



The Impact of Different Macroeconomic Variables on Poverty in Thailand

Tatchawan Kanitpong*

Tanai Nopakoon**

Abstract

Thailand has made great progress in social and economic issues and became an upper middle income economy since 2011. As such, Thailand has been one of the great development success stories, with sustained strong economic growth and impressive poverty reduction. Hence, the objective of this study is to investigate the impact of GDP, inflation, and export of goods and services on the poverty in Thailand over the period of 1973-2012. Firstly, the study tests of unit root by ADF. Secondly, the study apply Engle and Granger test to confirm the presence of cointegrating relation of time series variables. Finally, an error correction model is developed to investigate the short run behavior of poverty to its long run value. Empirical results in short run show that GDP has inverse relationship with poverty. On the other hand, inflation and export have positive correlated with poverty.

บทคัดย่อ

ประเทศไทยได้มีการพัฒนาทั้งด้านสังคมและด้านเศรษฐกิจซึ่งทำให้รายได้ของประเทศจัดอยู่ในระดับบนของกลุ่มประเทศที่มีรายได้ระดับปานกลางตั้งแต่ปี ค.ศ. 2011 ดังนั้นการศึกษารายนี้จึงมีวัตถุประสงค์เพื่อศึกษาผลกระทบของตัวแปรทางเศรษฐกิจมหภาคต่อความยากจนของประเทศไทยโดยใช้ข้อมูลในช่วงเวลาปี ค.ศ. 1973-2012 ซึ่งในโมเดลมีตัวแปรทางเศรษฐกิจคือ ผลิตภัณฑ์มวลรวมภายในประเทศ อัตราเงินเฟ้อ และมูลค่าการส่งออก โดยการศึกษาได้ทดสอบความนิ่งของข้อมูล (Unit Root Test) ด้วยวิธี Augmented Dicker-Fuller (ADF) จากนั้นได้วิเคราะห์หาความสัมพันธ์เชิงดุลยภาพระยะยาว โดยวิธี Engle and Granger Cointegration Test และวิเคราะห์การปรับตัวของตัวแปรในระยะสั้นเข้าสู่ดุลยภาพในระยะยาวโดยใช้ Error Correction Model ผลการศึกษาพบว่าผลิตภัณฑ์มวลรวมภายในประเทศมีความสัมพันธ์ผกผันกับความยากจน ในทางตรงกันข้าม อัตราเงินเฟ้อและมูลค่าการส่งออกมีความสัมพันธ์ทางบวกกับความยากจน

* National Institute of Development Administration

** National Institute of Development Administration



Introduction

Thailand has been one of the great development success stories, with sustained strong growth and become an upper-middle income economy in 2011. Even though, Thailand continues to make progress towards meeting the Millennium Development Goals (MDGs) which it is likely to meet most of the MDGs on an aggregate basis. But the poverty problem in Thailand still exists in rural area, with 88% of the country's 5.4 million poor living. Therefore, objective of the study is to investigate the impact of different macroeconomic variables on the welfare of the poor in Thailand.

The aim of this paper is to investigate how macroeconomic variables have impact on the poverty in Thailand. These relationships can answer the question of whether an increase in GDP reduces poverty, whether stabilization policies for controlling inflation benefit the poor, and whether openness to the world economy helps in reducing poverty. This study collects the annual time series data from 1973-2012. The multiple regression techniques are applied to detect the relationship between macroeconomic variables and poverty. Independent macroeconomic variables are included GDP, inflation, and export, while poverty is dependent variable.

Literature Review

Studies of GDP Growth and Poverty

Roemer and Gugerty (1997) use the Deininger-Squire data set, covering 26 developing countries including Thailand, to identify whether economic growth tends to reduce poverty. Their result shows that growth in per capita GDP can reduce poverty.

Tsangarides C.G., Ghura D., and Leite C.A. (2000) investigate the poverty alleviation through economic growth by using dynamic panel estimator to capture both across and within country effects. The empirical finding indicates that growth is important factor to raise the income of the poor. However, the relationship is less than one to one which implies that for a given target of poverty reduction over certain period of time, the economic growth rates required may exceed what can be reasonably expected.

Dollar and Kraay (2002) use a sample set of 92 countries for 40 years period to examine if average incomes of the poorest quintile rise proportionately with average incomes. The finding show strong relationship between incomes of the poor and average incomes with the elasticity of 1.07 which does not differ significantly from one.



Studies of Inflation and Poverty

Cardoso E. (1992) shows evidence in Latin America that wages increase more slowly than prices. Therefore, the work concludes that the inflation affects poverty mainly through real wages.

Sarel M. (1996) and Bruno and Easterly (1998) find the positive relationship between inflation and poverty by giving the following reason; the poor have to spend a larger proportion of their income on basic necessities on their lives, therefore, an increase in price of food items will have effect of lowering savings by the poor, which worsens the condition of the poor. They conclude that the stabilization policies for controlling inflation would benefit the poor instead of rich.

Easterly and Fischer (2011) examine the impact of inflation on poverty by using polling data for households in 38 countries. The results show that high inflation tends to lower real minimum wage, while tending to increase poverty.

Studies on GDP Growth, Inflation, Trade Openness and Poverty

A study by Richard (2002) focuses on the effect of macroeconomic adjustment on poverty by using cross country data. The variable included rate of output growth, changes in the real exchange rate, inflation, and macroeconomic volatility - as well as structural factors (degree of urbanization health conditions, illiteracy rate, and the degree of income inequality). The econometric results suggest that higher levels and growth rates of per capita income, higher rates of real exchange rate depreciation, better health conditions, and a greater degree of commercial openness lower poverty, whereas inflation, greater income inequality, and macroeconomic instability tend to increase poverty.

Chani (2011) use ARDL bound testing and cointegration approach to investigate the impact of economic growth, inflation, investment and trade openness on poverty in Pakistan over the period of 1972-2008. The empirical results show that economic growth and investment have significantly negative impact on poverty, while both inflation and trade openness have positive impact. Moreover, the study finds insignificant relationship between trade openness and poverty.

Sabir H.M. and Tahir S.H. (2012) study the impact of macroeconomic variables on poverty for the case of Pakistan by using time series data from 1981-2010. The results revealed that GDP growth rate, major crops, minor crops and livestock have negative impact on poverty. On the other hand, inflation and population growth rate have positive impact.



Methodology

Unit Root test:

This study tests unit root test for determine if trending data should be first differenced or regressed on deterministic functions of time to render the data stationary. To illustrate the important statistical issues associated with unit root tests by Augmented Dickey Fuller (ADF) test as following model

Cointegration test

The model is test for short run and long run relationship between poverty and GDP, inflation and export by using Engle and Granger method. Then the study develop error correction model to observe the speed of adjustment that poverty will return to equilibrium after a change in all independent variables.

Model Specification and Expectation on Variables

There are four economic variables in this model. The independent variables are GDP, inflation rate, and export. The dependent variable is the poverty rate. These data are sourced from statistical program IFS and World Development Indicators database of Thailand.

The functional form of the model:

$$POV = \beta_0 + \beta_1 GDP + \beta_2 INF + \beta_3 EX + \mu_i$$

Where;

POV = Poverty (Poverty headcount ratio at national poverty line (% of population))

INF = Inflation rate (Consumer price in annual percentage)

GDP = Gross Domestic Product

EX = Export of goods and service

μ_i = Error term



Hypothesis Making: List of hypothesis are tested to check the influence of different variables on the poverty

a. Hypothesize that GDP growth has negative impact on poverty

There are two debates about whether GDP growth can alleviate poverty. On one hand, the growth on GDP can reduce poverty if economies are based on small scale farming as in Africa and Asia countries since most of the poor are engaged in agriculture. Firstly, when countries grow through agricultural exports, that will increase demand for food by rural sector. Thus, growth benefits both poor farmers and the even poorer labourers they employ. Secondly, on the other hand, industrial economies which country's wealth is concentrated in very few hands, those countries growth has less of an effect on poverty alleviation. Since Thailand is an agricultural based economy, this study expects GDP growth has a negative impact on the poverty.

b. Hypothesize that inflation rate has positive impact on poverty.

Inflation rate is calculated using the consumer price index which has the greatest effect on the prices of goods and services most utilized by those in poverty. An increase in inflation rate lead to lower purchasing power, and therefore lower economic welfare, worsening conditions for the poor.

c. Hypothesize that export has negative effect on poverty.

With the global liberalization, most of developing countries have opened their economies to the world in order to promote exports. The main objective is that export tends to generate income and create jobs for the poor living in rural areas. In this regard, the contribution of exports will reduce poverty.

Results and Discussion

Test for Stationarity

Table 1 shows the results of ADF statistic. The statistic value of ADF with first difference with trend and intercept for all variable are exceed the critical values. Therefore, the results imply that inflation and export are stationary in their first differences at 1% significance level, poverty rate is stationary in first difference at 5% significance level and GDP is stationary in first difference at 10% significance level.



Table 1
Unit Root Tests (ADF Statistic)

VARIABLES	ADF TEST	T-STATISTIC		
		1% LEVEL	5% LEVEL	10% LEVEL
<i>POV</i>	-0.632676	-4.532598	-3.673616	-3.277364
Δ <i>POV</i>	-3.998783	-4.532598	-3.673616	-3.277364
<i>GDP</i>	-1.968115	-4.083355	-3.470032	-3.161982
Δ <i>GDP</i>	-3.323269	-4.083355	-3.470032	-3.161982
<i>INF</i>	-2.349652	-4.080021	-3.468459	-3.161067
Δ <i>INF</i>	-6.741246	-4.080021	-3.468459	-3.161067
<i>EX</i>	-1.773923	-4.498307	-3.658446	-3.268973
Δ <i>EX</i>	-5.928974	-4.532598	-3.673616	3.277364

Test for Cointegration and Error Correction Model

The results of testing for cointegration by Engle and Granger two-step procedure are shown in Table 2 and Table 3. According to the test for stationary of residual, the statistic value of ADF does exceed critical values at 10% level. Therefore, the results suggest that poverty, GDP, inflation and export have a long run relationship.

This paper also applies the error correction model which shows the result in Table 4. The results show that the coefficient of the error-correction term is has a negative sign and significant at 10% level, meaning that the speed of adjustment equal to 33.99 percent.

The value of the coefficient of GDP has a negative relationship with the poverty and has high significant impact on poverty. Thus, the result of this study confirms theoretical findings that an increase in GDP can reduce poverty.

The coefficient of inflation has a positive sign which means that there is a positive relationship between inflation and poverty. Therefore, the data collected in Thailand fully supports the conclusion for previous studies by Cardoso E. (1992), Sarel M. (1996) and Bruno and Easterly (1998).



The coefficient export has an unexpected positive which means that when exports from Thailand increase, poverty rate will increase as well.

Table 2
Engle and Granger Cointegration Test

VARIABLE	COEFFICIENT	STD-ERROR	T-STATISTIC
<i>GDP</i>	-1.901370	0.213332	8.103230
<i>INF</i>	0.031649	0.764209	-8.912731
<i>EX</i>	0.516073	0.194083	0.041415
<i>C</i>	5.949937	0.734267	2.659033
$R^2 = 0.971312$			

Table 3
Cointegration and Unit Root Test for Residual at Level

VARIABLES	ADF TEST	T-STATISTIC		
		1% LEVEL	5% LEVEL	10% LEVEL
RESIDUAL	-2.775043	-3.808546	-3.020686	-2.650413

Table 4
Error Correction Model

VARIABLE	COEFFICIENT	STD-ERROR	T-STATISTIC
ΔGDP	-1.216443	0.423999	-2.868977
ΔP	0.174894	0.090848	1.777378
ΔEX	0.363856	0.205180	1.773354
$\epsilon(-1)$	-0.339945	0.236910	-1.434912
<i>C</i>	-0.013666	0.014672	-0.931433



Conclusion and Recommendation

The objective of this paper is to investigate the impact of macroeconomic variables on the poverty in Thailand by using time series data over the period of 1973-2012. The result of the study reveals that GDP has a negative relationship with the poverty level. In contrast, the inflation and export have positive relationship with poverty.

From this research, the results indicate that Thailand's high economic growth is a prerequisite for poverty reduction. Employment generate from economic growth raise peoples' income which can reduce poverty. An Inflation targeting policy is another important issue that Thai government should take this seriously since inflation will decrease the purchasing power of the poor. Lastly, there is evidence from several countries that an export promotion strategy has a negative impact of poverty. However, most of Thailand's export value comes from industrial sector. Thus, when value of exports increase, most of the income goes to rich people. Therefore, Thai government should still pursue a policy of open markets but emphasis should be placed on major agriculture product to alleviate poverty.



References

- Adeyemi, S.L., Gafar T Ijayia and Usman A Raheem (2009), "Determinants of Poverty in Sub-Sahara Africa", *International Multi Disciplinary Journal Ethiopia*, Vol.3, No.2.
- Agenor, P.R (1998), "Poverty Income distribution and Labor market Issues in Sub Sahara Africa", *Collaborative Research Project*, CR-2-3.
- Bruno M. and Easterly W. (1998), "Inflation Crises and Long-Run Growth", *Journal of Monetary Economics*, No.41, pp.3-26.
- Cardoso E. (1992), "Inflation and Poverty", *National Bureau of Economic Research Working Paper*, No.4006.
- Chaudhry, I. S., Malik and Hassan (2009), "The Impact of Socioeconomic and Demographic Variables on Poverty: A Village Study", *The Lahore Journal of Economics*, 14(1), pp.30-68.
- Cervantes-Godoy, D. and J. Dewbre (2010), "Economic Importance of Agriculture for Poverty Reduction", *OECD Food, Agriculture and Fisheries Working Papers*, No.23, OECD Publishing.
- Dollar D. and Kraay A. (2002), "Growth is Good for the Poor", *Journal of Economic Growth*, No.7, pp.195-225.
- Easterly W. and Fischer S. (2001), "Inflation and the Poor", *Journal of Money, Credit and Banking*, Vol.33, No.2, Part 1, pp.160-178.
- Egbe, G and Awogbemi Clement (2011), "The Impact of Macroeconomic Policies and Programs on Poverty Problems", *Journal of Economics and Sustainable Development*, Vol.2, No.9.
- Gujarati, D. N (2003), "Basic Econometrics", McGraw Hill Education, fourth edition, pp. 300-560
- McNicoll G. (1999), "Population and Poverty", Sustainable Development Department (SD), Food and Agriculture Organization of the United Nations, *The Policy Issues*, Part 1.
- Merrick, T.W. (2002), "Population and Poverty: New Views on an Old Controversy", *International Family Planning Perspectives*, Vol.28, No.1, pp.41-46.
- Richard, A.P (2002), "Macro Economic Adjustment and the poor: Analytical issues and Cross country evidence", *Policy research working paper*, Report No. WPS2788 Vol.1.



Romar, M. and Gugerty, M.K., (1997),” Does Economic Growth Reduce Poverty?”, *Harvard Institute for International Development*, March 1997.

Sabir H.M. and Tahir S.H. (2012), “The Impact of Different Macroeconomic Variables on Poverty in Pakistan”, *Interdisciplinary Journal of Contemporary Research In Business*, February 2012, Vol.3, No.10.

Sarel M. (1996), “Nonlinear Effects of Inflation on Economic Growth”, *IMF Staff Papers*, No.43, pp.199-215.

Tsangarides C.G., Ghura D., and Leite C.A. (2000), “Is Growth Enough? Macroeconomic Policy and Poverty Reduction”, *IMF Working Paper*, No.02/118.

World Development Indicators sources of data, from <http://data.worldbank.org/country/thailand> retrieve 14 November 2013.