

**A Simple Model of Unpaid House-Work**

**&**

**Occupational Segregation and Gender Discrimination  
in the Vietnamese, Thailand & South African  
Labor Markets**

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## Objective

### *A. Unpaid work in households*

- An analytical framework (no empirical results)

### *B. Paid work in labor markets*

- Analyze gender disparity in earnings in labor markets:  
*Vietnam, Thailand, & South Africa*

## Determinants of earnings

- Hours of work
- Education
- Work experience
- Regions & Area (urban/rural)
- Ethnicity

## **Disparity can be explained by two factors**

- Occupational segregation
- Labor market discrimination

## **Data Source**

- Vietnam: 2002 LSMS
- Thailand: 2004 Labor Force Survey
- South Africa: 2002 Labor Force Survey

## A. Unpaid Work in Households (1)

$w_{ij}$  = wage rate of  $i$ th person in  $j$ th household

$h_{ij}$  = hours worked in labor market by  $i$ th person in  $j$ th household

$y_j = \frac{1}{n} \sum_i w_{ij} h_{ij}$  = per capita household income in labor market

$h_{ij}^*$  = hours worked at home by  $i$ th person in  $j$ th household

$h_j^* = \frac{1}{n_j} \sum_i h_{ij}^*$  = per capita unpaid hours of work in  $j$ th household

$w^*$  = monetary value of per hour household work

$y_j^*$  = per capita consumption of household production

$l_{ij} = \frac{M - h_{ij} - h_{ij}^*}{M}$  = hours of leisure enjoyed by  $i$ th person in  $j$ th household  
 $0 < l_{ij} < 1$ , where 1 is the maximum leisure enjoyed

$g'(l_{ij}) > 0$ ,  $g''(l_{ij}) < 0$ ,  $g(1) = a$ ,  $g(0) = 0$

## A. Unpaid Work in Households (2)

$$c_{ij} = y_j + y_j^* + g(l_{ij})$$

$$g(l_{ij}) = a \left[ 1 - (1 - l_{ij})^{1+\delta} \right]$$

$$g'(l_{ij}) = a(1+\delta)(1-l_{ij})^\delta > 0$$

$$g''(l_{ij}) = -a\delta(1+\delta)(1-l_{ij})^{\delta-1} < 0$$

$$g(l_{ij}) = 0 \quad \text{and} \quad g(1) = a$$

*This model provides welfare enjoyed by every person in the society.*

*Using this model, we can measure the welfare disparity between male and female.*

## B. Paid Work in Labor Market

### 1. Atkinson's Welfare Function

- *Equally distributed equivalent level of income*
- Welfare is measured in terms of money metric

$x_{\varepsilon}^*$  = money metric Atkinson's welfare

$\varepsilon$  = inequality aversion parameter

$x_{\varepsilon}^* = \mu$  = mean income when inequality aversion parameter is zero

$$A_{\varepsilon} = 1 - \frac{x_{\varepsilon}^*}{\mu} = \text{Atkinson's inequality measure}$$

## 2. Relative Gender Disparity Index (RGDI)

$x_{\varepsilon f}^*$  = welfare enjoyed by women

$x_{\varepsilon m}^*$  = welfare enjoyed by men

$$RGDI = \log(x_{\varepsilon m}^*) - \log(x_{\varepsilon f}^*)$$

= occupational *segregation*

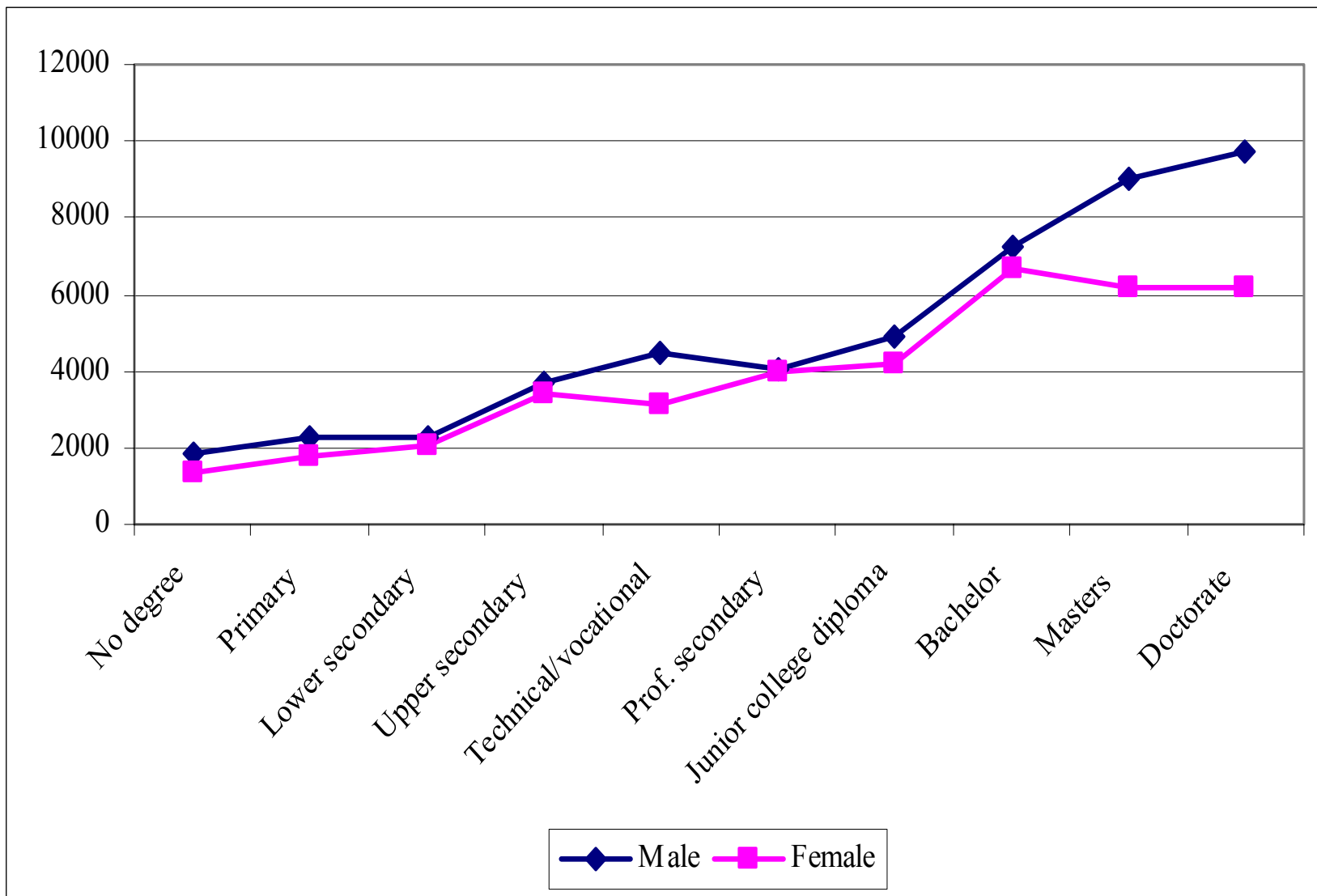
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labor market *discrimination*

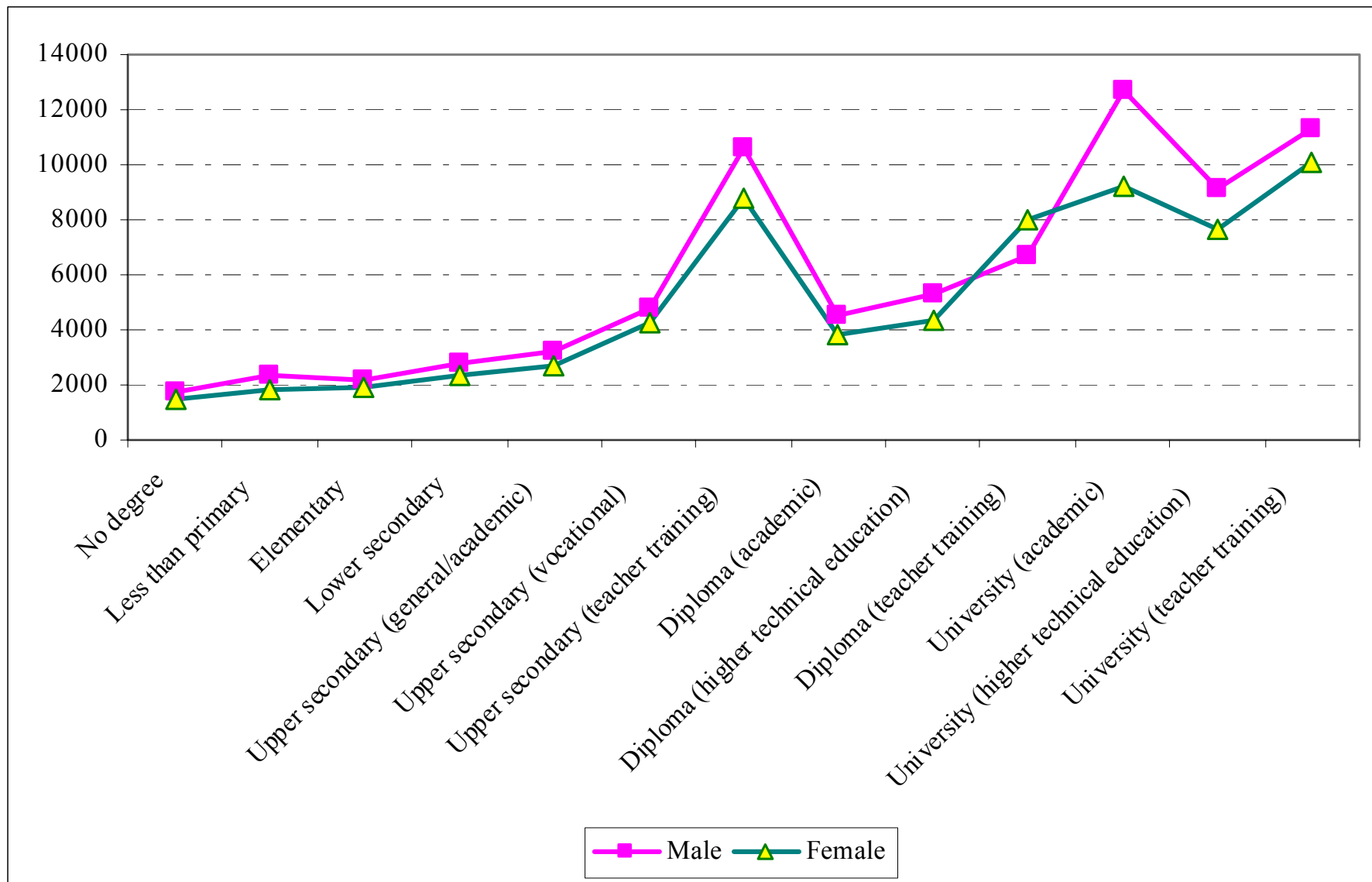
## Average Hours of Work Per Week

| Gender  | Vietnam | Thailand | <u>South Africa</u> |               |
|---------|---------|----------|---------------------|---------------|
|         |         |          | Total               | Black African |
| Male    | 45      | 46       | 49                  | 49            |
| Female  | 43      | 45       | 44                  | 45            |
| Average | 44      | 45       | 46                  | 47            |

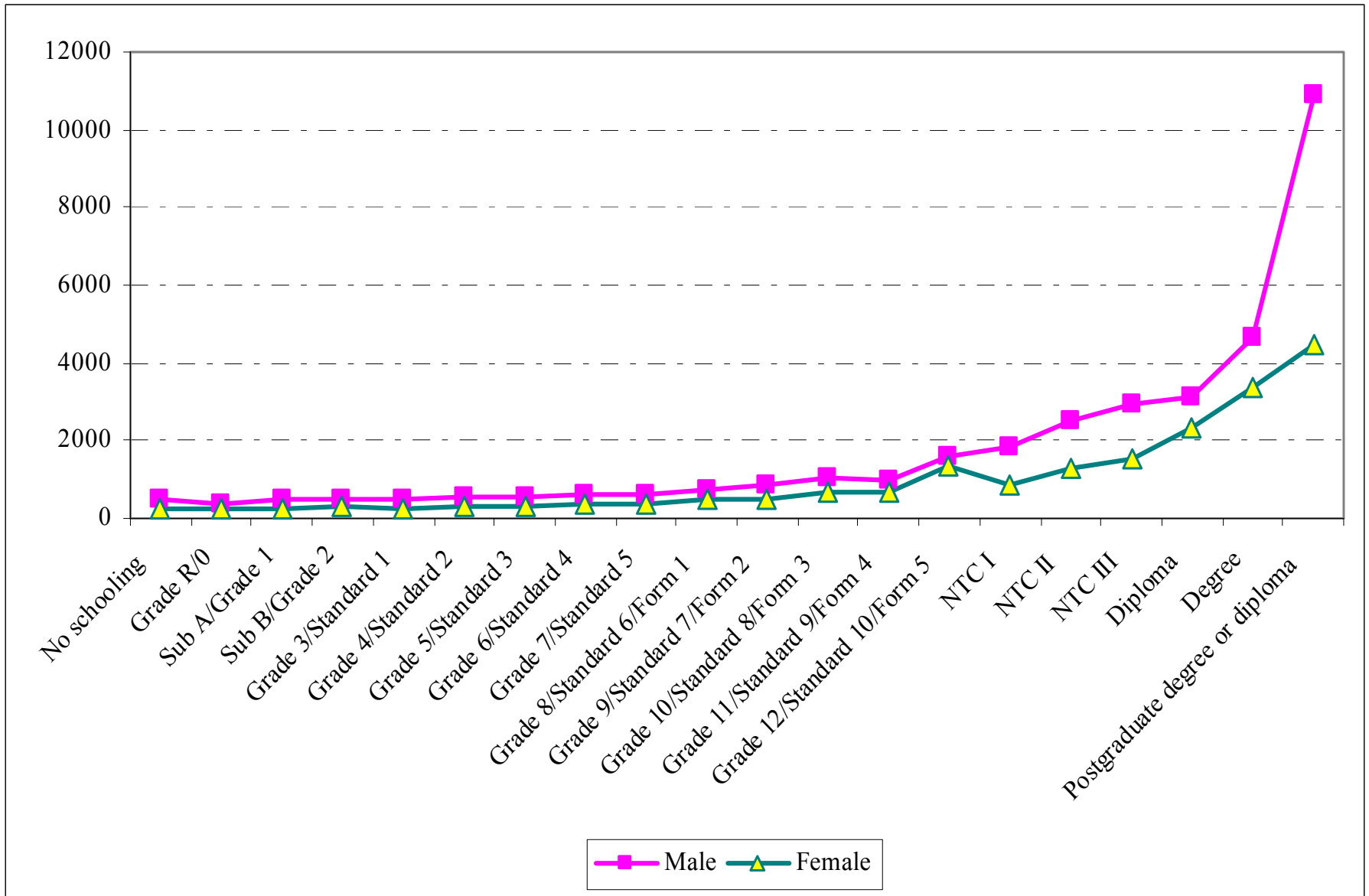
## Per capita wage per hour by educational level: Vietnam



## Per capita wage per hour by educational level: Thailand



## Per capita wage per hour by educational level: South Africa



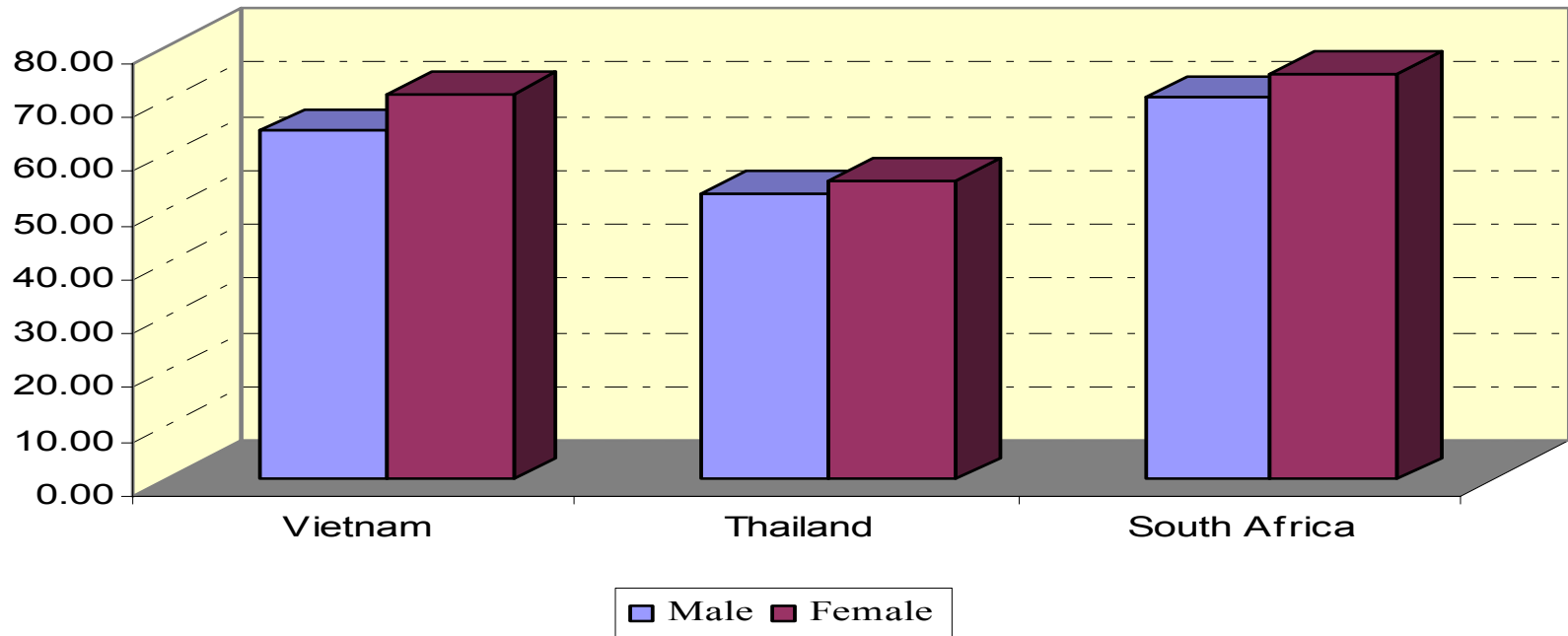
## Per capita wage per hour by ethnic groups: South Africa

| Ethnic groups | <u>Per capita hourly wage</u> |      |        | <u>Share of population</u> |       |        |
|---------------|-------------------------------|------|--------|----------------------------|-------|--------|
|               | Total                         | Male | Female | Total                      | Male  | Female |
| African/Black | 777                           | 861  | 658    | 74.8                       | 74.7  | 75.1   |
| Colored       | 959                           | 1006 | 893    | 11.7                       | 11.6  | 11.7   |
| Indian/Asian  | 1826                          | 1974 | 1550   | 3.9                        | 4.3   | 3.5    |
| White         | 3435                          | 3951 | 2706   | 9.5                        | 9.4   | 9.5    |
| Other         | 1112                          | 1016 | 1147   | 0.1                        | 0.1   | 0.2    |
| Average       | 1087                          | 1215 | 907    | 100.0                      | 100.0 | 100.0  |

## Atkinson's Inequality Measure

|                   | Vietnam | Thailand | South Africa |
|-------------------|---------|----------|--------------|
| $\varepsilon = 1$ |         |          |              |
| Male              | 36.38   | 36.24    | 47.52        |
| Female            | 39.76   | 37.50    | 52.51        |
| $\varepsilon = 2$ |         |          |              |
| Male              | 64.42   | 52.90    | 70.53        |
| Female            | 71.26   | 55.22    | 75.14        |

Atkinson's inequality measure when aversion parameter = 2



## Total disparity adjusted by education, experience, regions/areas, & race

|                     | $\varepsilon = 0$ | $\varepsilon = 1$ | $\varepsilon = 2$ |
|---------------------|-------------------|-------------------|-------------------|
| <b>Vietnam</b>      |                   |                   |                   |
| Total disparity     | 14.44             | 16.84             | 29.88             |
| Segregation         | 0.82              | 1.13              | 3.01              |
| Discrimination      | 13.62             | 15.70             | 26.87             |
| <b>Thailand</b>     |                   |                   |                   |
| Total disparity     | 15.58             | 15.20             | 14.78             |
| Segregation         | 3.42              | 2.70              | 2.19              |
| Discrimination      | 12.16             | 12.50             | 12.59             |
| <b>South Africa</b> |                   |                   |                   |
| Total disparity     | 32.81             | 36.83             | 39.63             |
| Segregation         | 12.20             | 16.09             | 21.52             |
| Discrimination      | 20.61             | 20.74             | 18.11             |

## Kakwani & Son Decomposition result I: Vietnam

|                                     | Total disparity | Segregation | Discrimination |
|-------------------------------------|-----------------|-------------|----------------|
| <i><math>\varepsilon = 0</math></i> |                 |             |                |
| Education                           | -4.97           | -3.80       | -1.17          |
| Experience                          | 2.93            | 1.03        | 1.89           |
| Province & areas                    | 0.04            | 0.03        | 0.01           |
| All factors                         | -2.01           | -2.74       | 0.74           |
| <i><math>\varepsilon = 1</math></i> |                 |             |                |
| Education                           | -1.84           | -3.77       | 1.93           |
| Experience                          | 2.92            | 0.91        | 2.01           |
| Province & areas                    | -0.01           | 0.00        | -0.01          |
| All factors                         | 1.07            | -2.87       | 3.93           |
| <i><math>\varepsilon = 2</math></i> |                 |             |                |
| Education                           | 2.12            | -1.81       | 3.92           |
| Experience                          | 1.74            | 0.73        | 1.01           |
| Province & areas                    | 0.07            | 0.01        | 0.05           |
| All factors                         | 3.92            | -1.06       | 4.98           |

## Kakwani & Son Decomposition result II : Thailand

|                   | Total disparity | Segregation | Discrimination |
|-------------------|-----------------|-------------|----------------|
| $\varepsilon = 0$ |                 |             |                |
| Education         | -11.08          | -10.63      | -0.44          |
| Experience        | 5.68            | 0.25        | 5.44           |
| Province & areas  | -3.90           | -0.28       | -3.62          |
| All factors       | -9.29           | -10.66      | 1.37           |
| $\varepsilon = 1$ |                 |             |                |
| Education         | -7.04           | -9.83       | 2.79           |
| Experience        | 4.05            | 1.95        | 2.10           |
| Province & areas  | -3.93           | -1.76       | -2.17          |
| All factors       | -6.92           | -9.64       | 2.72           |
| $\varepsilon = 2$ |                 |             |                |
| Education         | -2.23           | -6.81       | 4.58           |
| Experience        | 1.89            | 2.53        | -0.63          |
| Province & areas  | -3.11           | -2.48       | -0.63          |
| All factors       | -3.44           | -6.76       | 3.32           |

## Kakwani & Son Decomposition result III : South Africa

|                                     | Total disparity | Segregation | Discrimination |
|-------------------------------------|-----------------|-------------|----------------|
| <b><math>\varepsilon = 0</math></b> |                 |             |                |
| Education                           | -9.59           | -9.60       | 0.01           |
| Experience                          | 1.52            | -0.03       | 1.55           |
| Province & areas                    | 2.61            | -0.89       | 3.50           |
| Race                                | 1.58            | 3.79        | -2.22          |
| All factors                         | -3.88           | -6.72       | 2.83           |
| <b><math>\varepsilon = 1</math></b> |                 |             |                |
| Education                           | -1.72           | -5.24       | 3.52           |
| Experience                          | 0.31            | -0.45       | 0.76           |
| Province & areas                    | 3.32            | -3.97       | 7.30           |
| Race                                | 0.49            | 2.35        | -1.86          |
| All factors                         | 2.40            | -7.32       | 9.71           |
| <b><math>\varepsilon = 2</math></b> |                 |             |                |
| Education                           | 3.83            | -2.46       | 6.29           |
| Experience                          | -1.13           | -1.38       | 0.26           |
| Province & areas                    | 2.34            | -5.62       | 7.96           |
| Race                                | 1.41            | 2.41        | -1.00          |
| All factors                         | 6.45            | -7.06       | 13.51          |