Female Education & Economic Development: What is Needed for Female Secondary Education to Directly Improve Economic Growth?

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There is no tool for development more effective then the empowerment of women

Kofi Anan
Yet...

“It also appears, however, that male educational attainment is more important in terms of the direct effects on GDP growth and non-human investment. This last finding likely reflects the greater labor-force role of males in most developing countries.”

- Barro and Lee (International Comparisons of Educational Attainment 1993)

Barro uses an exogenous growth model to find what indicators are necessary for economic growth.

His primary concern is what a country can do to see growth results.

He looks at education and then separated this to female and male education.

- Male education has positive and significant results in all of his models
- Inflation, Exports, Rule of Law...
- No theory on female education vs. male
Important Literature

- Dollar and Getti 1999

- Female secondary education is beneficial for countries with a GDP pc of over $2,000

- Female secondary education is not significantly beneficial for developing countries

- No theory here
Indirect Effects

- We know very clearly through the literature that female secondary education has positive effects on development indicators, which creates an indirect effect on economic growth. These include:
  - Fertility
  - Health
  - Education of sons
  - Agriculture production
  - Potentially black market economy
A Look at the Field: A Tale of Three Stories

- Feminist Literature
  - Speaks about development not economic growth
  - Often qualitative

- Economic Literature
  - Does not take into account differences in women and men
  - Often quantitative
Research Questions

- A closer look at the impact of female secondary education on developing countries GDP per capita growth
  - Why is the effect negative or neutral in an historical study of the topic?
  - What distinguished developed countries from developing in this case?
Maybe...

Female education is beneficial when a particular level of gender equality is present.

- Gender inequality scale/SIGI
- Female participation in government
- Access to job market
- Access to contraceptives
- Lower gender wage gap
Research Questions

- Two questions
  - Why are educated women not entering the job market?
    - Lack of access
    - Choosing to have children instead
    - Other options are more lucrative
    - Culture
  - Why are educated females not as productive in the labor market?
    - Wage gap
    - Job selection
Theoretical Concept:
- At the individual level, women are using Decision Making to determine if they will get educated at the secondary level and how or if they will participate in the informal economy.

Statistical Concept:
- Nominal choice that is not ordinal.
EITM Step 2

- Theoretical analogue:
  - Utility maximization, Females want to maximize their income. (potentially through marriage)

- Statistical Analogue:
  - Discrete Choice Modeling, using expected utility.
EITM Step 3

- Combine for a testable theory:
- If $E(u)_i > E(u)_j$ then she will choose to join the informal market instead of the formal
  - $i =$ informal market  $j =$ formal market
- $E(u)_i = \beta c + \beta p + \epsilon$
- $E(u)_j = \beta r + \beta a + \epsilon$
  - $c =$ children
  - $p =$ higher pay
  - $r =$ prestige (legal)
  - $a =$ access
The Empirical work

- Does female secondary education increase GDP growth when a level of gender equality is met?
- Weighted gender indicators
- Is GDP growth increasing from female secondary education when there are 50% females in the job market, or a .5 SIGI index, or at least 35% of the national parliament is female?
Dependent Variable

- Economic growth
  - GDP per capita growth.
- Source
  - World Bank
- As opposed to a development indicator or informal economic market
Independent Variables

- Secondary Education attainment: Percentage of female or male population over 25 for whom primary (secondary) school education is the highest level of education attained. Source: Barro-Lee
- Access to job market: measured by labor force, female (% of labor force 5-49) source: World Bank
- Access to family planning: measured by contraceptive prevalence (% of women age 15-49) source: World Bank
- Gender equality: SIGI - Social Institutions and Gender Index (uses formal and informal laws, social norms, and practices) source: OECD Development Centre
- Gender equality measure: Women in national parliaments are the percentage of parliamentary seats in a single or lower chamber held by women. Source: World Bank
The Sample

- BarroLee data Advanced Economies and others
- 119 countries for developing
- 25 countries for developed
- Only looked at GDPpc Growth and Barro Education
A Look at the Situation

Simple OLS regression of Female Secondary Education Completion rates and GDP pc Growth for developing countries.

Coefficients:

|                | Estimate | Std. Error | t value | Pr(>|t|) |
|----------------|----------|------------|---------|----------|
| (Intercept)    | 1.85057  | 0.35821    | 5.166   | 3.33e-07 *** |
| seccomp        | 0.04302  | 0.01504    | 2.861   | 0.00438 **  |

![Scatter plot showing the relationship between seccomp and gdpcg.](image-url)
A Look at the Situation

- Simple OLS regression of Female Secondary Education Completion rates and GDP pc Growth for Developed Countries

Coefficients:

|                | Estimate | Std. Error | t value | Pr(>|t|)   |
|----------------|----------|------------|---------|------------|
| (Intercept)    | 3.21906  | 0.50129    | 6.422   | 2.95e-09 *** |
| seccomp        | -0.02792 | 0.01687    | -1.655  | 0.101      |

![Graph showing the relationship between seccomp and gdppcg]
A Look at the Situation

- Separate top third, second third and bottom third Proportion of females in legislature.
- N goes to 595
- None are significant
Bottom third for developing
Second third for developing
Top Third for Developing
Conclusion

- Left with lots of questions
- More empirical work is needed to determine if female education is beneficial to GDP growth in developing countries
- If there is gender equality does this trend get stronger?
- What causes women to join the informal market or the formal market?
  - Empirical work on which market they actually enter
Further Research

- Wage gap
  - Is the gender wage gap accounting for the difference?

- Child bearing: Number of Children, access to childcare
  - Is the gap from time off accounting for the difference?

- Case study analysis
  - Where are women being educated but not working and why? Vise versa
Data Needs for Future Empirical Research

- Better gender inequality index’s
- Better wage gap data
- Quantitative data on time off for childbearing
- Is the education data reliable?
  - Overrepresentation
  - Quality of Education
What direction should I start with?