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durongkaverroj, wannaphong

Chiang Mai University

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# Remedy of Poverty

Wannaphong Durongkaveroj<sup>\*</sup>

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## Abstract

Economic growth is typically recognized as the effective tool in eradicating of poverty. Unfortunately, many countries enjoy their national prosperity with no improvement in citizen's living standard. The purpose of this study is to investigate the new tool aimed at reducing poverty through log-linear model and to estimate the impact of exogenous macroeconomic shock occurred in every sector on poverty through SAM multiplier. The result reveals that poverty is not sensitive to economic growth changes while it is definitely elastic to economic development. Growth is no longer an effective tool. Additionally, Latin America needs to export the commodities from meat, heavy manufacturing, and textile sector to help getting people out of poverty.

*JEL classification:* I32, O21, O57

*Keywords:* Economic Development; Economic Growth; Poverty; SAM multiplier

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<sup>\*</sup> Chiang Mai, Thailand. Email: wannaphongd@gmail.com

## **Introduction**

Poverty is what we typically know but the way to solve poverty, remedy, is questionable. It is realized for a long time to be economic growth. When there is an expansion in output, economy is stirred. Every sector is assumed to be encouraged. The demand of labor increases corresponding to an increase in labor supply due to a labor-forced reward. It is a perfect picture of national development.

Unfortunately, economic growth we heard from the news is not equally distributed to all level of individuals. It is normally concentrated to the owner of factory, CEOs, politicians, or interest group. A higher return to labor (wage) is compensated to an inflation. Average price of commodity in daily life such as grain and meat is raised due to seller's claims about higher cost. Turn to financial system, inability of accessing credit due to low estimated asset causes the difficulty of investment in human capital, education and health, among the bottom quintile people. When there is no any investment, a high return to society is, of course, absurd. As economist and everyone realized that the poor are concentrated in agricultural sector, many populism policies occur there. Agricultural market is distorted from an artificial demand of cultivating grain. Negative externality is what developing country found inevitable. Economic policies undermine the living standard instead of improving it.

This paper tried to bridge the two strands of economic knowledge between econometric method and the preliminary CGE model called SAM-based model so as to find out the solution of poverty. The answer of this study will show the best subsidized policy aimed at raising citizen's well-being up.

## **Objectives**

- To estimate the relationship between economic growth, economic development, and poverty
- To compare the effectiveness of economic growth and economic development in eradicating of poverty
- To show how exogenous macroeconomic shocks raise well-being up of the citizens worked in each sector in economy
- To suggest Latin America's government about the effective policy aimed at reducing poverty.

## **Methodology**

There are 5 countries in this study which all are located in Latin America including El Salvador, Ecuador, Peru, Uruguay, and Venezuela. Poverty rate measured by national poverty line is collected from the World Bank database. Gross National Income (GNI) per capita is represented from economic growth collected from the World Bank. Economic development is measured from Human Development Index (HDI).

Stationary test (LLC, Ipshin, Fisher) will be used to test the quality of data aimed at avoiding the spurious relationship. Afterwards, economic growth elasticity of poverty (GEP) can be derived from the coefficient of regressor. It was developed from Squire (1993), Chen & Ravallion (1996). Data unavailability in poverty rate causes the limitation in econometric analysis. However, the data from world bank from 2006 - 2012 in 5 countries located in Latin America allows us to use panel data regression

model through Fixed Effect (FE), Random Effect (RE), and Pooled OLS. For model specification of GEP,

$$\log\text{POV}_i = B_0 + B_1\log\text{GNIPC}_i + U_i \quad (1)$$

where  $\log\text{POV}_i$  stands for the log of poverty rate (national poverty rate),  $\log\text{GNIPC}_i$  stands for the log of per capita Gross National Income, and  $U_i$  stands for the residuals. All variable was transformed in natural log so as to make the coefficient ( $B_1$ ) standing for growth elasticity of poverty.

For Economic development elasticity of poverty (DEP), it was fist calculated by Durongkaveroj & Osathanunkul (2013) and developed further by Durongkaveroj (2014). For model specification of DEP,

$$\log\text{POV}_i = R_0 + R_1\log\text{HDI}_i + V_i \quad (2)$$

where  $\log\text{POV}_i$  stands for the log of poverty rate,  $\log\text{HDI}_i$  stands for the log of Human Development Index (HDI), and  $V_i$  stands for the residuals. All variable was transformed in natural log so as to make the coefficient ( $R_1$ ) standing for development elasticity of poverty.

For the bridging between GEP (direct calculation) and poverty was derived by Miguel-Velez & Peres-Mayo (2010). However, Durongkaveroj & Osathanunkul (2013) studied on poverty and SAM multiplier which GEP was derived through econometric method (log-linear model) as following;

$$\frac{dp}{p} = \varphi \frac{m_i dx}{y} \quad (3)$$

From this model, it can be implied that a change in poverty depends on SAM multiplier, exogenous shock, income level, and GEP.  $\varphi$  in (3) is the same value of  $B_1$  in (1) standing for GEP. SAM multiplier was explained by Breisinger, Thomas, and Thurlow (2009) that it displays the relationship of all economic activities among all sectors and institutions.

Return to poverty dimension, Saari, Deitzenbacher, and Los (2008) found that poverty can be reduced an increase in final demand in Transportation, Communication, and service sector in case of Malaysia. For the implication, Durongkaveroj & Osathanunkul (2013) explained that to reduce poverty requires not only economic growth but also exogenous macroeconomic shock (export growth or income injection). This paper fulfilling the existing strand of knowledge by implementing traditional econometric model and SAM multiplier.

## Results

For stationary test by Fisher method, the log of poverty rate and the log of per capita GNI are stationary at 95% confidence with lag(0) while the log of HDI is stationary at 95% confidence with lag(1). For Im, Pesaran and Shin, the log of per capita GNI and the log of poverty rate are not stationary at any level while the log of HDI is

stationary at 95% confidence with lag(1). For Levin, Lin, and Chu, all data are stationary at 95% confidence with lag(1). After testing unitroot, log-linear model is implemented to find GEP and DEP, respectively.

For GEP, Random Effect (RE) is more proper than Fixed Effect (FE) suggested by Hausman Test. With Breusch-Pagan LM test, RE is more proper than pooled OLS. However, there is the presence of serial correlation and it was fixed by cluster. Then, GEP is - 0.8144 which is statistically significant. R-squared is 74.1% showing the strong relationship between economic growth and poverty reduction.

For DEP, RE is more proper than FE suggested by Hausman Test. Due to the result from Breusch-Pagan LM test, RE is more proper than pooled OLS. Nevertheless, there is the presence of serial correlation and it was corrected by cluster. Therefore, DEP is - 6.5429 which is statistically significant. R-squared is 32.46%. The result of GEP and DEP is shown by table 1.

**Table 1: The elasticity of poverty to growth and development**

	Coefficient from RE
logGNIPC	-0.8144**
logHDI	-6.5429**

**Source:** Author's own calculation

**Note:** \*\*  $p < 0.05$

According to table 1, an increase in per capita GNI by 1 percent can create a reduction in poverty by -0.8144 percent, and vice versa. Additionally, an increase in HDI by 1 percent can reduce the poverty by -6.5429 percent. Thus, economic development represented by HDI is more effective than economic growth in eradicating of poverty.

After deriving GEP, the next is to find SAM multiplier. SAM is derived from GTAP 8. SAM multiplier is to derive from SAM decomposition according to Thorbecke & Jung (1996). SAM multiplier in each sector was shown in table 2.

**Table 2: SAM multiplier in Latin America (selected countries)**

	Gr	Me	Extr	Pro.f	Text	L.mfg	H.mfg	Uti	Tran	Oth
<b>Output M</b>	3.349	4.506	2.652	3.997	4.003	3.569	4.132	3.370	3.487	2.783
<b>GDP M</b>	0.872	0.853	0.924	0.805	0.802	0.748	0.815	0.838	0.835	0.901
<b>Income M</b>	0.770	0.723	0.733	0.661	0.665	0.622	0.654	0.693	0.700	0.760

**Source:** Author's own calculation

**Notes:** Gr stands for grain, Me stands for meat, Extr stands for Extraction and Mining, Pro.f stands for processed foods, Text stands for textile, L.mfg stands for light manufacturing, H.mfg stands for heavy manufacturing, Uti stands for Utility, Tran stands for transportation

And communication, Oth stands for other.

According to table 2, output multiplier is highest in meat sector with 4.506, and it is followed by heavy manufacturing and textile with 4.132 and 4.003, respectively. For GDP multiplier, the highest multiplier is in extraction sector with 0.924, and it is followed by other sector and grain sector with 0.901 and 0.872, respectively. For income multiplier, the highest multiplier is in grain sector with 0.770, and it is followed by other sector and extraction sector with 0.76 and 0.733, respectively. For interpretation, supposed output multiplier of grain sector, an increase in export in grain sector by 1 unit can create an expansion in the total output of economy by 3.349 unit. Also, this increased export in grain sector can raise people's revenue by 0.77 unit. SAM multiplier represents the most efficient sector in encouraging economy as a whole.

SAM multiplier is linked to poverty and DEP by expression (3). From (3), it requires additional information about level of income and the magnitude of exogenous shock. Shock is assumed to be 1 unit aimed at considering minimum-scaled change. Level of income is an average of income (per capita GNI) in year 2012 for 5 selected countries and it is displayed in table 4.

**Table 4: Level of income for 5 selected countries (U.S. dollar)**

Country	GNIPC
Ecuador	5170
El Salvador	3590
Peru	6060
Uruguay	13580
Venezuela	12460
<b>Average</b>	<b>8172</b>

**Source:** World Bank

According to table 4, average income in this region is \$8,172 dollar. Then, the result on poverty is shown in table 5.

**Table 5: Remedy of Poverty**

	Ge	Me	Extr	Pro.f	Text	L.mfg	H.mfg	Uti	Tran	Oth
<b>M</b>	3.349	4.506	2.652	3.997	4.003	3.569	4.132	3.37	3.487	2.783
<b>GEP</b>	-0.8144	-0.8144	-0.8144	-0.8144	-0.8144	-0.8144	-0.8144	-0.8144	-0.8144	-0.8144
<b>Y</b>	8,172	8,172	8,172	8,172	8,172	8,172	8,172	8,172	8,172	8,172
<b>Shock</b>	1	1	1	1	1	1	1	1	1	1
<b>Δin Poverty</b>	-0.0334	-0.0449	-0.0264	-0.0398	-0.0399	-0.0356	-0.0412	-0.0336	-0.0348	-0.0277

**Source:** Author's own calculation

**Notes:** Gr stands for grain, Me stands for meat, Extr stands for Extraction and Mining, Pro.f stands for processed foods, Text stands for textile, L.mfg stands for light manufacturing, H.mfg stands for heavy manufacturing, Uti stands for Utility, Tran stands for transportation and communication, Oth stands for other. Output multiplier is used. Exogenous macroeconomic/demand shock here is an increase in export in each sector.

According to table 5, the result reveals that the response of shock and economic growth on poverty reduction is highest in meat sector and it is followed by heavy sector and textile sector which was the highest multiplier sector. Therefore, it is concluded that an effectiveness of poverty depends mainly on economic linkage among agents. A strong interdependence or long backward linkages is the great factor in eradicating of poverty because it refers to the encouragement or excitement in every unit in the sector which was shocked by exogenous demand.

## **Conclusion**

For the relationship between economic growth and poverty, traditional GEP, it is equal to -0.8144 (inelastic) while it is definitely elastic to economic development on poverty which DEP is equal to -6.5429. Of course, this study confirms that economic development is more impressive in eradicating of poverty or improving the bottom quintile people's living standard. Poverty is inelastic to economic growth. Simply put, a change in economic growth is likely to have no effect to poverty. Policy which aimed at stimulating economic growth will be no longer perfect tool to correct social problem. Additionally, to get rid of poverty in Latin America requires exogenous macroeconomic shocks - economic growth merely is not enough or slow. Finally, the process of reducing penury can be accelerated through an increase in export, especially in meat, heavy manufacturing, and textile sector.

## **Policy Suggestion**

There are two main policies. The first is to encourage economic development instead of only economic growth. Economic development is recognized (Todaro and Smith) for an improvement in income, health, and education simultaneously. An increase in income can be happened through job training, minimum wage law, worker protection law, and social welfare. For health and education which create people to be more productive, universal health care system and universal education are two main duties. Distribution of high-skilled doctor, medical authorities, and teacher should be critically concern, especially in rural area. Also, for developing countries, agricultural sector is still the source of wealth. Irrigation and modern technology can help improve this sector. However, government intervention is not a good idea due to the chronic market failure which is possible to create government budget deficit in the future.

The latter is the trade policy. An increase in meat, heavy, and textile sector is key policies for Latin America. Government should support technology and innovation in these sector. Labor should be trained to be more productive. Of course, an induced effect from SAM multiplier is the core of economic development nowadays. An increase in export in one sector create an expansion in production of other sectors. Workers tend to enjoy the higher income. Owners of firm tend to enjoy the higher profit. Consumption

is what we, economist, would like to promote because it is not only the great component of economic growth but also the sign of well-being.

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