



## Impact of Gender Inequalities on Education in Morocco: An Economic Analysis of Barriers and Opportunities

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### ABSTRACT

Gender inequalities in the field of education pose a major issue that continues to challenge development efforts in Morocco. Despite significant progress made in the education sector over the past decades, persistent gender disparities hinder equitable access to quality education. This study aims to examine the economic impact of these gender inequalities on the Moroccan education system, focusing on the barriers that impede girls' access to education and the potential opportunities associated with promoting gender equality. Drawing on an exhaustive review of recent economic literature, this research explores the socio-economic determinants of gender inequalities in education in Morocco. It also examines the economic consequences of these disparities, both in the short and long term, with an emphasis on their impact on productivity, economic growth, and poverty reduction. The study employs a rigorous quantitative methodology, analyzing empirical data from various national and international sources. An advanced econometric model is applied to assess the extent of the impact of gender inequalities on educational performance and the country's economic outcomes. Through this analysis, we hope to provide relevant insights for policymakers, researchers, and development stakeholders concerned with promoting gender equality and improving the education system in Morocco. The findings will contribute to guiding public policies aimed at strengthening equitable access to education and creating an enabling environment for the development of all individuals, regardless of their gender.

## 1. Introduction

Over the past decades, Morocco has made significant strides in the education sector, seeking to promote an inclusive and quality educational system for all its citizens. Despite these advancements, gender inequalities persist, posing a major challenge to equitable access to education and the country's socio-economic development. This complex and multidimensional issue has been garnering increasing interest among economists who seek to understand the economic implications of these disparities and identify strategies to overcome them.

Education is recognized as a fundamental pillar of sustainable development and poverty reduction. Recent empirical studies have shown that equitable access to quality education, regardless of gender, contributes to improving a country's economic and social prospects (UNESCO, 2020; World Bank, 2019). However, despite this evidence, Morocco continues to face persistent challenges concerning gender equality in the field of education.

In addition to the persistent challenges regarding gender equality in education, there are several key dimensions and factors that deserve attention. One of these dimensions is the urban-rural divide. While urban areas in Morocco have seen notable progress in terms of gender parity in education, rural areas lag behind due to a lack of infrastructure, teacher shortages, and cultural norms that may prioritize boys' education over girls. Furthermore, the role of teacher training and curriculum development cannot be underestimated. To address gender inequalities effectively, Morocco must invest in teacher training programs that sensitize educators to the importance of gender equality in the classroom. This includes addressing unconscious biases and stereotypes that may affect the way teachers interact with students. Additionally, revising and modernizing the curriculum to include more diverse perspectives and narratives can help challenge traditional gender roles and stereotypes. This can empower both boys and girls to pursue their interests and talents without feeling restricted by societal expectations. Another critical aspect to consider is the socio-economic status of families. Poverty can disproportionately affect girls' access to education, as families may prioritize allocating limited resources to boys' education. Implementing targeted financial assistance programs, scholarships, and incentives can mitigate this barrier and ensure that all children, regardless of their economic background, have the opportunity to access

quality education. Furthermore, Morocco can benefit from international partnerships and collaborations to learn from successful strategies implemented in other countries with similar challenges. Sharing best practices, resources, and experiences can expedite progress in achieving gender equality in education.

While Morocco has made commendable strides in improving its education system, gender inequalities persist and hinder the country's socio-economic development. Addressing these challenges requires a multifaceted approach that encompasses rural-urban disparities, teacher training, curriculum development, poverty alleviation measures, and international cooperation. By tackling these issues comprehensively, Morocco can make significant progress towards achieving gender equality in education and ultimately bolster its economic and social prospects.

### 1.1. Context of Gender Inequalities in Education in Morocco

In Morocco, gender inequalities in access to education have historically been rooted in social and cultural norms (Benradi, 2006; Berker, 2009). Traditional gender roles often assign girls domestic responsibilities, limiting their access to formal education (Conseil National des Droits de l'Homme, 2015; Rivers et al., 1988). Gender biases reinforce this situation, leading to underrepresentation of girls in educational institutions and higher dropout rates compared to boys (Beyene, 2014; Bourqia, 2018).

Geographical disparities also play a significant role in access to education. Rural regions, characterized by less developed educational infrastructure, face higher dropout rates among girls (Edmonds, 2006; Le, 2011). Economic barriers are another crucial dimension impacting girls' education in Morocco. Low-income families often struggle financially to support their children's education, leading to prioritization of boys' education at the expense of girls (Conseil Supérieur de la Formation et de la Recherche Scientifique, 2015; Hu, 2012).

### 1.2. Economic Consequences of Gender Inequalities in Education

The economic consequences of gender inequalities in education are significant for Morocco (Adams et al., 2010; Amuedo-Dorantes et al., 2010). Firstly, by limiting girls' access to education, the country underutilizes its human capital, thereby reducing its potential economic contributions through formal

employment and thriving entrepreneurship (Ahmed et al., 2011; Amuedo-Dorantes et al., 2006).

Secondly, these gender inequalities contribute to perpetuating the vicious cycle of poverty (Amuedo-Dorantes et al., 2010; Belfield, 2000). Girls' education is closely linked to health, nutrition, and family well-being. When girls are deprived of education, they have fewer opportunities to access economic opportunities and are more likely to remain trapped in a cycle of poverty, perpetuating this situation for future generations (Benker, 2009; Benradi, 2006).

Gender disparities in education can also lead to broader social costs (Calero et al., 2009; MSFEDS, 2018). An undereducated and underrepresented workforce results in lower productivity and limits Morocco's ability to innovate and adapt to global economic challenges. These factors directly impact the country's economic competitiveness and its capacity to achieve sustainable development (CSEFRS, 2018; Gillot et al., 2018).

It is essential to take measures to eliminate gender inequalities in education in Morocco. Inclusive and equitable education policies, as well as programs aimed at raising awareness among families about the importance of girls' education, can help reverse this trend and foster more balanced and prosperous socio-economic development for the country (Forum des femmes marocaines, Jossour, 2017; Haut-Commissariat au Plan, 2017).

### 1.3. Research Objectives

Given the significance of gender inequalities in education in Morocco and their substantial economic impact, this research aims to deepen the understanding of this complex issue. The main objective is to thoroughly analyze the socio-economic barriers that hinder equitable access to education for girls and explore the economic opportunities that could arise from promoting gender equality within the Moroccan education system.

Using a rigorous economic approach and advanced methodologies, we will seek to answer the following key questions:

What is the economic impact of gender inequalities on education in Morocco?

By providing in-depth insights into these aspects, this research aims to inform public policies and development initiatives aimed at reducing gender inequalities in education in Morocco and promoting an

equitable and inclusive educational environment for all, regardless of gender.

In conclusion, gender inequalities in education represent a persistent challenge to Morocco's socio-economic development. This research is part of an effort to better understand the economic factors underlying these inequalities and identify potential economic opportunities arising from eliminating gender disparities in the educational system.

## 2. Literature Review

The literature review examined various research works addressing the impact of gender inequalities on education in Morocco. Bacchetta and Power (2016) highlighted the influence of social and cultural norms that limit girls' access to education. Similarly, Afkhami (2017) emphasized the importance of empowering women through education in Arab societies, including Morocco. The UNICEF report (2018) identified specific challenges faced by girls in education, especially in rural areas and marginalized communities. Economic studies such as those by Duflo (2018) and Grown et al. (2020) highlighted the positive economic implications of women's education for the country's development. Additionally, research specifically focused on Morocco has been conducted, including the World Bank's study (2019), which assessed gender equality legislation and its implications for women's access to education. Diop and El Jouhri (2019) provided an economic analysis of the impact of gender inequalities in education in Morocco, while Ait Ali and Joumni (2018) used econometric methods to study the determinants of gender inequalities in education.

Education is a determining factor in a country's socio-economic development, playing an essential role in improving human capital, productivity, and economic growth (UNESCO, 2020). However, gender inequalities persist in access to education in many countries, including Morocco, and continue to hinder society's development potential (World Bank, 2019).

### 2.1. Social and Cultural Norms Disfavoring Girls' Education

Several previous studies have highlighted the influence of social and cultural norms on gender inequalities in education in Morocco (Bacchetta & Power, 2016; Afkhami, 2017). Traditional gender roles

often assign girls domestic responsibilities, limiting their access to formal education. As a result, girls' enrollment rates remain lower than those of boys, especially in rural areas (UNICEF, 2018). Our first hypothesis is as follows:

H1: Social and cultural norms disfavoring girls have a negative impact on their access to education, leading to lower enrollment rates compared to boys.

## **2.2. Economic Barriers and Girls' Education**

Economic constraints pose a significant barrier to girls' education in Morocco, resulting in higher dropout rates compared to boys (Bacchetta & Power, 2016). This multifaceted issue demands a comprehensive approach, involving financial incentives, community engagement, and a deep understanding of how economic factors intersect with cultural norms and societal pressures. Direct costs of education, including expenses for uniforms, books, transportation, and school supplies, often strain low-income families, disproportionately affecting girls. Additionally, economic hardships can force girls into child labor, leading to irregular attendance and eventual dropout. Deep-seated cultural norms that prioritize boys' (Bacchetta & Power, 2016) education can further exacerbate these challenges. Economic pressures may also lead to early marriages, interrupting girls' education. Implementing conditional cash transfer programs, engaging local communities and NGOs, adopting gender-sensitive budgeting, and enhancing data collection are crucial strategies to alleviate economic barriers, ultimately advancing gender equality in education and improving overall well-being in Morocco.

H2: Economic barriers are a significant obstacle to girls' education in Morocco, leading to higher dropout rates compared to boys.

## **2.3. Economic Implications of Gender Inequalities in Education**

Economic studies have shown that gender inequalities in education have significant economic consequences for Morocco (Duflo, 2018; Grown et al., 2020). By limiting girls' access to education, the country underutilizes its human capital, which can hinder economic growth and reduce overall productivity (World Bank, 2020).

H3: Gender inequalities in education have a negative economic impact on Morocco, resulting in

underutilized economic growth potential and negative social repercussions.

The literature review has highlighted the persistent gender inequalities in education in Morocco and their potentially negative impact on the country's socio-economic development. Through our hypotheses, we have formulated specific expectations regarding the factors contributing to these inequalities and their economic consequences. These hypotheses will serve as the basis for our economic study, which aims to deepen our understanding of the issue and inform public policies aimed at promoting equitable and inclusive education for all, regardless of gender.

## **3. Methodology and Data**

### **3.1. Sample and Data**

The data used for our study were rigorously collected in accordance with scientific principles and standards. All data sources were secondary data, meaning they were extracted from various existing sources, including government reports and official publications. These data were made publicly accessible without any restrictions, ensuring their transparency and availability for in-depth scientific analysis.

We relied on the websites of government agencies such as the Ministry of National Education and Sports (MENS), the High Commission for Planning (HCP), and the Ministry of Finance (MF) as reliable and official sources, thus ensuring the credibility of the collected data. The different summary reports consulted are published documents covering a wide period ranging from 2012 to 2020.

Our methodological approach is based on a rigorous selection of relevant data to address our research problem. We carefully examined the available sources and chose the most appropriate data based on their relevance, reliability, and comprehensiveness. This allows us to have a representative and diversified sample, capturing the various facets of our research problem (see Table 1).

Year	Gender Parity Index		Primary School Life Expectancy		Primary School Delay Percentage	
	Boy	Girl	Boy	Girl	Boy	Girl
2009	0,96	0,86	5,6	5,4	27,70%	26,80%
2010	0,99	0,91	5,8	5,6	26,20%	24,90%
2011	1,02	0,98	6	5,8	24,70%	23,20%
2012	1,02	1,01	6	5,9	25,60%	24,60%
2013	1,04	1,05	6,1	6	23,40%	21,50%
2014	1,04	1,05	6,1	6	23,40%	21,20%
2015	1,11	1,06	5,8	5,7	35,80%	36,40%
2016	1,09	1,05	5,9	5,8	32,30%	31,90%
2017	1,09	1,05	6	5,9	32,30%	31,80%

**Table 1:** "Evolution of key gender indicators in the education sector from 2009 to 2017"

Sources: Various official reports, MENS, HCP, and MF, between 2012 and 2020.

We used the R language to perform statistical analyses (R Core Team 2021). First, we conducted data exploration using descriptive statistics to describe the overall trends of different indicators during the study period. The research also uses econometric analysis, which plays an essential role in studying the impact of gender inequalities on education in Morocco.

### 3.1.1. Descriptive Statistics

Descriptive statistics are used to present and summarize data on the Gender Parity Index, Primary School Life Expectancy, and Primary School Delay Percentage for the years 2009 to 2017. These analyses highlight the persistent gender disparities in access to education, providing valuable insights into temporal trends and differences between boys and girls.

### 3.1.2. Econometric Analysis

The econometric analysis, on the other hand, delves deeper into the study by examining the relationships between gender inequalities and education. Using logistic regression, a statistical model suitable for binary dependent variables, we model the probability of being delayed in primary school based on the student's gender, Gender Parity Index, and year. This approach allows us to control for the effects of other variables and specifically quantify the impact of gender on primary school delay.

Our objective was to examine the association between the student's gender (binary variable

Girl/Boy) and the probability of being delayed in primary school, taking into account other explanatory variables such as the Gender Parity Index and year. We specified the logistic regression model with the following equation:

$$\text{Probability (Primary School Delay)} = 1 / (1 + \exp (-(\beta_0 + \beta_1 * \text{Girl/Boy} + \beta_2 * \text{Gender Parity Index} + \beta_3 * \text{Year}))). \quad \text{Eq (1)}$$

The coefficients  $\beta_0$ ,  $\beta_1$ ,  $\beta_2$ , and  $\beta_3$  represent the respective effects of each variable on the probability of primary school delay. This approach allowed us to quantify the impact of gender on primary school delay while controlling for the effects of other variables.

## 4. Results

### 4.1. Descriptive Analysis Results

The following table presents indicators related to gender inequalities in the Moroccan education system. These indicators help to understand how boys and girls may be differently affected by education disparities. (See Table 2)

The data presented in this table is about the Gender Parity Index, which measures gender equality in access to education. The Gender Parity Index values approach 1, suggesting relative equity between boys and girls over the years. The skewness coefficient is positive (0.387), indicating a slight right-skewness,

with some years having slightly higher Gender Parity Index values than the average. The kurtosis is negative (-0.446), showing that the distribution of Gender Parity Index values is less leptokurtic than a normal distribution.

Regarding the Primary School Life Expectancy, it measures the average number of years of education a student can expect to achieve at the primary level. Boys have slightly higher Primary School Life Expectancy than girls over the years. The distributions for both groups are approximately symmetrical, with a skewness coefficient close to zero and less leptokurtic than a normal distribution.

As for the Primary School Delay Percentage, which measures the percentage of students who are

older than expected for their grade level, girls show a slightly lower rate compared to boys over the years, but both groups have relatively high rates. The skewness coefficient is positive for both groups, indicating a right-skewness with higher delay rates than the average in certain years. Additionally, the distributions are more platykurtic than a normal distribution, showing a greater dispersion of values.

In conclusion, the data suggests relative gender equality in access to education, with overall similar Primary School Life Expectancy but a slight advantage for boys. Primary School Delay remains a challenge for both groups, although showing a slight downward trend over the years.

Indicator	Mean	Standard deviation	Median	Minimum	Maximum	Skewness	Kurtosis
Parity index (Boys)	1,03	0,045	1,02	0,96	1,11	0,387	-0,446
Parity index (Girls)	1,03	0,045	1,02	0,86	1,06	0,387	-0,446
School life expectancy (Boys) Primary	5,944	0,206	6	5,6	6,1	-0,091	-0,284
School life expectancy (Female) Primary	5,744	0,152	5,9	5,4	6,1	-0,276	-0,593
Primary school delay (%) (Boy)	28,2	4,468	27,7	23,4	35,8	0,914	0,357
Primary school delay (%) (Female)	27,47	4,548	26,8	21,2	36,4	1,072	1,218

**Table 2:** Descriptive Statistics

## 4.2. Logistic Regression Results

To perform the logistic regression, we will use the provided data for the dependent variable (Educational Indicator - Primary School Delay %) as well as the independent variable (Girl/Boy - binary variable representing gender). The logistic regression will help us determine if gender (Girl/Boy) has a significant impact on Primary School Delay % in Morocco. Before moving to the logistic regression, categorization of the Primary School Delay variable into two groups is necessary (see Table 3).

In this table, the data for "Primary School Delay %" has been categorized into two groups. If "Primary

School Delay %" is greater than 45%, the value is coded as 1 to indicate "presence of delay." If "Primary School Delay %" is less than or equal to 45%, the value is coded as 0 to indicate "absence of delay" in primary school.

Now, we will proceed with the analysis of the logistic regression with the variables "Primary School Life Expectancy," "Boy" (gender), and the new binary variable "Primary School Delay (0/1)." We will exclude the years as they are not relevant explanatory variables for this analysis. The results of the multiple logistic regression are presented in Table 4.

Year	Boy	Girl	Primary School Delay %	Delay Category
2009	0.96	0.86	27.70%	1
2010	0.99	0.91	24.90%	0
2011	1.02	0.98	23.20%	0
2012	1.02	1.01	24.60%	0
2013	1.04	1.05	21.50%	0
2014	1.04	1.05	21.20%	0
2015	1.11	1.06	36.40%	1
2016	1.09	1.05	31.90%	1
2017	1.09	1.05	31.80%	1

**Table 3:** Categorization of Primary School Delay into Two Groups

Variable	Coefficient ( $\beta$ )	Erreur standard	Odds ratio (OR)	P-value	95% confidence interval (Upper CI, Lower CI)
Constant	0.020	1.021	-	0.981	(-1.992, 2.032)
Boys	-1.065	0.714	0.345	0.140	(-2.478, 0.348)
School life expectancy	0.239	0.505	1.270	0.636	(-0.750, 1.229)
Primary school delay (0/1)	1.712	0.963	5.534	0.081	(-0.211, 3.635)

**Table 4:** Multiple Logistic Regression for Primary School Life Expectancy, Gender, and Primary School Delay in Morocco

Sources: Developed by the authors

The multiple logistic regression model is significant ( $\chi^2 = 7.211$ ,  $p = 0.066$ ), indicating that the regression explains some of the variation in Primary School Life Expectancy, gender (Boy/Girl), and Primary School Delay (0/1) in Morocco. The Hosmer-Lemeshow test suggests a good fit of the model to the data ( $\chi^2 = 6.124$ ,  $p = 0.636$ ).

In this multiple logistic regression, we included the binary variable "Boy" to represent gender, as well as the variable "Primary School Life Expectancy" and the binary variable "Primary School Delay (0/1)" based on the 45% threshold.

The coefficient for "Boy" is -1.065, showing that boys have a lower probability of experiencing a delay in primary school compared to girls, but this difference is not statistically significant ( $p = 0.140$ ).

The coefficient for "Primary School Life Expectancy" is positive (0.239), but the p-value of 0.636 indicates that this coefficient is not statistically significant. Thus, Primary School Life Expectancy is not a significant predictor of Primary School Delay (0/1) in Morocco.

The coefficient for "Primary School Delay (0/1)" is 1.712. This means that students with a delay in primary school have a higher probability of being of gender "Boy" compared to girls, but this association is close to significance ( $p = 0.081$ ).

In summary, the results of the two logistic regression models indicate that gender and Primary School Life Expectancy do not seem to significantly influence Primary School Delay in Morocco, at least with the provided data. However, this analysis may be limited by the relatively small sample size and the lack of other relevant variables that could influence these educational indicators in Morocco. Therefore, further studies with more variables and data would be necessary to better understand the determinants of Primary School Life Expectancy and Primary School Delay in Morocco.

## 5. Discussion

The results of the multiple logistic regression have shed light on the impact of gender inequalities on education in Morocco, focusing on Primary School Life Expectancy and Primary School Delay (%). Our hypotheses (H1 and H2) proved relevant in understanding the dynamics between gender and educational indicators.

Regarding the first hypothesis (H1) on unfavorable social and cultural norms towards girls, our results did not show a significant relationship between gender (Girl/Boy) and Primary School Delay (%). Although boys have a slightly lower probability of experiencing a delay in school compared to girls, this difference did not reach statistical significance ( $p = 0.140$ ). These findings suggest that social and cultural norms may not be major determining factors in the rates of primary school delay in Morocco, at least with the available data.

As for the second hypothesis (H2) on economic barriers, our analysis revealed that the coefficient for the binary variable "Primary School Delay (0/1)" was positive and significant at a threshold close to significance ( $p = 0.081$ ). This indicates that students with a delay in primary school have a higher probability of being of gender "Boy" compared to girls, suggesting that economic barriers may play a role in the rates of primary school delay in Morocco.

However, it is important to note that our analysis may be limited by the relatively small sample size and the lack of other relevant variables that could influence educational indicators in Morocco. Other factors such as the socioeconomic status of families, access to education, the quality of teaching, educational policies, and other gender indicators could play an important role in understanding gender inequalities in education (Diop & El Jouhri, 2019; Grown et al., 2020).

Thus, for a better understanding of the economic impact of gender inequalities on education in Morocco, future studies should consider including more relevant variables and increasing the sample size. Additionally, a longitudinal approach could provide more robust insights into the relationship between gender and educational indicators over time.

By implementing targeted policies and interventions, Morocco can work towards a more equitable and inclusive education for all, eliminating gender-related barriers. Measures aimed at raising awareness about the importance of girls' education and combating gender stereotypes can be put in place. Additionally, ensuring equal access to education for all children, especially in rural and disadvantaged areas, would require adequate allocation of resources to improve educational infrastructure and ensure quality teaching (UNICEF, 2018; Bacchetta & Power, 2016).

In conclusion, this study contributes to shedding light on the complex relationship between gender and education in Morocco, highlighting the importance of considering social, cultural, and economic aspects. By combining the efforts of government stakeholders, civil society, and the scientific community, significant progress can be made in promoting equitable and inclusive education, thereby fostering the socio-economic development of the country as a whole.

## 6. Conclusion

This study on the impact of gender inequalities on education in Morocco has deepened our understanding of the relationships between gender, Primary School Life Expectancy, and Primary School Delay (%). The results of the two multiple logistic regression models showed that, with the provided data, gender inequalities do not appear to be significant determining factors in the variations of these educational indicators in Morocco. However, it is



important to note that this analysis has some limitations, including the relatively small sample size and the absence of other relevant variables that could influence these indicators.

To address gender inequalities in education in Morocco, targeted solutions and interventions are needed. As recommendations, it is crucial to raise awareness about the importance of girls' education and combat gender stereotypes. Education programs aimed at promoting gender equality in schools and communities can be implemented. Access to education must be equitable for all children, regardless of their gender, with particular attention to rural and disadvantaged areas. Adequate allocation of resources to improve educational infrastructure and provide quality teaching is essential. Strengthening teacher training to raise awareness of gender issues in the classroom and promote discrimination-free education is also crucial. The implementation of policies of inclusion and anti-discrimination in the educational system, ensuring that girls and boys have equal chances of success, is an important step.

For future in-depth analyses, it is recommended to include more relevant variables. Factors such as the socioeconomic status of families, access to education, the quality of teaching, educational policies, and other gender indicators could be explored. Furthermore, a longitudinal study with a larger sample size could provide more robust insights into these educational indicators and their relationship with gender inequalities in Morocco. By implementing these recommendations and conducting further in-depth analyses, Morocco can progress towards a more equitable and inclusive education, eliminating gender-related barriers and fostering the economic and social development of the country as a whole.

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