

# The Urban - Rural Income Inequality in Thailand: 1996-2011<sup>1)</sup>

RUEANTHIP Kittipong

This paper reviews the pattern of income inequality in Thailand between 1996 and 2011 from a dataset derived from the Thai socio-economic survey (SES). After controlling for spatial price differences, real income figures reveal that income inequality in Thailand remains at a high level instead of declining somewhat as nominal income figures suggest. The inequality *between* urban and rural areas and *between* regions contributed to a small extent to total inequality, less than 20 percent, and the contribution continually declined. In other words, the contributions of income inequality mainly come from *within* urban and rural inequality.

The results from decomposing inequality by income sources provide further detail of the structure of inequality in Thailand. For example, for the whole country, the marginal impact of increasing labour income and business profit are the major sources of 'inequality-increasing' while increase in 'income in-kind' and income from 'remittance and assistances' are important in negating differences. Furthermore, it is worth noting that the marginal impact of farming profit on inequality dramatically switched from negative to highly positive in rural area and the positive impact of property income becomes larger at whole Kingdom and, especially in urban area.

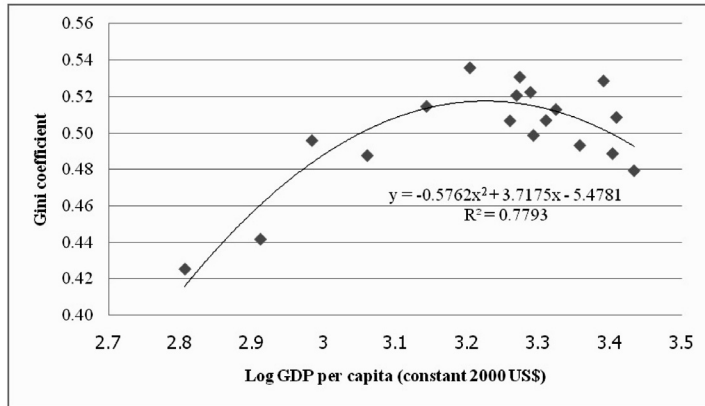
## I. Introduction

In the 1960s, Thailand had a relatively low level of income disparity compared with other Southeast Asian countries. However, due to unbalanced growth and development, the income inequality increased sharply during 1970s to 1990s. Although the problem of income inequality first gained some government attention in 1972, as it was mentioned in the third national economic and development plan, this attention and any actions then taken were insufficient to slow down persistent increases in inequality. There were widespread expectations that the level of inequality would reach the

Kuznets curve turning point in late 1990s, as had happened in other countries in East Asia, (Ikemoto and Limskul, 1987; Ikemoto and Uehara, 2000). However, that turning point seemed only to happen in the late 2000s instead, as seen in Figure 1.

Although, the level of income inequality has been the subject of many recent studies (Tinakorn, 2002, Israngkura, 2003; Motonishi, 2003; Wisaweisuan, 2009), there are concerns about the estimates obtained. They are likely biased since they did not take into account price differences between urban and rural areas in each region. Furthermore, most of them overlooked to analyze the impact

Figure 1 Kuznets Curve: Gini Coefficient versus log GDP Per Capita 1976–2011



Source: The Gini coefficient from NESDB and author's calculation, and GDP per capita from World Bank (WDI)

of differences in sources of income on inequality. In order to redress deficiencies in the literature in recent years, this paper estimates real income in each area as a basis for investigating various angles of urban-rural income inequality in Thailand.

Following this introduction, Section II provides a background of the economy and inequality in Thailand. The definition of data and method of price adjustment are discussed in the third section. Section IV and V show the level of income inequality, and the contribution of within- and between-areas inequality to total inequality. The marginal impact of each income source on inequality, estimated by means of the Gini decomposition method, is presented in Section VI. Finally, concluding remarks are to be found in Section VII.

## II. Background of Thai Economy and Income Inequality

The first national economic plan for the Thai economy was presented in 1963 with the support of the U.S. and the World Bank. Up to today, Thailand has had 11 national economic and social development plans. Each plan covered a 5-year period<sup>2)</sup>. Before 1997, the main priorities of the central plan were economic growth and stability. The largest proportion of government budget was allocated to basic infrastructures which encourage growth in the industrial sector (Tinakorn 2002). As a result, in the early- and mid-1980s, the Thai economy grew moderately at about 5 percent per annum. During the period from 1988 to 1996, however, the growth of the Thai economy reached the high level of around 9.5 percent per annum on average.

When the financial crisis occurred in

1997-98, the Thai economy experienced negative economic growth. After that severe financial crisis, it demonstrated resilience by achieving a growth rate of around 4.4 percent on average from 1999 to 2010, except that in 2009 the rate fell to 2.3 percent because of the 'sub-prime financial crisis'. The average income per capita of Thai people has rapidly increased since 1984: it grew by about 300 percent from US\$924 in 1984 to US\$2,713 in 2010.

While the objective of economic growth was the top priority in the early development period, the issue of income inequality did not become a major interest of the Thai government and public until a few years ago. Even though poverty has been successfully alleviated<sup>3)</sup>, a rapid growth in income per capita seems to favor higher income groups rather than lower one. This has been due to the unbalanced nature of economic development and perhaps also reflects ignorance of the extent of income disparity. During the period which saw a huge increase in income per capita the level of inequality, measured by the Gini coefficient, remarkably increased from 0.42 in 1976 to 0.53, its peak, in 1992. After 1992, inequality fluctuated and ended at 0.49 in 2011 which is still high by international standards. One good thing is a sign of turning point of inverse U-curve relationship between the Gini coefficient and GDP per capita have been revealed for

the period between 1976 and 2011, as revealed by polynomial trend line method (see Figure 1).

One reason it has not gone even higher is that there have been economic, social and political pressures, such as, the demand for a higher minimum wage rate and the demand for policies to support low income groups. Furthermore, since the implementation of 'populist' policies in 2002, a pro-poor constituency has formed among voters. Since that time, every government, no matter what the parties in government, has tended to address that constituency. However, while 'populist' policies are a major factor in alleviating poverty, many of the policies are unsustainable and inefficient. For example, as regards unsustainable policies, when the budget for 'populist' policies was reduced in 2005 and 2006, level of income inequality increased sharply. In addition, as regards inefficient policies, many policies benefit not only the relatively low income groups but also relatively high income groups and lead to large amount of budget leak (Siamwala and Jitsuchon, 2007).

### III. Data, Definition, Source and Price Adjustment

The secondary dataset from the Thai National Statistical Office (NSO) derived from the Socio-Economic Survey (SES) during the period 1996 to 2011 (4 years:

1996, 2006, 2009, and 2011) is used in this study. Each year's dataset comes from a survey of about 40,000 households comprising approximately 100,000 individuals throughout Thailand. Each year's survey is a survey of urban areas and of rural areas, as defined by the NSO of each of five regions: 1) Bangkok Metropolis (capital city and surrounding provinces), 2) Central, 3) North, 4) North East, and 5) South, comprising the entire Kingdom.

### 1. Definition of Each Income Source in SES Dataset

Throughout this paper total income is total household income per capita, not household income. The data will be weighted by 'individual sampling weight'<sup>4)</sup>, by following the method of Haughton and Khandker (2009), before calculating inequality. The income sources which are used to aggregate total household income are:

#### *Monetary Income*

1. Labour income: wages, salaries, and other received employment benefits
2. Net profit from business
3. Net profit from agriculture
4. Property income: rent from farming and non-farming, license and copyright, interest from banks and government bonds, dividends from stocks and other investment, and interest from loans.
5. Remittances and assistances:
  - a. Remittances: internal and

international remittances from household members who have migrated within the past 10 years.

b. Assistances: assistances from household members who migrated more than 10 years ago and from other relatives.

6. Government and private transfers: pension and annuities, terminating payment, elderly and disability assistances, and educational scholarships<sup>5)</sup>.

#### *Income in-kind*

7. Income in-kind: estimated rental of free-occupied house (including own house), unpaid goods and services, unpaid food and beverages.

#### *Other sources of income*

8. Other sources of income: inheritance and gifts, insurance (health, accident, fire and/or life insurance), lottery winnings and winnings from other gambling, and commissions.

### 2. Price Adjustment

The levels of prices in urban and rural areas in each region, for the same goods and services, can differ at any point of time and the differences may change over time. Spatial price differences that change over time can be corrected by adjusting by the distinct consumer price indices for each area and region. In case of Thailand, Thai official Consumer Price Indices<sup>6)</sup> (CPI), base year 2007, are provided by the Bureau of Trade and

Economic indices. Normally, urban household has the highest growth of CPI followed by low income people in urban and rural people. However, after 2007, growth of rural CPI become the highest followed by urban low income and urban CPI. This is because, in recent years, rural households depend more on secondary products, however they have less accessibility of cheaper products, compared to urban households, which increased their prices significantly due to higher world food price and/or fuel price.

Although, adjustment using the CPI can correct price differences over time, the levels of prices are also spatially different at any point of time. Correcting such differences can be done by adjusting Spatial Price Indices (SPI). A recent estimation of spatial price indices in 2002 can be found in the study of Jitsuchon et al. (2006). To calculate spatial cost of living in each year, the present study applies SPI 2002 to calculate the baseline of spatial price differences in 2007. Then, the CPI (base year 2007) are used to extrapolate the spatial price differences to earlier and later years. In summary, after controlling spatial price differences over time, the highest cost of living is in Bangkok, followed by the Central, South, North and North East regions, in order. In each region, the area/group which has the highest cost of living is the urban household, followed by the urban low

income group and then the rural group. But, after 2007, the sequence is changed to urban low income, urban and rural household.

Although the price levels are adjusted by using both CPI and SPI, the process still has two drawbacks. First, the accuracy of extrapolation from those years will decline with distance from the SPI base year because of changes in the basket of consumption. Second, the set of SPI suffered slightly from 'outlet error'. This error arises because the Ministry of Commerce tends to collect price data from major commodity outlets, for instance, major markets and supermarkets, to calculate CPI. Using this set of CPI to extrapolate SPI in 2002 may mean that the indices in remote areas may be underestimated since the prices of commodities bought there must bear additional transportation costs. Thus, the results in this paper regarding the real income inequality and the real urban-rural income gap may be slightly underestimated.

#### IV. The Extent of Income Inequality and the Urban-Rural Income Gap

Many contributions to the literature do not control for differences in cost of living (by using spatial price differences) since the data has been scarce. However, if the cost of living in urban areas is higher than in rural, the level of inequality and/or income gap between urban

and rural in many countries may not be as high as nominal income figures would suggest. For example, after controlling for spatial price differences, both the level of inequality and the urban-rural income gap are reduced by around a substantial 30 percent in the case of China (Sicular et al., 2007). The same is the case of Italy that real regional income gap is remarkably lower than nominal income suggested since higher price levels are normally found in higher income regions (Pittau et al., 2011).

In the case of Thailand, two types of income measure are used in estimations of the level of income inequality, namely ‘current income’ and ‘total income’. The definition of income applied in this paper is the ‘total income’ which comes from all income sources since it is believed that it can better reflect the real degree of inequality in the society. All of the income sources in this study are adjusted by CPI and SPI in each region and area. Then, after correcting for the price dif-

ferences between urban and rural in each region, a more realistic result can be obtained.

The simple, easily understandable and popular method which is normally used to describe the degree of inequality is the quartile dispersion ratio ( $Q_5/Q_1$ ). This ratio can be estimated by dividing the total income of people in the top 20 percent of income group ( $Q_5$ ) by the total income of the bottom 20 percent of income group ( $Q_1$ ). For the urban-rural income gap, after taking into account the population size<sup>7)</sup>, the gap can be simply calculated by dividing total income of urban areas by that of rural areas.

The results of calculating  $Q_5/Q_1$  ratio in Table 1 are separated into two sets: the first one is of results from unadjusted income data (nominal income) and the second one is of results from incomes adjusted by CPI and SPI<sup>8)</sup> which represents real income. Firstly, results from nominal incomes shows that inequality according to calculation of the quartile

Table 1 Household Income Per Capita, Q5/Q1 and Urban/Rural Ratio 1996–2011

	1996		2006		2011		2011		% Change 1996–2011	
	Unadjusted	Adjusted SPI	Unadjusted	Adjusted SPI	Unadjusted	Adjusted SPI	Unadjusted	Adjusted SPI	Unadjusted	Adjusted SPI
$Q_5/Q_1$ (Whole Kingdom)	13.28	10.47	14.85	12.55	11.90	10.60	11.42	10.52	-13.97	0.45
Urban (Thai Baht)	5,289	8,854	8,609	10,569	9,812	11,281	10,802	11,647	104.22	31.55
Rural (Thai Baht)	2,028	4,848	3,947	6,088	4,778	6,518	5,605	6,924	176.42	42.83
Ratio of Urban to Rural Income	2.61	1.83	2.18	1.74	2.05	1.73	1.93	1.68	-26.12	-7.89
Urban minus Rural Income (Thai Baht)	3,261	4,006	4,662	4,482	5,034	4,764	5,196	4,723	59.33	17.91

Source: SES dataset, author's calculation

dispersion ratio decreased from 13.28 in 1996 to 11.42 in 2011. In contrast, results from real incomes reveal that the level of inequality remained at 10.5 in 2011. The urban-rural income gap was significantly reduced after price adjustment which means that the real income gap between urban and rural areas is less severe due to a relatively low living cost in rural areas. In addition, economic development seems to have been faster in rural areas as both nominal and real urban-rural income gaps since 1996 diminished to be less than two times in 2011.

However, there is a limitation to the use of the quartile dispersion ratio: it does not take into account the information about middle income groups,  $Q_2-Q_4$ , and does not even consider distribution characteristic of top and bottom 20 percent of income groups. The Gini coefficient is another measurement which is widely used, can be used to compare internationally and avoids the drawback of

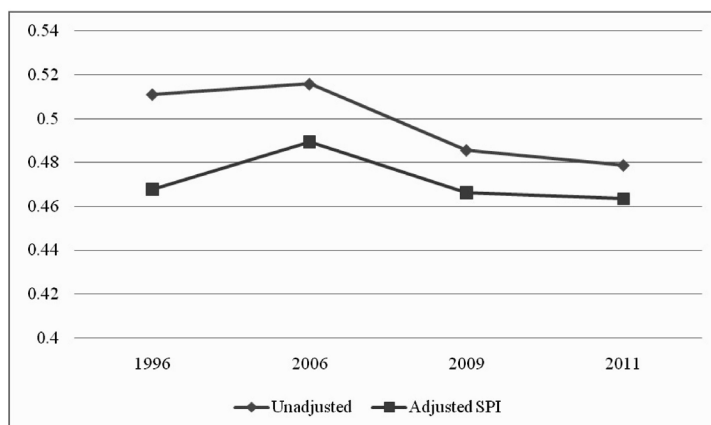
the quartile dispersion ratio. There are many different ways to calculate the Gini coefficient. One useful method is covariance-based formula which can be written as:

$$G = \frac{2}{\bar{y}} Cov(y, F(y))$$

where  $Cov$  is the covariance between income level  $y$ ,  $F(y)$  is the cumulative distribution function, and  $\bar{y}$  is the average income (Bellu and Liberati, 2006).

The Gini index calculated from nominal income and real income figures is presented in Figure 2. It shows that after price adjustment, the inequality levels between 1996 and 2011 are lower than those with unadjusted data due to a lower living cost in rural areas. However, the gap between nominal and real Gini coefficients was smaller in recent years as a result of higher growth of CPI in rural areas in last few years - price levels in rural areas have continually come closer to price levels in urban

Figure 2 The Gini Coefficient before and after Price Adjustment: 1996-2011



Source: SES dataset, author's calculation

areas. On the one hand, the result as measured by the nominal Gini coefficient shows that inequality somewhat declined from 0.51 to 0.48, a 6.3 percent reduction. On the other hand, the real Gini coefficient showed less than a 1 percent reduction, from 0.468 to 0.463. In other words, the level of inequality in term of real incomes in 2011 remained the same as in 1996.

Considering the levels of inequality in urban and rural areas from adjusted SPI incomes, Table 2 shows that inequality in urban areas slightly increased by 1.74 percent from 0.47 to 0.478 while the Gini index in rural areas was considerably lower than in urban areas and dropped from 0.433 to 0.425, a 1.92 percent reduction. Regarding the trend of the disparity in each region, Bangkok has been the region which has an enormous increase

in inequality. Bangkok's inequality level rose from 0.403 to 0.509, or 27 percent. Meanwhile, all urban areas in other regions experienced a reduction in inequality. It can be argued that rising inequality in Bangkok is the significant determinant of an increase in inequality in not only urban areas but also throughout the whole Kingdom. In rural areas, the downward trend of inequality can be observed in all regions except the southern rural area where there was an upward trend and the highest inequality level within a rural area in any region.

### V. Contribution of Spatial Differences to Overall Inequality

The urban-rural income ratio is one way to describe the gap between the two areas. However, a clearer picture emerges if the income gap between urban and rural areas is estimated in term of its contribution to total income inequality. The standard method of doing this estimation is to decompose and/or break down the inequality index by population groups. The family of generalized entropy (GE) is a widely applied technique to decompose inequality by population subgroup and has an advantage over the Gini index since it enables decomposition across partitions.

We choose one of the GE indexes, Theil L, since it is most often used to decompose inequality and can provide

**Table 2 Urban – Rural Gini Coefficient, SPI Adjusted Incomes by Regions in 1996 and 2011**

Region	Area	1996	2011	Change (%)
Whole Kingdom	Total	0.4678	0.4634	-0.93
	Urban	0.4694	0.4776	1.74
	Rural	0.4328	0.4245	-1.92
Bangkok	Urban	0.4025	0.5094	26.57
Central	Total	0.4249	0.3980	-6.32
	Urban	0.4370	0.3992	-8.65
	Rural	0.4098	0.3879	-5.36
North	Total	0.4513	0.4337	-3.92
	Urban	0.4853	0.4624	-4.72
	Rural	0.4337	0.4047	-6.70
North East	Total	0.4530	0.4573	0.95
	Urban	0.5180	0.4966	-4.13
	Rural	0.4192	0.4137	-1.31
South	Total	0.4977	0.4670	-6.15
	Urban	0.5354	0.4762	-11.07
	Rural	0.4455	0.4580	2.81

Source: SES dataset, author's calculation



interesting and internationally comparable results. The Theil L is defined as:

$$L = \frac{1}{N} \sum_{i=1}^N \ln\left(\frac{\bar{y}}{y_i}\right)$$

where  $N$  is the total number of individuals,  $\bar{y}$  is mean income and  $y_i$  is income of the  $i$ -th individual. This index can be decomposed among population subgroups as written below:

$$L = \underbrace{\sum_j \left(\frac{N_j}{N}\right) L_j}_{\text{Within}} + \underbrace{\sum_j \frac{N_j}{N} \ln\left(\frac{N_j}{N}\right)}_{\text{Between}}$$

where  $N_j$  is number of members of a subgroup (i.e. urban population),  $\bar{y}_j$  is mean income of this subgroup and  $L_j$  is the value of the Theil L for subgroup  $j$ . The first term represents the *within* part of the decomposition or the contribution of within inequality. The second term provides the contribution of *between*-groups inequality (Haughton and Khandker, 2009).

The results of inequality measured by Theil L in 1996, 2006, 2009 and 2011 are

presented in Table 3. In general, the inequality results from nominal and real Theil L have the same trend as is shown by the Gini coefficient in the previous section. For the contribution of *within* and *between* urban-rural inequality, the result from nominal income shows that the gap between areas contributed 22.8 percent in 1996 and remarkably declined to 13 percent in 2011. When real incomes are used, the contribution of between-group inequalities is much lower. The numbers are about 10.6 percent in 1996 and less than 10 percent in recent years. In contrast, the inequality within urban and rural is shown to have increased in terms of its contribution to overall inequality, though it remained the same in terms of actual Theil index.

If inequality within an area is investigated further, the result from real incomes shows that more than 60 percent of total inequality was contributed by within-rural inequality. Although within-

Table 3 Theil L Decomposed by Urban and Rural Subgroups: 1996-2011

	1996			2006		2009		2011		
	Unadjusted	Adjusted	Adjusted (exc. BKK)	Unadjusted	Adjusted	Unadjusted	Adjusted	Unadjusted	Adjusted	Adjusted (exc. BKK)
Total (area)	0.4518	0.3726	0.36661	0.4710	0.4175	0.4045	0.3696	0.3934	0.3670	0.33847
Between areas	0.1030	0.0393	0.02721	0.0687	0.0336	0.0595	0.0341	0.0510	0.0318	0.0188
Within areas	0.3488	0.3333	0.33941	0.4024	0.3840	0.3450	0.3355	0.3424	0.3352	0.31967
Within urban	0.1134	0.0925	0.067478	0.1196	0.1139	0.1191	0.1037	0.1362	0.1126	0.084665
Within rural	0.2353	0.2408	0.271932	0.2828	0.2700	0.2259	0.2318	0.2062	0.2227	0.235005
<i>Contribution (%)</i>										
Total	100	100	100	100	100	100	100	100	100	100
Between areas	22.8	10.6	7.4	14.6	8.0	14.7	9.2	13.0	8.7	5.6
Within areas	77.2	89.5	92.6	85.4	92.0	85.3	90.8	87.0	91.3	94.4
Within urban	25.1	24.8	18.4	25.4	27.3	29.4	28.1	34.6	30.7	25.0
Within rural	52.1	64.6	74.2	60.0	64.7	55.8	62.7	52.4	60.7	69.4

Source: SES dataset, author's calculation

rural has highest share in total disparity, its share slightly declined from 64.6 to 60.7 percent. In contrast, the contribution of within-urban continually increased from 0.093 (25 percent) to 0.113 (31 percent) at the same period. This means that the contribution of the urban-rural income gap to total inequality is continually overwhelmed by within-area inequality, especially from within-urban inequality. In addition, the contributions of inequality within an area and between urban and rural in *every region* are small: the urban-rural income gap contributed to total inequality less than 10 percent (result not shown). In other words, approximately 90 percent of inequality in all regions was derived from inequality within urban and rural areas.

For regional disparity, the results in Table 4 suggest that the contribution of between-regions inequality is small: results using nominal income are less than 20 percent while results from real income are less than 10 percent and this proportion continually declined over time. These results, using nominal income, are simi-

lar to those of a study by Motonishi (2003), which estimated that interregional inequalities contributed approximately 20-25 percent to total inequality during 1975 to 1998. Besides, it seems that half of the interregional inequalities come from disparity between Bangkok and other regions, as the results are reduced by half when Bangkok region is excluded from the calculation (exc. BKK).

Overall, Table 3 and 4 reveal that total inequality in Thailand mainly comes from intra-area inequality, especially intra-rural. Spatial inequalities (income gap between urban and rural and between regions) are small and continually decline over time as a result of an improvement in the balance of development, rural development and decentralization. However, even though the contributions of between urban and rural inequality and interregional inequality are small, they should not be overlooked.

Table 4 Theil L Decomposed by Regional Subgroups: 1996–2011

	1996			2006		2009		2011		
	Unadjusted	Adjusted	Adjusted (exc. BKK)	Unadjusted	Adjusted	Unadjusted	Adjusted	Unadjusted	Adjusted	Adjusted (exc. BKK)
Total (area)	0.4518	0.3726	0.3666	0.4710	0.4175	0.4045	0.3696	0.3934	0.3670	0.3385
Between regions	0.0880	0.0279	0.0140	0.0819	0.0328	0.0627	0.0264	0.0581	0.0210	0.0102
Within regions	0.3638	0.3447	0.3526	0.3891	0.3847	0.3418	0.3432	0.3353	0.2924	0.3282
<i>Contribution (%)</i>										
Total	100	100	100	100	100	100	100	100	100	100
Between regions	19.5	7.5	3.8	17.4	7.9	15.5	7.2	14.8	5.7	3.0
Within regions	80.5	92.5	96.2	82.6	92.1	84.5	92.8	85.2	79.7	97.0

Source: SES dataset, author's calculation

## VI. Source of Income Inequality in Thailand: Gini Decomposition by Income Source Analysis

In view of the large contributions to overall inequality of within-urban and within-rural, it is interesting to investigate further the information on sources of income at national, urban and rural levels by following the method from previous studies (i.e. Taylor *et al*, 2005; Lopez-Feldman, 2006; Esquivel, 2009; Van Kerm, 2009), especially as there is scarce literature employing this method in the case of Thailand. Even though the Theil index can be broken down by population subgroup, it cannot be decomposed by different sources of income. The most appropriate and widely used measure that *can* be decomposed by income source (with some manipulations) is the Gini coefficient.

According to Lerman and Yitzhaki (1985), the Gini coefficient for income inequality can be re-written as:

$$G = \frac{1}{N} \sum_{k=1}^K S_k G_k R_k$$

where  $G$  is Gini coefficient,  $S_k$  represents the proportion of source  $k$  in total income,  $G_k$  is the Gini coefficient of income of source  $k$ , and  $R_k$  stands for Gini correlation between income of source  $k$  and total income. Now since the Gini index does not support an explicit form of income source decomposition, the 'pseudo-Gini coefficient' which mimics the

Gini coefficient in some respects is used in this study instead. Although this index can be decomposed by income sources in the different way from conventional one, the result remains similar (Xu, 2004).

This method allows us to decompose the Gini coefficient and observe the influence of each income source on total income inequality. The contribution of income source  $k$  on total income inequality depends on an interaction between three factors;

- 1) How important the income source is with the respect of total income ( $S_k$ )
- 2) How equally or unequally distributed the income source is ( $G_k$ )
- 3) How much of the level of correlation between income source and the distribution of total income are correlated ( $R_k$ )

If one source of income contributes a relatively high proportion of total income (high  $S_k$ ), is unequally distributed (high  $G_k$ ) and shows a high correlation with total income (high  $R_k$ ), then it will have a large positive impact on inequality. By the same token, if that income source is quite equally distributed as indicated by a low  $G_k$ , the effect/contribution of that income source to overall inequality will be smaller. On the other hand, if the particular source of income is unevenly distributed but is strongly distributed in favour of the poor (i.e. a well-targeted government subsidy program), that

income source probably has an equalizing impact on income distribution.

In addition, the Lerman and Yitzhaki method can estimate an effect of change in one specific income source on the overall Gini coefficient, holding other things constant. Consider a small change  $ey_k$  of source  $k$  income, where  $y_k$  stands for source  $k$  income and  $e$  is close to 1. Then, the effect of a small change in percentage attributed to income source  $k$  can be estimated by considering the following equation:

$$\frac{\partial G}{\partial e} = S_k(G_k R_k - G)$$

Note that  $G$  is the Gini coefficient of total income prior to income change. Alternatively, the percentage change in inequality from a marginal percentage change in  $k$ -th source of income is equal to the initial share of income source  $k$  on overall inequality ( $S_k G_k R_k / G$ ) minus the initial share of income source  $k$ , as in the

following equation:

$$\frac{\partial G / \partial e}{G} = \frac{S_k G_k R_k}{G} - S_k$$

Decomposition results of the Gini coefficient of Thailand using income sources as categorized in Section 3 are presented in Tables 5 – 7. For simplicity, the SES datasets of only 1996, 2006 and 2011 are presented here.

In general, the characteristic ( $S_k$ ,  $G_k$  and  $R_k$ ) of each income source showed some changes during the last 15 years. At national and urban levels, total income mainly come from labour income (around 40 – 50 percent), and business profit (about 19 – 26 percent) - see  $S_k$ . Income from farming profit was approximately 20 percent of income in rural areas, 14 percent for the whole Kingdom's income and just 3 percent of income in urban areas. Rural households depend on in-kind income and remittances and assistances more than urban

Table 5 Gini Decomposition by Income Sources: Thai National Level

Income source	1996					2006					2011				
	$S_k$	$G_k$	$R_k$	$s^*g^*r/G$	Marginal effect (%)	$S_k$	$G_k$	$R_k$	$s^*g^*r/G$	Marginal effect (%)	$S_k$	$G_k$	$R_k$	$s^*g^*r/G$	Marginal effect (%)
Labour income	0.40	0.73	0.73	0.45	0.055	0.38	0.74	0.74	0.43	0.045	0.38	0.73	0.71	0.41	0.038
Business profit	0.19	0.90	0.72	0.26	0.072	0.20	0.88	0.69	0.25	0.048	0.20	0.91	0.68	0.26	0.061
Farming profit	0.14	0.82	0.41	0.10	-0.039	0.13	0.91	0.48	0.12	-0.014	0.14	0.91	0.50	0.14	-0.003
Property income	0.01	0.98	0.79	0.02	0.009	0.02	0.97	0.79	0.03	0.010	0.02	0.98	0.81	0.03	0.013
Remittance & Assistances	0.07	0.89	0.43	0.06	-0.013	0.08	0.86	0.36	0.05	-0.029	0.06	0.85	0.23	0.03	-0.037
Government & Private Transfers	0.01	0.99	0.80	0.02	0.007	0.02	0.98	0.73	0.03	0.010	0.05	0.87	0.56	0.05	0.001
Income in-kind	0.17	0.44	0.46	0.07	-0.096	0.15	0.44	0.57	0.08	-0.074	0.14	0.42	0.49	0.06	-0.077
Other	0.02	0.97	0.64	0.02	0.006	0.01	0.97	0.64	0.02	0.004	0.02	0.96	0.59	0.02	0.004

Source: SES dataset, author's calculation

Note:  $S_k$  = Share in total income;  $G_k$  = Income source Gini;  $R_k$  = Gini correlation with total income ranking.  $s^*g^*r/G$  = Contribution on the total income inequality, Marginal Effect (%) = % Change in Gini from a 1% change in income source

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Table 6 Gini Decomposition by Income Sources: Thai Urban Area

Income source	1996					2006					2011				
	$S_k$	$G_k$	$R_k$	$s^*g^*r/G$	Marginal effect (%)	$S_k$	$G_k$	$R_k$	$s^*g^*r/G$	Marginal effect (%)	$S_k$	$G_k$	$R_k$	$s^*g^*r/G$	Marginal effect (%)
Labour income	0.50	0.64	0.74	0.50	0.001	0.48	0.66	0.74	0.49	0.014	0.46	0.66	0.73	0.46	0.000
Business profit	0.26	0.84	0.64	0.30	0.040	0.25	0.82	0.59	0.26	0.005	0.26	0.86	0.64	0.29	0.035
Farming profit	0.03	0.97	0.33	0.02	-0.009	0.03	1.05	0.43	0.03	-0.002	0.03	1.08	0.42	0.03	-0.002
Property income	0.02	0.98	0.81	0.03	0.014	0.03	0.96	0.77	0.04	0.016	0.03	0.97	0.81	0.05	0.018
Remittances & Assistances	0.04	0.92	0.28	0.02	-0.017	0.05	0.90	0.35	0.03	-0.017	0.05	0.90	0.25	0.02	-0.024
Government & Private Transfers	0.01	0.99	0.71	0.02	0.007	0.03	0.98	0.72	0.04	0.015	0.05	0.93	0.66	0.06	0.013
Income in-kind	0.12	0.59	0.56	0.09	-0.037	0.12	0.53	0.63	0.09	-0.034	0.11	0.50	0.60	0.07	-0.042
Other	0.01	0.98	0.54	0.01	0.001	0.01	0.97	0.58	0.01	0.002	0.01	0.97	0.59	0.01	0.002

Source: SES dataset, author's calculation

Note:  $S_k$  = Share in total income;  $G_k$  = Income source Gini;  $R_k$  = Gini correlation with total income ranking,  $s^*g^*r/G$  = Contribution on the total income inequality, Marginal Effect (%) = % Change in Gini from a 1% change in income source

Table 7 Gini Decomposition by Income Source: Thai Rural Area

Income source	1996					2006					2011				
	$S_k$	$G_k$	$R_k$	$s^*g^*r/G$	Marginal effect (%)	$S_k$	$G_k$	$R_k$	$s^*g^*r/G$	Marginal effect (%)	$S_k$	$G_k$	$R_k$	$s^*g^*r/G$	Marginal effect (%)
Labour income	0.32	0.74	0.66	0.36	0.039	0.32	0.76	0.69	0.35	0.033	0.30	0.75	0.62	0.33	0.025
Business profit	0.13	0.91	0.71	0.20	0.067	0.16	0.91	0.71	0.22	0.056	0.15	0.92	0.65	0.20	0.057
Farming profit	0.21	0.77	0.55	0.21	-0.007	0.21	0.86	0.60	0.23	0.019	0.24	0.85	0.63	0.30	0.059
Property income	0.01	0.97	0.72	0.02	0.006	0.01	0.97	0.71	0.01	0.004	0.01	0.98	0.73	0.02	0.006
Remittances & Assistances	0.09	0.87	0.51	0.09	0.002	0.10	0.83	0.40	0.07	-0.029	0.08	0.82	0.24	0.04	-0.043
Government & Private Transfers	0.01	1.00	0.81	0.01	0.006	0.02	0.98	0.66	0.02	0.006	0.04	0.80	0.42	0.03	-0.009
Income in-kind	0.20	0.36	0.46	0.08	-0.125	0.17	0.39	0.54	0.08	-0.096	0.16	0.36	0.42	0.06	-0.103
Other	0.02	0.97	0.69	0.03	0.012	0.02	0.97	0.69	0.03	0.007	0.02	0.96	0.64	0.03	0.009

Source: SES dataset, author's calculation

Note:  $S_k$  = Share in total income;  $G_k$  = Income source Gini;  $R_k$  = Gini correlation with total income ranking,  $s^*g^*r/G$  = Contribution on the total income inequality, Marginal Effect (%) = % Change in Gini from a 1% change in income source

people. At all levels, the income sources which tend to favour the poor ( $R_k$ ) are farming profit, remittances and assistances, and income in-kind. However, the concentration of farming profit among the poor lessened as  $R_k$  at all levels has increased over time.

The results also provide the marginal impact (elasticity) of change in total

inequality resulting from a 1 percent increase in one income source (in percentage terms). Firstly, as regards *labour income*, marginal impact on inequality is positive and high at both national and rural levels, but not urban. This result, a high positive elasticity of labour income, is somewhat surprising in the case of Thailand which has a minimum wage

rate policy in order to reduce the level of income inequality in society. In reality, however, there is in Thailand a large proportion (around 40 percent) of labour in the informal sector receiving income lower than the minimum wage rate in 1996. One probable reason why the positive impact of a change in labour income on inequality moderately decreased at all levels (national, urban and rural) since 1996 is that the proportion of labour in the informal sector, which gains lower than minimum wage rate, significantly declined from 40 percent to 23 percent in 2010 (Lathapipat, forthcoming). Therefore, it is quite possible that a successful transference of labour from the informal to the formal sector is one of the keys to reduced wage inequality. Moreover, a reason why the marginal impact of labour income is neutral in urban areas could be that the formal sector in urban areas is much larger than in rural areas.

There are factors other than the transference of labour to the formal sector which have played important roles in this issue. For example, differences in education and occupation also contributed large proportions to wage inequality. In the case of the manufacturing sector, education in elementary and lower secondary was an inequality-decreasing factor, while higher education is an inequality-augmenting factor (Suwanmana, 2011). Unfortunately, the government's education budget per student is still

highly concentrated on higher education<sup>9)</sup>, such as in medical, arts and architect schools, for which students normally are willing and able to pay (NESDB, 2011).

As regards *business profit*, the marginal impact is positive and highest among all income sources in all level. This effect is to be expected because, since the beginning of the era of economic development, Thailand has chosen to develop its economy by trickle-down policy, supporting big enterprises to lead the rest of the Thai economy. Until today, big enterprises still have more potential to grow and greater competitiveness in the market than have small and medium enterprises (SMEs). While SMEs also play an important role in Thailand since they employ the majority of workers, they gain less government attention and support. Although government has claimed to have empowered SMEs through many channels for more than 10 years, SMEs still face many obstructions, and as long as these are not removed the high marginal impact of this source on inequality will remain high.

Although Thailand has passed laws such as the Anti-Monopoly Act in 1979 and Trade Competition Act in 1999 to support fair competition in the market, they are poorly implemented. For example, there are only few cases that were handled by Trade Competition Office per years. Moreover, not a single case has been submitted to the court and no

administrative fines and/or remedies have been determined since this act was passed (Nikomborirak and Rueanthip, 2012).

As regards income from *farming profit*, the marginal impact on inequality switched from negative to neutral at both the whole Kingdom and urban levels and to the highest positive in rural. This is probably because, in recent days, high farming profit comes more from large land holdings. Smallholder farmers normally farm for their own consumption and that source of income is recorded as 'income in-kind' instead. An increased number of large/high income farmer is one reason that farming profit widens the income gap in rural area. In addition, the higher price of cash crops (i.e. rice and rubber) in last few years has tended to favour large farmers rather than small farmers. In the case of rice, only large farmers (net sellers) enjoyed higher profit from selling rice while small farmers and landless farm labourers (net buyer) suffered from higher price for food (Warr, 2008). It follows that an agricultural subsidy policy like 'paddy pledging market intervention measures' should be carefully considered. This is because it benefits only large/-high income farmers, harms the poor and small farmers through higher rice price (Paopongsakorn and Jarupong, 2011) and probably widens income inequality in rural areas and whole

Kingdom.

As regards *property income*, the marginal impact has become larger, especially in urban areas, but still remains low in rural. In 2011, property income mainly came from land/room renting (54 percent) and 'saving, interests, dividends and returns from other investment' (42 percent). Income from property generates higher inequality in urban society and the whole Kingdom. It can be expected that impact would increase with increase in the number of people who buy stocks and mutual funds in the financial market because of tax and other advantages in purchasing 'Long-Term Equity Fund (LTF)' and 'Retirement Mutual Fund (RMF)'. Although, an appropriate tax structure for money market earnings is one effective way to reduce inequality, unfortunately the current Thai tax system tends to be pro-the rich. Return from interest from savings deposits is taxed at a fixed rate (15 percent) instead of at the progressive marginal rate. In addition, there is so far still no 'capital gains tax' which can collect tax from individuals who earn capital gains from dealing in financial securities in the Thai financial markets.

As regards *income from remittances and assistances*, the equalizing impact became larger at all levels, especially rural areas. This may be because in 1996 migrants who had the opportunity to work in higher-earning jobs in other

areas and to send remittances back to their original households came from households with relatively high incomes, whereas in recent years, workers from relatively poor households may have more information and/or better networks in urban area which can reduce the cost and risk of migration. Then, they have more opportunities to work in other places and send remittance back to their family. Thus in recent times an increase in the remittances and assistance income source is more likely to favour the poor and to have a larger inequality-reducing impact. This kind of phenomenon also can be found in many other developing countries (de Haas, 2008, p. 39-42).

*Income in-kind* has highest inequality-reducing effect because it includes many income sources which characterise the poor, for instance free-occupied house and unpaid foods, goods and services. *Income from government and private transfers* has an inequality-increasing effect because this income source mainly consists of welfare benefit for government officers who are normally not among the poor and educational scholarships which are allocated on ability criteria rather than equality criteria. The negative effect on inequality does not mean that government spending overall creates more inequality in society since many other kinds of government spending (i.e. free education and healthcare)

mainly benefit low-income groups but are recorded as another source of income or even are not recorded in SES.

## VII. Concluding Remarks

In this paper, different angles on income inequality between 1996 and 2011 in Thailand at national, urban and rural levels have been explored. The use of data from the Socio-Economic Survey (SES) adjusted by consumer price indices and spatial price index figures to obtain estimates of real incomes, has produced many key findings.

Firstly, the results from Gini coefficient show that the degree of real income inequality has been lower than nominal income inequality because price levels in urban areas are higher than in rural areas. However, the gap between nominal and real Gini coefficients has shrunk because of a higher growth of CPI in rural areas than in urban after 2007. Although, the inequality using nominal income has shown some decline since 1996, the real Gini coefficient reveals that there is no clear sign of reduction. Inequality in urban areas is still larger than in rural areas. Furthermore, inequality levels in urban areas, especially in Bangkok, significantly increased in last 15 years.

Secondly, the contributions of between-group inequality (between urban and rural, and between regions) to total



income inequality are relatively small (a share of less than 20 and/or 10 percent), and continually (but slightly) declined over time. In 2011, using real incomes, it was shown that around 90 percent of inequality came from inequality within areas or within regions. However, it cannot be simply inferred that spatial inequalities and any further rural development and/or decentralization are not important.

Lastly, the result from decomposition of Gini coefficients by income sources suggests that the marginal impacts of changes in labour income and business profit on income inequality are high at national, urban and rural levels, though the impact of change in labour income became neutral in urban areas in 2011. Although at whole Kingdom and urban levels an increase in farming profit still has a small reverse impact on inequality, the impact switched from small negative effect on inequality to a high positive effect on inequality in rural areas. The positive marginal impact of property income on inequality in Thailand is obviously high at whole Kingdom and urban levels but not in rural areas. As an inequality-reducing force, income in-kind still has the highest negative impact on inequality while the impact of income from 'remittances and assistances' has become larger and more important for the alleviation of inequality.

Overall, this study shows that, in term

of real prices, the level of income inequality has remained stable for the last 15 years. Major contributions to inequality are coming from within-areas (urban and rural) and/or within-regions. The issues of wage inequality, supporting SMEs, encouraging free and fair competition in markets, a capital gain tax, and reducing agricultural price distortion are issues which governments should seriously pay more attention and take more action, if their priority really is the reduction of inequality. For further research, the analysis of income inequality using disposal income (income after tax) is a challenge; and deeper investigations for practical policy implementation are needed.

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#### **Notes**

- 1 ) This paper is published in the special issue for the Economic Research Center after reviewed by referee invited by the Center.
- 2 ) Exception is the first plan which covered 6 years.
- 3 ) Between 1988 and 2010, poverty (expenditure) headcount ratio at whole Kingdom

- reduced from 50 to 10 percent approximately.
- 4) Individual sampling weight of  $j$ th household = (household sampling weight of  $j$ th household) \* (household size of  $j$ th household)
- 5) According to the NSO, an educational scholarship belongs to the 'other income' category. However, in this study, an educational scholarship is considered as one kind of government/private transfer. Thus it is reclassified in the government/private transfer category instead.
- 6) There are 3 sets of CPI in Thailand: urban consumer price index, urban low income consumer price index and rural consumer price index.
- 7) Between 1996 and 2011, total population increased from 55.3 to 63.2 million and proportion of urban to total population rose from 27.8 to 33.6 percent. In addition, the definition and size of urban and rural areas remain the same.
- 8) For simplicity, this paper has called income adjusted CPI and SPI as 'SPI adjusted income' or 'real income' only.
- 9) Students in higher education receive government budget more than students in basic education approximately 3-7 times (NESDB, 2011, p. 39).

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