



# 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 than 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)

# Important literature

- ▶ Barro and Lee 1991, 1993, 1998
- ▶ 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?

# Theory?

- ▶ 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

# EITM Step 1

- ▶ 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

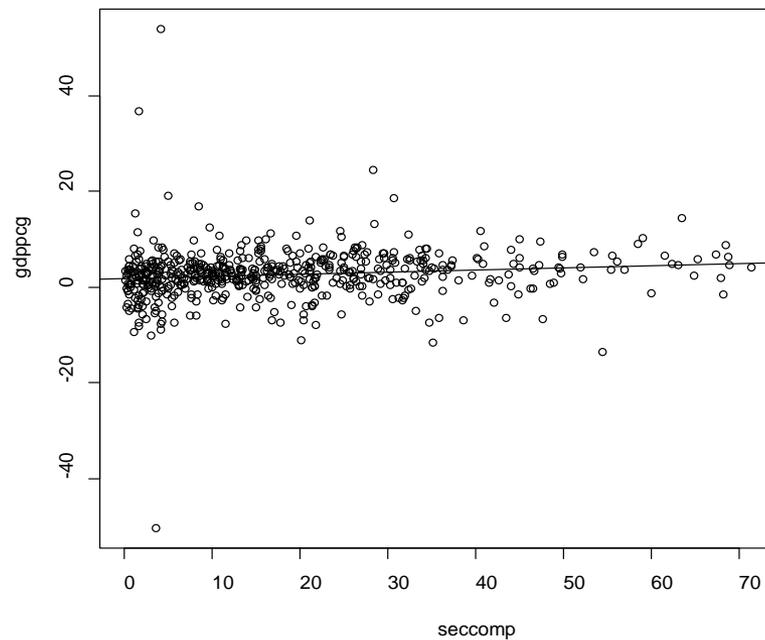
- ▶ BarroLee data Advanced Economies and others
- ▶ 119 countries for developing
- ▶ 25 countries for developed
- ▶ Only looked at GDPpc Growth and Barro Education

# 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 **

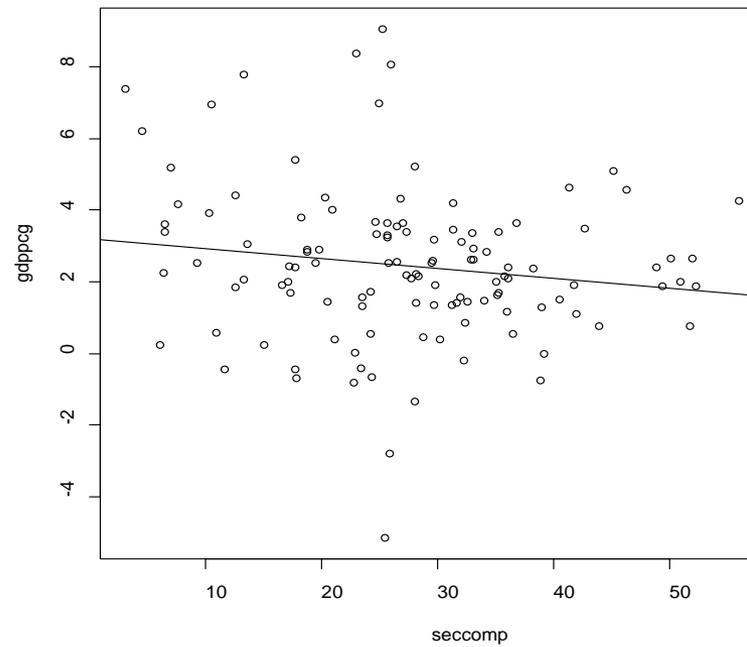


# A Look at the Situation

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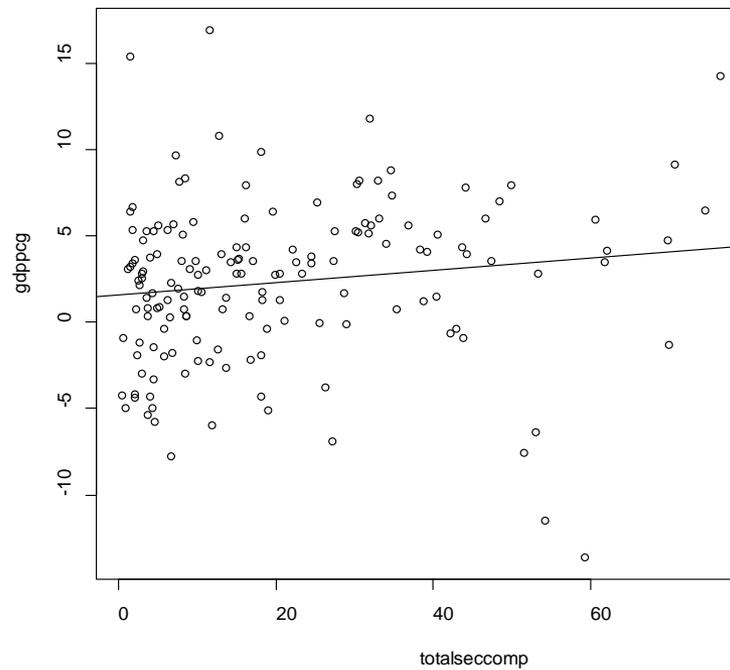
	Estimate	Std. Error	t value	Pr(>  t )
(Intercept)	3.21906	0.50129	6.422	2.95e-09 ***
seccomp	-0.02792	0.01687	-1.655	0.101



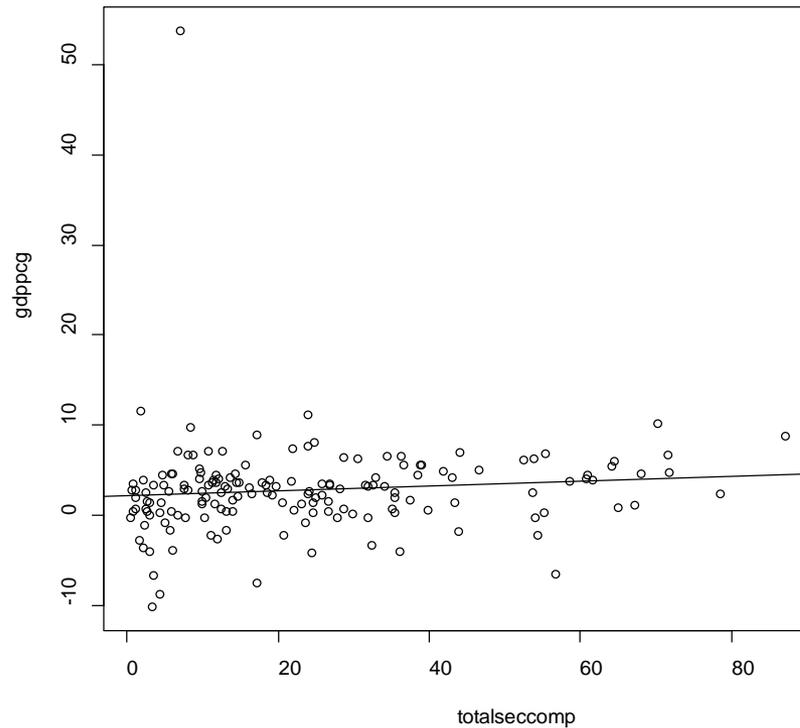
# A Look at the Situation

- ▶ Separate top third, second third and bottom third Proportion of females in legislature.
- ▶ N goes to 595
- ▶ None are significant

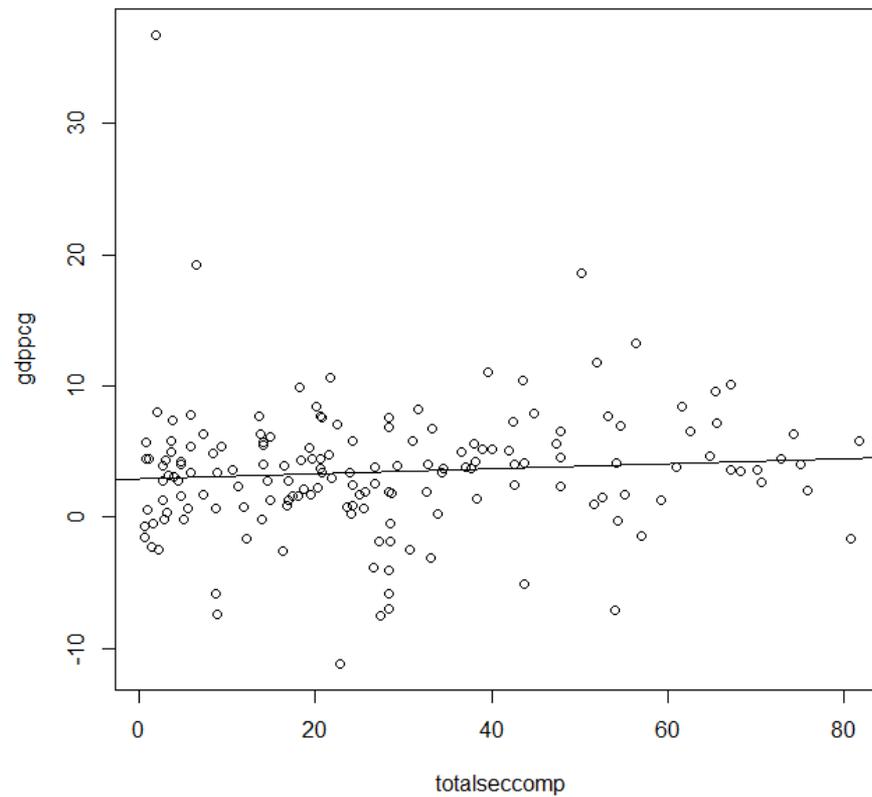
# Bottom third for developing



# 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? Vice 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

# Q & A

- ▶ What direction should I start with?