APPENDIX
Methodology

1. Sample Design

A Stratified Two–stage Sampling was adopted for the survey. Bangkok Metropolitan and other Provinces were considered to be constituted strata. There were altogether 77 strata, each stratum (except Bangkok Metropolitan) was divided into two parts according to the type of local administration area corresponding to the Department of Provincial Administration, namely, municipal areas, and non-municipal areas.

1) Selection of Primary Sampling Units

The sample selection of enumeration area was performed separately and independently in each part by using probability proportional to the total number of households in that enumeration area.

2) Selection of Secondary Sampling Units

In this stage, private households were the ultimate sampling units. Households in every enumerating area sample were listed to serve as the sampling frame then the set of households was rearranged by size of household (classified by number of household members) and type of economic household (determined on the basis of the occupational type which produces the highest income in the household). Finally, private sampled households were selected by using the systematic method in each type of local administration with the following sample sizes :

(1) 15 households from each of enumerating area sample in municipal areas

(2) 10 households from each of enumerating area sample in non–municipal areas

The total number of private sampled households for the whole year was 52,000 households.

2. Method of Estimation

The results of the survey were presented at regional level and provincial level. At the reginal level, the results were reported for Bangkok Metropolitan and the three provinces (Nonthaburi, Pathum Thani and Samut Prakan), Central region (exclude Bangkok Metropolitan and the thre provinces), Northern region, Northeastern region and Southern region. The result at local administrative area also presented for the regional level. The estimation processes were the following stages:

1) Estimation of Total

Let $k = 1, 2, 3, \ldots, m_{hij}$ (enumeration area sample)

$j = 1, 2$ (type of local administration)

$i = 1, 2, 3, \ldots, A_h$ (province)

$h = 1, 2, 3, 4, 5$ (region)

Adjusted estimate of the total number of characteristic X of household for the hth region was based on the formula :

$$x''_h = \sum_{i=1}^{A_h} \sum_{j=1}^{2} \frac{x'_{hij}}{y'_{hij}} Y_{hij} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots(1)$$

where $Y_{hij}^{1/}$ is the estimate, based on the population projection, of the total number of households in the jth area, i^{th} province, h^{th} region.

x'_{hij} is the ordinary estimate of the total number of characteristic X of household in the jth area, i^{th} province, h^{th} region.

$$x'_{hij} = \frac{1}{m_{hij}} \sum_{k=1}^{m_{hij}} \frac{1}{P_{hijk}} \frac{N_{hijk}}{n_{hijk}} x_{hijk}$$

y'_{hij} is the ordinary estimate of the total number of households in the jth area, i^{th} province, h^{th} region.

$$y'_{hij} = \frac{1}{m_{hij}} \sum_{k=1}^{m_{hij}} \frac{1}{P_{hijk}} \frac{N_{hijk}}{n_{hijk}} n'_{hijk}$$

that x_{hijk} is the characteristic X of every sample household in the kth enumerating area sample, j^{th} area, i^{th} province, h^{th} region.

N_{hijk} is the number of listing households in the kth enumerating area sample, j^{th} area, i^{th} province, h^{th} region.

n_{hijk} is the number of enumerating sample households in the kth enumerating area sample, j^{th} area, i^{th} province, h^{th} region.

P_{hijk} is the probability of selection of the kth enumerating area sample, j^{th} area, i^{th} province, h^{th} region.

m_{hij} is the number of enumerating area sample in the jth area, i^{th} province, h^{th} region.

n'_{hijk} is the number of the interviewed households in the kth enumerating area sample, j^{th} area, i^{th} province, h^{th} region.

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2) Estimation of Average

The estimate of the average of characteristic X per household for the hth region was based on the formula :

$$\bar{x}_h = \frac{x''_h}{Y_h} = r_h \quad \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots(2)$$

where Y_h is the estimate, based on the population projection, of the total number of households in the hth region

$$Y_h = \sum_{i=1}^{A_h} \sum_{j=1}^{2} Y_{hij}$$

3. Annual Percentage Change

$$g_{t+n} = \left\{ \left[\frac{V_{t+n}}{V_t} \right]^{1/n} - 1 \right\} \times 100$$

g_{t+n} is annual percentage change between year t+n and year t.

V_{t+n}, V_t are values in year t+n and year t, respectively.

t is the based year (in this context : 2011, 2013).

n is number of comparable year (in this context : 2).

4. Real Income

$$Z^R_{t+n} = \frac{CPI_t}{CPI_{t+n}} \times Z_{t+n}$$

Z^R_{t+n} is real income in year t+n.

Z_{t+n} is nominal income in year t+n.

CPI_{t+n}, CPI_t are consumer price indices in year t+n , and year t, respectively.

t is the based year (in this context : 2011).

n is number of comparable year (in this context : 2, 2).

5. Data Collection

The sample of about 52,000 households, in both municipal and non-municipal areas, was divided into twelve equally representative sub-samples. Each sub-household group was interviewed for the period of one-month. The survey data was collected by an interviewing method. The interviewers were sent out to interview the household head or other household members of the sample households. The period of data collection started from January to December 2015.

6. Data Processing

All recorded questionnaires were preliminarily reviewed, edited and encoded in each provincial office before sending the raw data file to the NSO headquarter. All raw data were, consequently, computerizedly edited for the final review. After several stages of data correction, the results were then tabulated.