

# Gender Differences in Competition: Evidence from a Matrilineal and a Patriarchal Society

Gneezy, Leonard, List  
Econometrica, 2009

Presentation: Shadi Farahzadi  
15th July 2019

# Appetizer

- Gender gap persists in wages and in prospects for advancement
- Common explanations:
  - Discrimination
  - Different characteristics/preferences
    - Gender differences in competition inclination.
- This paper:
  - Are there gender differences in selecting into competitive environments across matrilineal and patriarchal societies?
    - Identical lab experiments in two distinct societies

# Experiment Setting

- Identical lab experiments in the two environments
- Two societies: Matrilineal and Patriarchal
- 155 participants

## Matrilineal Society: Khasi tribe in India

- Family life is organized around the mothers house.
- A woman never joins the household of her husbands family;  
A man usually leaves his mothers household to join his wifes household.
- Inheritance and clan membership always follow the female lineage through the youngest daughter.
  - The youngest daughter eventually becomes the head of the household.
- Husband has no authority or property, is expected to work for the gain of his wifes family, and has no social roles deemed important.
- Return to unverifiable investment in the human capital of girls is retained within the household.
- **However**, Women do not participate in politics, civil defense, or justice.

## Patriarchal Society: Maasai tribe of Tanzania

- Age and cattle dominate the Maasai social structure.
  - Wives are said to be less important to a man than his cattle.
- The age structure prevents men from marrying until they are roughly 30 years.
  - Polygamy is the most common form of marriage.
- For women, permission of husband or an elder male is needed for
  - Traveling any significant distance,
  - Seeking health care,
  - or making any other important decision.

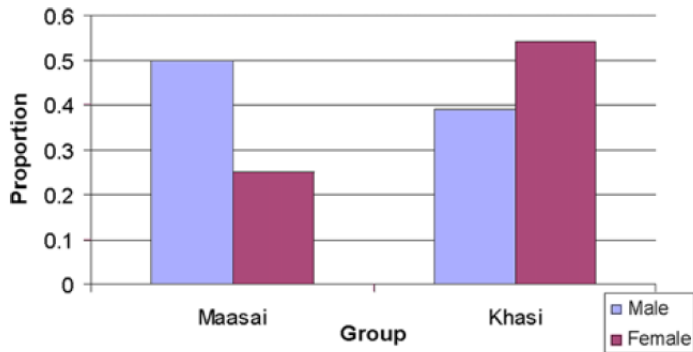
# Experiment Design

- Two random groups (separated for the entire experiment), 4 sides
- Experiment task: Toss a tennis ball into a bucket that was placed 3 meters away (10 chances)
  - No gender differences in ability were expected (Pilot experiment)
- Participants were told that they were matched with a participant from the other group who was performing the same task at the same time in another area.
- Decision: payment scheme
  - 1 X per successful shot
  - 2 3X per successful shot if they outperformed the other participant

## Participant Characteristics

| Individual Characteristics           | Khasi Mean (Std. Dev.) |                    |                    | Maasai Mean (Std. Dev.) |                      |                      |
|--------------------------------------|------------------------|--------------------|--------------------|-------------------------|----------------------|----------------------|
|                                      | Pooled                 | Women              | Men                | Pooled                  | Women                | Men                  |
| <i>Age</i>                           | 30.9<br>(16.1)         | 32.1<br>(16.7)     | 28.8<br>(15.0)     | 37.8<br>(13.5)          | 36.5<br>(12.1)       | 38.9<br>(14.6)       |
| <i>Education</i>                     | 4.3<br>(3.6)           | 4.5<br>(3.6)       | 4.1<br>(3.5)       | 4.3<br>(3.9)            | 4.1<br>(4.4)         | 4.5<br>(3.5)         |
| <i>Income</i>                        | 23,569<br>(76,088)     | 25,794<br>(93,429) | 19,437<br>(20,585) | 195,040<br>(400,538)    | 154,294<br>(341,903) | 234,550<br>(448,855) |
| <i>Activity</i>                      |                        |                    |                    |                         |                      |                      |
| Farmer                               | 0.60 (0.5)             | 0.60 (0.5)         | 0.61 (0.5)         | 0.73 (0.5)              | 0.53 (0.5)           | 0.93 (0.3)           |
| Student                              | 0.23 (0.4)             | 0.21 (0.1)         | 0.25 (0.4)         | 0.00 (0.0)              | 0.00 (0.0)           | 0.00 (0.0)           |
| Teacher                              | 0.05 (0.2)             | 0.06 (0.2)         | 0.04 (0.2)         | 0.00 (0.0)              | 0.00 (0.0)           | 0.00 (0.0)           |
| Housewife                            | 0.01 (0.1)             | 0.00 (0.0)         | 0.04 (0.2)         | 0.17 (0.4)              | 0.38 (0.5)           | 0.00 (0.0)           |
| Other                                | 0.05 (0.2)             | 0.06 (0.2)         | 0.04 (0.2)         | 0.07 (0.3)              | 0.06 (0.2)           | 0.08 (0.3)           |
| Unemployed                           | 0.06 (0.2)             | 0.08 (0.3)         | 0.04 (0.2)         | 0.00 (0.0)              | 0.00 (0.0)           | 0.00 (0.0)           |
| <i>Marital status</i>                |                        |                    |                    |                         |                      |                      |
| Single                               | 0.36 (0.5)             | 0.33 (0.5)         | 0.43 (0.5)         | 0.24 (0.4)              | 0.18 (0.4)           | 0.30 (0.5)           |
| Marr. (mono.)                        | 0.44 (0.5)             | 0.42 (0.5)         | 0.46 (0.5)         | 0.32 (0.5)              | 0.38 (0.5)           | 0.28 (0.5)           |
| Marr. (poly.)                        | 0.00 (0.0)             | 0.00 (0.0)         | 0.00 (0.0)         | 0.36 (0.5)              | 0.35 (0.5)           | 0.38 (0.5)           |
| Widowed                              | 0.13 (0.3)             | 0.17 (0.4)         | 0.04 (0.2)         | 0.01 (0.1)              | 0.03 (0.2)           | 0.00 (0.0)           |
| Divorced                             | 0.08 (0.3)             | 0.08 (0.3)         | 0.07 (0.3)         | 0.04 (0.2)              | 0.03 (0.2)           | 0.05 (0.2)           |
| <i>Relation to head of household</i> |                        |                    |                    |                         |                      |                      |
| HH                                   | 0.38 (0.5)             | 0.39 (0.5)         | 0.36 (0.5)         | 0.53 (0.5)              | 0.18 (0.4)           | 0.85 (0.4)           |
| Spouse                               | 0.23 (0.4)             | 0.29 (0.5)         | 0.11 (0.3)         | 0.32 (0.5)              | 0.71 (0.5)           | 0.00 (0.0)           |
| Son/daughter                         | 0.36 (0.5)             | 0.31 (0.5)         | 0.46 (0.5)         | 0.09 (0.3)              | 0.03 (0.2)           | 0.15 (0.4)           |
| Brother/sister                       | 0.04 (0.2)             | 0.02 (0.1)         | 0.07 (0.3)         | 0.00 (0.0)              | 0.00 (0.0)           | 0.00 (0.0)           |
| Father/mother                        | 0.00 (0.0)             | 0.00 (0.0)         | 0.00 (0.0)         | 0.03 (0.2)              | 0.06 (0.2)           | 0.00 (0.0)           |
| <i>N</i>                             | 80                     | 52                 | 28                 | 75                      | 34                   | 40                   |

# Competitive Choices across Gender





# Regression Results (Probit Model)

|                | Pooled Data      |                     |                     | Khasi           |                    |                    | Maasai          |                     |                     |
|----------------|------------------|---------------------|---------------------|-----------------|--------------------|--------------------|-----------------|---------------------|---------------------|
|                | S1               | S2                  | S3                  | S1              | S2                 | S3                 | S1              | S2                  | S3                  |
| Female         | -0.25<br>(0.12)  | -0.29<br>(0.13)     | -0.32<br>(0.15)     | 0.15<br>(0.11)  | 0.24<br>(0.13)     | 0.24<br>(0.13)     | -0.24<br>(0.12) | -0.29<br>(0.12)     | -0.27<br>(0.18)     |
| Khasi          | -0.11<br>(0.12)  | -0.14<br>(0.13)     | -0.15<br>(0.14)     | —               | —                  | —                  | —               | —                   | —                   |
| Khasi×female   | 0.39<br>(0.17)   | 0.43<br>(0.17)      | 0.46<br>(0.19)      | —               | —                  | —                  | —               | —                   | —                   |
| Male exp.      | 0.007<br>(0.08)  | -0.02<br>(0.08)     | -0.03<br>(0.08)     | 0.08<br>(0.11)  | 0.19<br>(0.12)     | 0.18<br>(0.12)     | -0.07<br>(0.12) | -0.16<br>(0.12)     | -0.21<br>(0.13)     |
| Constant       | -0.003<br>(0.09) | -0.03<br>(0.17)     | -0.09<br>(0.20)     | -0.14<br>(0.11) | -0.36<br>(0.20)    | -0.34<br>(0.27)    | 0.03<br>(0.09)  | 0.14<br>(0.26)      | -0.03<br>(0.31)     |
| Age            | —                | 0.002<br>(0.003)    | 0.002<br>(0.003)    | —               | -0.003<br>(0.004)  | -0.002<br>(0.005)  | —               | 0.001<br>(0.005)    | 0.002<br>(0.005)    |
| Education      | —                | 0.005<br>(0.01)     | 0.009<br>(0.01)     | —               | 0.003<br>(0.02)    | 0.003<br>(0.02)    | —               | -0.006<br>(0.02)    | -0.004<br>(0.02)    |
| Income         | —                | -0.2e-6<br>(0.2e-6) | -0.2e-6<br>(0.2e-6) | —               | 0.1e-4<br>(0.4e-5) | 0.1e-4<br>(0.4e-5) | —               | -0.3e-6<br>(0.2e-6) | -0.3e-6<br>(0.2e-6) |
| Other controls | No               | No                  | Yes                 | No              | No                 | Yes                | No              | No                  | Yes                 |
| Chi squared    | 7.3 (4)          | 9.8 (7)             | 12.6 (10)           | 2.0 (2)         | 11.4 (5)           | 11.9 (8)           | 4.7 (2)         | 9.3 (5)             | 12.9 (8)            |
| N              | 154              | 151                 | 151                 | 80              | 80                 | 80                 | 74              | 71                  | 71                  |

<sup>a</sup>The dependent variable is “compete,” and it takes on a value of 1 if the participant opted to compete and 0 otherwise. Standard errors are given in parentheses. Estimates are partial derivatives computed at the sample means from probit models. Variables are as defined in the Table I footnote. Male exp. = 1 if the experimenter was male, = 0 otherwise. Other controls include all of the other variables defined in Table I.

# Group Composition

- Identity of the subjects potential competitor should remain neutral  
⇒ Opponents gender ambiguous
- Possible trouble: unbalanced sample across societies
  - 52 of 80 Khasi subjects are female (65%)
  - 34 of 74 Maasai subjects are female (46%)
- What if subjects deduce the gender distribution of potential competitors?
- Sensitivity checks: Exploring nearest neighbor variables and systematically enlarging the set as active control variables.
  - 1 Gender of the subject standing immediately in front of the person.
  - 2 The average of the gender identity of the directly adjacent subjects.
  - 3 The average of the gender identity of the four nearest subjects
  - 4 The average of the gender identity of the eight nearest subjects.
  - 5 The average of the gender identity of all others in the group.

## Group Composition

|                    | Specification   |                  |                  |                 |                 |
|--------------------|-----------------|------------------|------------------|-----------------|-----------------|
|                    | In Front        | Adjacent 2       | Adjacent 4       | Adjacent 8      | Group           |
| <b>Pooled data</b> |                 |                  |                  |                 |                 |
| Female             | -0.38<br>(0.16) | -0.42<br>(0.16)  | -0.41<br>(0.16)  | -0.43<br>(0.16) | -0.38<br>(0.16) |
| Khasi              | -0.25<br>(0.16) | -0.28<br>(0.16)  | -0.25<br>(0.15)  | -0.28<br>(0.16) | -0.23<br>(0.16) |
| Khasi × female     | 0.60<br>(0.22)  | 0.65<br>(0.23)   | 0.56<br>(0.20)   | 0.58<br>(0.20)  | 0.53<br>(0.20)  |
| Group Composition  | -0.16<br>(0.10) | -0.19<br>(0.12)  | -0.28<br>(0.17)  | -0.35<br>(0.21) | -0.23<br>(0.25) |
| Other controls     | Yes             | Yes              | Yes              | Yes             | Yes             |
| N                  | 141             | 151              | 151              | 151             | 151             |
| Chi squared        | 13.8 (11)       | 15.2 (11)        | 15.4 (11)        | 15.5 (11)       | 13.5 (11)       |
| <b>Khasi data</b>  |                 |                  |                  |                 |                 |
| Female             | 0.36<br>(0.15)  | 0.34<br>(0.15)   | 0.24<br>(0.14)   | 0.25<br>(0.14)  | —               |
| Group Composition  | -0.28<br>(0.15) | -0.25<br>(0.18)  | -0.68<br>(0.36)  | -0.95<br>(0.51) | —               |
| Other controls     | Yes             | Yes              | Yes              | Yes             | —               |
| N                  | 78              | 80               | 80               | 80              | —               |
| Chi squared        | 16.1 (9)        | 13.9 (9)         | 15.6 (9)         | 15.6 (9)        | —               |
| <b>Maasai data</b> |                 |                  |                  |                 |                 |
| Female             | -0.25<br>(0.20) | -0.27<br>(0.20)  | -0.27<br>(0.19)  | -0.31<br>(0.20) | -0.34<br>(0.20) |
| Group Composition  | 0.09<br>(0.15)  | -0.008<br>(0.17) | -0.007<br>(0.21) | -0.12<br>(0.25) | -0.20<br>(0.27) |
| Other controls     | Yes             | Yes              | Yes              | Yes             | Yes             |
| N                  | 63              | 71               | 71               | 71              | 71              |
| Chi squared        | 14.2 (9)        | 12.9 (9)         | 12.9 (9)         | 13.2 (9)        | 13.5 (9)        |

# Who Competes?

- The primitive competitive preferences among agents versus stereotypes on task, societal expectations, and the like.
  - Examine the success rates among those who chose to compete versus those who chose not to compete.
  - No evidence of any significant correlation in task proficiency and the decision to compete.
  - Khasi women and Maasai men who chose to compete
    - Earned the highest amount of money in their respective societies
    - Were most likely to win the competition.
- ⇒ better understanding of relative ability
- More work is necessary

# Risk Aversion

- Whether risk aversion is playing an important role in individual choices.
- Parallel risk aversion experiments: Whether the competitive differences might be driven by heterogeneous risk postures across gender groups.
- Risk experiment:
  - One-shot game
  - Endowment: 100 units
  - Decision: What portion of endowment to bet
  - Outcome of bet: Three times the bet with one-half probability and nothing with one-half probability.

# Risk Aversion

|                | Average Bet<br>(Standard Deviation) |                     |                        |                      |
|----------------|-------------------------------------|---------------------|------------------------|----------------------|
|                | <i>Khasi</i><br>Women               | <i>Khasi</i><br>Men | <i>Maasai</i><br>Women | <i>Maasai</i><br>Men |
| Proportion bet | 86.5 (3.3)                          | 85.0 (4.0)          | 60.7 (4.1)             | 61.3 (4.2)           |

- Although the Khasi and Maasai appear to have different risk preferences, there are no gender differences observed in either society.

## Concluding Remarks

- *It is not universally true* that the average female in every society avoids competition more often than the average male in that society.
- Three possible explanations for this result:
  - 1 Nature:
    - Women are inherently less competitive than men due to innate differences.
    - Can Khasi women have different genes?
  - 2 Nurture
  - 3 Co-evolution of nature and nurture.

## Concluding Remarks

- Maasai: men compete at roughly twice the rate as women, Khasi: women choose the competitive environment more often.
- Care should be taken when making inference from the data patterns observed herein because several important factors vary across the two societies.
- They have sampled a limited number of villages
- Results may not be a universal truth amongst all matrilineal villages, rather other important factors will interact with matrilineity to produce the data patterns observed herein.
- Policy implication: target socialization and education at early ages as well as later in life to eliminate this asymmetric treatment of men and women with respect to competitiveness.