

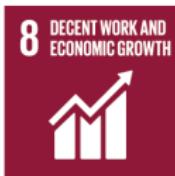
# Does Women Care More ?

The relationship between women's participation in  
legislation and national health expenditure  
A preliminary result

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# SUSTAINABLE DEVELOPMENT GOALS



# Motivation

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*"Women belong in all places where decisions are being made."*

*-Ruth Bader Ginsburg*



# Empowerment and Development

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Empowerment and development work in both ways.

- Empowerment relies on the development of the economy.
- Empowerment boosts the development of the economy.

**Exp:** Mother's education and Children's wellbeing (But biased)

# Mechanism

## Budget Allocation

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Evidences from household level:

- Hoddinott and Haddad (1995): Studied Cote d'Ivoire.  
Women spend money on **family friendly** items.
- Quisumbing and Maluccio (2003): Cross countries study.  
Women spend more on **education**

# Influence from Politics

From local level government.

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- Chattopadhyay and Duflo (2004): Village council
- Irma (2011): State Legislature
- Both studies show female politicians prefer **women-friendly** decisions. Pass law on equal inheritance right, budget preference on nutrition, entry-level education etc.

# Even at the country level...

From national level government:

# Even at the country level...

From national level government:

- Dollar et al. (2001): Corruption
- Jayasuriya and Burke (2013): Economic Growth
- York and Bell (2014): Life-satisfaction
- Salahodjaev and Jarilkapova (2020): Deforestation

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Challenger: Sung (2003): Better gender or better system ?

# Core Problem

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## Predecessors

- Municipal (Funk & Philips, 2018)
- State (Irma, 2011)
- Seats Quota in parliament (Chen, 2010)
- ...

# This Research

Does the ratio of female lawmakers are linked with the national health care expenditure?

If yes, how?  
If no, why?

# Model: Simple

$$HealthExp = \beta_0 + \beta_1 Women\_Lawmaker\_Ratio + \beta_2 \mathbf{X} + \epsilon$$

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What are inside the **X** ?  
How to estimate the coefficient?

# Data

1. Health Care Expenditure
2. Female Lawmaker ratio
3. Control Variables: **X**
4. Other Indicators: Binaries

Use Country Level Data: 122 Countries  
Annual data from 2001 - 2019: 20 years

# Health Care

1. The total national budget to the GDP
2. The health care budget to the GDP

The proportion of Health Care Expenditure to the National Budget

|                       | Mean  | StD  | Min  | Max  |
|-----------------------|-------|------|------|------|
| Global                | 10.41 | 4.65 | 0.63 | 33.1 |
| High Income Countries | 14.27 | 3.02 | 7.43 | 24.3 |
| Emerging Market       | 9.55  | 3.89 | 2.62 | 18.6 |
| LDC Countries         | 6.599 | 2.27 | 1.03 | 15.0 |

Table: Summary Statistics of Health Care (%)

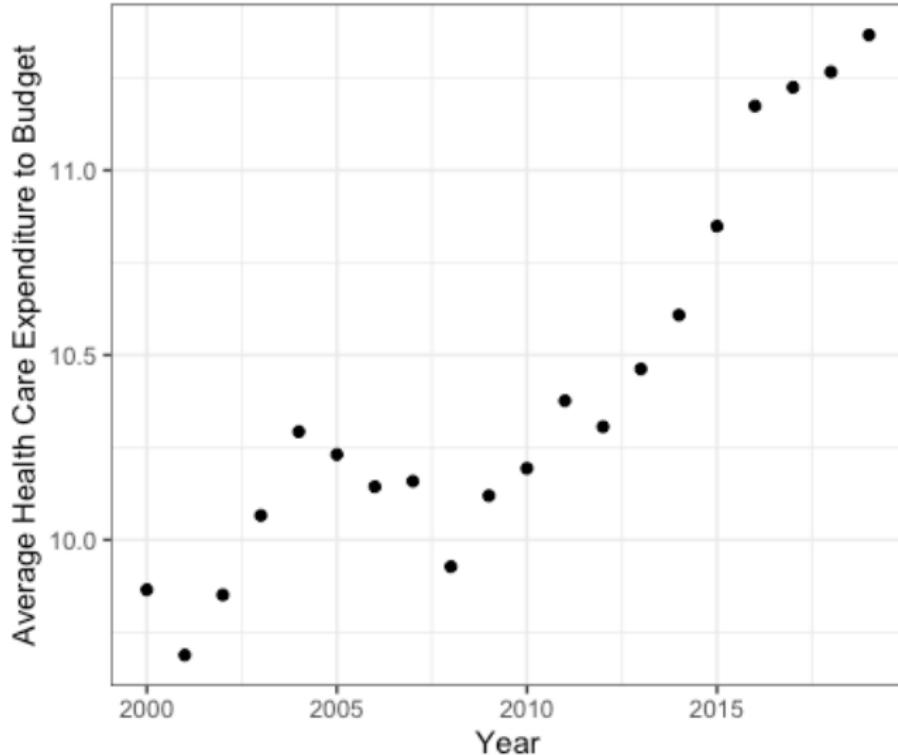


Figure: Average ratio of Health Care Expenditure to Total Expenditure (Global)

# Lawmakers

The proportion of seats held by female to the total seats count

- Lower house in Bicameral System
- Solo house in Unicameralism System

|                       | Mean  | StD   | Min  | Max   |
|-----------------------|-------|-------|------|-------|
| Global                | 19.66 | 11.64 | 0.00 | 63.75 |
| High Income Countries | 27.36 | 9.94  | 7.08 | 47.6  |
| Emerging Market       | 18.64 | 9.70  | 0.61 | 48.2  |
| LDC Countries         | 19.34 | 13.05 | 0.00 | 63.75 |

Table: Summary Statistics of Lawmakers (%)

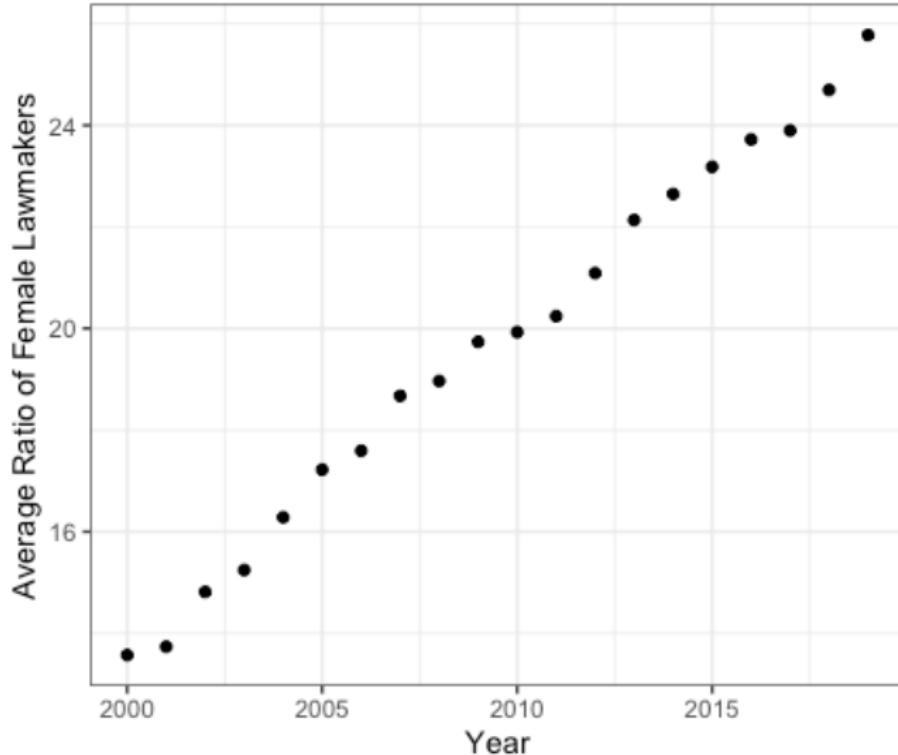


Figure: Average ratio of Female Lawmakers to Total Lawmakers (Global)

# Control Variable

1. Factors influence health care (Hitiris & Posnett, 1992  
Gerdtham & Jönsson, 2000)
  - Economic Development (GDP per capita)
  - Demographic (Age group proportion)
  - Contagious Disease (Number of Infections)
2. Foreign Aid
3. Democracy
4. Labour Participation Ratio: Better system or better gender (Sung, 2003)

|                                | mean    | Std. deviation | min    | max      |
|--------------------------------|---------|----------------|--------|----------|
| GDP per capita (US\$)          | 13401.4 | 18987.59       | 111.9  | 123514.2 |
| Age 64+ (%)                    | 8.72    | 5.85           | 0.69   | 28.00    |
| Age 0-14 (%)                   | 28.05   | 10.68          | 12.21  | 50.07    |
| TB cases (per 100,000 people)  | 131.7   | 201.31         | 0.00   | 1270.00  |
| Foreign Aid per capita (US\$)  | 38.26   | 60.31          | -49.54 | 688.09   |
| Democracy index                | 0.67    | 0.25           | 0.05   | 0.98     |
| Female Labor Participation (%) | 51.14   | 14.59          | 12.4   | 87.81    |

Table: The summary statistics of Control Variables

# Binary Variables

- Lawmaker Dummy: Annual Average
- Democracy Dummy: Demoracy or Autocracy
- Intersection

# Model

## Fixed Effect Model

$$HealthExp_{i,t} = \beta Lawmaker_{i,t-1} + \lambda \mathbf{X}_{i,t} + \alpha_i + \gamma_t + \epsilon_{i,t}$$

- $HealthExp_{i,t}$ : Health Care Expenditure Ratio
- $\mathbf{X}_{i,t}$ : Control variables and Binary Variables
- $\gamma_t$ : Year Specific Fixed Effect
- $i$ : Country Indicator 1 - 122
- $Lawmaker_{i,t-1}$ : Female Lawmaker Ratio (lag)
- $\alpha_i$ : Country Specific Fixed Effect
- $\epsilon_{i,t}$ : Turbulence Term
- $t$ : Year Indicator 2001 - 2019

# Some Preliminary Results

|   | (1)                   | (2)                    | (3)                   | (4)                   | (5)                   | (6)                   | (7)                   | (8)                   |
|---|-----------------------|------------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Female Lawmaker (%)                               | 0.087***<br>(0.003)   | 0.008<br>(0.009)       | 0.096***<br>(0.004)   | 0.006<br>(0.009)      | 0.096***<br>(0.004)   | 0.005<br>(0.01)       | 0.098***<br>(0.004)   | 0.005<br>(0.009)      |
| GDP per capita (US\$)                             | 0.00003***<br>(0.000) | 0.00004***<br>(0.0000) | 0.00003***<br>(0.000) | 0.00003***<br>(0.000) | 0.00003***<br>(0.000) | 0.00003***<br>(0.000) | 0.00001***<br>(0.000) | 0.00003***<br>(0.000) |
| Population 64+ (%)                                | 0.146***<br>(0.01)    | 0.317***<br>(0.041)    | 0.172***<br>(0.011)   | 0.271***<br>(0.044)   | 0.172***<br>(0.011)   | 0.258***<br>(0.042)   | -0.0001<br>(0.021)    | 0.264***<br>(0.04)    |
| Population 0-14 (%)                               | -0.086***<br>(0.013)  | -0.275***<br>(0.032)   | -0.062***<br>(0.013)  | -0.261***<br>(0.032)  | -0.063***<br>(0.013)  | -0.259***<br>(0.031)  | -0.09***<br>(0.017)   | -0.257***<br>(0.03)   |
| Incident of Tuberculosis (per 100,000 people)     | -0.001***<br>(0.0002) | 0.002**<br>(0.0006)    | -0.001***<br>(0.0002) | 0.002***<br>(0.0006)  | -0.001***<br>(0.0002) | 0.002***<br>(0.0006)  | -0.002**<br>(0.0003)  | 0.002***<br>(0.0006)  |
| Female Labor Participation (%)                    |                       |                        | -0.028***<br>(0.0034) | 0.067***<br>(0.015)   | -0.028***<br>(0.003)  | 0.064***<br>(0.015)   | -0.031***<br>(0.015)  | 0.065***<br>(0.015)   |
| Official Development Assistance per capita (US\$) |                       |                        |                       | 0.0009<br>(0.0008)    | -0.005***<br>(0.001)  | -0.001*<br>(0.0009)   | -0.005***<br>(0.001)  | 5.743***<br>(0.331)   |
| Democracy index                                   |                       |                        |                       |                       |                       |                       |                       | 0.689<br>(0.6)        |
| Lawmaker Dummy                                    | YES                   | YES                    | YES                   | YES                   | YES                   | YES                   | YES                   | YES                   |
| Democracy Dummy                                   | NO                    | YES                    | NO                    | YES                   | NO                    | YES                   | NO                    | YES                   |
| Intersection Term                                 |                       |                        |                       |                       |                       |                       |                       |                       |
| Fixed Effect: Year                                | YES                   | YES                    | YES                   | YES                   | YES                   | YES                   | YES                   | YES                   |
| Fixed Effect: Country                             | NO                    | YES                    | NO                    | YES                   | NO                    | YES                   | NO                    | YES                   |
| Adjust R <sup>2</sup>                             | 0.339                 | 0.892                  | 0.346                 | 0.893                 | 0.346                 | 0.894                 | 0.402                 | 0.894                 |

# Country Groups

| Country Group                                     | (1)<br>High Income   | (2)<br>Emerging      | (3)<br>LDC         | (4)<br>LDC          |
|---|----------------------|----------------------|--------------------|---------------------|
| Female Lawmaker (%)                               | -0.068***<br>(0.014) | 0.007<br>(0.019)     | 0.02<br>(0.018)    | 0.019<br>(0.018)    |
| GDP per capita (US\$)                             | 0.00003**<br>(0.000) | 0.0001*<br>(0.0000)  | 0.00003<br>(0.000) | 0.00008<br>(0.0001) |
| Population 64+ (%)                                | 0.704***<br>(0.063)  | 0.066<br>(0.097)     | -1.48<br>(0.718)   | -1.614*<br>(0.705)  |
| Population 0-14 (%)                               | 0.608***<br>(0.073)  | -0.251***<br>(0.035) | -0.396*<br>(0.146) | -0.382*<br>(0.145)  |
| Incident of Tuberculosis (per 100,000 people)     | 0.033**<br>(0.008)   | -0.002*<br>(0.001)   | 0.0005<br>(0.001)  | 0.0003<br>(0.001)   |
| Female Labor Participation (%)                    | 0.038<br>(0.028)     | -0.022<br>(0.021)    | -0.006<br>(0.042)  | 0.001<br>(0.04)     |
| Official Development Assistance per capita (US\$) |                      |                      |                    | 0.005#<br>(0.002)   |
| Fixed Effect: Year                                | YES                  | YES                  | YES                | YES                 |
| Fixed Effect: Country                             | YES                  | YES                  | YES                | YES                 |
| Adjust R <sup>2</sup>                             | 0.901                | 0.941                | 0.392              | 0.396               |

# Findings

1. In general, no clear relationship between lawmaker's gender and health care expenditure. (Irma, 2011's finding)
2. In well developed countries, negative influence exists. (Can't explain yet.)
3. When reading similar papers, need more caution.
4. Other factors are overpower

# Limitation and Plan

- Limitation
  - 1. Sample size:  $122 \times 19$
  - 2. Handling missing value: better solution
  - 3. Better system measurement: robustness
- Plan & Extension
  - 1. Implement the binary: DID (some flaws)
  - 2. Country's case studies
  - 3. If time allow: solve some limitations
  - 4. Consider the administration branch

# Thanks for listening

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