

## **Estimating Labor Income Profiles for Taiwan & Indonesia**

This document summarizes the data and methodology used in estimating labor income profiles for Taiwan (1976 through 2003) and Indonesia (1993, 1996, and 1999).

### **Data**

#### *Taiwan*

Data used in estimating labor income profiles for Taiwan was obtained from the Family Income/Expenditure Survey (FIES) of Taiwan, for years 1976 to 2003. Sponsored annually by the Directorate-General of Budget, Accounting and Statistics (DGBAS), the survey consists of a cross-sections selected annually, and is designed to cover the non-institutionalized, civilian population of Taiwan. Households are subject to an annual interview, with selected households maintaining daily diaries of expenditures and income as a form of quality control. Samples since 1978 exceed 13,000 households; with specific information on household composition, individual income, and household expenditures being collected.

Income information collected in the FIES includes data on employee compensation, entrepreneurial income, property income, imputed rent income, and current transfer receipts. To estimate labor income, data on both employee compensation and entrepreneurial income are used. Employee compensation is reported before taxes and social security contributions, for all jobs during the reference period of January 1<sup>st</sup> through December 31<sup>st</sup>; and includes payroll, retirement pay, overtime, awards, insurance by employers, and fringe and death benefits. Entrepreneurial income refers to net profit earned by a household from participation in unincorporated enterprise activities.

#### *Indonesia*

Indonesian income data is obtained from the National Socioeconomic Survey (*Susenas*), for years 1993, 1996, and 1999. *Core-Susenas* is a nationally representative survey conducted annually, and containing detailed information on household demography, individual education, and other socio-economic variables. In addition, every three years, a more detailed survey of socio-economic aspects of the household is undertaken, the *module-Susenas*, in which specific information is collected on household health, education, income and expenditures.

*Module-Susenas* provides information on wages and in kind, entrepreneurial income from agriculture (food and non-food crops, livestock, poultry, fishery etc.) and non-agriculture business/activities. Data on wages and salary is provided for the previous week on an individual basis, while entrepreneurial income is provided by household for the previous month.

## **Methods**

Labor income is defined as all compensation that is a return to work effort; including labor earnings, employer-provided benefits, taxes paid to the government on behalf of employees, and the portion of self-employment (entrepreneurial) income which is a return to labor. This is estimated as the sum of earnings (YLE); fringe benefits (YLF); other labor income (YLY); plus a fixed, and age invariant, share of entrepreneurial income.

If all necessary data is provided on an individual basis, as is the case with Taiwan, direct estimation of labor income is possible. Labor income of individual  $i$  can then be expressed as the sum of the components of employee compensation for the individual:

$$YL_i = YLE_i + YLF_i + YLX_i + YLS_i \quad (1.1)$$

Where the returns from self-employment that can be attributed to individual  $i$ 's labor is calculated as a fixed share of entrepreneurial income:

$$YLS_i = \gamma SE_i \quad (1.2)$$

The labor share value that is used in labor income estimates for both Taiwan and Indonesia is  $\frac{2}{3}$ . Thus, the returns from self employment for individual  $i$  is:  $YLS_i = \frac{2}{3} SE_i$ .

#### *Allocating household returns to self-employment*

In the case of Indonesia, returns to self-employment are reported on a household, rather than individual, basis. Thus, it is necessary to allocate household returns to individual members of the household. This is done using a regression model.

Household entrepreneurial income is regressed on the total number of self-employed individuals in the household ( $W_j$ ), and the proportion of self-employed individuals in the household in each age group:

$$SE_j = \alpha W_j + \sum \beta(a) \frac{W_j(a)}{W_j} \quad (1.3)$$

Where  $W_j(a)$  is the number of self-employed individuals in the household in age group  $a$ ; and  $W_j = \sum W_j(a)$ , the total number of self-employed workers in the household. Five-year age groups were utilized for those within the ages of 10 and 59, along with a final age group of 60 though 99 were utilized in Indonesian estimates.

Regression coefficients are then used to allocate entrepreneurial income amongst self-employed household members. Coefficients are assigned to individuals based on age group (i.e. a new variable is created, which takes on the value of  $\beta(a)$  for self-employed individuals in age group  $a$ ; and a value of 0 otherwise).

Individual coefficients are summed by household, and the share of this household sum is calculated for each individual. This share is then used to allocate household self-employment income to individuals. Self-employment income for individual  $i$ , aged  $x$ , in household  $j$  is:

$$SE_{ij} = SE_j \frac{\beta(x)}{\sum \beta(a)W_j(a)} \quad (1.4)$$

Equation (1.2) can then be applied to obtain the individual's returns to self-employment for use in obtaining individual labor income from Equation (1.1).

#### *Age profile of labor income*

The age profile of labor income is the per-capita labor income, by age. Smoothing is done using the Lowess method in Stata, with a bandwidth of 0.1. Negative values which are obtained due to the nature of the smoothing process can be constrained to zero. The codes used to estimate labor income profiles for Taiwan and Indonesia using Stata are contained in the following files: [Taiwan](#), [Indonesia](#)

#### **Uploading data to NTA website**

The final step of the process is to upload your estimates to the NTA website. Directions for uploading data can be found at: [Upload data](#)

The age-specific data template, which is to be used for uploading labor income estimates, can be found at: [Age-specific data template](#)

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