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An Application of Input-Output Multiplier to the Foster-Greer-Thorbecke Poverty Index: A Case of Thailand

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Abstract

This paper theoretically develops the Foster-Greer-Thorbecke poverty index using sectoral multipliers from an Input-Output Table and also applies the model to the Thai economy. This new method is based on the ideology of Hirschman's unbalanced growth. To end the gap between the poverty line and individual income resulting in zero poverty, a different size of government subsidy is required based on the assumption that industrial policy can indirectly affect the poor through the employment channel. According to this study, it suggests that Thailand has successfully reduced poverty overtime because it, on average, requires a smaller amount of subsidy necessary to end this gap. However, a challenge in improving the well-being among workers in the agricultural sector still exists due to a relatively small increase in its backward linkage between 2005 and 2010 indicating that some massive injections through the pro-poor policy should be prioritized to this sector.

Keywords: Poverty, Foster-Greer-Thorbecke Class of Poverty, Input-output Table

1. Introduction

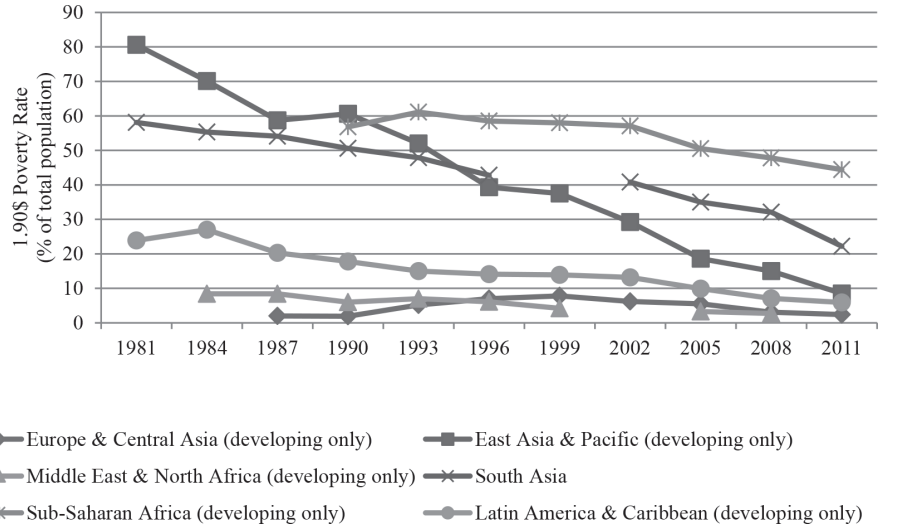
Poverty reduction is a core of economic development. Poverty can be viewed as both cause and consequence of socio-economic problems. It is deprivation of well-being among citizens. Also, it can retard the development process along with other contemporary issues including income inequality and unemployment (Seers, 1969).

In a global perspective, we can see that poverty is a crucial issue as it is listed as the first goal of both Millennium Development Goals (MDGs) and Sustainable Development Goals (SDGs) proposed and supported by the United National Development Programme (UNDP). The prominent task among development economists is to define "poverty" and to measure, notice, and target it efficiently. Nevertheless, this task sometimes gives us an assiduous and daunting work because there are numerous measurements developed to understand poverty. If the poor are measured inappropriately, it is possible for a country to be unsuccessful in tackling this problem. Also, to know the number of the poor in one country helps policymakers propose more proper pro-poor policies and monitor the development projects (Ravallion, 1998; World Bank Institute, 2005).

Traditionally, either income or expenditure is a benchmark to represent the well-being of people. We need to set a criterion (threshold) to separate the poor from other people, namely non-poor people. Characteristics of the poor are unique but still far from a consensus. In a comprehensive sense, they include a low level of incomes, an inability to obtain and sustain the essential goods and services, poor health and education, malnutrition, inaccessible clean water, pollution, insecurity, powerlessness, low productivity, small saving, and also not having access to credit. However, not every poor person has to hold these features. In several cases, the poor are surprisingly not notably different from other people in term of behavior and taste, but they just face a unique constraint (limited resources) to pursue their life and willingness (Banerjee & Duflo, 2007). Alternatively, an ability to function as a freedom of life is another way to intrinsically measure the poor (Sen, 1987). Multidimensional poverty measurement is another way to understand the poor by considering several dimensions simultaneously, for example, deprivation in health and education and low income (Alkire & Foster, 2011). Thus, poverty is deliberately explored through many dimensions, not only the amount of money spent in daily life.

In addition to several definitions, the most widely used poverty indicator is still a poverty Head Count Index (HCI) or poverty rate. It is due to its simplicity in measurement and implication. It refers to a proportion of population whose either income or expenditure is lower than a poverty line. Hence, the critical part of this indicator is how to calculate the poverty line accurately. We can separate the poverty line into two types including the international poverty line (World Bank poverty index) and the national poverty line (the average of income in each country issued by the national statistic organization). Of course, poverty rate across nations and across time varies upon the poverty line (Sen, 1987; United Nations, 1998). Poverty rate by regions measured at 1.90 U.S. dollar a day between 1981 and 2011 is shown in figure 1.

Figure 1. Poverty rate by regions at 1.90 U.S. dollar per day



Source: World Bank (2017)

As shown in figure 1, the poverty rate in all areas impressively decreased from 1981 to 2011. A regional poverty rate declined differently. Poverty dramatically reduced in East Asia and Pacific countries, from 80 percent in 1981 to less than 10 percent in 2011. It is because of a considerable poverty

reduction in China. Poverty in Latin America steadily declined over the same period. However, it was likely that Sub-Saharan Africa still struggled with getting the poor out of poverty because its poverty rate, on average, did not fall much. Presently, poverty is still noticeable although almost all regions can halve poverty rate between 1990 and 2015 and achieve the first goal of the MDGs.

Even though the poverty headcount index is the most popular indicator of poverty, its significant shortcoming is that it does not provide us the difference of living standard among the poor who live below poverty line. People whose earning or expenditure are around the poverty line are far better than those who are living in a destitute condition. Additionally, the government still lack an indicative amount of revenue that should be devoted to ending poverty. This drawback leads to a development of measurement named the poverty gap pioneered by Sen (1976). It demonstrates the difference between the poverty line and actual individual income. It can be understood as a minimum amount necessary to close the gap and end poverty incidence. The government can use this measurement as a rough indicator to their in-cash subsidies. Poverty gap is developed further and then can be expressed as the percentage of the poverty line. Total poverty gap index in each region is shown in table 1.

Table 1. TPG index at $1.25 poverty line in 1990 and 2011 (Percentage of the poverty line)

Regions	1990	2011	Change
Eastern Asia and Pacific	19.46	1.56	-91.98
Europe and Central Asia	0.41	0.14	-65.85
Latin America and Caribbean	4.00	2.17	-45.75
The Middle East and Northern Africa	1.07	0.35	-67.29
Southern Asia	16.28	5.16	-68.30
Sub-Saharan Africa	25.47	19.18	-24.70

Source: The World Bank (2017)

According to table 1, TPG was declined in all regions between 1990 and 2011. Eastern Asia and Pacific countries highly accomplished in reducing this index as it fell from 19.46 percent of the poverty line in 1990 to only 1.56 percent of the poverty line in 2011. Also, Southern Asia and the Middle East and Northern Africa were still able to rise the well-being of the poor. Nonetheless, Sub-Saharan Africa had highest TPG index, around 19.18 percent of poverty line indicating that the poor in this region strongly need an additional income by 20 percent of the poverty line to become the non-poor. It is consistent with the data shown in figure 1. In conclusion, regarding policymaking, this index is beneficial because it at least signifies and roughly quantifies the required efforts of the government in poverty reduction plan.

2. Literature reviews

The widely accepted panacea to reduce poverty is an economic growth measured by an increase in per capita Gross National Income (GNI). This idea is called "an economic growth elasticity of poverty (GEP)." It is referred to poverty reduction caused by economic growth (Ravallion & Chen, 1997; Kalwij & Verschoor, 2004; Perrota, 2007; Takeda, 2009).

Besides economic growth at a national level, a source of growth linking to poverty has been increasingly studied through an information contained in the Social Accounting Matrix (SAM). It is developed to picture an economic impact of policy, namely exogenous macroeconomic shocks, to economy overall. Total impacts are divided into direct, indirect and induced effect which altogether contribute to total impact borne by economy (Miller and Blair, 2009). Using this economic matrix, we can derive a SAM multiplier demonstrating the impacts from a change in final demand in one specific sector to economy overall. A change in a given sectoral output due to some policies leads to a change in the demand for intermediate inputs – both domestically produced input and imported input. As final output is a composition of intermediate output and value added from production factor, an increase in production eventually requires more value added to sustain this growth. A share of wages in total output is then a key to poverty reduction. Hence, poverty reduction can be accelerated through an increase in the final demand and government subsidy because labors, both poor and non-poor, will be more

demanded (Thorbecke & Jung, 1996; Klan, 1999; Civardi & Lenti, 2006; Durongkaveroj, 2015).

Also, a macroeconomic shock can be viewed through the concept of low-level equilibrium trap (Nelson, 1956; Leibenstein, 1957). The economy requires a massive injection, not a piecemeal attempt, to break the vicious cycle. In this study, a minimum effort of subsidy is assessed using the theory and practice of Input-Output table.

3. Methodology

Poverty gap was developed by Sen (1976) aimed at demonstrating the amount of money required to get the poor out of poverty. It is critical for policymakers, especially in designing pro-poor policies. Poverty gap can be written as following;

$$PG_i = \left(Y_p - Y_i\right) \tag{1}$$

Where PG_i is poverty gap, Y_p is poverty line, and Y_i is individual income. PG_i is nonnegative for the poor and negative for others.

This idea was developed to poverty gap index developed by World Bank Institute (2005) as following;

$$PGI = \frac{1}{N}\sum\nolimits_{i=1}^{N} \frac{PG_i}{Y_p} \tag{2}$$

Where PGI is poverty gap index and N is total population. Here, this gap is treated to be zero for the non-poor[1].

However, one of the major drawbacks of poverty gap index is that it treats total population equally. It was developed further to capture more about the severity of poverty which means that the distance between the poverty line and real income is more highlighted. It is to put more weights on observations falling under the poverty line. This method is so-called "Squared Poverty Gap Index" (SPG). Inequality among the poor is prioritized through this index. It can be written as following;

[1] Where equation (1) is negative.

$$SPG = \frac{1}{N}\sum_{i=1}^{N}\left(\frac{PG_i}{Y_p}\right)^2 \tag{3}$$

Equation (3) can be seen of "Foster-Greer-Thorbeck Poverty Index" (1984) written as following;

$$FGT_\alpha = \frac{1}{N}\sum_{i=1}^{N}\left(\frac{PG_i}{Y_p}\right)^\alpha \tag{4}$$

Where α is poverty parameter. If α is 0, FGT is the poverty rate. If α is 1, FGT is PGI. However, if α is 2, this index is SPG.

Higher α refers to greater weight to the poor, especially the poorest in society. Also, higher FGT means more prevalence of poverty. From expression (4), it can be expanded using the information from expression (1) as following;

$$FGT_\alpha = \frac{1}{N}\sum_{i=1}^{N}\left(\frac{Y_p - Y_i}{Y_p}\right)^\alpha \tag{5}$$

In this case, a change, even higher or lower, of FGT depends on 1) poverty line 2) individual income 3) the number of population and 4) poverty parameter. The poverty line, in this case, can be either international poverty line calculated by the World Bank or national poverty line provided by the national statistics office or related institution of each country. Individual income can be obtained through a household socio-economic survey with the weight of population. Lastly, poverty parameter is assumed.

For an application, a change of income as a change of exogenous shock or injection was developed by Pyatt and Round (1979) through a framework of Input-Output (I-O) Table and also Social Accounting Matrix (SAM). A change of individual income can be expressed as following;

$$dy_i = m_h dx_i \tag{6}$$

Where dy_i is a change of endogenous incomes in each person, m_h is an I-O multiplier[2] in each sector, and dx_i is a change of exogenous injection in each person.

A reason behind this multiplier is the linkage analysis pioneered by Hirschman (1958) emphasizing that gain from economic development can be maximized by directing investment only in critical sectors. It is a concept of unbalanced growth. It is referred to a sequence of investment implying that the economy should focus on the industries having high economic linkage. An application of this study relies primarily on this concept.

The economic sector can be disaggregated using different assumption. In this study, multipliers in 26 industries are examined from 2005 and 2010 Thailand's I-O table published by NESDB (2017). This study uses 26x26 I-O table including crops (001), livestock (002), forestry (003), fishery (004), mining and quarrying (005), food manufacturing (006), beverages and tobacco products (007), textile industry (008), paper products and printing (009), chemical industries (010), petroleum refineries (011), rubber and plastic products (012), non-metallic products (013), basic metal (014), fabricated metal products (015), machinery (016), other manufacturing (017), electricity and water works (018), construction (019), trade (020), restaurants and hotels (021), transportation and communication (022), banking and insurance (023), real estate (024), services (025), and unclassified (026). Also, I-O multiplier is derived from a decomposition technique advanced by Thorbecke and Jung (1996). Thus, expression (6) show how endogenous income changes as a result of the injection.

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[2] Input-Output multiplier here is based on backward linkage. It can be derived as following;

$$AX + Y = X$$
$$(I - A)X = Y$$
$$X = Y(I - A)^{-1}$$

Where A is Leontief's coefficient matrix, X is total output, Y is final demand and $(I - A)^{-1}$ is Leontief domestic inverse matrix (namely, multiplier). Multiplier here provides an information on the backward linkages. It indicates output of all other sectors necessary to sustain an increase in output of sector j (Athukorala & Santosa, 1997).

In this study, it is assumed that a change in individual income (Y_i) is straightforward to dy_i. Then, substitute equation (6) in (5);

$$FGT_\alpha = \frac{1}{N}\sum_{i=1}^{N}\left(\frac{Y_p - m_h dx}{Y_p}\right)^\alpha \tag{7}$$

Where $m_h dx$ is used instead of individual income, the number of population in this case is the total number of economic sector, 26 sectors. Other notations are similar to previous equation.

According to expression (7), a level of FGT depends on 1) poverty line 2) I-O multipliers in each sector, 3) a magnitude of exogenous injection, and 4) the number of population. Information on the poverty line, multiplier, and I-O multiplier are given. However, dx is missing. It can guide policymakers to a proper amount of subsidy aimed at eradicating of poverty. To close poverty gap, individual income must be equal to the poverty line. It can be derived as following;

$$Y_p = Y_i \tag{8}$$

Then,

$$Y_p = mdx \tag{9}$$

Rearrange,

$$\frac{Y_p}{m} = dx \tag{10}$$

Thus, an appropriate amount of minimum injection aimed at zero poverty in the different sectors can be found from expression (10).

4. Results

An objective of this study is to derive an equation connecting FGT index and I-O multiplier. To obtain an applied FGT index requires an individual information for every person in Thailand. Unfortunately, Thailand's household socio-economic survey collects data, in general, in a household level. An implication from household to individual level can, by some means, yield a huge variation. However, this may not limit the study of any other

countries conducting an individual-level survey. Here, I try to calculate an indicative magnitude of economic shock in each sector using equation (10).

Poverty line and poverty rate are shown in table 2.

Table 2. The 2005 and 2010 Thailand's poverty line and poverty rate

Indicators	2005	2010	Δ2005-2010 (%)
Poverty Line (Baht per month)	1,826.67	2,284.71	25.0751
Poverty Rate (Percent of total population)	24.35	16.37	-32.772

Source: NESDB (2017)

Notes: Poverty line for 2005 is not available. The author calculates an average of poverty line between 2004 (1,718.85 Baht per month) and 2006 (1,934.49 Baht per month).

According to table 2, the poverty line was increased from 1,826.67 Baht per month to 2,284.71 Baht per month between 2005 and 2010. As the poverty line has to be revised every year based on citizen's purchasing poverty, the poverty line is, thus, expected to be increased gradually. If there is no change in the well-being of citizens, the poverty rate is automatically increased as a result of a higher standard. However, poverty rate above was declined over the same period from 24.35 percent to 16.37 percent. It is, of course, indicated that Thailand has successfully reduced poverty. The quality of life among the destitute can be expected to rise.

I-O multipliers measuring a backward linkage to the economy in each sector in the year 2005 and 2010 are presented in table 3.

Table 3. The 2005 and 2010 I-O Multipliers

Sector	2005	2010	Δ2005-2010
Crops (001)	1.36	1.69	0.32
Livestock (002)	2.06	2.40	0.33
Forestry (003)	1.31	1.56	0.25
Fishery (004)	1.66	2.25	0.59
Mining and Quarrying (005)	1.43	1.83	0.40
Food Manufacturing (006)	**2.07**	2.59	0.53
Beverages and Tobacco Products (007)	1.52	2.05	0.53
Textile Industry (008)	1.99	2.78	0.79
Paper Products and Printing (009)	1.53	2.65	1.12
Chemical Industries (010)	1.54	2.61	1.06
Petroleum Refineries (011)	**1.10**	2.52	1.42
Rubber and Plastic Products (012)	1.89	2.71	0.82
Non-metallic Products (013)	1.77	2.59	0.82
Basic Metal (014)	1.72	3.09	1.37
Fabricated Metal Products (015)	1.37	3.13	1.76
Machinery (016)	1.45	**3.27**	**1.82**
Other Manufacturing (017)	1.55	2.87	1.32
Electricity and Water Works (018)	1.71	2.36	0.65
Construction (019)	1.87	2.95	1.07
Trade (020)	1.30	1.45	**0.14**
Restaurant and Hotels (021)	1.91	2.44	0.53
Transportation and Communication (022)	1.76	2.52	0.76
Banking and Insurance (023)	1.45	1.64	0.20
Real Estate (024)	1.22	**1.40**	0.18
Services (025)	1.45	1.85	0.40
Unclassified (026)	2.23	2.73	0.50

Source: Author calculation using data from NESDB (2017)

According to table 3, I-O multipliers are likely to increase in all sectors from 2005 to 2010. It means that the inter-industry relationship is stronger. A higher I-O multiplier promises a higher return to total output once there is a change in its final demand through policy shock. In 2005, the multiplier of food manufacturing sector (Sector 010) was highest while the lowest is petroleum refineries sector (Sector 011). It means that an increase in final demand in food manufacturing sector by 1 million baht will generate growth of overall output in the economy by 2.07 million baht[3]. Moreover, the second highest I-O multiplier is the food manufacturing sector (Sector 026). In 2010, machinery sector (Sector 016) shared the highest I-O multiplier while the multiplier derived from real estate sector (Sector 024) is lowest. Between 2005 and 2010, an expansion in I-O multiplier is highest in machinery sector (Sector 016) while lowest in trade sector (Sector 020). A change of I-O multiplier is referred to the structural transformation of the economy. It is also for a policymaker to design the proper industry to be strongly endorsed through investment.

As suggested by equation (10), the different sector containing the different value of I-O multiplier causes a different magnitude of policy shock. The minimum requirement for income injection in each sector is shown in table 4.

[3] 2.07 million baht to Thai economy as a result of this positive shock stems from an increase in the demand for intermediate input used by food manufacturing sector.

Table 4. Minimum requirement to eradicate of FGT Poverty Index between 2005 and 2010

Sector	2005	2010	Δ2005-2010
Crops (001)	1,343.14	1,351.90	8.76
Livestock (002)	886.73	951.96	65.23
Forestry (003)	1,394.40	1,464.56	70.15
Fishery (004)	1,100.40	1,015.43	-84.98
Mining and Quarrying (005)	1,277.39	1,248.48	-28.92
Food Manufacturing (006)	882.45	882.13	-0.32
Beverages and Tobacco Products (007)	1,201.76	1,114.49	-87.26
Textile Industry (008)	917.92	821.84	-96.09
Paper Products and Printing (009)	1,193.90	862.15	-331.75
Chemical Industries (010)	1,186.15	875.37	-310.78
Petroleum Refineries (011)	**1,660.61**	906.63	-753.98
Rubber and Plastic Products (012)	966.49	843.07	-123.43
Non-metallic Products (013)	1,032.02	882.13	-149.89
Basic Metal (014)	1,062.02	739.39	-322.63
Fabricated Metal Products (015)	1,333.34	729.94	-603.40
Machinery (016)	1,259.77	698.69	-561.08
Other Manufacturing (017)	1,178.50	796.07	-382.43
Electricity and Water Works (018)	1,068.23	968.10	-100.13
Construction (019)	976.83	774.48	-202.35
Trade (020)	1,405.13	1,575.66	170.53
Restaurant and Hotels (021)	956.37	936.36	-20.02
Transportation and Communication (022)	1,037.88	906.63	-131.25
Banking and Insurance (023)	1,259.77	1,393.12	133.34
Real Estate (024)	1,497.27	**1,631.94**	134.67
Services (025)	1,259.77	1,234.98	-24.79
Unclassified (026)	819.13	836.89	17.76

Source: Author calculation

According to table 4, a different sector requires a separate minimum effort from the exogenous economic shocks (government subsidy) to effectively eliminate poverty. Simply put, it is an amount that narrows the gap between the proposed poverty line and the actual income. However, its benefit is not merely to reduce the FGT index but also Sen's poverty gap and the traditional poverty rate. In 2005, the minimum effort was highest in petroleum refineries sector (Sector 011) while lowest in the unclassified industry (Sector 026). This result is straightforward to the value of I-O multiplier. With a given poverty line, the lower the multiplier, the higher the effort required. As poverty line is treated equally among all sectors, this minimum requirement depends only on the multiplier derived from I-O table. An income among people working in petroleum refineries still needs more 1,663.87 Baht per month while only 819.72 Baht per month for other sectors. This information can help us to expect how the poor are affected by an expansion of some economic areas.

In 2010, the government needed to give the maximum effort in an investment in the real estate sector (Sector 024) while it requires only a small subsidy in machinery sector (Sector 016). It is because the real estate sector has the lowest output multiplier. An increase in the final demand of this sector gives the least benefit to the economy. Labor working in this sector is likely to receive the relatively low wage. From 2005 to 2010, an increase in minimum effort is highest in trade sector (Sector 020) and lowest in petroleum refineries sector. Even though a total impact from machinery sector (Sector 016) increases the most between 2005 and 2010, the minimum effort aimed at ending poverty is not lowest because the growth rate of the poverty line over this period is not equal to a change of I-O multiplier.

Additionally, the average critical minimum effort is lower from 1,159.71 Baht per month to 1,016.71 Baht per month. The primary factor affecting this achievement is a change in multiplier across all sectors. Thus, cost of eradicating poverty is likely to decrease according to this result.

5. Discussion

An unbalanced growth theory initially advocated by Hirschman (1958) is taken into account in this study. Instead of promotion of all economic sectors

equally, only crucial areas should be highlighted aimed at different objectives. This study tries to minimize poverty, measured by the well-known FGT index, by different size of the increase in final demand in each sector. This last demand can be increased by various ways, for example, government subsidy, foreign demand (export), and trade policies. To eliminate poverty efficiently, this paper suggests a specific sector that the government should have concerns.

However, a connection to poverty is provided in a fairly abstract way. It is assumed that workers in the different sector are paid differently. This line of reason is based on the fact that wages across industries are hugely different (National Statistical Office, 2016). Based on I-O multiplier, an expansion of each sector leads to an unequal gain to the economy overall. Workers in each sector are thus affected differently. Even though the poor are not spread evenly across all sectors, it is believed that an increase in the final demand in some industries will spur employment in that sector. As the given poverty line is used to measure the minimum effort across all sectors, the poor, no matter where they work, are treated with the same criteria. In fact, this minimum effort can be derived directly from I-O multiplier. Theoretically, once this gap is closed, it benefits not only the poor but also a non-poor worker. In conclusion, the result from table 4 is not a perfect recommendation to the government regarding an actual expenditure needed to spend in each sector, but it can be used as a guideline to see how workers in each sector are affected by the government subsidy.

Nonetheless, it should be noted that an application to Thai data has been limited by several factors. Firstly, the official poverty is not calculated based on economic sector. Instead, NESDB only publishes the national poverty line. To use a single value of the poverty line causes the amount of minimum injection relies solely on the output multiplier. Further development is to generate a different value of the poverty line across industries. The result is needed to interpret with cautions. Secondly, the current poverty rate in Thailand is quite low. There is zero extreme poverty defined by the World Bank. Hence, to require the government to inject money into some specific sectors, other than agricultural sector, may be questionable. Thirdly, as the minimum effort relies hugely on the output multiplier, the policy recommendation coming from this study might not be valid due to the fact that employment generation

is less relevant to output multiplier under the growing feature of vertical integration. A sector having high output multiplier is not necessary to create jobs.

6. Conclusions

Even though the poverty gap gives more information about poverty than poverty ratio, its main drawback is too broad to display clearly about the characteristics of the poor working in the different sector, especially agricultural sector.

This study aims to develop the Foster-Greer-Thorbecke poverty index by using the concept of Input-Output multiplier. As it is straightforward to poverty gap, it shows the cost of eliminating poverty because it refers to an exact amount of money which have to be transferred to the poor to bring their income up to the poverty line. As this new poverty indicator is based on FGT measure, it still leaves unanswered the question about the best value of α. However, it brings the emotional appeal back to poverty indicator because it shows the amount of money required to add in the different sector. Moreover, the characteristics of each economic sector are considered based on its multiplier derived from I-O table. It is contrary to other benchmarked poverty measures which generally illustrate the performance of well-being among citizens in the broad picture.

The results from the new model suggest that Thailand has significant progress to reduce the problem of poverty. It is observed from the lower average minimum critical effort between 2005 and 2010. As the poor are more likely to live in an agricultural sector, the minimum requirement is higher among agricultural sectors (Sector 001, 002, and 003). It means that the cost of eliminating poverty in these sectors is relatively high. Regarding policy guidance, the priority of exogenous macroeconomic shock needs to set in the following industries: crops, forestry, fishery, mining and quarrying, beverages and tobacco products, trade, banking and insurance, real estate, and services.

This indicator is an alternative to government and policymakers to deal with poverty, especially in macro-level. However, the core limitation of this indicator is the availability of Thailand's I-O table. To predict and suggest

the future policy based on this indicator requires an updated I-O table. Several extensions could be conducted in the future:

1. I-O table could be disaggregated into more economic sectors to suggest more specific policies.

2. Besides I-O table, this indicator could be applied to SAM which contains more detail towards the economic structure.

3. There should be an assessment of the money invested in the actual development program and the proposed amount of injection to figure out how much have to be devoted to ending poverty.

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