFI + \beta 5.INSQ + \overbrace{\beta 6.GDEB + \beta 7.INFL + \beta 8.TRDE + \beta 9.FDIR}^{control\ variables} + \epsilon$$

The dependent variable is the pro-poor growth rate (PCGR), calculated as:

$$Growth/(1 - IESW)$$

Where $IESW$ is the Index of Economic and Social Well-Being, determined by the following formula:

$$IESW = (100 - ADWK) + (100 - AELC) + (100 - AHSV) + (100 - LIFE)$$

The components of this index include access to drinking water $(ADWK)$, access to electricity $(AELC)$, access to health services $(AHSV)$ and life expectancy $(LIFE)$. Independent variable values were calculated using composite indices based on available data from 2000 to 2022. For each variable Xi, the normalized value Zi was calculated using the formula :

$$Zi = (Xi - Xi,min) / (Xi,max - Xi,min)$$

These normalized values were then combined to obtain an index for each public effort. For example, the Public Effort Index for Improving Access to Education (PEEA) was calculated by combining public education expenditures as a percentage of GDP, the net enrollment rate in primary education, and the number of teachers per 1000 students in primary education. Each component was normalized before being aggregated to form the final index. The Public Effort Index for Job Creation (PEJC) was calculated similarly. Investments in infrastructure, labor market participation as a percentage of the population aged 15 and above, employment in services as a percentage of total employment, and employment in industry as a percentage of total employment were all normalized and combined to form the index. For the Public Effort Index for Income Redistribution (PEIR), the components include social expenditures as a percentage of GDP, public health expenditures as a percentage of GDP, and public pension expenditures as a percentage of GDP. Each of these components was normalized before being aggregated to obtain the final index.

The Public Effort Index for Promoting Financial Inclusion (PEFI) was calculated by normalizing and combining domestic credit provided to the private sector as a percentage of GDP, the number of ATMs per 100,000 adults, and the number of commercial bank branches per 100,000 adults. Finally, the Institutional Quality Index (INSQ) takes into account various indicators such as control of corruption, government effectiveness, political stability and absence of violence/terrorism, regulatory quality, rule of law, and voice and accountability. These indicators measure perceptions of corruption, the quality of public services, the likelihood of political violence, the ability to formulate and implement sound policies and regulations, confidence in the rules of society, and freedom of expression and association. Each component was normalized and aggregated to obtain the final institutional quality index. The control variables include public debt as a percentage of GDP (GDEB), the inflation rate (INFL), trade openness as a percentage of GDP (TRDE), and foreign direct investment as a percentage of GDP (FDIR). Table 1 provides a summary of the variables, the hypotheses they represent, and the expected correlation direction for the study on the effectiveness of public policies in promoting pro-poor growth.

Table 1: Variables, Assumptions and Expected Direction of Correlation

Independent Variable	Hypothesis	Direction of Correlation
Public Effort for Improving Access to Education (PEEA)	H1: Public Effort for Improving Access to Education has a significant positive impact on pro-poor growth.	Positive
Public Effort for Job Creation (PEJC)	H2: Public Effort for Job Creation has a significant positive impact on pro-poor growth.	Positive
Public Effort for Income Redistribution (PEIR)	H3: Public Effort for Income Redistribution has a significant positive impact on pro-poor growth.	Positive
Public Effort for Promoting Financial Inclusion (PEFI)	H4: Public Effort for Promoting Financial Inclusion has a significant positive impact on pro-poor growth.	Positive
Institutional Quality (INSQ)	H5: Institutional Quality has a significant positive impact on pro-poor growth.	Positive

Source: authors

4.2 Choice of empirical methodology

The results of the stationarity analysis of the time series using the ADF test are presented in Table 2. For each variable, the t-statistic is compared to the 5% critical value to determine if the series is stationary. A variable is considered stationary if the t-statistic is lower than the critical value.

Table 2: Augmented Dickey-Fuller (ADF) unit root test

Variables	ADF t–Statistics	5% critical value	Level of Difference	Order of integration
PCGR	-3.058091	-2.898623	1	I(1)
PEEA	-3.842636	-2.898623	2	I(2)
PEJC	-4.607596	-2.898623	0	I(0)
PEIR	-4.204565	-2.896779	0	I(0)
PEFI	-3.926389	-2.898623	1	I(1)
INSQ	-5.415464	-2.898623	0	I(0)
GDEB	-4.636727	-2.896779	2	I(2)
INFL	-3.640043	-2.898623	2	I(2)
TRDE	-3.798302	-2.896779	1	I(1)
FDIR	-2.984146	-2.896779	2	I(1)

Source: authors

The variable PCGR is integrated of order 1 (I(1)), becoming stationary after the first difference. PEEA, on the other hand, is integrated of order 2 (I(2)), requiring two differences to achieve stationarity. The variables PEJC and PEIR are already stationary at level, integrated of order 0 (I(0)). PEFI is integrated of order 1, becoming stationary after one difference. INSQ is also stationary at level (I(0)). GDEB and INFL require two differences to achieve stationarity, being integrated of order 2. TRDE becomes stationary after one difference, being integrated of order 1, as does FDIR. These results have implications for applying appropriate econometric techniques, highlighting the difficulty of applying an ARDL model or ordinary least squares. Indeed, the application of such econometric techniques is not appropriate in this context. Variables integrated at the same order allow the use of robust techniques to model long-term relationships, ensuring more reliable and robust estimates.

The results of the ARDL bounds test are presented in Table 3. The test is based on the null hypothesis that there is no level relationship. The obtained F-statistic is 4.129, compared to critical values for different significance levels. At a 10% significance level, the bounds are 1.8 (I(0)) and 2.8 (I(1)). At 5%, they are 2.04 (I(0)) and 2.08 (I(1)), and so on. However, with variables integrated at different orders, it becomes difficult to conclude a coherent level relationship, making the application of the ARDL model inadequate.

Table 3: ARDL limit test

Bounds Test		Null Hypothesis: No levels relationship		
Test Statistic	Value	Signif.	I(0)	I(1)
F-statistic	4.129456	10%	1.8	2.8
k	9	5%	2.04	2.08
		2.5%	2.24	3.35
		1%	2.5	3.68

Source: authors

Robust Least Squares (RLS) were chosen to handle the time series data due to their ability to effectively address common issues such as autocorrelation, heteroscedasticity, and multicollinearity. In the presence of non-stationarity, traditional methods like OLS can produce misleading results. The ADF unit root test revealed that some series require differencing to achieve stationarity, while others are integrated at different orders. The ARDL approach is used to examine long-term cointegration relationships between series integrated of order I(0) or I(1). When these conditions are not met, RLS provides a robust alternative, allowing for effective handling of non-stationarity issues while ensuring the validity of conclusions about long-term relationships.

4.1 Model robustness

The results of the Ramsey RESET test for the RLS regression (Table 4) indicate an absence of significant specification issues in the model. The obtained t-statistic is 0.538 with 78 degrees of freedom and an associated probability of 0.592, meaning that the null hypothesis of correct specification cannot be rejected. Similarly, the F-statistic is 0.290, with degrees of freedom of (1, 78) and a probability of 0.592. This reinforces the indication that the adjusted values do not lack important squared variables, confirming that the model does not suffer from specification errors. These combined results suggest that the squares of the adjusted values do not contain additional significant information that could improve the model's performance.

Table 4 : Ramsey RESET Test

Specification: PCGR C PEEA PEJC PEIR PEFI INSQ GDEB INFL TRDE
Omitted Variables: Squares of fitted values

	Value	df	Probability
t-statistic	0.538433	78	0.5918
F-statistic	0.289910	(1, 78)	0.5918
Likelihood ratio	0.330182	1	0.5656

Source: authors

The results in Table 5 present the Variance Inflation Factors (VIF) for the regression variables. The VIF measures how much the variance of an estimated coefficient is increased due to multicollinearity among the explanatory variables. A VIF greater than 10 generally indicates a significant multicollinearity problem. The centered VIFs for the variables are as follows: PEEA has a VIF of 1.268, PEJC of 1.505, PEIR of 2.160, PEFI of 1.337, INSQ of 1.818, GDEB of 1.763, INFL of 1.399, TRDE of 1.289, and FDIR of 1.441. These values indicate low multicollinearity among the explanatory variables, as all centered VIFs are well below the critical threshold of 10. These results confirm that multicollinearity is not a significant issue in this model, allowing for reliable estimates of the coefficients.

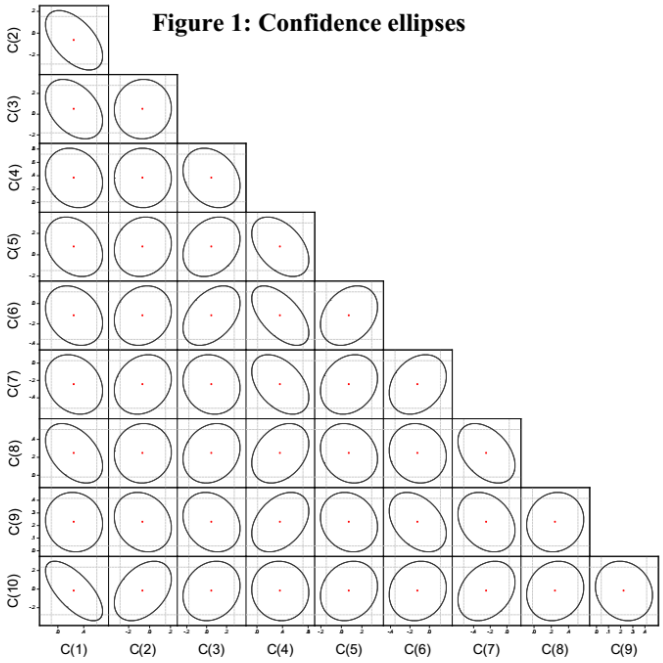
Table 5 : Variance Inflation Factors

Variable	Coefficient Variance	Uncentere VIF	Centered VIF
C	0.031048	53.61069	NA
PEEA	0.011905	5.459179	1.267795
PEJC	0.013226	5.892040	1.504939
PEIR	0.031932	15.11149	2.159942
PEFI	0.012485	5.466774	1.336655
INSQ	0.013847	6.059956	1.817959
GDEB	0.018885	10.18168	1.762664
INFL	0.017595	9.247052	1.399220
TRDE	0.008921	4.908554	1.288787
FDIR	0.016405	7.441503	1.440653

Source: authors

Figure 1 presents the confidence ellipses for the model variables. Confidence ellipses are used to visualize the relationship between pairs of variables, showing the confidence intervals for the regression coefficients. Each ellipse represents a 95% confidence interval for the combinations of coefficients. The ellipses indicate the presence or absence of multicollinearity among the explanatory variables. Elongated and tilted ellipses suggest a high correlation between variables, while more circular ellipses indicate low correlation. The ellipses in the figure show that most relationships between the variables are moderately correlated, without significant signs of problematic multicollinearity. These observations confirm the robustness of the model's coefficient estimates.

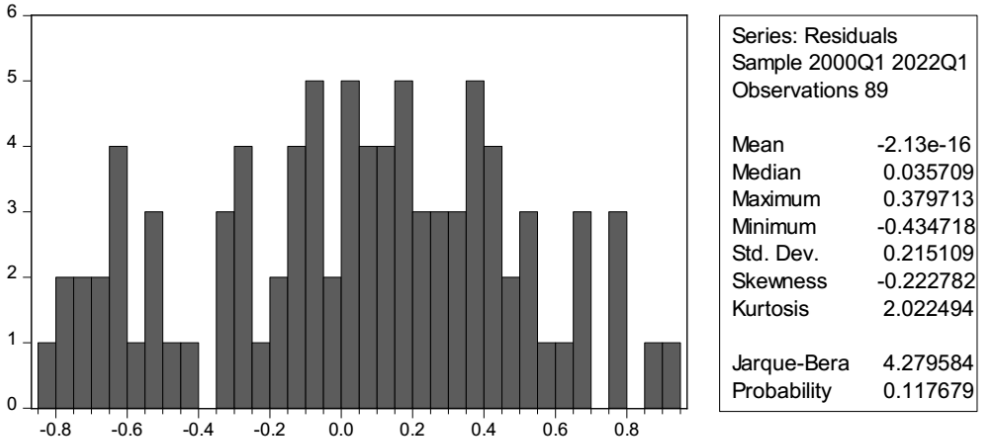
Figure 1: Confidence ellipses



Source: authors

Figure 2 presents the results of the JB normality test of the residuals. The residuals appear to follow a normal distribution, which is confirmed by the mean close to zero (-2.13e-16) and a median of 0.036. The standard deviation is 0.215, indicating a moderate dispersion of residuals around the mean. The measures of skewness (-0.223) and kurtosis (2.022) are also close to the values of a normal distribution (skewness of 0 and kurtosis of 3). The Jarque-Bera test, with a statistic of 4.280 and an associated probability of 0.118, does not reject the null hypothesis of normality of the residuals, as the probability is greater than 0.05. These results confirm that the model's residuals are normally distributed, thus validating the application of robust least squares.

Figure 2: JB residuals normality test



Source: authors

The results of the Breusch-Godfrey test for serial correlation (Table 6) show the following statistics: an F-statistic of 0.189 with a probability of 0.828 and an Obs*R-squared statistic of 0.433 with a probability of 0.806. These probabilities, both greater than 0.05, indicate that the null hypothesis of no serial correlation cannot be rejected. This means that there is no significant serial correlation in the model's residuals, validating the application of robust least squares.

Table 6: Breusch-Godfrey Serial Correlation LM Test

Statistic	Value	Probability
F-statistic	0.188959	0.8282
Obs*R-squared	0.432562	0.8055

Source: authors

The results of the Breusch-Pagan-Godfrey test for heteroscedasticity (Table 7) show the following statistics: an F-statistic of 0.958 with a probability of 0.481, an Obs*R-squared statistic of 8.757 with a probability of 0.460, and a Scaled explained SS statistic of 7.448 with a probability of 0.591. All these probabilities are greater than 0.05, indicating that the null hypothesis of homoscedasticity cannot be rejected. This means that there is no significant evidence of heteroscedasticity in the model's residuals, confirming the validity of the estimates.

Table 7: Heteroskedasticity Test (Breusch-Pagan-Godfrey)

Statistic	Value	Probability
F-statistic	0.957929	0.4810
Obs*R-squared	8.757006	0.4600
Scaled explained SS	7.447622	0.5906

Source: authors

The results of the CUSUM and CUSUMSQ stability tests are presented in Figure 3. The CUSUM plot shows that the CUSUM line remains well within the 5% significance limits, indicating that the model is stable over the analysis period. In other words, the regression coefficients do not vary significantly, confirming the stability of the estimated parameters. The CUSUM of squares (CUSUMSQ) plot also indicates stability, with the CUSUMSQ line staying within the 5% significance bands throughout the period. This stability suggests that the variance of the residuals is constant, supporting the absence of structural instability in the model. Thus, the CUSUM and CUSUMSQ tests confirm the model's stability, validating the use of robust least squares and ensuring the reliability of the obtained estimates.

Figure 3: CUSUM and CUSUMSQ stability tests

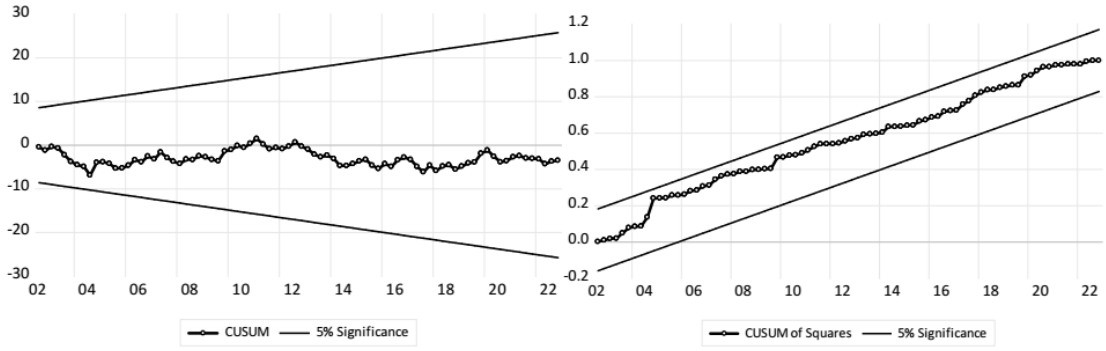
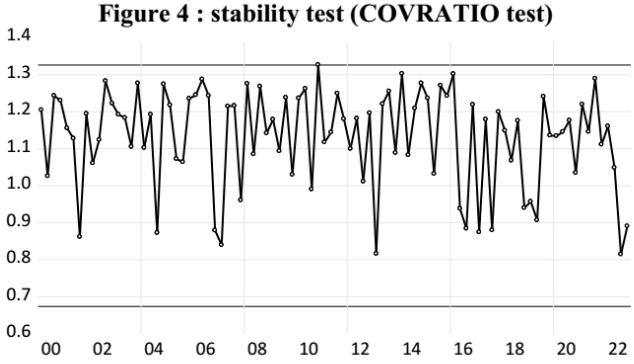


Figure 4 presents the results of the COVRATIO test, which measures the influence of each observation on the covariances of the estimated parameters. Values of COVRATIO close to 1 indicate that the removal of an observation does not have a significant effect on the parameter estimates, suggesting that the data are homogeneous. In this graph, the majority of points fall within the bounds, indicating a

moderate influence of observations on the covariances of the estimated parameters. A few values approach the upper and lower bounds but mostly remain within the acceptable range, meaning that the observations do not have a disproportionate effect on the results. These findings suggest that the model is stable and that the parameter estimates are robust with respect to the removal of individual points. Therefore, the model results can be considered reliable and not significantly affected by influential observations.

Figure 4 : stability test (COVRATIO test)



Source: authors

4. Results and discussion

The robust least squares methodology was chosen due to the non-stationary nature of some variables, as revealed by the ADF test. Variables requiring differencing to achieve stationarity and varying orders of integration make ARDL and OLS methods inappropriate. Robust least squares effectively address autocorrelation, heteroscedasticity, and multicollinearity, ensuring reliable estimates. The robustness of the results is confirmed by several tests: the Ramsey RESET test indicates no misspecification, the VIFs show low multicollinearity, the Jarque-Bera normality test confirms the normal distribution of residuals, and the CUSUM and CUSUMSQ stability tests demonstrate model stability. Finally, the COVRATIO test confirms that the estimates are not significantly affected by influential observations. The results of the robust least squares regression are presented in Table 8.

Table 8: Robust least squares regression results

Dependent Variable: PCGR
Method: Robust Least Squares
Sample: 2000Q1 2022Q4
Included observations: 92

Method: M-estimation

Variable	Coefficient	Std, Error	z-Statistic	Prob
C	***0,631926	0,177778	3,554578	0,000600
PEEA	***8,828935	3,111630	2,837399	0,005595
PEJC	*2,001190	1,111119	1,801059	0,074970
PEIR	**13,466966	5,112185	2,634288	0,009892
PEFI	*1,953550	1,114282	1,753192	0,082900
INSQ	***2,767360	0,932188	2,968672	0,003813
GDEB	-2,243228	2,129439	-1,053436	0,294900
INFL	*-1,253222	0,715130	-1,752439	0,083030
TRDE	-*0,987407	0,522098	-1,891230	0,061740
FDIR	0,642514	0,903712	0,710972	0,478900

Source: authors;
*** significant at 1%; ** significant at 5%; * significant at 10%.

Public Effort for Improving Access to Education (PEEA) is significant at the 1% level with a probability of 0.0056. This result confirms that public efforts in education have a positive and significant impact on pro-poor growth, thus validating hypothesis H1. This finding aligns with the idea that education enhances human capital and economic opportunities for disadvantaged populations. By investing in education, the policymakers strengthens the skills and capabilities of its citizens, enabling them to better integrate into the labor market and actively participate in economic life. This development of human capital leads to poverty reduction and more inclusive economic growth, where the benefits of growth are shared more equitably. Moreover, these results highlight the importance of a robust and well-targeted education policy. Public policymakers must ensure that resources allocated to education are used effectively and efficiently by implementing high-quality educational programs accessible to all, especially the most vulnerable populations.

Public Effort for Job Creation (PEJC) is significant at the 10% level with a probability of 0.0750. This suggests a moderate positive effect of public efforts for job creation on pro-poor growth, partially supporting hypothesis H2. Indeed, public efforts in infrastructure and job creation increase income opportunities for the poor, contributing to more inclusive growth. By investing in infrastructure and creating jobs, policymakers can increase income opportunities for disadvantaged populations, contributing to more inclusive growth. Improved infrastructure, such as roads, public transportation, and service facilities, facilitates access to the labor market and can attract investments, thus creating new job opportunities. Public policies aimed at stimulating job creation can include SME development programs, tax incentives for companies that hire local workers, and vocational training initiatives to improve workers' skills. These measures can help reduce unemployment, particularly among young people and vulnerable groups, and improve the living conditions of poor populations. However, the moderate impact observed in this study suggests that job creation policies need to be complemented by other measures to maximize their effectiveness. For instance, it is important to ensure that the jobs created offer decent wages and adequate working conditions to truly improve living standards. Additionally, complementary policies, such as improving access to education and continuous training, can reinforce the positive effects of job creation.

Public Effort for Income Redistribution (PEIR) is significant at the 5% level with a probability of 0.0099. This result indicates a positive and significant effect of income redistribution policies on pro-poor growth, thus validating hypothesis H3. Income redistribution through social and health expenditures improves the well-being of poor populations, promoting inclusive economic growth. Income redistribution policies play an important role in reducing economic and social inequalities. By increasing social and health expenditures, the policymakers can directly improve the living conditions of disadvantaged populations. This includes measures such as increasing family allowances, funding public health programs, and improving access to basic services like education and housing. By investing in social expenditures, the policymakers helps reduce poverty and promote economic growth that benefits the entire population. Health expenditures, for example, can enhance productivity by reducing sick days and increasing life expectancy, which in turn stimulates economic growth. Similarly, social support programs can help individuals and families overcome financial obstacles, enabling them to participate more fully in the economy. Public policymakers must ensure that redistribution mechanisms are fair and effective, targeting the most vulnerable populations. This can include tax reforms to make the taxation system more progressive, as well as measures to improve the transparency and efficiency of public expenditures.

Public Effort for Promoting Financial Inclusion (PEFI) is significant at the 10% level with a probability of 0.0829. This suggests a moderate positive effect of financial inclusion on pro-poor growth, partially validating hypothesis H4. Financial inclusion allows disadvantaged populations to access

financial services, increasing their capacity to invest and participate in the economy. Financial inclusion is a key lever for poverty reduction and the promotion of inclusive economic growth. By enabling poor populations to access financial services such as bank accounts, credit, and insurance, the policymakers facilitates their economic and social integration. This increased access to financial services allows individuals and small businesses to manage their finances more effectively, save for the future, and invest in economic opportunities. Public policies aimed at promoting financial inclusion can include initiatives such as microfinance programs, reducing regulatory barriers to banking services, and promoting financial education. Additionally, the adoption of innovative financial technologies, such as mobile banking services, can play a significant role in improving access to financial services for rural and underserved populations. However, the moderate effect observed in this study indicates that financial inclusion must be complemented by other measures to maximize its impact on pro-poor growth. For example, it is essential to ensure that the financial services offered are tailored to the needs of poor populations and accessible at reasonable costs. Furthermore, policies aimed at strengthening financial consumer protection can help prevent abusive practices and ensure that the benefits of financial inclusion are widely shared.

Institutional Quality (INSQ) is significant at the 1% level with a probability of 0.0038. This result confirms that high-quality institutions have a positive and significant impact on pro-poor growth, thus validating hypothesis H5. High-quality institutions promote political stability, transparency, and administrative efficiency, creating an environment conducive to inclusive and pro-poor growth. Strong and transparent institutions are essential for economic development and poverty reduction. The political stability they provide reduces uncertainty and fosters a climate of trust for long-term investments. Administrative transparency helps reduce corruption and ensures that public resources are used effectively and equitably, maximizing their impact on socio-economic development. Public policies aimed at improving the quality of institutions can include administrative reforms, strengthening the rule of law, and measures to increase government transparency and accountability. For example, implementing independent oversight and monitoring mechanisms, as well as promoting citizen participation in decision-making processes, can help build public trust in institutions. Additionally, effective institutions can facilitate the implementation and monitoring of development policies, ensuring that social and economic programs reach the targeted populations. This includes the ability to manage and coordinate national initiatives, respond promptly to citizens' needs, and promote an environment conducive to innovation and entrepreneurship.

Public debt (GDEB) has a probability of 0.2949, indicating no significant relationship with pro-poor growth in this model. The absence of a significant relationship between public debt and pro-poor growth can be explained by several factors. First, how the borrowed funds are used is important. If the resources from public debt are poorly managed or invested in ineffective projects, their impact on growth and poverty reduction will be limited. Conversely, if the debt is used to finance productive investments, such as infrastructure, education, or health, it can contribute to inclusive economic growth. Additionally, the level of public debt must be managed prudently. Excessive debt can lead to macroeconomic instability, increased borrowing costs, and reduced capacity for the policymakers to finance social and development programs. Therefore, it is essential for public policymakers to adopt a debt management strategy that balances short-term financing needs with long-term financial sustainability.

Inflation (INFL) is significant at the 10% level with a probability of 0.0830, suggesting a negative impact on pro-poor growth. Inflation can erode the purchasing power of households, particularly the poorest, who spend a large proportion of their income on essential goods. When prices rise rapidly, low-income households are the first to feel the effects, as they have less flexibility to adjust their spending. Additionally, inflation can lead to economic instability, making conditions less predictable for businesses

and investors, which can hinder job creation and long-term investment. Public policies aimed at controlling inflation are therefore essential to support pro-poor growth. This can include monetary policy measures to stabilize prices, such as controlling the money supply and managing interest rates. Fiscal authorities must also ensure that public spending is not financed through inflationary means, such as excessive borrowing. Moreover, income support policies, such as indexing wages and social benefits to inflation, can help protect the most vulnerable households from the adverse effects of rising prices. Targeted subsidies for basic goods and essential services can also mitigate the impact of inflation on disadvantaged populations.

Similarly, trade openness (TRDE) is significant at the 10% level with a probability of 0.0617, also indicating a negative impact on pro-poor growth. While trade openness can offer opportunities for economic growth and market diversification, it can also lead to imbalances and inequalities. Local economic sectors may not be competitive enough to withstand international competition, which can result in the closure of local businesses and job losses. Moreover, the economic gains from trade openness may not be distributed equitably, favoring wealthier groups and exacerbating inequalities. To mitigate these negative effects, public policies should aim to strengthen the capacity of local businesses to adapt to and benefit from trade openness. This can include support measures for innovation, training programs to enhance workers' skills, and initiatives to facilitate access to financing for SMEs.

5. Conclusion

This study examined the impact of public policies on promoting pro-poor growth in Morocco, focusing on five key areas: improving access to education, job creation, income redistribution, promoting financial inclusion, and institutional quality. Using data covering the period from 2000 to 2022 and adopting a robust least squares estimation methodology, we evaluated the effects of these policies on inclusive growth. The analysis results confirm that public efforts in these five areas have a positive and significant impact on pro-poor growth. Improving access to education has a strongly positive effect on pro-poor growth. By investing in education, the policymakers enhances human capital, which leads to increased productivity and reduced economic inequalities. These investments allow disadvantaged populations to better integrate into the labor market and actively participate in economic life, thereby contributing to more inclusive growth.

Public efforts for job creation also have a significantly positive impact on pro-poor growth, although moderate. This highlights the importance of investments in infrastructure and labor market stimulation initiatives to increase income opportunities for poor populations. However, to maximize the effectiveness of these policies, it is important to ensure that the jobs created offer decent wages and adequate working conditions. Income redistribution through social and health expenditures significantly improves the well-being of poor populations, thereby contributing to inclusive economic growth. The results show that these redistribution policies play an important role in reducing inequalities and promoting economic growth that benefits the entire population.

Moreover, promoting financial inclusion has a moderately positive effect on pro-poor growth. By facilitating access to financial services for disadvantaged populations, the policymakers enables them to better manage their finances and invest in economic opportunities. However, to optimize the impact of financial inclusion, it is essential to ensure that financial services are tailored to the needs of poor populations and accessible at reasonable costs. Additionally, the quality of institutions has a strongly positive impact on pro-poor growth. Strong and transparent institutions promote political stability, reduce corruption, and ensure the efficient and equitable use of public resources. These conditions create an environment conducive to inclusive growth and socio-economic development.

Furthermore, the analysis revealed that certain control variables, such as inflation and trade openness, have a negative impact on pro-poor growth. High inflation erodes the purchasing power of poor households, while trade openness can exacerbate economic imbalances and inequalities if local sectors are not competitive enough to face international competition. Therefore, it is important that public policies include measures to control inflation and support local economic sectors in adapting to international competition. Prudent management of public debt is also essential to ensure long-term financial sustainability. Effective use of borrowed funds to finance productive investments can contribute to inclusive economic growth, while excessive debt can lead to macroeconomic instability and reduce the policymakers' capacity to finance social and development programs. Thus, this study highlights the importance of public efforts in various areas to promote inclusive and pro-poor economic growth. Policymakers must adopt an integrated and balanced approach, ensuring that development policies are well-coordinated and targeted to maximize their impact on poverty reduction and the promotion of inclusive growth.

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