

Continued  
(20-22 September 2022)



Gender Economics (EE364)

## Chapter 5

Supply and demand factors determining gender-related differences in occupation and income, and gender roles switching in occupation



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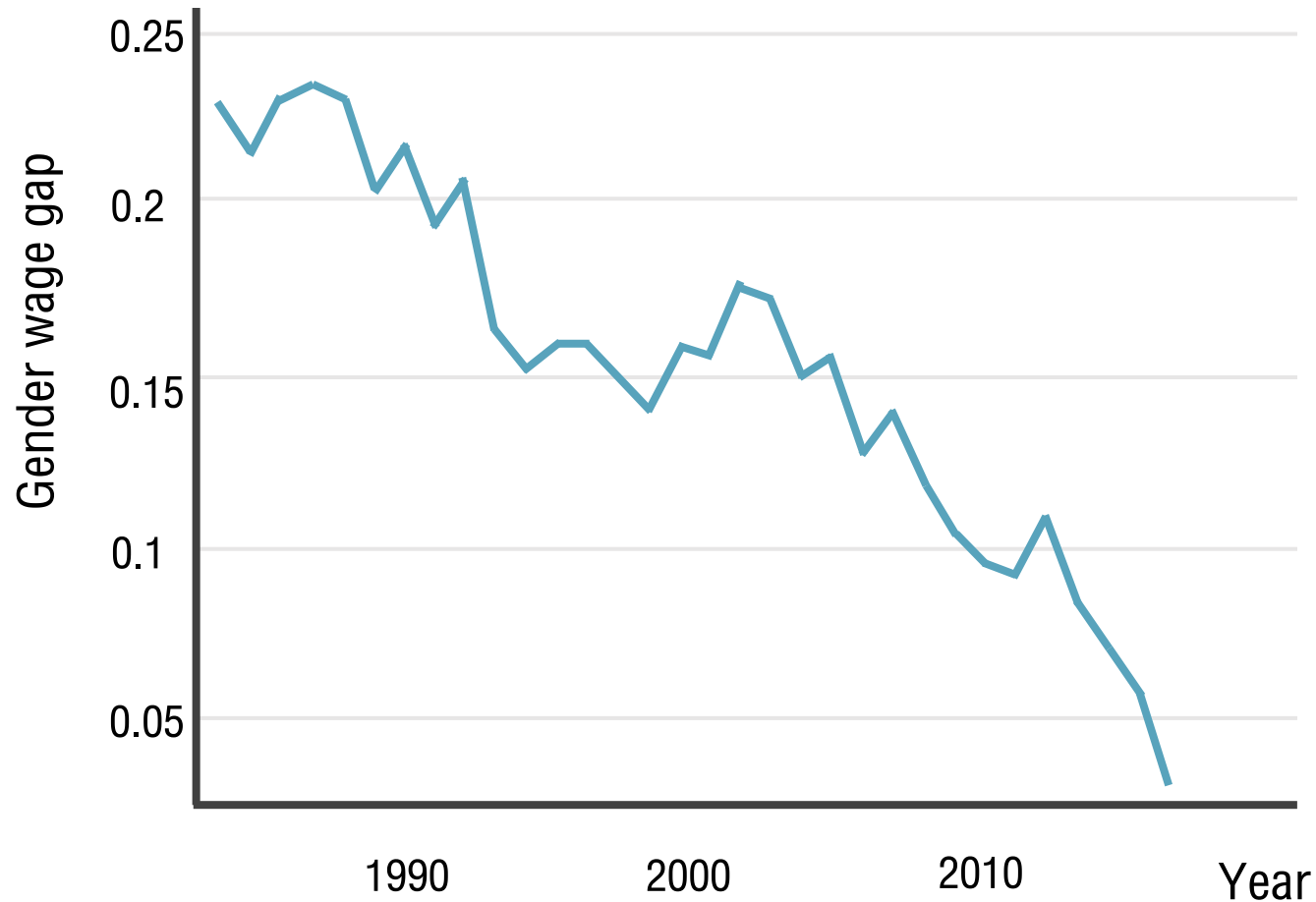
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## Examples of research on gender wage gap

- 🏠 Paweenawat and Liao (2022) - Parenthood Penalty and Gender Wage Gap: Recent Evidence from Thailand.
- 🏠 Trend of change in average wage differences between men and women over the past 30 years (1985–2017).
- 🏠 Using LFS data from the National Statistical Office

Source - Paweenawat, S.W. and Liao, L. 2022. Parenthood Penalty and Gender Wage Gap: Recent Evidence from Thailand, *Journal of Asian Economics*, Volume 78, February 2022, 101435

# Trend of wage differences between male and female workers in Thailand



● Gender wage gap –

The average wage difference between men and women compared to the average male wage has been declining steadily since 1985.

# What factors explain the trend of declining wage differences?

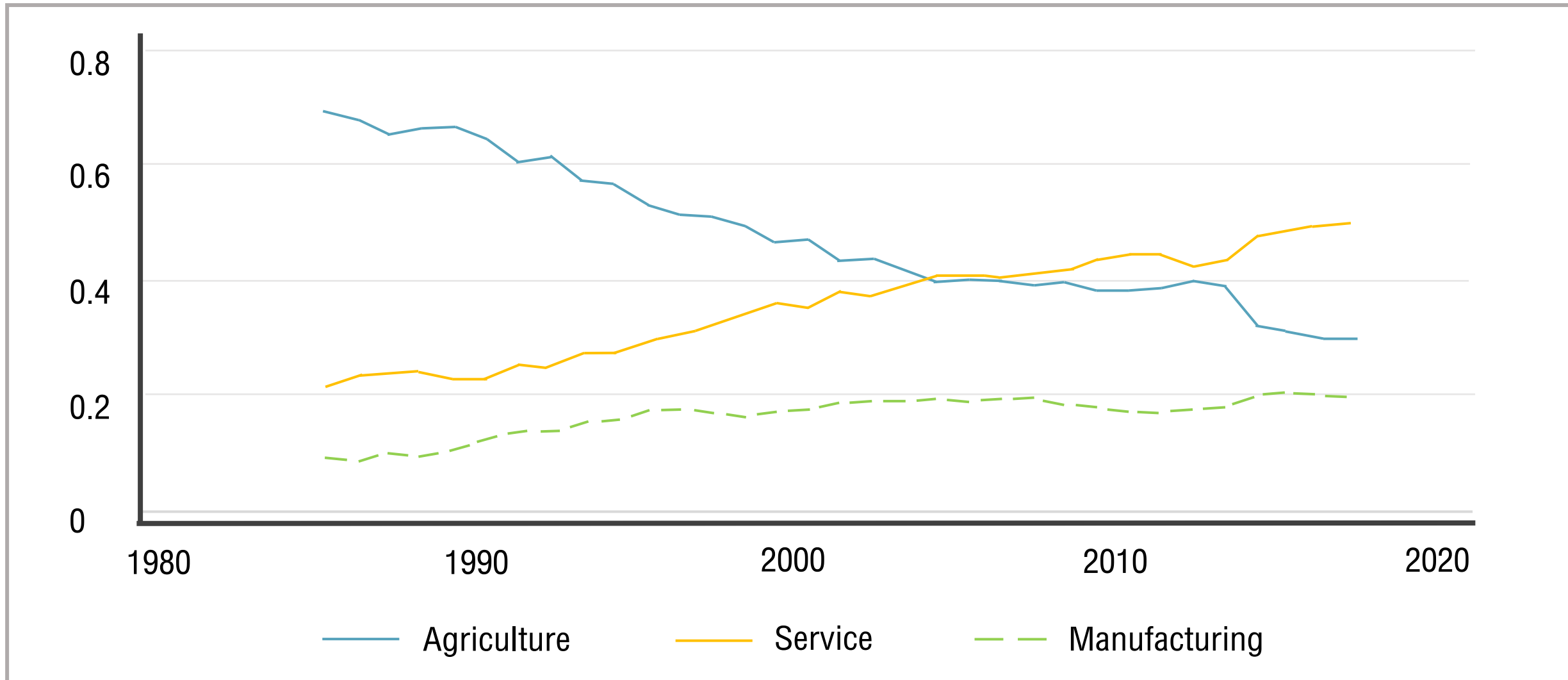
🏠 The research divided the factors affecting the wage differences between men and women into two parts:

**(1) Factors that can be explained** - characteristics of female workers that are different from male workers.

- Education level is the most important factor.
  - Increased women's education increases income.
  - Wage differences between men and women in Thailand has decreased.
- Women move from agricultural labor work to manufacturing service sectors) & work in more professional career and related sectors.

# Trend of the percentage of female workers in manufacturing sectors in Thailand <sup>39</sup>

Source – Paweenawat and Liao (2022)



# What factors explain the trend of declining wage differences?




**(2) Unexplained Factors** - These factors could not be explained by the different attributes of male and female workers

- gender discrimination or bias towards women workers in the labor market. In Thailand
- unexplained factors tend to decline continuously, declining gender exclusion in the Thai labor market and more opportunities for Thai women.

## Parenthood Wage Gap in Thailand (Paweenawat and Liao, 2022)

- 🏠 The Parenthood Wage Gap between women and men has continued to increase over the past 30 years.
  - Having children has a negative impact on the wages of Thai women workers
    - Women with children are on average lower wages than women without children (Motherhood Wage Penalty).
  - The findings are consistent with previous studies on negative effects on mothers (Becker 1981, 1985; Waldfogel 1997; Glauber 2008; Juhn and McCue 2017).
  - Also found in male workers, men with children are on average lower wages than those without children (Fatherhood Wage Penalty).

## Parenthood Wage Gap in Thailand (Paweenawat and Liao, 2022)

-  Having children negatively affects the wages of Thai male workers. This is different from the “Fatherhood Wage Bonus” found in developed countries.
-  Male workers with children have a higher average wage than those without children.
-  The behavior can explain this - After having children, men tend to work more because, in most societies, men are the breadwinner in the family, while women tend to be secondary earners.

LABOUR DAY



## Labor Supply Factors



Human Capital Investment

# Human Resources

## Human Resources

- Quantity (Size) & Quality (Quality)
- A country's population is one of the country's key assets - efficiency and productivity.
- Main tool of production and all economic activities of nation

## Human capital

- Abilities, skills and knowledge of the population in the country.



# Human Resources

## Policy

- Focus on human resource development through education, training, regulations in the labor market.
- Regulations in the labor market. Policies related to human resources (immigration, family, wages, labor market)
  - ➔ Improving the welfare of population and country



# The importance of human resources

## Adam Smith (1776)

- The Wealth of Nations
- Sources of the country's wealth – Labor productivity & division of labor based on expertise.

“The Wealth of a nation depends upon (1) the productivity of labor; and (2) the proportion of laborers who are usefully or productively employed”

## After the World War II

- Human resources – the center of some countries' development.
- Japan and Germany rapidly recovered through high investment in human resources development.

**\*\*\* Education is the key of human resource development \*\*\***

# The importance of human resources



## Solow (1957)

- “Technological Change and the Aggregate Production Function”
- Production function– technological change and economic development.
- Investing in education is a form of investment and a key contributor to economic development – Labor is a key component of production.


# The importance of human resources











## Schultz (1960)

- “Capital Formation by Education”
- Role and importance of human resources– Investment in education is a key factor in the country's economic development.
- Developing production efficiency and domestic productivity is the main principle to increase the productivity of the country
- Education plays a primary role in human capital investment.

# Human resource development

 In addition to investment in education, human resource development can be done through various channels by developing the following factors

-  Family (family relationships/decision making)
-  Education (formal vs informal)
-  Training (before and during work)
-  Health (physical and mental)
-  Migration (Rural/Urban/Overseas)
-  Work Information in Labor Market
-  Work regulations
-  Environment

# Definition



## Human capital

- ⬡ Skills, knowledge, health, and other personal factors that promote each person's development.
- ⬡ Human capital is contained in the persons themselves, and no one can take it or separate it from that person.

# Definition

Gratton and Ghoshal (2003) add aspects to the definition of human capital. Human capital is the sum of three main components:

- (1) Intellectual capital is the knowledge, ability, expertise, and accumulated skills and experience of a specific person.
- (2) Social capital is a relationship, a network of social structures. Human connection via a network includes relatives, community, society, and organization in which people live.
- (3) Emotional capital is the cognition involved in managing emotions, such as an individual's self-awareness, self-esteem, and flexibility.

## Human capital investment



Involves a higher investment in education, training, and professional learning.

# The case of a perfectly competitive labor market - educational theory

## Basic assumptions of the human capital model

- Higher Education → Increased Productivity → Increased Wages
- Each worker will decide to invest in education based on their financial benefit/cost
- Educational investment decisions will consider –
  - costs (actual expenses incurred and lost wages - workers cannot work during studies)
  - benefits (higher wages received and better job opportunities in the future)

## Example: Decision to study in the undergraduate level



### Cost:

- ⬡ Direct and indirect expenses -tuition and expenses related to books and other equipment.
- ⬡ Loss of income during studying.
- ⬡ Psychological costs – Work hard or difficulties.

### Benefits:

- ⬡ Higher future income (from higher education)
- ⬡ decides to study bachelor's degree -> get better jobs in the future  
(both in terms of income and future career path)

# Human capital investment



- The decision to invest in human capital relies on comparing the expected future benefits with the resources required to invest in the present.
- However, the benefits people will receive do not occur now or at the time of the investment.
  - Instead, benefits tend to be delayed
- How can we calculate the benefits of investing in education?
- We need to compare costs incurred with the benefit (or the present value of future earnings).

# Example

## Example

Suppose you received 1000 baht, would you choose to receive 1,000 baht today? Or, receive one year from now

- 🍯 You would choose 1,000 baht today because most people prioritize the present over the future.
- 🍯 In addition, if you put 1,000 baht into savings at 5% interest, 1,000 baht today will become  $1,000 + .05 * 1,000 = 1,050$  baht in a year.
- 🍯 Therefore, the present value of 1,050 baht in one year is equal to 1,000 baht today.

# Calculating the present value of future benefits derived from educational investments



We use the present value principle to calculate the sum of the future benefits you will receive from continuing education.

## Assign

$B_i$  is the benefit received from studying more during time  $i$ .

$\tau$  is the last time you will receive that benefit (retirement period)

$r$  is subjective discount rate.

$C$  is costs and expenses incurred at present.

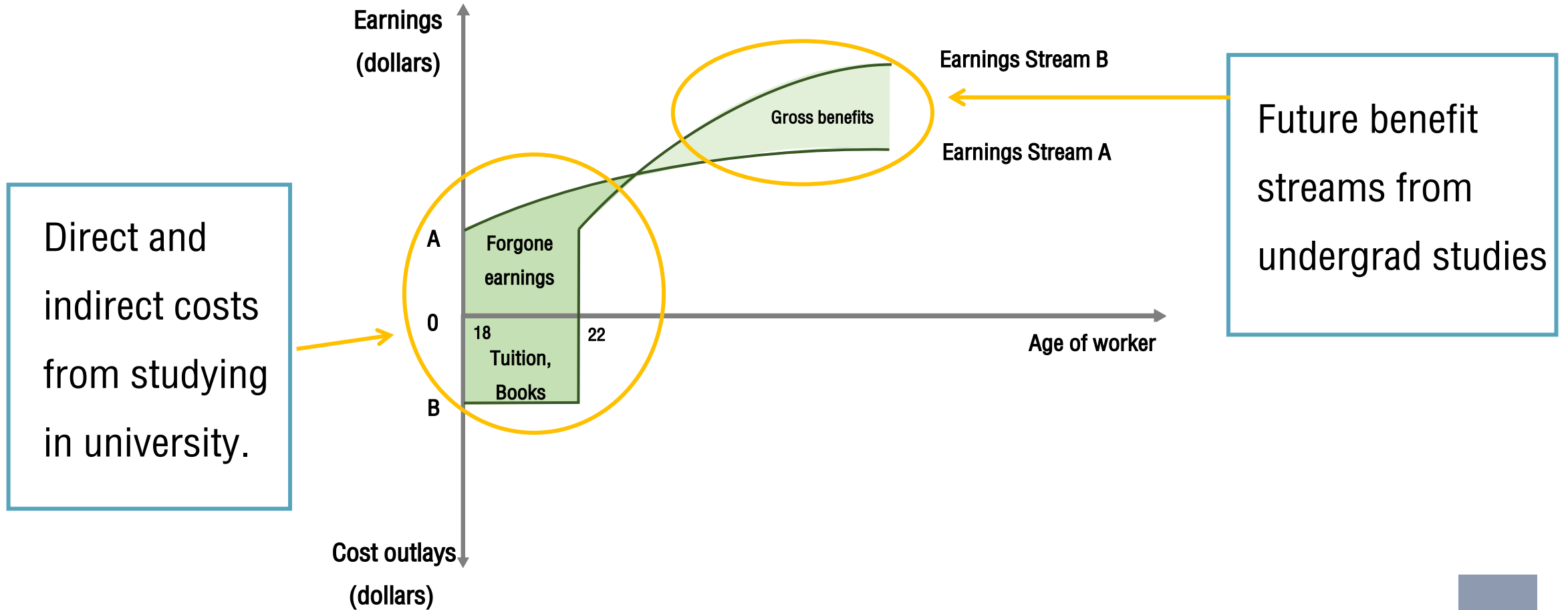
## Calculating the present value of future benefits derived from educational investments

$$\text{Present Value} = \frac{B_1}{(1+r)} + \frac{B_2}{(1+r)^2} + \frac{B_3}{(1+r)^3} + \dots + \frac{B_\tau}{(1+r)^\tau}$$

That person will choose to study at a higher level in that case.

$$\frac{B_1}{(1+r)} + \frac{B_2}{(1+r)^2} + \frac{B_3}{(1+r)^3} + \dots + \frac{B_\tau}{(1+r)^\tau} > C$$

# The decision to study at a higher level



## The decision to study at a higher level

A person will decide to go to university only if the expected future benefits of investing in education are larger than the costs




$$\frac{B_1}{(1+r)} + \frac{B_2}{(1+r)^2} + \frac{B_3}{(1+r)^3} + \dots + \frac{B_\tau}{(1+r)^\tau} > C$$

Who is more likely to study undergraduate level (or university)?

# Who is more likely to study undergraduate level (or university)?

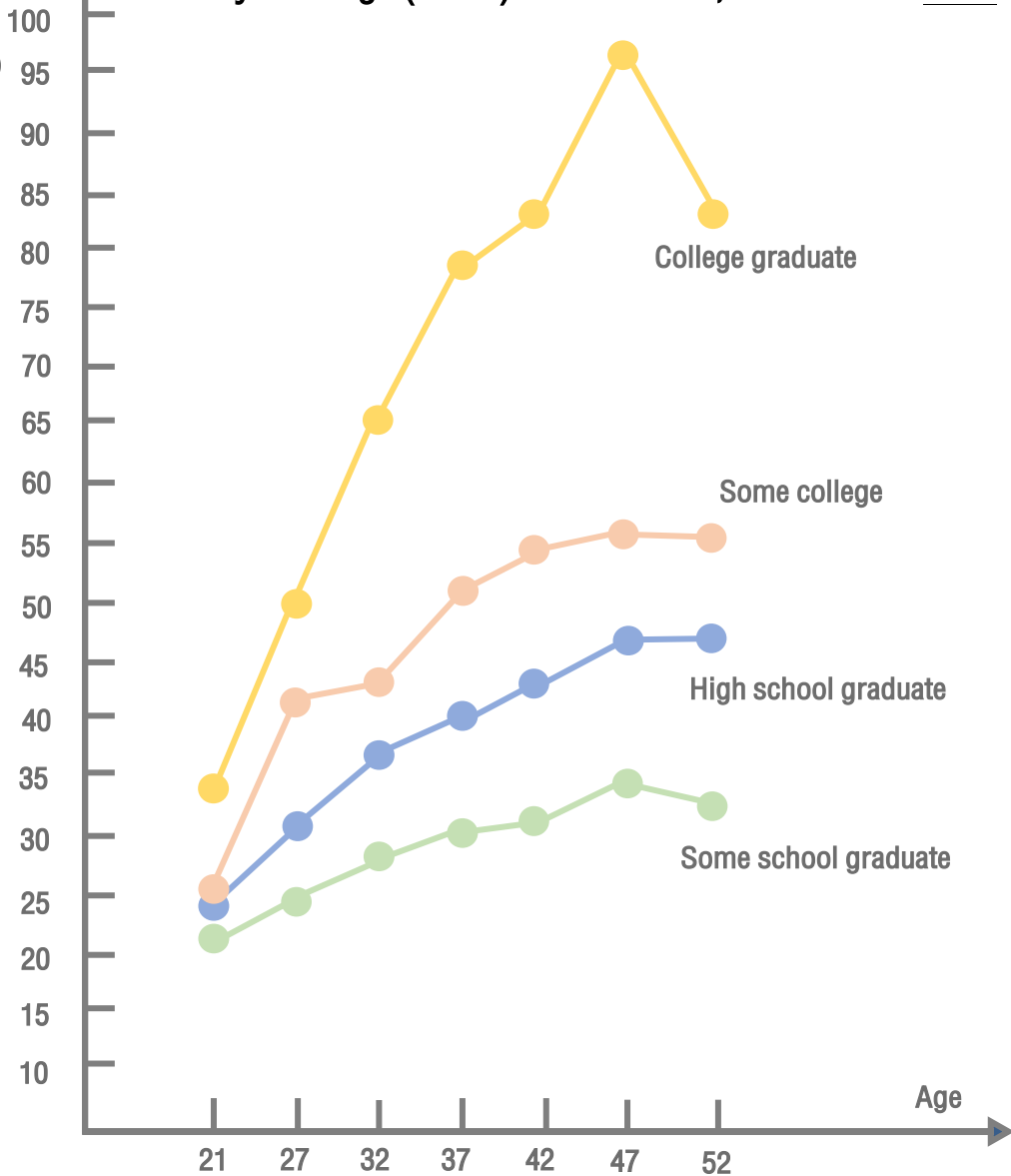
1. A person who focuses on the future (more than the present) is more likely to wait for increased income in the future (or a person with low subjective discount rates (low  $r$ ))
2. A young person who has a relatively long time in the labor market gives them more time to receive the benefits (high  $\tau$  for a long time).
3. A person has a low cost ( $C$ ) of study, both direct (tuition fees) and indirect (study effort) costs.
4. A person who expects the high-income gap between high school and university graduates ( $B$  is high).

# Investing in people after school and impact on the lifelong income path

-  Labor becomes more efficient with more experience.
-  This is because workers receive formal (during work) and informal training.
-  Workers themselves may learn more either professionally or through education at higher degree or certificate level.

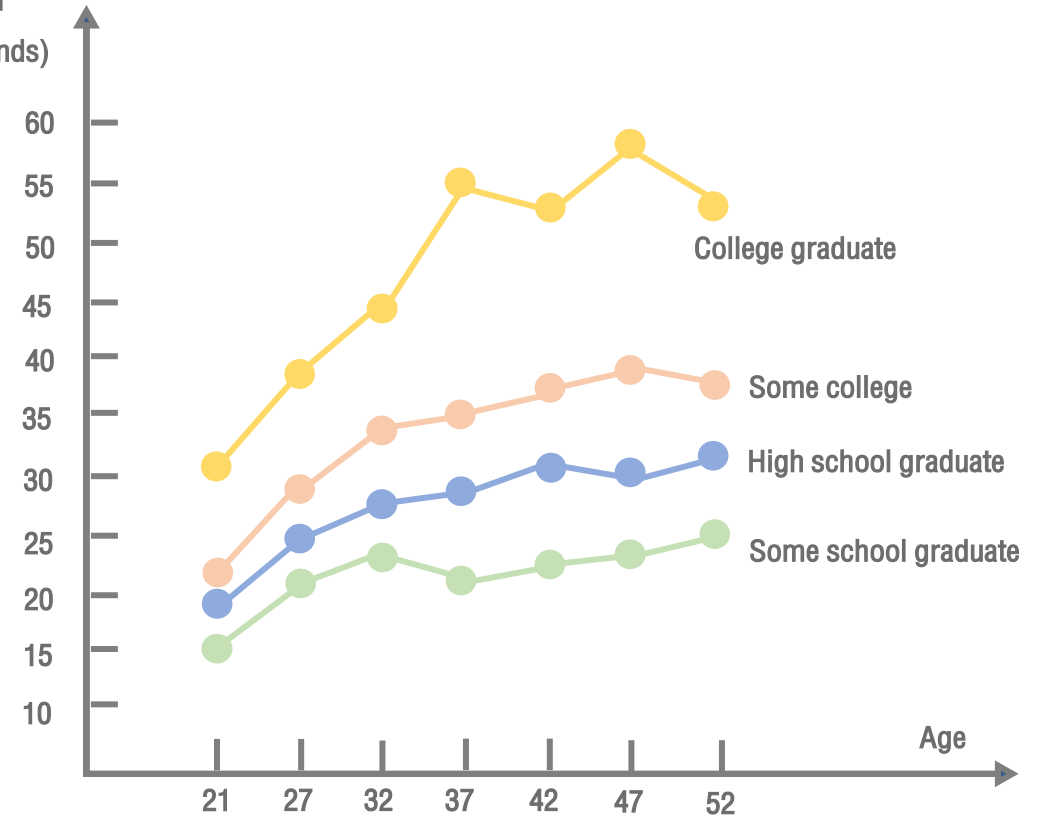
Earnings  
Per year  
(in thousands)

### Money Earnings (Mean) for Full-Time, Year-Round Male Workers, 2005



Earnings  
Per year  
(in thousands)

### Money Earnings (Mean) for Full-Time, Year-Round Female Workers, 2005



# The relationship between age and earnings





1. The average earnings of full-time employees increase along with their education. According to the human capital model, education increases the skills of workers.



2. Earnings increase at an increasing rate in the beginning (as a result of being educated in the formal system) and gradually increase at a decreasing rate when getting older (as a result of receiving training during working hours).

# The relationship between age and earnings

-  3. Considering different ages by comparing people with varying levels of education, the earning gap between higher educated and low-educated workers tends to widen when they are older. .
  
-  4. Considering different ages by comparing people with varying levels of education and gender.
  - The earnings of men with higher or lower education tend to increase more than those of women.
  - During the working period, married women who have children are likely to leave the labor market (for a certain period) or work less
    - > Less work experience and fewer training opportunities, directly impacting income.

# Labor market is imperfectly competitive: education is just a signal

- ⬡ The labor market is imperfectly competitive. **Education is merely a signal of a worker's qualifications to employers and is only used during the application period.**
- ⬡ Even though workers with a higher level of education have increased wages, **more education has nothing to do with increasing labor productivity.**
- ⬡ Education is the only information workers use as a signal to get a job/employment in the labor market.



**Why should we invest  
in education for  
women?**

# WHY EDUCATING GIRLS MATTERS



## Life

Educated women have **less risk of dying** in childbirth, and their children have a **better chance of surviving** past age 5.



## Healthy families

Educated mothers are more likely to provide their children with the **health care** and **nutrition** they need.



## Prosperity

Educated women get **better work opportunities and pay**, making economies more fair and prosperous.



## The future

Educated mothers more often decide to **send their children to school**, continuing a beneficial cycle.

**Educating girls empowers them to make decisions about their bodies and lives.**



# “Why Governments Should Invest More to Educate Girls”

PAUL SCHULTZ

*World Development (2002)*

*Vol. 30, No. 2, pp. 207–225*

# Externalities Of Women's and Men's Schooling

- ⬡ The external impact of women's investment in education is high.
- ⬡ Empirical estimates of the macroeconomic external impact of education on economic growth
- ⬡ Transmission between generations in the production of human capital and child development
- ⬡ A mother's higher level of education is more associated with improving the quality of the children than the father's level of education.

birth weight, child survival, good nutrition, attending school at an early age, school attendance, and years of schooling

# Policy options to increase the schooling of women

- East Asia and Latin America have been successful in promoting women's education.
- The traditional way to increase women's enrollment is to reduce the cost of education.
  - schools close to the residents
  - reduce tuition fees, especially for girls
  - provide school uniforms/subsidies for girls
  - funds/scholarships for girls.



# Experience in different countries

- 🍯 Bangladesh – Since 1994, scholarships for girls to pursue secondary education.
- 🍯 Mexico – Funding to poor rural mothers to get their children to school in a program known as "Progresas".
- 🍯 Brazil – Funding mothers in poor households enrolling all their children.

Parents in some cultures do not want daughters to be educated in same classroom as boys.

- South and West Asia and North Africa, girls' education may be limited by the absence of gender-segregated schools, especially at the secondary level

# 6 BARRIERS TO GIRLS' EDUCATION:

**POVERTY:** Even if education is free, the cost of uniforms and or supplies can make education inaccessible

**CHILD MARRIAGE & EARLY PREGNANCY:**

Child brides are almost always forced to drop out of school

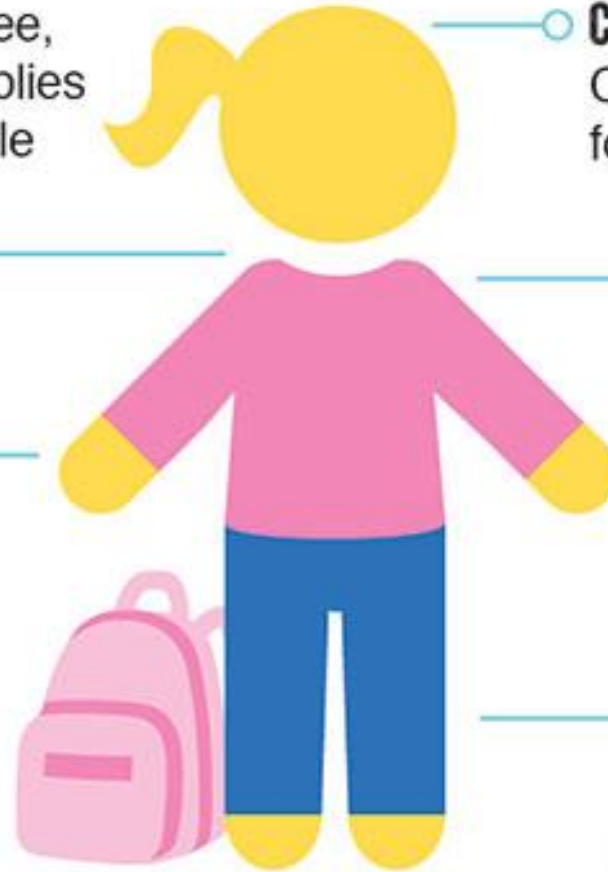
**LACK OF SAFE, PRIVATE GIRLS-ONLY LATRINES:**

Stigma and other factors mean 1 in 10 girls in Africa miss school during their periods

**VIOLENCE :** Once arriving to school, girls may face various forms of violence at the hands of teachers, peers and other people in the school environment. If parents find out school isn't safe for their daughters, they may remove them from school

**GENDER INEQUALITY :** Girls are often kept home from school to help with family care & housework

**LONG DISTANCE TO SCHOOL:** Girls are at an increased risk of experiencing violence or harassment



# The rate of return on investment in education

- Warunsiri and McNown (2010) estimated the rate of return on investment in education in Thailand.
- The study found that Thailand's rate of return on education is 14-16 percent.
- The rate of return on investment in education for women is higher than that of men (women 18% vs. men at 13%).

# The rate of return on investment in education



Education is a key factor in increasing women's income.

Thailand - a one-year increase in the year of education for Thai



Women will increase the average wage by 18%, a relatively high figure compared to the global average.



The government should therefore consider more support for women's educational opportunities.




# The rate of return on investment in education

Table 2. *Returns to education estimates for men and women<sup>a</sup>*

	Men individual data (cross- sectional regression) (i)	Men pseudo-panel (two-year cohort means) (ii)	Women individual data (cross- sectional regression) (iii)	Women pseudo-panel (two -year cohort means) (iv)
Constant	0.128 (0.0350)	-0.0536 (0.161)	-0.502 (0.0353)	-0.742 (0.150)
Years of education	0.107 (0.000342)	0.126 (0.0158)	0.129 (0.000362)	0.178 (0.0130)
Age	0.0880 (0.00181)	0.0893 (0.00684)	0.0985 (0.00187)	0.0825 (0.00718)
Age squared	-0.000606 (0.0000231)	-0.000679 (0.0000861)	-0.000712 (0.0000244)	-0.000561 (0.0000901)
Cohort dummies	-	Yes	-	Yes
Individual observations	112,419	112,419	87,414	87,414
Cohort-year observations	-	220	-	220
Adjusted $R^2$	0.540	0.944	0.663	0.953

<sup>a</sup> Numbers in parentheses are standard errors. All coefficients are significant at or below the 0.05 level.

# The effect of scholarship/educational funding for Thai girls

-  Paweenawat and Vechbanyongratana (2015) examined the outcomes of scholarships for female students in rural areas and from low-income family backgrounds.
-  An analysis of panel data, in which they continuously collected the data from students who received scholarships from grades 4-6 (until and after graduation, i.e., admission to higher education).
-  Studies have shown that this scholarship has increased the chances of entering higher education among poor students.

# The effect of scholarship/educational funding for Thai girls

- 🍯 The findings are consistent with international studies - Money is one of the key factors in helping poor children gain access to higher education.
- 🍯 The policy recommendation
  - 🍯 government should consider subsidizing those students in poverty during the transition period from upper secondary to tertiary levels
- 🍯 This will increase the chances -> higher education admission

# ● Female labor supply



# Female labor supply – 2 dimensions

## 1) Extensive margin

🏠 Female Labor Force Participation Rate

🏠 Decision to participate in the labor market (Participation decision), regardless of the number of working hours - how many women workers work in the labor market?

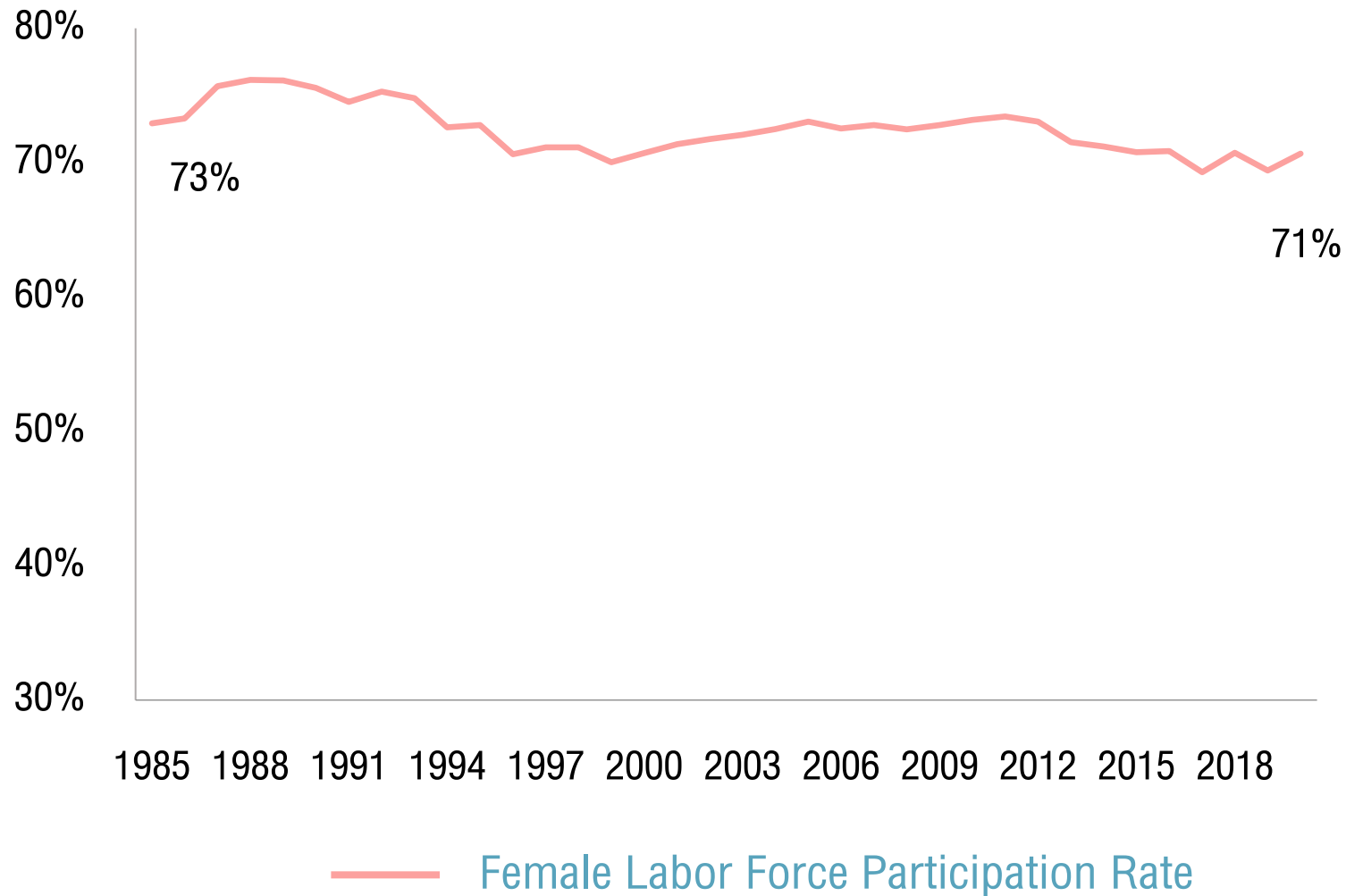
- Thailand has a high participation rate of female workers (more than 65% from 1985 -2016)

## 2) Intensive margin

🏠 The relationship between wages and hours worked.

🏠 Number of working hours (or intensity of work of workers participating in the labor market) when wages increase/decrease

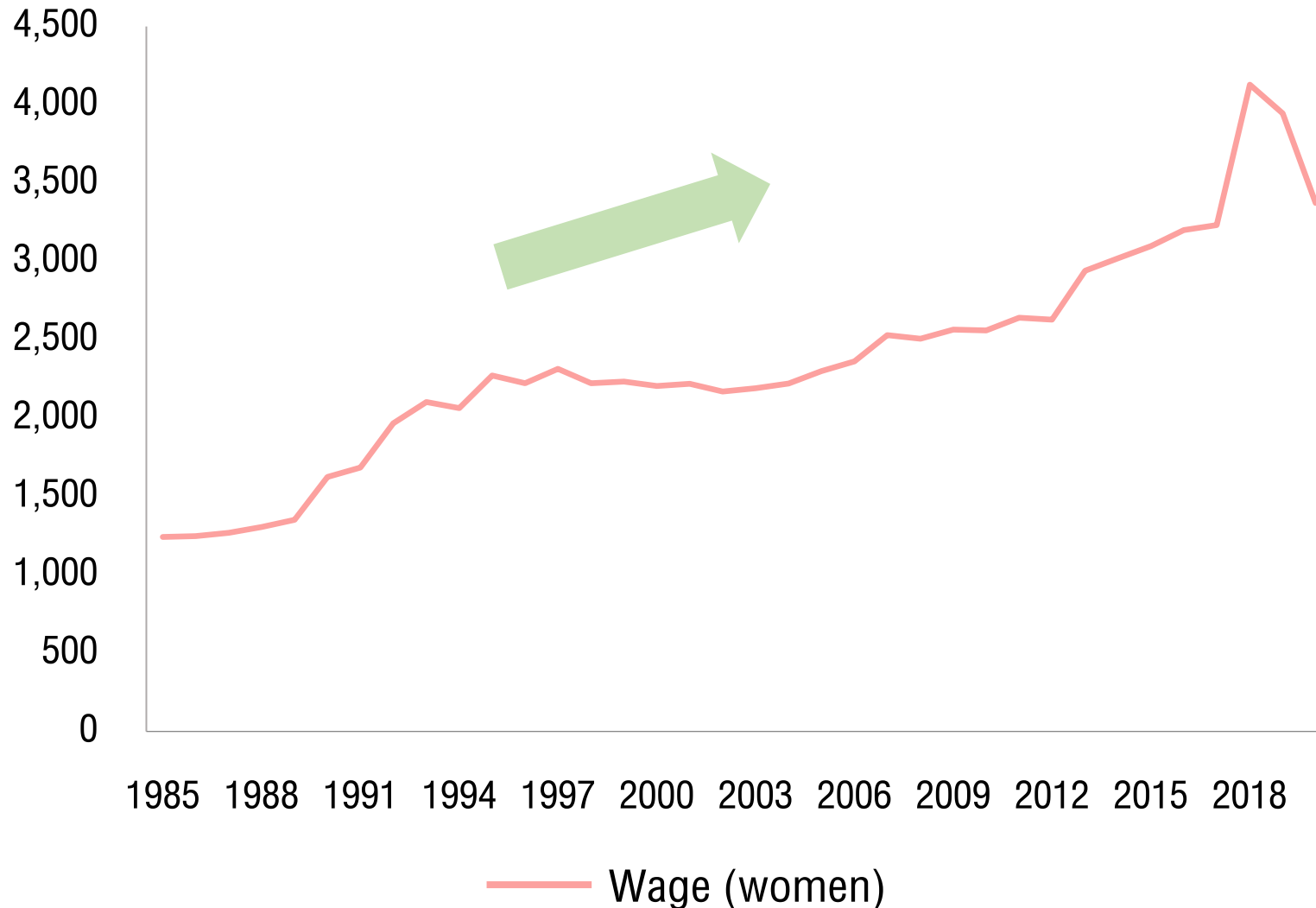
# Female Labor Force Participation Rate (1985-2020)



**Extensive margin**  
**- Around 70%**

Source: Author's calculation from LFS (1985-2020)

# Average real wage rate trends for women (1985-2020) (baht)

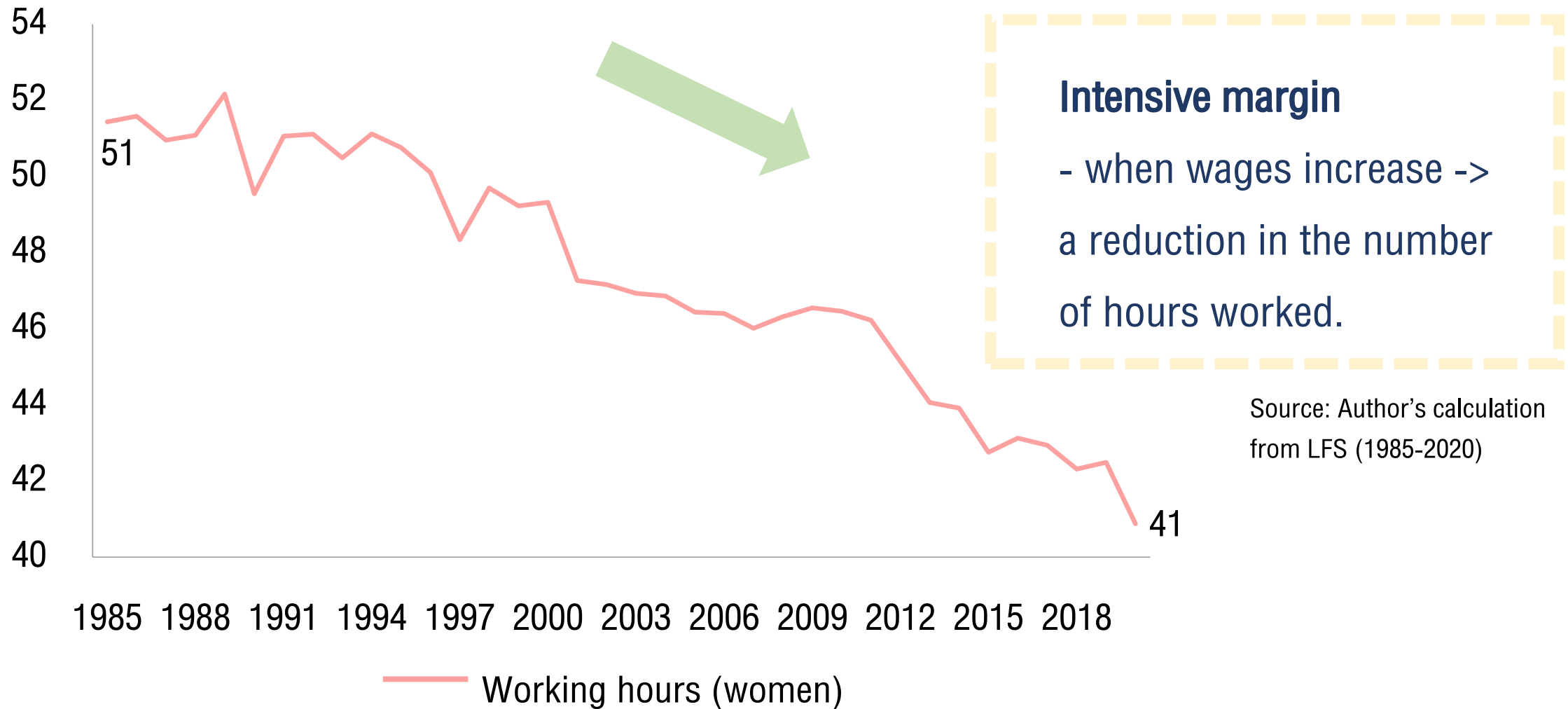


## Intensive margin


Intensive margin  
- when wages increase,  
whether the number of  
hours worked increase or  
decrease?


Source: Author's calculation  
from LFS (1985-2020)

# Average working hours per week for women (1985-2020)



# Female labor supply in Thailand

 Between 1985-2016, the number of weekly working hours of Thai women workers decreased. But the weekly wage rate has increased.

 Paweenawat and McNown (2018) provide empirical evidence in female labor supply estimates in Thailand

➤ Publication – Paweenawat, S., McNown, R., 2018. “A synthetic cohort analysis of female labor supply: The case of Thailand”. *Applied Economics*, Volume 50(5): 527-544

# Female labor supply in Thailand : (Paweenawat and McNown, 2018)

- Paweenawat and McNown (2018) provides empirical evidence in estimating the supply of female workers in Thailand.
  - Negative relationship between female labor supply and wages
  - Thai women adjust working hours to maintain a subsistent level of household income.
    - When wages are reduced, they also increase working hours (In addition to the already long hours of housework and childcare).
    - However, when wages rise, workers choose to reduce their working hours to make all the housework hours and workloads easier to manage.

# Female labor supply in Thailand : (Paweenawat and McNown, 2018)

🏠 In countries with a relatively low level of development, women will increase their working hours when wages decrease (to maintain the subsistence level) (Mincer 1962 & Khan 1995)

## ● Consistent with empirical evidence in other developing countries

● Licona (2000) – The female labor supply in Mexico - Most workers in low-income families work more in the labor market when wages are lower.

➤ Dessing (2002) – Low-income workers in rural Philippines.

➤ Dasgupta and Goldar (2006) – Female labor supply in rural India.

## ● Contradict to empirical evidence in developed countries

➤ There is a positive correlation between working hours and wages - US (Juhn and Murphy, 1997); Germany (Merz, 2008); Canada (Dosie and Kromann (2012)

# Determinants of the female labor supply in Thailand

: (Paweenawat and McNown, 2018)

## Education level

- An increase in women's education plays an important role in determining the supply of women in the labor market

## Age group

- Younger women had the highest response (compared to other age groups) per change in wages.
- Older women are more likely to have a well-matched lifestyle and work style and may be subject to more stringent traditions than younger women

# Determinants of the female labor supply in Thailand

: (Paweenawat and McNown, 2018)

## Marital status

- Unmarried women responded to wage changes greater than married women.
- Married women have more flexibility in choosing whether to work because the husband's income is a cushion

Number of children and age of children – women's priorities in family influence decision-making to work in the labor market (Angrist and Evans 1998).

## Labor supply of married women in Thailand : (Liao and Paweenawat, 2021)

 Liao and Paweenawat (2021) Evidence of the Labor Supply of Married Women in Thailand: 1985-2016.

- Taking into account the effects of having children and the effects of married couples

**Husbands** - The labor supply of married women is affected by changes in husbands' wages (Mincer, 1962).

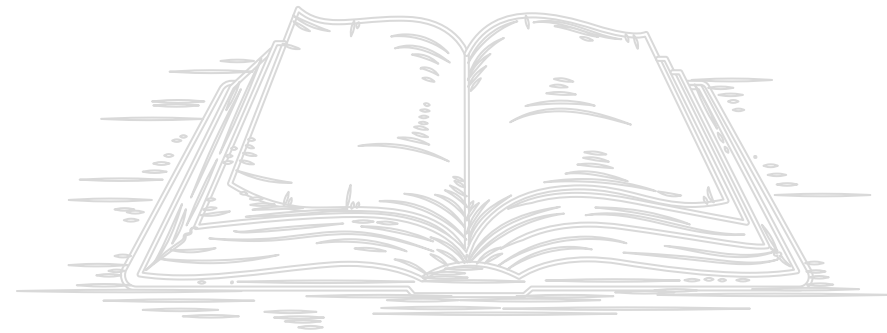
- High wage husband -> low motivation for women to work
- Husband's wages affect the labor supply of married women in the United States (Ashenfelter and Heckman, 1974).
- If wages are increased, this group of workers will reduce their working hours by a larger number than those without children.

# Labor supply of married women in Thailand : (Liao and Paweenawat, 2021)


## Women with children respond to their high wages -

- Because women with children spend time doing housework within the household than women without children
- If wages are increased, this group of workers will reduce their working hours by a larger number than those without children.

Source: Liao, L., Paweenawat, S., 2021. "The inversion of married women's labor supply and wage: Evidence from Thailand", *Asian-Pacific Economic Literature*, Vol. 35(1): 82-98.



# Maternal labor supply of married women in Thailand : (Liao and Paweenawat, 2022)

 Liao and Paweenawat (2022) provide empirical evidence of family structure on the labor supply of married women with children

## Living with parents

- Positively affects the participation in the labor market of married women with children.
  - Increased the likelihood of participation in the labor market by 21% compared to those who did not live with their parents.
- Women who live with their parents will have about 10 more hours of work per week.
  - Co-residence with parents, either husband's or wife's side
  - Get help in raising children and reduce the burden of household chores.

Women have more time to participate in the labor market

# Exercise

- 1) Discuss the connection between the differences in educational choices between men and women. How does this affect the income gap trend and career paths of men and women? Provide examples or empirical evidence in your discussion.
- 2) Describe the differences in the following three types of labor market discrimination: (1) bias-based discrimination, (2) market power discrimination, and (3) statistical discrimination. Which of the concepts of discrimination do you think are most evident in the labor market? Why? Provide an example and explanation.
- 3) Based on the model of prejudice and discrimination, compare the outcomes of discrimination in terms of wages and number of women employed in the labor market (accompany your explanation with a graph) in the following three cases of employer discrimination:
  - Case 1 – In a market with employers who do not discriminate against women.
  - Case 2 – In a market with employers who discriminate against women.
  - Case 3 – In the event of a change in the employer's attitude toward discrimination

# Exercise

- 4) Use a human capital model to explain the difference in wages between university and high school graduates. In addition, how do workers who decide to work after graduating from high school differ from those who decide to continue their studies at a university? (Draw a graph and accompany this with an explanation).
- 5) Do you agree that when considering different ages by comparing the levels of people with different education and genders, the income gap between men with a high and low level of education tends to spread more widely than among women? Explain the relationship between income and the age and gender of workers with examples from real cases.
- 6) According to Schultz (2002), governments should focus on investing in education for women and girls because it has a more positive impact on society than investing in men. Do you agree or disagree with this conclusion? Please discuss.
- 7) Discuss the factors that determine the supply of married and unmarried women. Based on examples of research in Thailand or abroad, what was the most influential factor in determining the supply of female labor?