

DOES THE SECTORAL ECONOMIC GROWTH MAKES THE POOR RICHER?

CASE OF THAILAND

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Abstract

Thailand has magnificent progress during the past ten years in terms of poverty eradication. However, there are still 5.33 million Thai people struggling with poverty in 2017. There are up to 620,540 people living in extreme poverty. This paper aimed to investigate the role of economic growth on poverty reduction from macro-economic perspective and try to find the empirical evidences to support that the aggregate and sectoral economic growth (agriculture, industrial, and service sector) can help lowering poverty incident. Based on a classical linear regression model, we found that the results are analogous to the theoretical framework in which aggregate and sectoral economic growth play a significant role in poverty reduction. While increasing in food prices worsen the poverty incidence.

Keywords: Poverty Incidence, Economic Growth, Sectoral Economic Growth

JEL CLASSIFICATION: O15, D31, I32

1. Introduction

In economics, "Poverty" is a monetary term of income or expenses measurement of people that are below the appropriate standard living of people in society (World Bank, 2005) or lower than the average income of society known as poverty lines. Those people having income below the standard level of society will be considered as the poor. The word "poor" is a universal language used to call those who lack key capabilities, inadequate income or education, be in poor health, feel powerless, or lack political freedoms. It is believed that the poverty problem is "man-made" (Mandela, 2011), in which the characteristics of poverty faced by the individual, household, society or country. This might be different from their socioeconomic factors, geographical location, and government policies, not a natural selection. Economists have developed the measurement to measure poverty, such as the Headcount Index (HI), the Poverty Gap Index (PGI), and the Severity of Poverty Index. One of the easiest and well-known tool is "Poverty Line". It is an average line of income or expenditure of people in society. When a person has income or living expenses below the poverty line, that person is considered poor. There are four reasons why poverty need to be measured; first, to keep the poor on the agenda, without poverty measured, the poor would be easily left behind. Second, measuring poverty can identify directly who are the poor and allows the government to set the right target group to alleviate poverty. Third, to monitor and assess policy interventions that are geared towards the poor. And finally, to evaluate the effectiveness of institutions whose goal is to help the poor (World bank, Poverty Manual, All, JH Revision, 2005).

In Economic Development literature, there are two types of poverty problems by its definition. Firstly, "*absolute poverty*" refers to the problems when an individual, household, or society does not have access to the basic requirements of life, for instance, food, shelter, clothing, and medicine. These people are extremely struggling with finding a living. Absolute poverty does not consider other factors that are wider than the basic needs of individuals. For example, an individual is facing the absolute poverty problem as they have an inadequate income to afford accommodation. Another dimension of poverty definition is "*relative poverty*", it is a problematic situation when individuals are excluded from being able to take part in what is considered the normal, acceptable standards of living in a society. It is a measurement of poverty by comparing the quality of life of one person with the average standard of living of the whole society (Worldbank, Poverty Manual, All, JH Revision, 2005). For instance, an individual might relatively feel poorer to the average majority of people in their village as they have less income comparing to others.

For Thailand, the situation of poverty has improved continuously. The proportion of poor people has decreased continuously for ten years from 21.94 to 4.8 million or declined by 67% within ten years (See Figure 1). It was impressive progress reported in accordance with the World Bank (Worldbank, 2017) indicating that the situation of Thai poverty has been improved outstandingly comparing to neighboring countries. However, the current number of Thai poor people reported by Thailand National Economic and Social Development Board (NESDB) in 2017 has a total of **5.325 million people or 7.87% of the population** (NESDB, 2019), which is something Thailand still cannot be proud of and claim its triumph over poverty combat.

Poverty in Thailand (unimpressive progress) 5.33 Million poor in (2018)

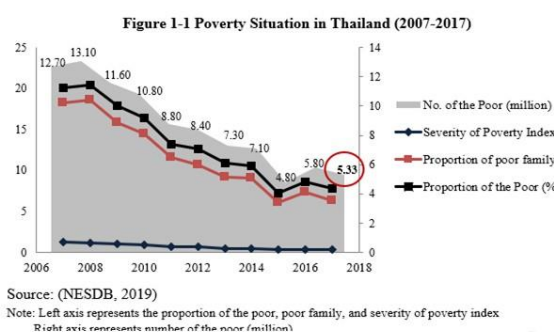
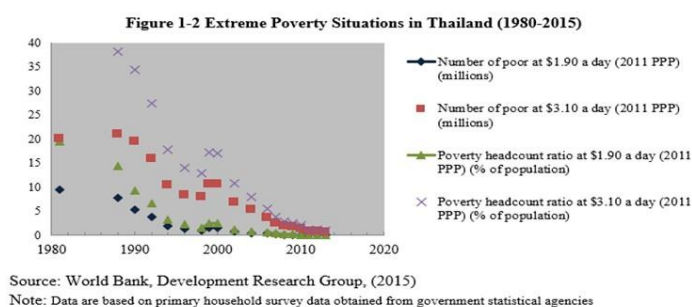


Figure 1 Poverty Situation in Thailand (2007-2017)

Source: (NESDB, 2019), pictures retrieved from internet

At the same time, if considering the “**extreme poverty**” situation in Thailand represented by the number of the poor living below \$1.90 and \$3.10 per day from 1980-2015 (see figure 2), the number of poor who suffer severe poverty is around **26,980** and **620,540 people** respectively (Worldbank, Household survey data, 2015). Even this amount accounted only for 1% of the population, but it claims that the absolute poverty problem still exists. Therefore, no one should be left behind.

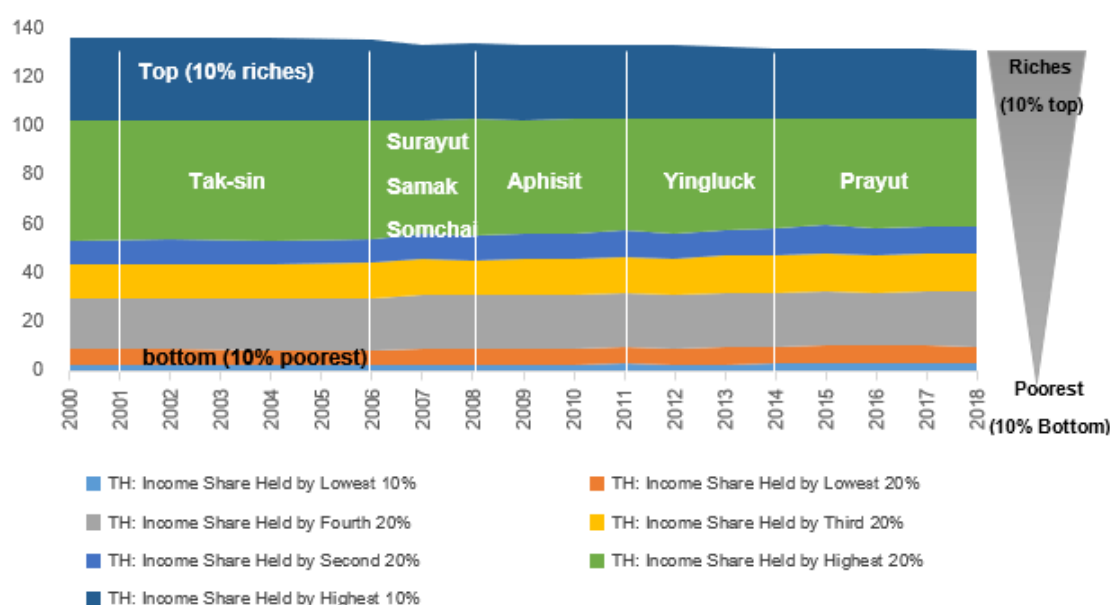


- Extreme Poverty**
 the poor living below \$1.90 (60B.) and \$3.10 (100B.) per day from 1980-2015 (see figure 2), the number of poor who suffer severe poverty is around **26,980** and **620,540 people** respectively (World bank, Household survey data, 2015).
- Even this amount accounted only for 1% of the population, but it claims that the absolute poverty problem still exists. Therefore, no one should be left behind.

Figure 2 Extreme Poverty Situations in Thailand (1980-2015)

Source: World Bank, Development Research Group, (2015), pictures retrieved from internet

We also know that the poverty is the partial consequences from the income distribution. In case of Thailand, the income inequality is considered the main issue for economic development. We encounter this structural inequality between the rich and the people with low wealth position in our society since the past to present. Figure below illustrates that the income sharing among each income class is not in the balancing distribution. Regardless of which prime ministers, the income of top richest or top 10% and upper middle-income class take more than half of the income of the whole country. Whereas the poor and poorest of the poor received lower than 3% of the whole income. The imbalance structure remains unchanged for almost 20 years since 2000 onward.



Income Inequality in Thailand 2000-2018

Source: World Bank, CEIC (Compiled by authors)

All statements mentioned above are only monetary poverty where poverty is measured using the monetary term. Besides, if we consider poverty in a wider and more touching dimension, for example, well-being, health, and education, we can see the poverty problem in the wider dimension. Whether or not these numbers can reflect the actual poverty situation. As a later definition of poverty covered both income and non-income dimensions, it is important not to overlook "non-income poverty". A later study has put further poverty measurement and has developed other indicators, for example, The Human Poverty Index (HPI) and The Regional Human Achievement Index (RHAI).

The United Nation Development Programme (UNDP), therefore, developed the "Multidimensional Poverty Index (MPI)" to destroy the imitation of income-poverty. MPI was co-designed and launched in 2010 by cooperation with The Human Development Report Office (HDRO) and the Oxford Poverty and Human Development Initiative (OPHI). It provided a new methodology to measure poverty which takes multidimensional health, education, and standard of living into the calculation. As a result, this becomes the new era of poverty analysis that needs to integrate various dimensions into measurement and consequently requires more dimensional approaches to alleviate the problem.

Many approaches to combat poverty have been studied by economists throughout the world including the Poverty Reduction Strategy Paper (PRSP) process suggested by World Bank in 1999 (World Bank, Poverty Manual, All, JH Revision, 2005), a comparative perspective on poverty reduction (Ravallion, 2009), poverty reduction through long-term growth (Warr, 2009), trade liberalization and poverty (Winters et al., 2004), industrialization, employment and poverty (P. Athukorala and K.Sen, 2015), understanding the economic lives of the poor (Abhijit V. Banerjee and Esther Duflo, 2007) and income, health, and well-being around the world (Deaton, 2008). However, the concept of well-being, poverty profile, and determinants of poverty of each country are different based on different demographical presentations, economic characteristics, socioeconomic factors, and government policies. Therefore, suitable approaches to end poverty need to be well-designed, target the right spot, and sustainable.

This paper, therefore, aimed to find evidence to support our hypothesis if the long-term economic growth and sectoral economic growth (agriculture, industrial, and service sector growth) has significantly relation to poverty reduction in Thailand. The study will benefit multiple stakeholders whose goals to end poverty. Firstly, this study will support the PRSP of the World Bank, and help improve the capacity of analysts, researchers, and statisticians in developing countries especially in the ASEAN region. Secondly, the Thai government and the National Economic and Social Development Board (NESDB) whose main purpose to develop and monitor the economic and social development of the country. Lastly, this study will contribute to those passionate researchers throughout the globe who engaging the field of poverty and inequality.

2. Literature Review

2.1.1 Poverty Definition

According to the World Bank's Poverty Analysis Initiative (PAI) (2005), "**Poverty is pronounced deprivation in well-being.**" The conventional view links well-being primarily to command over commodities, so the poor are those who do not have enough income or consumption to put them above some adequate minimum threshold. This view sees poverty largely in monetary terms. Thus, the people who live their life below the average adequate minimum threshold of society will be considered as the poor. In common sense, the poor most likely to lack key capabilities, and may have inadequate income or education, or be in poor health, or feel powerless, or lack political freedoms. On the other hand, it can conclude that poor are those people living below the poverty line. Poverty, however, may also be tied to a specific type of consumption; thus, someone might be house poor or food poor, or health poor. These dimensions of poverty can often be measured directly, for instance by measuring malnutrition or literacy. After 2018, World Bank has put further definition beyond monetary poverty and increase the minimum poverty line from \$1.9\$ to \$5.5 a day as the cost of basic need (CBN) of people has now changed from the past and related to the location they live.

2.1.2 Poverty Line (PL)

In general, to indicate an individual or household is facing the poverty problem, it is commonly using the poverty line (PL). The PL will be the benchmark classifying the poor and non-poor group. The poverty line is the most convenient indicator that is commonly used among economists. The poverty line is developed to set the standard adequate basic need of an individual to live a day. They capture both food and the non-food dimension of expenditure of an individual. It first estimates the cost of acquiring enough food (CBN) for adequate

nutrition, usually 2,100 calories per person per day for maintaining good health (World Bank, Poverty Manual, All, JH Revision, 2005) and then adds on the cost of other essentials such as clothing and shelter. When there is no price information, this allows using the Food Energy Intake (FEI) method, which illustrates graphically expenditure (or income) per capita against food consumption (in Calories per person per day). Or use the Subjective Poverty Lines which are based on asking people what minimum income (or expenditure) level is needed to just make ends meet. For Thailand, the concept of poverty line calculation consists of two phases: first, the original poverty line by the World Bank in the year 1962-1963, based on necessities in life such as food and non-food. Disadvantage of the original poverty line is that it is regardless of age differences, sex, product prices in urban areas and rural areas. Therefore, to reflect the current consumption pattern and the change in population structure new poverty line is used instead (Kakwani and Medhi, 1998). The new poverty line can measure poverty at the individual, household, regional, and national levels based on the minimum basic needs of individuals. (Report on poverty in Thailand, TDRI, 2015)

2.1.3 Poverty Measurement

It is extremely important to measure poverty because of four main reasons by World Bank; first, to keep the poor on the agenda, without poverty measured, the poor would be easily left behind. Second, measuring poverty can identify directly who are the poor and allows the government to set the right target group to alleviate poverty. Otherwise, the policy might yield deficiencies and leak to the non-poor group. Third, to monitor and assess policy interventions that are geared towards the poor. And finally, to evaluate the effectiveness of institutions whose goal is to help the poor. However, to construct poverty measures are not easy. The measurements are perhaps inefficient due to the survey issues. For example, the survey designs, sampling, coverage and valuation, and quality control. Therefore, The World Bank has developed the Living Standards Measurement (LSMS) survey to measure poverty more accurately. However, there are more indicators measuring poverty and beyond. This measurement initially relied on the selection of welfare indicators such as the income and consumption per capita, then using a calculation to develop the indicators. To make an efficient measure on the actual poverty situation multiple indicators are developed to do so (see figure 3).

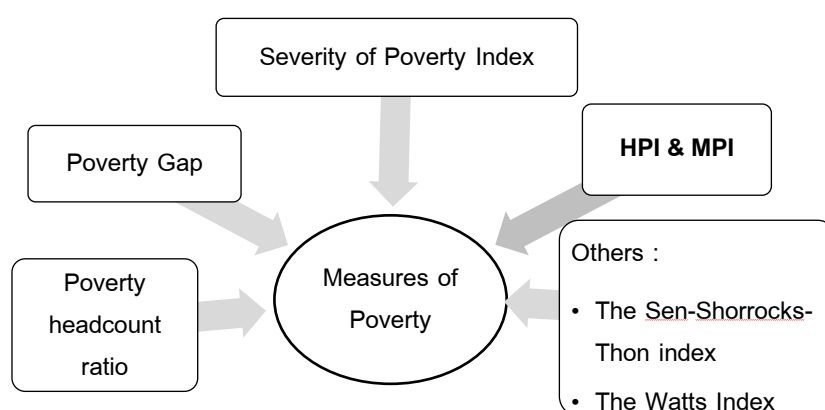


Figure 3 Poverty Measurement

As displayed in the figure above, there are six main indicators namely, the poverty headcount ratio (P_0) measures the proportion of the poor to total population of the country, the poverty gap (P_1) the extended measures of individuals fall below the poverty line and minimum cost of eliminating the poverty, the squared

poverty gap or poverty severity (P_2) which are the average squares of the poverty gaps relative to the poverty line.

2.1.4 Poverty headcount ratio (P_0)

The poverty headcount ratio, sometimes called Poverty Incidence, is the percentage of the population below the minimum level of real income. Headcount (the number of people below the poverty line) and headcount index (ratio) the proportion of people below PL from the whole population. World Bank has announced the poverty line at \$1.90 a day which is the percentage of the population living on less than \$1.90 a day at 2011 international prices. They called those people the poor who are facing the extreme poverty problem. Later, the poverty line has revised to \$3.1 and \$5.5 a day respectively. Poverty Rate, Headcount Index or Headcount Ratio can be calculated as the following equation:

$$P_0 = \frac{1}{N} \sum_{i=1}^N I(y_i \leq Z) \quad (2.1)$$

$$P_0 = \frac{N_p}{N}$$

Where: N_p is the number of populations with job (Income or Expenditure) below the poverty line
 N is the number of the population
 y_i is monthly current income or consumption per capita
 I is 1 if ($y_i < Z$), 0 if ($y_i > Z$)
 Z is the poverty line

2.2 Poverty Reduction Approach

2.2.1 Sectoral Economic growth and poverty reduction

In the late 1990s, Local Economic Development (LED) has been widely used to strengthen countries' economic growth. Many regions have put their priority on "strength from within" rather than international economic reliance. Thus, role of sectoral economic growth, particularly the agricultural, industrial and service sector growth, could help lowering the poverty incidence (War, Peter G., 2018; Northrop, E., 1988; Hainsworth, G., 1979; Casse, T., & Jensen, S., 2009). As the world major financial crisis namely the hamburger crisis (2008), Eurozone crisis (2009), currency war, oil price war, Brexit (2018), and the trade war between China and the U.S. (2019), many countries started to recognize that international trade liberalization might no longer be the best solution for economic growth. Instead, the "trade protectionism" and "localization" seemed to be the new mindset of growth for many countries including emerging market like ASEAN. De Janvry, A., & Sadoulet, E. (2010) and Somporn Isvilanonda, Ahmad, A., & Hossain, M. (2000) emphasized the role of agricultural growth, expansion in crop yields, and the local economic development correlated with poverty reduction.

According to (Mahlalela, 2014) LED defined as ten principles; 1) Strategically structured process, which is based on empathetic the economic and social dynamics of an area, structuring competitive advantages and minimizing an area's weaknesses and threats; 2) Founded on a territorial approach- initial purpose is to have functional economic space at regional or city levels, incorporating urban and rural space and using sectoral methods; 3) Locally owned, designed and distributed- each scheme must be planned and spread locally in order to address local urgencies and exclusive competitive positions; 4) Best realized through partnerships for

design and implementation- LED strategies are inclined to be designed by public, private and local government community actors partnerships; 5) Reinforced by integrated government actions at both the vertical and horizontal tiers - All tiers of government need to participate as partners in LED, it is necessary for each tier to equally reinforce and integrate national and local urgencies; 6) Obsessed on enabling a favorable local business environment for all stakeholders- LED facilitates private sector growth through reducing ‘red-tape’, and reducing transaction costs; 7) Includes integrated interventions across numerous sectors- unlike traditional supply side sectors approaches which only address certain sectors, LED addresses various sectors thereby maximizing synergies; 8) Embraces standardizing interventions in hard, soft and institutional infrastructure- It is essential to invest in human capital, economic infrastructure, institutional support and inclusion programs as different components of LED; 9) Prioritizes development and withholding of local business and people- Contrary to early LED focusing on attracting investment and being unsustainable, LED presently focuses on growing local economies; and 10) Public, private and non-governmental actors are involved in bringing projects- all sectors being public, private and community have specific competencies in delivering LED projects.

European Unions (EU) defined LED as “the process by which local authorities develop - with their local partners (other public organizations, business and non-governmental sector) - a better business environment; i.e. they create the condition for private sector-led economic growth and employment generation, from which all communities benefit” (ESI, 2011) Also, suggests the local economic development tools an introduction for municipalities and local economic service providers in Bosnia and Herzegovina that Local Economic Development could be implemented focusing on; 1) increase the local availability of Finance; 2) support the development of businesses & SMEs; 3) create the local infrastructure for economic growth, and 4) develop human resources and training activities.

Including (Astia Dendi et.al., 2004) who studied the Alleviating Poverty through Local Economic Development case of Nusa Tenggara, Indonesia. The research tried to emphasize the role of LED and poverty alleviation with objectives to increase people’s incomes, the synergy between government and the private sector, and to match policy to local characteristics, conditions, and potentials and responds to local problems. This study found the relationship between growth in the local economy and job market, a reduction in the number of poor and sustainable livelihoods. It suggested that strategies should focus on the attractiveness of local economy, the resilience of local economy, and the competitiveness of the local economy.

3. Methodology

This paper aimed to find evidence to support that poverty reduction is driven by aggregate and sectoral economic growth, possibly influenced by its sectoral composition and further by the relative price of food. The data consisted number of the poor by the National Economic and Social Development Board of Thailand from 2007-2018, real and sectoral GDP growth, and the relative price of food by the Ministry of Commerce. According to Peter War (2018), the model classification as expressed as the following expressions;

3.1 Nexus of the Poverty and Aggregate Growth

$$P = \frac{N_p}{N} = \varphi(Y, R^F) \quad (3.1)$$

Where, P = poverty headcount ratio
 N_p = Total number people in poverty
 N = Total number of the whole population
 Y = Real income per unit of population
 R^F = The relative price of food

To indicate the marginal effects of real income and relative price effect, we take the total differentiating 3.1 and obtain the following expression,

$$dP = \varphi_Y Y_y + \varphi_R dR^F \quad (3.2)$$

Where, dP = represents the change in poverty incidence
 dR^F = represents the change in the real price of food
 $y = dY/Y$ is the growth rate of aggregate real income per person
 Finally, we estimate relationships of the change in poverty to the change in two determinants:

$$dP = a + b_y + cd(R^F) \quad (3.3)$$

And test whether the coefficients b and c are significantly different from zero.

3.2 Poverty and Sectoral Growth

Whether the sectoral composition of economic growth is significant for poverty reduction can be investigated as follows. The level of real GDP per person is given by:

$$Y = Y_a + Y_i + Y_s + Y_{it} + Y_{edu} \quad (3.4)$$

Where $Y_a, Y_i, Y_s, Y_{it}, Y_{edu}$ and denote value-added (contribution to GDP) per person in the total population, measured at constant prices, in agriculture, industry, services, information and technology, and education respectively. The overall real rate of growth per person can be decomposed into its sectoral components from:

$$y = H_a y_a + H_i y_i + H_s y_s + H_{it} y_{it} + H_{edu} y_{edu} \quad (3.5)$$

Where $H_k = \frac{Y_k}{Y}$, $k = (a, i, s, it, edu)$, denotes the share of sector k in GDP.

$$dP = a + b_a H_a y_a + b_i H_i y_i + b_s H_s y_s + b_{it} H_{it} y_{it} + b_e H_{edu} y_{edu} + cdR^F \quad (3.6)$$

4. Empirical Results

The regression represented in table 4.1 and 4.2 summarized the empirical results which are analogous to support the theoretical framework discussed above. First, we discussed the role of aggregate economic growth and poverty reduction in Thailand using annual data from 1993-2019. Prior to the result interpretation, regression models had satisfied the classical linear regression assumptions in which there is no multicollinearity, heteroscedasticity, and autocorrelation. For the detection of multicollinearity, pairwise correlation and Variance Inflation Factors (VIF) had been adopted to ensure that correlation among the independent variable does not exists (VIF of around 1.6025 which is less than 5, thus we concluded that there is no multicollinearity problem). The results also passed the white's heteroscedasticity test in which the null hypothesis of homoscedasticity was accepted (F-statistic 2.453, Prob. F (5,5) 0.1735). Durbin-Watson stat is 1.8743 which is located close to 2, it is concluded no positive and negative autocorrelation.

Table 1 Regression results: aggregate growth and poverty reduction of Thailand

Independent Variable	Change in poverty (1)		Change in poverty (2)	
	Coefficient	t-statistic	Coefficient	t-statistic
Aggregate GDP growth	-4.510*** (5.945)	-7.591	-3.715*** (6.498)	-5.712
Real price of food			0.249* (0.122)	2.026
Constant	25.382*** (2.224)	11.412	21.305*** (2.780)	7.663
R-squared	0.865		0.911	
Adjusted R-squared	0.850		0.888	
F-statistic	57.629		40.780	

Note: Standard errors in parentheses; * Denotes confidence level at 90%; ** Denotes confidence level at 95%; *** Denotes confidence level at 99%

The (1) model in table 1, we firstly discuss the effect of aggregate GDP growth and change in poverty. Results from Thailand suggested that when aggregate economic growth increases, the poverty (or number of the poor) is reduced by 4.510 percentage points significantly. By the rule of thumb, we knew that this is due to the spillover of the economic expansion into the employment and labor income. Then, in the second model (2) we estimated equation 3.2 to observe if the real food price and change in aggregate economic growth simultaneously affect to the poverty. Results are unsurprising, the two components affected poverty significantly. On one hand, the aggregate economic growth lowers the poverty. On the other hand, when consider the price effect to the poverty, the real price of food (taken as a cost of living of people) does worsen the purchasing power of the poor and caused poverty incidence to increase. We then can conclude that the aggregate economic growth can lower poverty, whereas the higher food price worsens the poverty incident in Thailand.

Table 2 Regression results: sectoral growth and poverty reduction of Thailand

Variable	Change in poverty headcount ratio							
	at national poverty line		at \$5.50 poverty line		at \$3.20 poverty line		at \$1.90 poverty line	
	Coefficient	t-stat	Coefficient	t-stat	Coefficient	t-stat	Coefficient	t-stat
Agricultural growth (Y_a)	0.049 (0.404)	0.121	-0.132 (0.321)	-0.411	-0.414 (0.520)	-0.795	-0.079 (1.551)	-0.051
Industrial growth (Y_i)	-0.342 (0.736)	-0.465	0.572 (0.584)	0.978	0.976 (0.947)	1.030	-11.644*** (2.824)	-4.123
Service Sector growth (Y_s)	-1.456*** (0.453)	-3.215	-1.845*** (0.360)	-5.130	-3.983*** (0.583)	-6.831	3.425 (1.737)	1.971
Information and Technology growth (Y_{it})	0.895* (0.445)	2.012	0.888*** (0.353)	2.515	1.673*** (0.572)	2.921	3.654** (1.707)	2.141
Education growth (Y_{edu})	-0.496 (0.627)	-0.791	-1.011* (0.497)	-2.032	-1.340 (0.806)	-1.662	3.434 (1.429)	1.430
Constant	25.244 (3.199)	7.890	26.82 (2.541)	10.555	50.414 (4.119)	12.237	33.351 (2.279)	2.716
R-squared	0.957		0.979		0.986		0.787	
Adjusted R-squared	0.946		0.974		0.982		0.736	
F-statistic	92.541		194.602		292.968		92.541	

Note: Standard errors in parentheses; * Denotes confidence level at 90%; ** Denotes confidence level at 95%; *** Denotes confidence level at 99%

As equation (3.6), we estimated the nexus between poverty and sectoral economic growth. The results showed in table 2 distinguished the results for three groups of the poor by the different poverty line. Namely, the poor at the national poverty line, \$5.50 poverty line, and the poor at \$3.20 poverty line. While the last column represents the extremely poor citizen who live under \$1.90 poverty line.

For the effect of **Agricultural growth** on the poverty reduction, the estimated coefficients of agricultural sector were not found significant to the poverty (under the national poverty). The results yielded the positive side showed that the increase in agriculture economy worsen the poverty incidence. This is in line with the current problems of Thai farmers. A group of studies noticed that Thai farmers encountered severe debt problems, weather condition, and yield price fluctuation (Fabrizio Bresciani, et al., 2002; Soontaranurak, K., & Dawson, P., 2015; Laosutsan, P., Shivakoti, G., & Soni, P., 2019; Sukanlaya Choenkwan, Jefferson Metz Fox, & A. Terry Rambo., 2014; Sukanlaya Choenkwan, et al., 2016). Although there is an increase in production, the debt of the farmers remains the same or even increase, which comes from the existing debt, rising interest rates for loans which caused a debt repayment ability. Also, this creates additional debt for production in the next. Then the problem of poverty does not decrease. However, if we have a look at the poor by the poverty line at \$5.50, \$3.20, and \$1.90 a day, we found that the expansion in agriculture are positively impacted to those who live their life lower than \$5.5, \$3.2, and \$1.9 a day. Which means that most of the poor in Thailand who are still in agriculture sector were benefited by the expansion in agriculture economy. We conclude that the agricultural growth is not the key factor for poverty reduction for Thailand.

While **industrial growth** did not impact to the poor at national poverty line, \$5.5, and \$3.2 poverty line. This is because; (i) The structure of Thailand industrial sector- that more than half of investment value

comes from the foreign direct investment. This benefited only unskilled labor. This argument claimed by the results in the last column that it positively benefits to those extremely poor group significantly. (ii) The shrinking in number of Thai labors in manufacturing which arise from various factor, i.e., aging labor, insufficient number of unskilled labors, migrant workers from neighboring countries (Mizuno, A., 2020), etc. Currently, most of the labors in Thai manufacturing come from the neighboring countries such as Myanmar Lao and Cambodia (Mizuno, A., 2020). (iii) Due to the wage imbalance between Thailand and its neighbors, many foreign direct investments were encouraged to reallocate their production base to neighboring countries instead. Therefore, even the growth in the industrial sector increases, it does not spill benefit significantly to reduce poverty.

Service sector growth, the growth of services economy was associated with reductions in poverty incidence in Thailand significantly. This is because the service sector involves several economic activities (Booth, A., 2019), employs high skilled labor with higher return. The service sector is considered as a high value-added economic activity which provides positive externality spillover to other related industries as well. Our results claimed that service sector growth benefits to most of the poor except the extremely poor. Comparing to other types of the poor, this might because the extremely poor people may not be able to access to service sector yet. Or, the service sector does not reach the bottom group of the poor yet.

This paper found that **Information and Technology growth** surprisingly not lower the poverty problems. In contrast, it generates more poverty incidence. This implies that the poor may be not able to access in IT sector. IT devices might be unaffordable to the poor. Or, the IT sector job might require those with higher skill and education which are the key resources that the poor does not have.

Lastly, this paper found that the **education growth** helps lower amount of the poor significantly. By the rule of thumb, the foundation of success is the education. Accessing to education at least guarantee that the poor can access to job market and seek for the job.

5. Conclusion and Discussion

This paper was developed to find empirical evidence to support the theoretical framework introduced by War, Peter G. (2018). The theoretical framework follows that aggregate and sectoral economic growth can lower the poverty incident. This paper was tested with this framework by constructing a classical linear regression model incorporating basic violation assumption diagnosis to ensure that the results are “Best Linear Unbiased Estimator (BLUE)” and independent of multicollinearity, heteroscedasticity, and autocorrelation. We found similar results to War Peter (2018); Northrop, E. (1988); Hainsworth, G. (1979); that the aggregate growth does reduce the extreme poverty in Thailand. Comparing to Peter War (2018), we found additional evidences. First, we supported finding of Peter War (2018) that the real price of food has impacts the poverty incidence and the poor’s purchasing power. Second, we agreed that the sectoral growth affected the poverty incidence in Thailand, excepted the that the agricultural growth might affected some group of the poor. The main reason agriculture growth does not lower the poverty is because of the severe debt-cycle and repayment ability of Thai agriculturists and the price fluctuation in the agriculture sector (both product price and inputs price) that worsen debt-cycle situation of farmers. Our result in line with De Janvry, A., & Sadoulet, E. (2010) that arggricultural growth might somehow not able to lower poverty due to the differernce regional contexts, rural conditions, and limitations. For the futher studies, we suggested to take the greater look into more regional data. As well as, using other method to discuuss how the service sector growth can lower the poverty incidence in Thailand.

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