การพัฒนาเศรษฐกิจและการลดความยากจน : ประสบการณ์จากละตินอเมริกา

ECONOMIC DEVELOPMENT AND POVERTY REDUCTION : EXPERIENCES FROM LATIN AMERICA

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บทคัดย่อ

งานวิจัยชิ้นนี้มีวัตถุประสงค์เพื่อประเมินประสิทธิภาพของการเจริญเติบโตทางเศรษฐกิจและการพัฒนาเศรษฐกิจในการลดความยากจนด้วยแบบจำลองทางเศรษฐมิติ และเพื่อศึกษาบทบาทของปัจจัยภายนอกที่มีผลในการเพิ่มขึ้นของความกินดีอยู่ดีของประชาชนในแต่ละสาขาของระบบเศรษฐกิจด้วยค่าตัวทวีบัญชีเมตริกซ์สังคม โดยขอบเขตของการศึกษาได้พิจารณา 5 ประเทศ ในทวีปละตินอเมริกา ประกอบด้วย เอกวาดอร์ เอล ซัลวาดอร์ เปรู อุรุกวัย และเวเนซุเอลา ซึ่งล้วนมีความสามารถในการลดความยากจนที่แตกต่างกัน

ผลการศึกษาด้วยแบบจำลองทางเศรษฐมิติพบว่า การพัฒนาเศรษฐกิจมีประสิทธิภาพในการลดความยากจนมากกว่าการเจริญเติบโตทางเศรษฐกิจซึ่งนำไปสู่นโยบายการพัฒนาเศรษฐกิจแบบองค์รวมที่มุ่งเน้นไปที่การเพิ่มระดับรายได้ สุขภาพ และการศึกษาไปพร้อมกันแทนที่จะให้ความสำคัญกับการเพิ่มขึ้นของรายได้เพียงอย่างเดียว นอกจากนั้น จากการศึกษาด้วยค่าตัวทวีบัญชีเมตริกซ์สังคม พบว่า สาขาการผลิตที่ควรได้รับการสนับสนุนจากรัฐบาลของทั้ง 5 ประเทศ ทั้งในด้านการผลิตและการส่งออกมากที่สุด ได้แก่ ผลิตภัณฑ์จากสัตว์ อุตสาหกรรมหนักและสิ่งทอ เนื่องจากเป็นสาขาการผลิตที่สามารถยกระดับชีวิตความเป็นของประชาชนในภูมิภาคได้มากที่สุด

คำสำคัญ: การพัฒนาเศรษฐกิจ การเจริญเติบโตทางเศรษฐกิจ การลดความยากจน ค่าตัวทวีบัญชีเมตริกซ์สังคม

Abstract

The purposes of this research are : to estimate the effectiveness of economic growth and economic development in elimination of poverty through econometric tools and to figure out the role of exogenous demanded shocks in raising the well-being among people in an economic sector through Social Accounting Matrix (SAM) multipliers. For the scope of this study, it focuses on five countries in Latin America including Ecuador, El Salvador, Peru, Uruguay, and Venezuela due to their various performance on poverty reduction.

From employing econometric technique, the study reveals that economic development yields more effectiveness in reducing poverty than economic growth which leads to a suggestion of holistic development policies shedding on income, health, and education simultaneously instead of increasing income level merely. Additionally, from SAM multipliers, meat sector, heavy manufacture, and textile should be the regional priority for government of five countries to support the production and export due to their highest promises to raising population's living standard.

Keywords: Economic Development, Economic Growth, Poverty Reduction, SAM Multiplier

Introduction

Poverty is both cause and consequence of social problem. According to the latest poverty data, the world poverty rate measured by poverty headcount ratio at $1.25 a day (PPP) is around 14.5 percent in 2011 [1]. Poverty in Sub-Saharan Africa is highest, around 46.8 percent of its population is the poor, followed by South and East Asia and Latin America. For poverty alleviation, it is realized that a great medicine is economic growth which is ideally expected to raise population's income.

How much the quality of life among people increase as they receive more income? The research on the Growth Elasticity of Poverty (GEP) is normally focused on the effects of a change in income level on poverty reduction [2]. However, this relationship can be affected by the situation of income inequality in society because an additional income may be not trickled down to all groups of people. Thus, income inequality is also included in the model [3-4]. Additionally, instead of using the poverty rate, the poverty gap representing the better picture of poverty is also implemented [5]. However, with the limitation of data about poverty rate measured by the international poverty line from World Bank, some authors used a mathematical estimation to calculate GEP [6-7].

Besides a single number from GDP, there is an widely accepted measure to effectively consider the national income distributed to economic sectors. It is Social Accounting Matrix (SAM) which captures the monetary flows or transactions among all sectors and institutions in economy. However, the core of SAM is its multiplier which displays the overall impacts of income subsidy in each sector from government to the economy. A high SAM multiplier of one single sector is generally referred to the high impact to economy when the production of that sector increases or decreases [8]. SAM multiplier was also developed to study the poverty [9] which stated that the elimination of poverty requires an exogenous shock. Also, it was found that an increase in output of agriculture, services, and manufacturing sector can effectively reduce poverty in South Africa [10] which is correspondent to authors studied poverty and economic activities in South Africa and stated that economy needed to shift its base from resources to primary industries [11].

Moreover, the effects of macroeconomic policies on poverty reduction were clearly studied through SAM multipliers [12]. Also, it was found that poverty was related to economic growth in all sectors through the poverty income elasticity [13]. Moreover, the effects of income injection was investigated through many scenarios, for example, an increased demand or decreased subsidy using SAM multiplier in the dairy chain in reunion island [14]. To the extent, a new technique in considering poverty with SAM multiplier was improved [15] and it was revealed that poverty measured by Headcount Index (HCI) dramatically decreased from government in-cash subsidy (income injection).

Why Latin America? Latin America becomes an interesting region because every country has its own good pace of running economy. From 2005 to 2013, Gross National Income (GNI) per capita and regional Gross Domestic Product (GDP) growth rate were higher than the global average which was contrast to many regions around the world, for example, South Asia and Sub-Saharan Africa [1]. However, there is a variety in race, language (mainly in Spanish and Portuguese), economic growth measured by GDP, economic development measured by Human Development Index (HDI), and interest through each government policies even they are in the same region. For foreign policy through the export-oriented growth policy which is adopted by many countries around the world, for example, South Korea, Taiwan, and Singapore, many countries in Latin America are likely to implement this policy but the export's share of GDP is still low. The data for export in Latin America is shown in Table 1.

Table 1 Selected countries in Latin America's value of export and its share of GDP

Country	Export (Million U.S. Dollar)			Export's share of GDP (2013)
	2009	2013	Growth (2009-2013)	
Brazil	180,723.09	281,160.96	55.58	12.6
Chile	63,955.50	89,471.01	39.90	32.6
Dominican Republic	7,982.10	16,052.30	101.10	25.5
Ecuador	15,748.55	27,722.45	76.03	29.2
El Salvador	9,383.57	12,714.29	35.50	26.4
Guatemala	244,799.36	400,856.01	63.75	23.7
Mexico	17,565.50	26,986.30	53.63	31.7
Paraguay	8,307.74	14,366.33	72.93	49.4
Peru	4,215.79	6,402.59	51.87	23.7
Uruguay	8,711.30	13,581.19	55.90	24.0

Source: World Bank (2013) [1]

Notes: Data is not available for Venezuela.

According to table 1, there were differences in the value of export among countries in Latin America. The export of Guatemala and Brazil were $400,856 and $281,161 million dollar, respectively, in 2013 while it were merely $12,714 and $6,403 million dollar for El Salvador and Peru, respectively. For the growth of export, all of them had a growth in export from 2009 to 2013 which is the positive sign of development. Dominican Republic had the highest growth rate about 100 percent (two times increase) which was followed by Ecuador, Paraguay, and Guatemala. Nevertheless, the share of export was around 30 percent of GDP which is far from being the export-led growth policy in the world of internationally economic interdependence nowadays.

Additionally, some countries are likely to be emerging countries due to their large size of economy, for example, Brazil and Mexico while some countries are likely be least developed countries (LDCs) due to their low level of development, for example, Haiti and Nicaragua. Interestingly, for the regional performance, it was found that the share of the middle class in Latin America dramatically increased from 103 million people in 2003 to 152 million people in 2009 or increased by 50 percent [16]. This phenomenon made the equal share of the middle class and the poor (each 30 percent of population) which, interestingly, the size of the poor was once greater than the middle class by 2.5 times. Latin America experienced a progress in poverty reduction due to dynamic growth, job creation, better subsidies for the poor, and social insurance [17]. Latin America's progress on poverty is shown in figure 1.

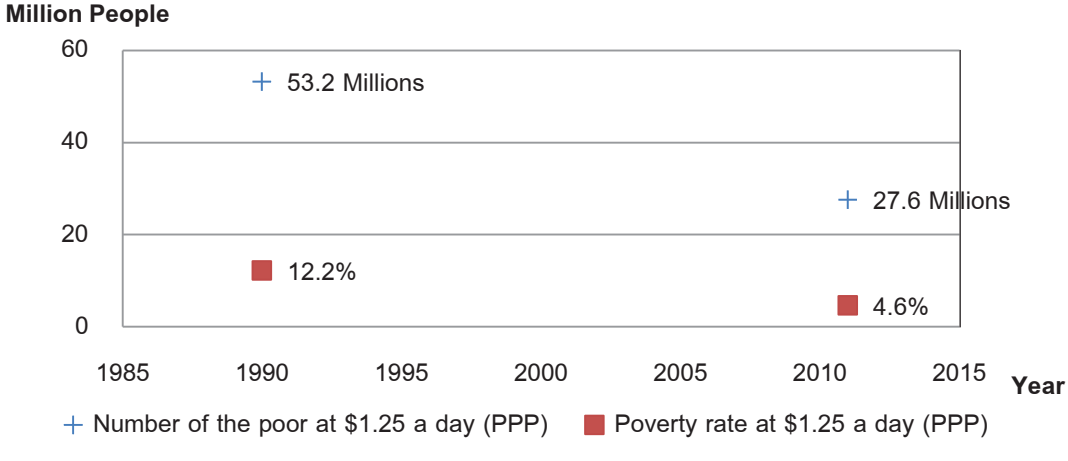

Figure 1 Latin America's progress on poverty

Source: World Bank (2013) [1]

According to the figure 1, regional poverty in Latin America dramatically declined from 1990 to 2011. Around 25 million people have not out of poverty trap. Poverty Headcount Index (HCI), namely the poverty rate measured at $1.25 a day (Purchasing Power Parity: PPP) as poverty line, declined from 12.2 percent in 1990 to 4.6 percent in 2000. Also, Latin America is the third lowest poverty rate in the world, next to Europe and North America [1]. Moreover, every country in Latin America is seemed to enjoy its success in eradication of poverty measured by the international poverty line measured by $1.25, $2, $4, and $5 day (PPP). However, the prospect is likely to be vastly different when it is measured by national poverty rate – an average income in each country as showing in figure 2.

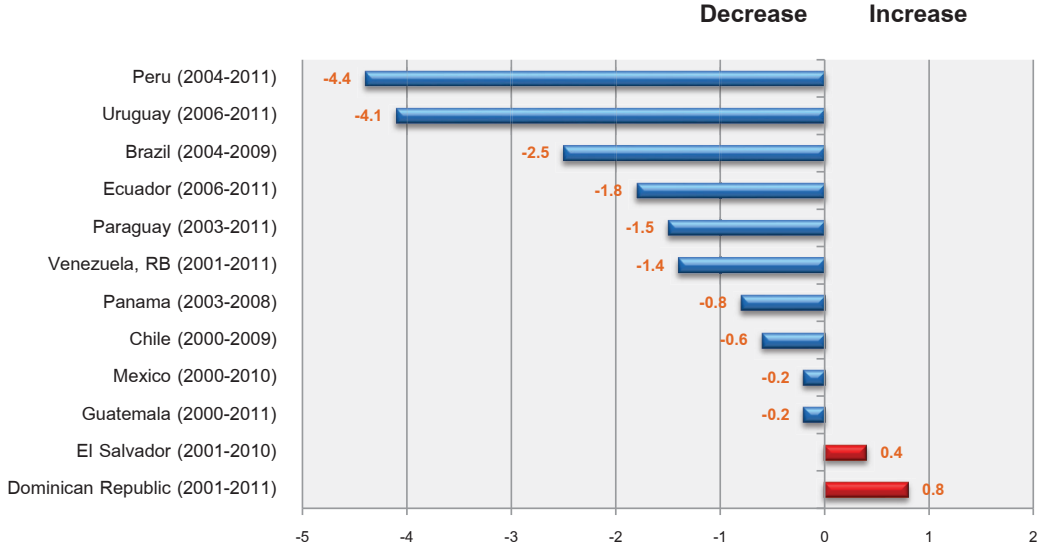

Figure 2 Average annual change in poverty rate measured by national poverty line

Source: World Bank (2013) [1]

According to the figure 2, Peru and Uruguay were likely to be the most successful country in the region in alleviating poverty due to their potential to reduce poverty around four percent per year. However, even the same region, Dominican and El Salvador were likely to be in a tough situation because their poverty rates measured by an average income level increased. However, this figure does not contain a perfect picture for comparison because the period of available data is different.

In development economics, economic growth is a good prerequisite to achieve economic development. Also, it is realized to have a great effort in eradicating of poverty. Unfortunately, the process is likely to be relatively slow in some region. So this paper try to understand the situation of poverty in Latin America which has a good progress

on raising well-being among populations by connecting the two main strands of economics including econometric methodology and SAM multiplier to figure out the poverty in this region. An interesting issue occurs when some countries seem to be successful in improving population's living stage while some countries seem to be stagnant.

Objectives

This study aims to estimate the relationship between economic growth, economic development, and poverty by comparing the effectiveness of economic growth and economic development in eradicating of poverty in Latin America. Also, this study aims to show how can Latin America effectively reduce its poverty through the exogenous macroeconomic shocks which are able to raise well-being up of the citizens worked in each sector in economy.

Methods

This study focuses on poverty reduction in Latin America. However, the data for many countries is not available, for example, Panama and Dominica Republic. Thus, the scope of this study cover five countries including Ecuador, El Salvador, Peru, Uruguay, and Venezuela. The different achievement for poverty reduction among these five countries (According to the figure 2, the best performance for Peru and Uruguay, the moderate performance for Ecuador and Venezuela, and the worst performance for El Salvador) will be a good representative for the whole region. For the data, the poverty rate measured by each national poverty line and economic growth measured by Gross National Product (GNP) per capita (PPP) are collected from World Bank while economic development measured by Human Development Index (HDI) is collected from UNDP.

For the first objective, the relationship between economic growth and poverty is derived through the concept of Growth Elasticity of Poverty (GEP) [3, 4, 5, 6] as following;

$$\log POV_i = B_0 + B_1 \log GNPPC_i + U_i \quad (1)$$

Where $\log POV_i$ denotes the log of poverty rate (national poverty line measurement), $\log GNPPC_i$ denotes the log of GNI per capita (PPP), and U_i denotes the residuals. All variable was transformed in natural log so as to make the coefficient (B_1) stand for growth elasticity of poverty (percentage change).

While the relationship between economic development and poverty namely Development Elasticity of Poverty (DEP) [18] as following;

$$\log POV_i = R_0 + R_1 \log HDI_i + V_i \quad (2)$$

Where $\log HDI_i$ denotes the log of Human Development Index (HDI), and V_i denotes the residuals. All variable is also transformed in natural log so as to make the coefficient (R_1) stand for development elasticity of poverty (percentage change).

For the second objective, the structure of economy is displayed through Matrix [12] as following;

$$Y = AY + X \quad (3)$$

Where Y is given or endogenous income, A is matrix of technical coefficient or

endogenous expenditure propensities, and X is matrix of injections from exogenous into endogenous accounts.

This equation expresses that endogenous incomes are given or determined by fixed coefficient (Economic linkage among sectors) and exogenous shock. Then, rearrange equation (3) as following,

$$Y - AY = X \quad (4)$$

$$Y(1 - A) = X \quad (5)$$

$$Y = (1 - A)^{-1}X \quad (6)$$

Where the inverse $((1 - A)^{-1})$ is the accounting multiplier matrix (m_i) which connects endogenous income to injections or exogenous shock. Thus, a change in income can be written as following;

$$dy = m_i dx \quad (7)$$

Where dy is a change in income level and dx is an exogenous shock (income injection or increase in export). This equation explains that regional income can be increased or decreased depends mainly on two factors including SAM multiplier which is referred to the economic linkage among all sectors and institutions and a change in government policy through monetary support (In cash subsidy) or trade promotion. Also, this equation was developed to capture poverty dimension [18] as following;

$$\frac{dp}{p} = \varphi \frac{m_i dx}{y} \quad (8)$$

Equation (8) stated that a change in poverty depends on four dimensions including SAM multiplier, exogenous shock, income level, and GEP. For GEP (φ), it is calculated through direct concept of elasticity (Direct estimation of elasticity). However, this study will calculate GEP by regression analysis [18]. So, φ in (8) is the same value of B_1 in (1) standing for GEP. Additionally, in this study, GEP is no longer used because it focuses only the impacts of economic growth. DEP is more preferable and the model specification for this study is as following;

$$\frac{dp}{p} = \theta \frac{m_i dx}{y} \quad (9)$$

Where denotes the Development Elasticity of Poverty (DEP).

Results

In analysis of panel data regression, the proper coefficient depends on the calculation technique including Fixed Effect (FE), Random Effect (RE), and simple regression. After testing by econometric methods, RE is more proper for both GEP and DEP. The value of GEP and DEP is shown in table 2.

Table 2 The elasticity of poverty to economic growth and development

Factors	Effects on Poverty
Economic Growth Elasticity of Poverty	-0.8144**
Economic Development Elasticity of Poverty	-6.5429**

Source: Author's calculation

Note: ** $p<0.05$

According to table 2, both economic growth and economic development has a negative relationship with poverty. An increase in per capita GNP (PPP) in five selected countries by 1 percent is able to reduce poverty by 0.8144 percent while an increase in HDI by 1 percent is able to reduce the poverty by 6.5429 percent. For the effectiveness in eradicating poverty, economic development represented by HDI (DEP) is more effective than economic growth (GEP) in eradicating of poverty which emphasizes the role of the holistic policy aimed at improving income, health, and education among citizens simultaneously.

After deriving GEP, SAM for all selected countries is collected from the Global Trade Analysis Project (GTAP) version 8.0. The technique of calculation SAM multiplier is the SAM decomposition [9]. SAM multiplier in each sector was shown in table 3.

Table 3 SAM multipliers in Latin America

Sector	Gr	Me	Extr	Pro.f	Text	L.mfg	H.mfg	Uti	Tran	Oth
Multiplier	3.349	4.506	2.652	3.997	4.003	3.569	4.132	3.370	3.487	2.783

Source: Author's calculation

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

According to table 3, SAM multiplier in Latin America is highest in meat sector (4.506) which means that an increase in the production of meat sector by one unit can lead to an increase of output from all sectors by 4.506 unit. It is followed by heavy manufacturing sector and textile sector with 4.132 and 4.003, respectively. Thus, this finding highlights the importance of the production of meat, heavy manufacture, and textile because they can generate the output of economy more than other sectors which have relatively low multiplier, for example, grain and extraction and mining.

Then, SAM multiplier is linked to poverty and DEP by equation (9) which requires the level of income and the magnitude of exogenous shock. For macroeconomic shock (policy), it is assumed to be 1 unit aimed at considering minimum-scaled change. For level of income, Gross National Product (GNP) for each country is displayed in table 4.

Table 4 Level of income for five selected countries

Country	GNP PC (U.S. dollar)
Ecuador	10,720
El Salvador	7,490
Peru	11,160
Uruguay	18,940
Venezuela	17,900
Average	13,242

Source: World Bank (2013) [1]

According to table 4, Uruguay and Venezuela are likely to have the better living standard than the average of region, especially El Salvador. Thus the average income of the five selected countries in is $13,242 dollar in 2013. Then, the result on poverty reduction is shown in table 5.

Table 5 Results on poverty **reduction of all sectors**

	Gr	Me	Extr	Pro.f	Text	L.mfg	H.mfg	Uti	Tran	Oth
SAM Multiplier	3.35	4.51	2.65	4	4	3.57	4.13	3.37	3.49	2.78
DEP	-6.54	-6.54	-6.54	-6.54	-6.54	-6.54	-6.54	-6.54	-6.54	-6.54
Income Level	13,242	13,242	13,242	13,242	13,242	13,242	13,242	13,242	13,242	13,242
Size of shock	1	1	1	1	1	1	1	1	1	1
Poverty Reduction	-0.166	-0.223	-0.131	-0.198	-0.198	-0.176	-0.204	-0.167	-0.172	-0.138

Source: Author's calculation

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

According to table 5, a change in poverty is calculated by the equation (9). A degree of impacts depends on the level of only multiplier due to an assumed constant (as exogenous) DEP, income, and size of shock for all sectors which means that a high level of SAM multiplier is the main factor affecting poverty. Therefore, it is able

to conclude that an effectiveness of poverty depends mainly on economic linkages among agents, both forward and backward linkages. It reveals that national poverty can be most effectively reduced if government subsidizes in the meat sector (All types of animal product (cattle, sheep, goats, and horse), raw milk, wool and silk-worm cocoons), followed by the heavy manufacturing sector (Chemicals, rubber, plastics, petroleum, metal product, and electronic equipment) and the textile sector (textile and clothing).

Conclusions and Discussion

Economic development is proved to play a more vital role than economic growth in reducing poverty. Poverty is inelastic to economic growth but elastic to economic development. Simply put, a change, even increase or decrease, in economic growth is likely to have no impressive effect to poverty. Policies which aimed at stimulating only economic growth, for example, export or government consumption only, will be no longer perfect formula to correct the social problem namely poverty. Additionally, to eradicate poverty in Latin America requires the exogenous macroeconomic shocks, only a push from economic growth is not enough because it is still inelastic to poverty. According to the method capturing overall economy, SAM multiplier, the process of reducing poverty can be effectively accelerated through an increase in export or government income scheme, especially in meat, heavy manufacturing, and textile sector because all of these sectors have highest economic linkage to the economy of the five selected countries overall. However, there are three main factors affecting poverty from this model including income level, DEP, and especially SAM multiplier. As these factors are totally different in each country, future study should expand to cover each country's model in order to capture this differences among regions.

For policy recommendation, there are two main policies. The first is to encourage economic development instead of only economic growth. Economic development is recognized for an improvement in income, health, and education simultaneously [19]. An increase in national income can be occurred through job training, minimum wage law, worker protection law, and social welfare. For health and education which are able to lead people to be more productive, universal health care and education system are two main duties for any government. The five selected countries in Latin America should create a committee aimed at designing health and education system as a role model. Distribution of high-skilled doctor, medical authorities, and teacher should be critically concerned, especially in rural area. Also, for developing countries, the agricultural sector is still the source of wealth of all developing countries. Irrigation and modern technology (transferred) can help improve this sector. However, government intervention for a very long time is not a good idea due to the chronic market failure which is possible to create government budget deficit in the future.

The second policy is the trade policy. World becomes internationally economic interdependence which means that export-led policy should be highlighted. An increase of production in meat, heavy, and textile sector is key policies for Latin America. Government should support technology and innovation in these sectors. Of course, an induced effects from SAM multiplier are the core of economic development nowadays. An increase in export in one sector create an expansion in production of other sectors called economic linkages which workers tend to enjoy the higher income and lead to their consumption. Owners of firms tend to enjoy the higher profit and they will desire for new labor. Consumption should be government priority as it is not only the great component of economic growth but also the sign of well-being.

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