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Assessing the Role of Government Education Spending in Reducing Poverty: A CGE Model for Morocco.

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ABSTRACT

This study explores the impact of public education expenditure on poverty reduction in Morocco, employing a computable general equilibrium (CGE) model that is based on the 2007 Social Accounting Matrix (SAM) of the Moroccan economy. The simulation findings show that increased spending on education promotes economic growth and helps to reduce poverty. Nevertheless, the success of this policy depends on macroeconomic stability, the availability of resources and technological progress. The results show that directing investment in education towards low-income households generates the greatest poverty reduction effects. In addition, continued employment growth, supported by flexible labor markets, is essential for long-term poverty reduction. The research recommends increasing investment through school expansion, conditional cash transfers and teacher incentives, particularly in rural areas. In addition, it is essential to align educational outcomes with labor market demand to improve economic opportunities for the poor.

Keywords: Government Expenditure, Education, Poverty reduction, CGE model, Morocco.

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INTRODUCTION

Poverty continues to be one of Morocco's most significant socio-economic challenges, despite the considerable strides made over the past few decades. Among the various policy measures aimed at tackling this issue, public expenditure particularly in the field of education has garnered growing interest. Education is widely acknowledged as a fundamental pillar of sustainable economic growth and a vital instrument for promoting social advancement. Through the development of human capital, increased government spending on education has the potential to boost productivity, enhance earnings, and thereby contribute to reducing poverty. In the Moroccan context, education receives a large share of public investment. However, concerns persist regarding the actual impact of this spending in effectively reducing poverty. Standard empirical methods often fall short in capturing the complex economic dynamics and distributional consequences of such policies. In this regard, a Computable General Equilibrium (CGE) model presents a valuable analytical tool, capable of simulating the effects of policy interventions across various economic sectors and household types.

The main goal of this study is to evaluate how government expenditure on education influences poverty reduction in Morocco, using a Computable General Equilibrium (CGE) model as the analytical tool. More precisely, the research investigates the effects of increased public investment in education on income distribution, labor market performance, and poverty incidence across various household groups. By modeling different policy scenarios, the study aims to generate empirical evidence that can guide the development of more efficient and equitable education financing policies within the broader framework of national strategies to combat poverty.

Poverty is a global issue that ties nations together (FOA, 2015), leading to international efforts like the United Nations' Sustainable Development Goals (SDGs), which aim to eliminate poverty in all its forms, with a specific focus on eradicating it by 2030 (United Nations, 2012). In Morocco, despite efforts, poverty persists, particularly in rural areas. Literature from Booth (1880), Booth, C (1880) ; Rowntree, S (1899) ; Amartya Sen (1981) ; Townsend (1961) ; Sandbrook, R (1982) Oppenheim, Carry (1993) ; Ravallion (1994) ; Fleurbaey (1996) ; Alcock, Peter (1997) ; Greer & Thorbecke (2001)... explored the causes of poverty and its solutions; Atkinson (2003); Hoogeveen & Ozler (2006); Bhorat & Kanbur (2006); à Alkire & Foster (2011) explored the causes and solutions of poverty, emphasizing the importance of education in both reducing poverty and stimulating economic growth (Sen, 1976). Studies by Barro (1991), Gupta & Verhoeven (2001), among others, emphasize that public spending on

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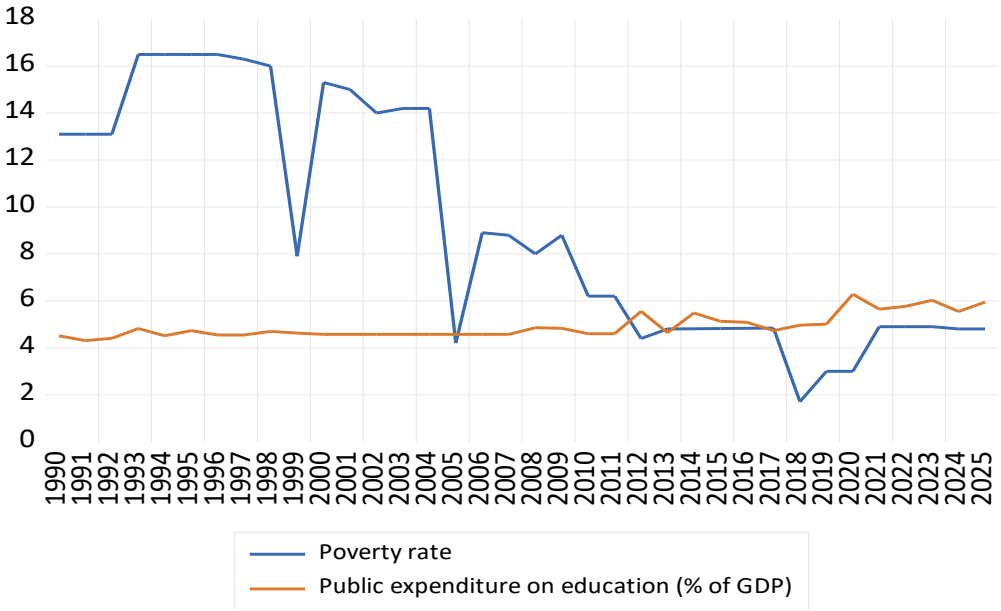
education can improve equity and human capital development (Cochrane, 1988; Odior, 2014). Recent shocks like COVID-19, inflation, and geopolitical crises have intensified poverty in Morocco, with multidimensional poverty affecting over 26% of the population. Government spending on education has fluctuated between 4.3% and 5.9% of GDP, and also poverty rate fluctuated between 13% to 4,8 % (1990–2025), with increased efforts post-2015. Household consumption has also risen, yet regional disparities remain.

Figure 1. Evolution of public expenditure on education (% of GDP) & poverty rate in Morocco (1990-2025)



Source: By authors

Figure 1 illustrates the relationship between the poverty rate and public spending on education (% GDP) in Morocco from 1990 to 2025. The poverty rate shows significant fluctuations over the period, with sharp rises and falls, notably in the end of the 1990s and early 2000s. Notably, there is a substantial drop around 2004, followed by a period of volatility before stabilizing at lower levels after 2010. In contrast, public expenditure on education remains relatively stable over the years, with only slight variations. The trend suggests that while education spending does not exhibit major shifts, the poverty rate undergoes more pronounced changes, potentially influenced by broader economic and policy dynamics. The observed decline in poverty after 2004 may indicate the delayed impact of social and economic reforms, including investments in education. However, the slight increase in poverty around 2016/2018 highlights the complexity of poverty reduction efforts, where factors beyond education spending, such as labor market conditions and economic shocks, play a crucial role.

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Despite progress, challenges like school dropout rates, inequality, and quality persist. This study explores how public spending on education can reduce poverty in Morocco, using a CGE micro-simulation model. It seeks to answer: **To what extent does public education expenditure significantly contribute to poverty reduction in Morocco**?

The structure of the paper is as follows: Section two reviews the existing literature on the topic. Section three outlines the methodology, including data sources and model specification. Section four focuses on model simulation, results interpretation, and offers a detailed discussion. Finally, Section Five concludes with a summary of the findings and policy recommendations.

2. Review of Literature

This section provides an overview of the literature on the effect of public spending on education in reducing poverty, specifically through the use of a CGE model. Over time, research in this area has advanced with regard to the methodologies employed and the transmission channels examined. However, the findings have often been inconsistent, highlighting the complexity of this relationship.

Early economic studies on education primarily focused on its role in economic growth. The foundational work of Becker (1964) on human capital theory emphasized that investment in education enhances individual productivity, leading to overall economic development. Schultz (1963) further argued that education reduces inequality by enabling individuals to improve their productivity and income levels.

The endogenous growth models of Romer (1986) and Lucas (1988) expanded on these ideas, demonstrating how human capital accumulation drives long-term economic growth. Lucas (1988) identified two forms of education externalities: one that directly improves worker productivity and another that does not immediately affect output. Meanwhile, Adam Smith (1776) recognized education as an essential investment in individual capabilities, although he did not formalize a theory of human capital (Smith, 1776).

Beyond growth, education has been studied in relation to poverty and inequality. Becker (1961) and Schultz (1963) argued that education facilitates knowledge accumulation, leading to higher future incomes and reducing socioeconomic disparities. Sen et al. (1997) emphasized that investment in human capital expands individual capabilities, increasing access to opportunities and improving overall well-being.

Recent research has leveraged CGE models to analyze the broader economic and social effects of public education expenditure. Unlike traditional methods, CGE models incorporate multiple economic interactions, enabling a more comprehensive assessment of policy impacts. **Savard**

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and Adjovi (1998) introduced CGE models to examine education's role in poverty reduction, considering externalities in the health and education markets (Savard & Adjovi, 1997). **Cloutier et al. (2004, 2008)** developed a static CGE model for Vietnam, highlighting how public education spending influences household welfare and labor market dynamics (Cloutier et al., 2008). **Bourguignon et al. (2006)** integrated education into a macroeconomic framework to assess progress toward the Millennium Development Goals (MDGs), introducing labor market feedback effects. **Balma et al. (2010)** studied Burkina Faso, demonstrating that increasing public education spending by 40% led to improved welfare and reduced poverty through household income growth (Balma et al., 2010). **Batega & Matovu (2011); Wiebelt et al., (2011)** examined productivity spillovers from public education investment, emphasizing the importance of systematic tracking to measure enrollment and labor market absorption effects. **Robichaud et al. (2014)** analyzed Uganda, showing that increased education spending resulted in short-term economic trade-offs, such as delayed labor market entry, but long-term GDP growth. **Odior (2014)** applied a dynamic CGE model to Nigeria, concluding that education investment was essential for achieving poverty reduction targets but required better budget allocation strategies (Odior, 2014).

While extensive research exists on the role of education expenditure in poverty reduction across various countries, studies on Morocco remain limited. A recent study by Agueny and Ragbi (2024) employed a CGE model to examine the effect of a 10% augment in public education expenditure on economic growth, labor market dynamics, and household well-being. Their results show that increased investment in education led to GDP growth, a slight rise in employment (particularly among unskilled workers) and increased well-being for low-income households.

Despite the growing body of literature on education expenditure and poverty reduction, key gaps remain in the Moroccan context. Most CGE studies focus on other developing nations, leaving a need for country-specific analyses that account for Morocco’s unique economic and social structure. This study seeks to address this gap by applying a CGE micro-simulation approach to evaluate the effect of public education spending on poverty in Morocco, expanding on previous models and integrating national policy factors (Agueny & Ragbi, 2024).

3. Methodological Framework, Data Collection, and Simulations

This research adopts a positivist epistemological position, which emphasizes the use of objective, observable, and quantifiable data to understand social and economic phenomena. Rooted in the belief that reality is external and measurable, positivism allows for the

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formulation and testing of hypotheses using systematic and scientific methods. In line with this epistemological stance, the study follows a hypothetico-deductive reasoning approach. This involves starting with a theoretical framework and formulating testable hypotheses regarding the impact of government education spending on poverty. These hypotheses are then examined through a Computable General Equilibrium (CGE) model, which serves as a quantitative tool to simulate and analyze the effects of policy interventions. This approach enables the researcher to draw conclusions based on empirical evidence while maintaining scientific rigor and logical consistency.

A CGE model provides a strong and suitable methodological framework for evaluating the impact of higher education investment on poverty reduction, as it effectively captures the interactions between all economic agents within a coherent system. This research adopts a neoclassical multisectoral CGE model, drawing from the frameworks of Dervis et al. 1982; Jung & Thorbecke, 2003; Robinson et al. 1999; Thorbecke et al.1992). The model includes two main processes: (1) government expenditure on education boosts human capital development, raising the availability of skilled labor, and (2) it facilitates easier substitution between less-skilled workers but creates more inflexible substitution between less-skilled and skilled labor. The CGE model is simulated using the 2007 Social Accounting Matrix (SAM) of Morocco's economy.

a. Model Structure

The CGE model is formulated based on four fundamental institutional sectors: households, firms, government, and the external sector.

- **Households**: Divided into four categories according to region and income status: urban non-poor, urban poor, rural poor, and rural non-poor.
- **Production Sectors:** The model distinguishes three main sectors: agriculture, industry, and services.
- **Government:** Revenue is generated through direct taxes, import duties, and various indirect taxes. Public spending includes purchasing goods and services and providing transfers to households and businesses.
- **External Sector:** Economic interactions with foreign entities are considered, encompassing exports, imports, and remittance flows.

b. Core Assumptions and Equilibrium Conditions

The neoclassical multisectoral CGE model operates under the assumption of a fixed stock of physical and human capital, with labor mobility across sectors.

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- Households maximize utility through consumption decisions.
- Firms optimize profits by allocating factors according to relative prices.
- Factor income is distributed to households based on their endowments, with portions allocated to savings and consumption.
- The model establishes general equilibrium by balancing savings and investment through an adjustable interest rate, while the labor and foreign exchange markets achieve equilibrium through wage flexibility and fluctuations in exchange rates.

c. Dynamic Adjustments Over Time

The model includes dynamic adjustments through changes in physical and human capital:

- **Physical Capital Growth:** Drove by investment, which is supported by both domestic and foreign savings.
- **Human Capital Growth:** Influenced by demographic trends and educational investments, which determine the future availability of skilled labor.

By combining these components, the CGE model offers a detailed framework for assessing the long-term impact of public education spending on economic growth, employment, and poverty reduction in Morocco.

Educated labor supply is based on agents maximizing their lifetime income and utility from consumption. Agents maximize utility by maximizing lifetime income. They are identical except for access to education facilities, which affect their expected wage income. In period t, agents decide whether to pursue higher education to earn higher wages in period (t+1) or continue working with their current education level. This choice is based on price data from the previous period and the myopic assumption that future wage growth and discount rates will remain at the growth rate $GR_{t-1}$and interest rate I_{t-1}. Given these assumptions, an agent's expected lifetime income is H_t^e if they choose to pursue further education, and H_t^{ne} if they opt not to, as outlined below.

$$H_t^e = A_t^i \sum_{s=1}^{T} WR_{t-1}^L (1 + GRt - 1)(1 - \theta) \left(\frac{1+GR_{t-1}}{1+I_{t-1}}\right)^s \quad (1)$$

$$H_t^{ne} = WR_{t-1}^N (1 + GR_{t-1})(1 - \theta) + \sum_{s=1}^{T} WR_{t-1}^N (1 + GR_{t-1})(1 - \theta) \left(\frac{1+GR_{t-1}}{1+I_{t-1}}\right)^s \quad (2)$$

Where A_t^i is an index indicating the availability of educational facilities ($0 \leq A_t^i \leq 1$), WR_{t-1}^N represents the wage rate for education level l in the previous period, L is the additional income attainable from further schooling at level l, θ is the constant income tax rate, and \(T \) is the total number of work periods. An agent will pursue education if $H_t^e \geq H_t^{ne}$.

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$$A_t^i \geq \left(\frac{WR_{t-1}^N}{WR_{t-1}^L}\right) * \left(\frac{(I_{t-1}-GR_{t-1})+(1+GR_{t-1})\left[1-\left(\frac{(1+GR_{t-1})}{1+I_{t-1}}\right)^T\right]}{(1+GR_{t-1})\left[1-\left(\frac{(1+GR_{t-1})}{1+I_{t-1}}\right)^T\right]}\right) \quad (3)$$

On one side, A_t^i, represents the availability of educational facilities, while on the other side, the expression captures the lifetime wage differential. The education availability index for agent A_t^i, is assumed to follow the functional form:

$$A_t^i = \partial_i + \rho * EXPEDU_t^{\psi} \quad (4)$$

Where ∂_i, ρ and μ are constants, and DPEDU represents public education expenditure in period t. The distribution of the index A_t^i is assumed to follow a uniform distribution, as shown in Fig 2. Therefore, a rise on the left side or a decline on the right side of Eq. (3) leads to a rightward shift of the distribution of A_t^i or a leftward shift of the vertical line representing the lifetime wage differential. Both changes result in a proportional increase in the number of newly educated workers. Assuming a large T and an economy with relatively low capital, where the rate of return on capital exceeds the economic growth rate (I > C), the supply of educated labor can be approximated as:

$$EDUL_t^L = \beta_1 * EXPEDU_t^{\mu} + \beta_2 \left(\frac{WR_{t-1}^L}{WR_{t-1}^N}\right)\left(\frac{1+GR_{t-1}}{1+t_{t-1}}\right) \quad (5)$$

Let β_1 and β_2 be positive constants. Labor flows across education levels are linked. From the total population (L1), some move to primary education (L2), while others remain uneducated (U1). Starting from primary education, some individuals proceed to higher education (L3), while others enter the labor market with only primary education (U2). Workers with higher education (U3) originate from L3. The supply of uneducated labor is determined residually, with the following linkages: L3=U3, L2=U2+L3 and L1=U1+L2. (see appendix), where L1 signifies the output flow of education at level 1, and U1 represents the new labor supply at education level 1. Alternatively, the relationships can be expressed as:

Labor types are combined in two stages: less-skilled labor (less than secondary educated) is aggregated using a Cobb-Douglas function, while skilled labor (secondary and higher-educated) is combined with it in a CES function. Firms optimize labor use based on profit maximization, reflecting productivity growth from education. Educated workers, with higher wages, contribute more to the composite labor, boosting production.

3.1. Calibration

The model is calibrated using Morocco's 2007 Social Accounting Matrix (SAM), adjusted to fit the study's classification. The model differentiates between three production sectors (agriculture, industry, and services), three educational labor categories (primary, secondary, and

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higher education), and four socioeconomic groups (urban/rural poor and non-poor) as outlined in Table 1. The CGE model results highlight the role of public education spending in reducing poverty. Sectoral substitution elasticities show that services benefit more from human capital investment than agriculture. Education-driven wage disparities are most pronounced in industry and services, reinforcing education's role in reducing inequality. Socioeconomic disparities affect educational access, with urban poor individuals having lower education levels. Policies promoting education for disadvantaged groups can enhance economic well-being. Increased public education spending improves productivity, competitiveness, and income distribution, ultimately fostering economic growth and poverty reduction.

Table 1: Model Parameters for the Computable General Equilibrium (CGE) Analysis

1.	**2. Agriculture**	**3. Industry**	**4. Services**
5. Substitution Elasticities			
6. μcl_i (between labor and capital)	7. 0,3	8. 0,5	9. 0,6
10. μdm_i (between imports and domestic sales)	11. 1,2	12. 0,8	13. 0,6
14. μde_i (between exports and domestic sales)	15. −1,2	16. −0,8	17. −0,3
18. μus_i (between skilled and unskilled)	19. 0,5	20. 0,5	21. 0,5
22.	23. Primary-level educated	24. Secondary-level educated	25. Higher-level educated
26. Wage differentials			
27. Agriculture	28. 0.002	29. 0.003	30. 0.003
31. Industry	32. 0.001	33. 0.002	34. 0.006
35. Services	36. 0.004	37. 0.007	38. 0.002

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39. Endowment coefficients of human capital	40. Primary educated	41. Secondary educated	42. Higher educated 43.
44. Urban Poor	45. 0.40	46. 0.27	47. 0.45
48. Urban non-poor	49. 0.23	50. 0.06	51. 0.18
52. Rural Poor	53. 0.12	54. 0.49	55. 0.15
56. Rural non-poor	57. 0.25	58. 0.18	59. 0.22
60. Total	61. 1.00	62. 1.00	63. 1.00
64. Consumption shares			
65.	66. Agriculture	67. Industry	68. Services
69. Urban Poor	70. 0.15	71. 0.48	72. 0.31
73. Urban non-poor	74. 0.60	75. 0.27	76. 0.38
77. Rural Poor	78. 0.10	79. 0.20	80. 0.07
81. Rural non-Poor	82. 0.15	83. 0.05	84. 0.24
85. Total	86. 1.00	87. 1.00	88. 1.00

Source: author's calculations.

4. Simulations and results

The results of the policy experiment are compared to the baseline scenario, which represents the current state. Even in the absence of an increase in education expenditure (Table 2), the Moroccan economy experiences the accumulation of both physical and human capital, driven by a 3.5% labor growth rate. We assume that all other exogenous variables stay constant in real terms. The comparison focuses on the growth rates of labor, income, and other variables in the following period compared to the initial period.

Table 2: Simulation plan

Scenario	Description
Scenario 1	Labor supply increases at the population growth rate (3.5%). Educated labor supply grows faster.
Scenario 2	Unemployed unskilled workers re-enter the market as wages rise, stopping when wages normalize.
Scenario 3	Increased education spending targets poor households, boosting educated labor supply from them.

Source: developed by the authors

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4.1. Labor supply and wage levels

The simulation results (Table 3) demonstrate that a 10% increase in real public spending on education yields differentiated effects on labor supply and wages, depending on education levels and the scenarios considered. In terms of labor supply, the variations remain generally modest, with increases ranging between 3.49% and 3.55%, reflecting a slight improvement compared to the baseline scenario (3.5%). The most notable impact is observed in secondary education, where labor supply rises by 3.66% in Scenario 1 (SIM1) and 3.68% in Scenario 2 (SIM2), compared to 3.58% in Scenario 3 (SIM3). This suggests that increased educational expenditure predominantly enhances access to secondary education. Conversely, the response in primary and higher education is more restrained, with labor supply fluctuating around 3.5% for primary education and between 3.41% and 3.51% for higher education, indicating a more moderate reaction to these investments.

Regarding real wage rates, the findings reveal marked differences. For workers with primary education, wages exhibit a modest and consistent increase of 2.2% across all scenarios, indicating low wage elasticity to educational spending increases. In contrast, wages for workers with secondary education experience notable growth, rising by 4.44% in SIM1, 4.47% in SIM2, and 4.34% in SIM3, compared to 4.25% in the baseline scenario. This trend underscores the positive impact of educational investment on remuneration for this category of workers. The highest wage increases are observed for those with higher education, with wages increasing by 6.73% in SIM1, 6.60% in SIM2, and 6.53% in SIM3, compared to 6.7% in the baseline. These results indicate that increased educational expenditure significantly benefits the wages of the most highly skilled workers, though the effect is slightly muted in SIM3.

These findings suggest that increasing public spending on education enhances labor supply, particularly at the secondary education level, while boosting wages, especially for workers with secondary and higher education. This highlights the importance of targeted educational investments to maximize positive labor market outcomes and reduce income inequalities by supporting skilled workers.

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Table 3: Labor Supply and Wage Levels by Education

	Base	**SIM1**	**SIM2**	**SIM3**
Labor supply (increase rate) (%)	3.50	3.50	3.55	3.49
Primary education	3.50	3.50	3.59	3.50
Secondary education	3.50	3.66	3.68	3.58
Higher education	3.50	3.51	3.45	3.41
Wage Rates (Real, Growth Rate) (%)	4.25	4.56	4.12	2.25
Primary education	2.20	2.20	2.26	2.20
Secondary education	4.25	4.44	4.47	4.34
Higher education	6.70	6.73	6.60	6.53

Source: author's calculations.

4.2. Economic growth and income distribution

The results from the simulations (Table 4) demonstrate that increased public expenditure on education yields substantial economic benefits, with a particularly pronounced effect on the most disadvantaged groups. Real GDP growth increases from 3.18% in the baseline scenario to 4.00% in Scenario 3, underscoring the positive influence of targeted educational investments on overall economic activity. Concurrently, the savings and investment rate rise steadily, reaching 29.00% of GDP in Scenario 3, compared to 27.54% in the baseline scenario, highlighting the role of educational expenditure in driving capital accumulation. Furthermore, real wage income shows a notable increase, rising from 3.9% to 4.8%, which reflects the heightened demand for a more skilled labor force. Capital income also experiences moderate growth increasing from 0.5% to 1.0%, signaling an improvement in capital productivity. At the household level, income growth is observed (Fig. 2) across various groups, with urban poor households seeing a rise from 3.22% to 4.04%, and rural poor households benefiting from an increase from 2.88% to 3.66%. In contrast, income growth among non-poor urban and rural households is more modest, with increases from 2.52% to 3.28% and 2.2% to 2.9%, respectively. These findings suggest that enhanced educational investment is particularly advantageous for low-income households, contributing to the reduction of economic disparities and promoting more equitable economic growth.

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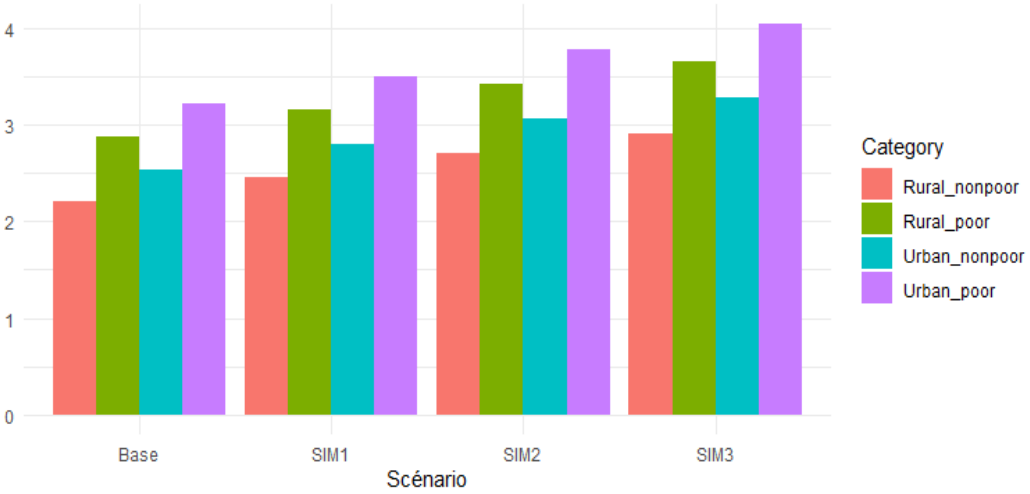
Table 4: Growth and Income Distribution Analysis

	Base	**SIM1**	**SIM2**	**SIM3**
GDP (real, increase rate) (%)	3.18	3.50	3.80	4.00
Saving and investment (% of GDP)	27.54	28.00	28.50	29.00
Wage income (real, increase rate) (%)	3.9	4.2	4.5	4.8
Capital income (real, increase rate) (%)	0.5	0.7	0.9	1.0
Household income (real, increase rate) (%)	2.8	3.0	3.2	3.5
Urban poor	3.22	3.50	3.78	4.04
Urban nonpoor	2.52	2.80	3.06	3.28
Rural poor	2.88	3.15	3.42	3.66
Rural nonpoor	2.20	2.45	2.70	2.90

Source: author's calculations.

Figure 2: Household income growth by scenario



Source: developed by the authors

5. Discussion and policy implications

The findings highlight that higher public spending on education can drive economic growth and help reduce poverty. However, the simulations are based on the assumption of stable macroeconomic conditions, with government expenditure and capital inflows remaining constant. This suggests that the efficacy of such policies is contingent upon a country's specific technological capabilities and resource endowments, thereby implying that similar policy interventions may yield heterogeneous outcomes across different national contexts. A critical insight from the analysis is that the most pronounced effect on poverty alleviation emerges when education spending is effectively targeted toward economically disadvantaged

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households. Although increased public spending on education typically promotes economic growth and improves income levels among the poor, its effect on poverty reduction is limited without targeted interventions, as shown by the comparative analysis of the three simulation scenarios. For instance, the limited success of certain educational development initiatives, such as the *Programme d'Urgence* in Morocco, exemplifies the risks associated with untargeted policy implementation.

To enhance the effectiveness of education expenditure, policymakers should prioritize strategic investments, including the expansion of school infrastructure, the implementation of targeted development programs such as conditional cash transfers, and the incentivization of educators to serve in underserved rural areas. Moreover, fostering labor demand through an economic growth model that aligns more closely with the skill sets generated by the education system is imperative. In Morocco, the structural gap between the supply and demand for skilled labor exacerbated by periods of low economic growth and limited employment opportunities, as seen during the COVID-19 crisis has constrained the poverty-reducing impact of educational expansion. Addressing this challenge necessitates a more coherent alignment between the education system and labor market needs, ensuring the development of human capital that is well-suited to the country's evolving production structure. Furthermore, the results underscore that employment growth, facilitated by increased labor market flexibility and the removal of structural barriers to employment, constitutes a crucial mechanism for sustainable poverty reduction. Future research could further investigate the intricate interplay between labor supply, employment dynamics, and income distribution to refine policy recommendations.

Nonetheless, the study's assumptions introduce certain methodological constraints. Notably, the premise that increased education spending will automatically enhance educational outcomes is debatable, as empirical evidence suggests that the quality of public expenditure is equally, if not more, critical than its quantity. Additionally, the model presumes fixed technological and resource endowments across household groups, a reasonable assumption given the moderate scope of the simulated policy changes. However, the findings strongly imply that a holistic poverty reduction strategy necessitates a dual approach: enhancing human capital formation while simultaneously ensuring adequate levels of both public and private investment to sustain long-term economic and social development.

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Conclusion

Like many countries, Morocco has prioritized education in its development strategy, particularly in the context of widespread poverty. This study, utilizing a static CGE model, examines the effect of increased public spending on education (primary, secondary, and higher education) on poverty. The findings suggest that higher public expenditure on education fosters economic growth and reduces poverty. However, the success of these policies depends on Morocco's specific structural conditions. Directing spending toward poor households has a more substantial effect on poverty reduction. The simulations' findings illustrate that higher public expenditure on education has a significant positive economic impact, especially for the poorest people. In Scenario 3, real GDP growth rises from 3.18% in the baseline scenario to 4.00%, highlighting the beneficial impact of focused educational spending on the economy as a whole. Simultaneously, the savings and investment rate increase gradually, rising to 29.00% of GDP in Scenario 3 from 27.54% in the baseline scenario. This underscores the contribution of educational spending to capital formation. In addition, real wage income increased significantly, from 3.9% to 4.8%, reflecting the increased need for workers with higher levels of competence. Additionally, capital income grows moderately, rising from 0.5% to 1.0%, indicating an improvement in capital productivity.

The study shows also that income growth in urban and rural poor households is more significant than in non-poor households. Urban poor households saw a rise from 3.22% to 4.04%, while rural poor households saw a rise from 2.88% to 3.66%. A 10% increase in real public spending on education has dissimilar effects on labor supply and wages, depending on education levels and scenarios. Labor supply increases are generally modest, with modest improvements. Secondary education sees the most significant impact, with labor supply rising by 3.66% in Scenario 1 and 3.68% in Scenario 2. Primary and higher education have a more restrained response, with labor supply fluctuating around 3.5% and 3.41%, respectively.

Additionally, the model operates under the assumption of segmented labor markets, where different types of labor primary-educated, secondary-educated, and higher-educated do not overlap. In reality, highly educated workers who fail to secure formal employment may enter less-skilled labor markets, potentially displacing less-educated workers and affecting wage dynamics. A 10% increase in public education spending would improve household well-being and contribute to poverty reduction. For future research, it would be relevant to divide the labor market into four categories (unqualified labor, qualified labor at each level of education

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primary, secondary, and higher) and allow households to choose their education level based on investment.

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