Education and Inequality in India through an Econometric Analysis

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INTRODUCTION TO THE TOPIC

Inequality and Education are often considered to be correlated. It has been an existing notion around people of the world that increasing access to education leads to a lower income inequality. This is what we have been taught growing up. Economists have tried and tested the correlation between these factors through multiple methods and trials, and have found rather interesting results. This academic review paper will sum up the results of various studies conducted on the topic, after which I will conclude my understanding of the importance of education in decreasing inequality.

Key Terminology
- *Gini Coefficient:* **Parameter used to measure inequality level.**
- *Educational Attainment:* **Highest level of education that a person / persons have successfully completed.**
- *MPCE:* **Monthly Per Capita Expenditure or MPCE refers to the household monthly expenditure divided by the household size.**

INTRODUCTION TO THE PRIMARY STUDY

The primary study that will be analyzed through this academic review paper is titled, "Education and Inequality in India: A Microeconometric Decomposition Analysis" by Janneke Pieters. The study measures how education affected the distribution of household consumption expenditures in the periods 1987-1993 and 1993-2004. It uses factors such as the Gini Coefficient and nationwide literacy rates to find an effective connection between educational attainment and inequality levels. The study also dives into the analysis of the indirect impacts of education - through fertility rates - and their impact on consumption expenditures, aiming to find a conclusion to the subject of focus.

Methodology

The research paper uses household survey data, exploring both inequality and educational expansion through two periods in India from 1987 - 1993 and 1993 - 2004. The survey data is accessed to find a relationship between educational expansion and the distribution of household consumer expenditures. Furthermore, the research paper also uses calculations and survey data for the fertility rates in order to create a simulated MPCE distribution table and find a relationship between the fertility rates and the Gini coefficient through the years of study.

RESULTS

Table 1: Inequality of Monthly Per Capita Expenditure

Year	Gini	GE(0)	GE(1)	GE(2)
1987	0.338	0.188	0.230	0.540
1993	0.329	0.178	0.224	0.612
2004	0.346	0.197	0.255	0.706

Fig.1.

Table 2: Educational Attainment, percentage distribution

Educational Level	1987	1993	2004
1 Illiterate	50.50	44.75	35.87
2 Below primary	10.91	10.91	7.35
3 Primary	12.46	11.00	13.23
4 Middle	9.74	11.61	16.55
5 Secondary	11.21	14.81	18.04
6 Graduate and above	5.17	6.92	8.96
Total	100	100	100

Fig. 2.

The results found concluded through the study were rather interesting (See *fig. 1* and *fig. 2* for reference). Looking at *Fig. 1*, it can be observed that the Gini Coefficient during the first period (1987 - 1993) dropped from 0.338 to 0.329, signifying the decrease in household income inequality through the period. Looking at *Fig. 2* for the same period, it is observable that the illiteracy rates overall decreased from 50.50% to 44.75%, showing an increase in educational attainment. Therefore, the results for the first period

from 1987 - 1993 help us conclude that an increase in educational attainment led to lower income inequality levels in the country. For the second period of focus (1993 - 2004), looking at *Fig. 1* tells us that the Gini coefficient saw a substantial increase from 0.329 to 0.346, through which it can be understood that income inequality rates rose significantly over the decade of study. *Fig. 2*, on the other hand, displays an increase in educational attainment and a drop in illiteracy rates from 44.75% to 35.87%. Through this data, we can conclude that an increase in educational attainment led to higher income inequality levels in the country. Due to the varying results through the two periods from 1987-1993 and 1993-2004, it would make it hard to determine a relationship between educational attainment and income inequality levels, leaving us to conclude that there is no direct correlation between the variables. However, looking at the indirect impacts of education (through fertility rates), it could be possible to determine a relationship between the factors.

Table 3: Simulated Distribution of MPCE 1987-93: Summary of Results

	Gini	GE(0)	GE(1)	GE(2)
Observed 1987	0.338	0.188	0.230	0.540
Observed 1993	0.329	0.178	0.224	0.612
Unobservable	0.330	0.179	0.216	0.468
Price effect all	0.332	0.181	0.222	0.530
Price effect education	0.333	0.182	0.222	0.517
Total effect education	0.337	0.187	0.227	0.521
Endowment effect education	0.344	0.194	0.236	0.546
+ Indirect, fertility	0.368	0.222	0.270	0.609
+ Indirect, household type	0.368	0.222	0.270	0.615

Fig. 3.

Table 4: Simulated Distribution of MPCE 1993-2004: Summary of Results

	Gini	GE(0)	GE(1)	GE(2)
Observed 1993	0.329	0.178	0.224	0.612
Observed 2004	0.346	0.197	0.255	0.706
Unobservable	0.326	0.175	0.219	0.596
Price effect all	0.331	0.181	0.227	0.623
Price effect education	0.335	0.185	0.232	0.642
Total direct effect education	0.333	0.183	0.229	0.626
Endowment effect education	0.327	0.176	0.219	0.599
+ Indirect, fertility	0.359	0.214	0.256	0.594
+ Indirect, household type	0.359	0.214	0.256	0.593

Fig. 4

In *Fig. 3*, the first two rows summarize inequality in the beginning and end of the period. All measures of inequality show a decline, except for the GE(2), which is more sensitive to changes at the high end of the distribution. The row 'unobservable' shows the effect of changes in the distribution of unobservables, which reduced inequality by all measures. In this period, the price effect of education was a slight reduction in inequality, while the endowment effect of education was to increase inequality: both effects were similar in magnitude but operated in opposite directions. Combined, the total direct effect of education was a very slight reduction in inequality. However, when the

indirect effect of educational endowment via fertility is included (in the row '+ Indirect, fertility'), we see a large increase in inequality. This suggests that reductions in fertility were greatest at the high end of the educational and MPCE distribution. In *Fig. 4* as well, it can be observed that the indirect effect of educational endowment via fertility has the largest adverse impact on the MPCE distribution. The subsequent effect via household type (last row) has no further distributive effects.

These results clearly showcase how the indirect effect of educational endowment (fertility rates) have had the biggest impact on inequality. As fertility rates increase, resources will be stretched thin due to increased family size, and income per capita within households may decrease. This dilution of income can lead to greater income inequality, especially if it disproportionately affects lower-income families.

SUPPORTING STUDIES

In addition to the study done by Janneke Pieters, I looked at supporting studies to find additional information that could help us coin the relationship between education and inequality in India. "Changing Educational Inequalities in India in the Context of Affirmative Action" by Sonalde Desai and Veena Kulkarni introduces us to the uneven distribution and access to educational services faced by marginalized groups, such as the Adivasis, Dalits, Kashyaps, Kevats and other OBCs. The unequal access to education across these OBCs leads to eventual income inequalities that we see today. The study "An overview of educational inequality in India: The role of social and demographic factor" by Mausam Kumar Garg, Poulomi Chowdary, and Illias Sheikh highlight how educational inequality (The inequality in the access to educational services) can play a huge role in contributing to income inequality in the long-term. Educational inequality is measured by a parameter known as "Educational Gini" and the results of the study show that the level of educational inequality has gone down between 2007 and 2018, but the Gini indices are still concentrated around 38%. Decomposition of the Gini and Shapley regression approach indicates that the within-group component and rural-urban division contribute the most to educational inequality. The study further recommends policies to work towards the improvement of

education in rural areas by focusing on school infrastructure, e-learning, educational quality, and parent involvement to reduce income inequality in the future.

CONCLUSION

In exploring the intricate relationship between education and inequality in India, this review has provided valuable insights into the nuanced dynamics shaping socio-economic disparities. Through an analysis of Janneke Pieters' primary study and complementary research, several key conclusions emerge. Firstly, while the direct correlation between educational attainment and income inequality appears inconsistent across different periods, the indirect effects of education, particularly through fertility rates, emerge as significant determinants of inequality dynamics. Pieters' study highlights how fluctuations in educational attainment influence household consumption expenditure distribution, with the interplay between education and fertility rates exerting substantial impacts on income inequality. Supporting research further underscores the critical role of addressing educational disparities in mitigating income inequality. Studies such as "Changing Educational Inequalities in India in the Context of Affirmative Action" and "An Overview of Educational Inequality in India: The Role of Social and Demographic Factors" elucidate the unequal access to education among marginalized groups and emphasize the imperative of policy interventions aimed at enhancing educational equity.

In light of these findings, it is evident that addressing educational inequality must be a cornerstone of efforts to reduce income disparities in India. Policies aimed at improving access to quality education, particularly in rural and marginalized communities, are crucial for fostering inclusive growth and socio-economic development. Investments in school infrastructure, e-learning initiatives, and parental involvement can play a pivotal role in narrowing educational gaps and fostering a more equitable society. Moreover, holistic approaches that consider the broader socio-economic context, including demographic factors and affirmative action policies, are essential for addressing the root causes of educational inequality and its downstream effects on income distribution. Ultimately, while the relationship between education and income inequality in India is multifaceted and complex, this review underscores the transformative potential of education in shaping more equitable societies. By prioritizing inclusive education policies and targeted interventions, policymakers can pave the way for a more prosperous and equitable future for all citizens. As we move forward, continued research and concerted efforts towards educational equity will be paramount in realizing the vision of a more just and inclusive society in India.

REFERENCE

Primary Study

[1] "Education and Inequality in India: A Microeconometric Decomposition Analysis." ECINEQ,http://www.ecineq.org/ecineq_ba/papers/pieters.pdf. Accessed 29 January 2024.

Complementary Studies

[2] Katirai, Amelia. "An overview of educational inequality in India: The role of social and demographic factors." Frontiers, https://www.frontiersin.org/articles/10.3389/feduc.2022.871043/full. Accessed 29 January 2024.

[3] DESAI, SONALDE, and VEENA KULKARNI. "Changing Educational Inequalities in India in the Context of Affirmative Action." NCBI, https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2474466/. Accessed 29 January 2024.