

The Effect of Macroeconomic Variables on Pro-Poor Growth in Iran

Tasan, M.¹, Pirae, Kh.^{2*}, Nonejad, M.³, Abdeshahi, A.⁴

Abstract

Poverty reduction is one of the main goals of policies pursued by governments. At the same time, economic growth and a strong belief in growth along with justice have always been of interest to policymakers. In this regard, the concept of pro-poor growth focuses on the interaction between three elements: growth, poverty and inequality. On the other hand, pro-poor growth is affected by several factors including macroeconomic variables. The purpose of this study is to investigate the effect of macroeconomic variables including government expenditures, transfers, liquidity, openness, oil revenues and external debt on pro-poor growth during the period 1982-2015. To this aim, first, we calculated pro-poor growth index. Then, using the time series data of desired macroeconomic variables and by ARDL model, we estimated that relationship. The results showed that all macroeconomic variables, except transfers and openness, have a negative and significant effect. In other words, by increasing liquidity, external debt, oil revenues and government expenditure, the share of poor people from economic growth will be less than the rich. Therefore, it is suggested that the government change the path of economic growth by improving the infrastructures and increasing social spending in the field of education and health, as well as directing liquidity towards productive and employment activities and allocating oil revenues to improving the infrastructures so the benefits of the poor will be more than the rich from economic growth, and the goal of reducing poverty and inequality would be achieved. Also, in spite of the positive effect of transfers and the openness of the economy on pro-poor growth, it is suggested that the accurate identification of poor people and the targeting of subsidies, as well as the removal of barriers of free trade and membership of the WTO, along with the establishment of appropriate infrastructures and institutions, will increase the effectiveness of these macroeconomic variables.

Keywords: Pro-poor growth, External Debt, Liquidity, Government Expenditure, Transfers, Oil Revenue, Trade openness, ARDL Method.

JEL Classification: I32, I38.

-
1. PhD student of Economics Group, Shiraz Branch, Islamic Azad University, Shiraz, Iran
 2. Associate Professor of Economics Group, Shiraz Branch, Islamic Azad University, Shiraz, Iran
 3. Associate Professor of Economics Group, Shiraz Branch, Islamic Azad University, Shiraz, Iran
 4. Associate Professor of Agricultural Economics, Agricultural Sciences and Natural Resources University of Khuzestan

Email: m.tasan@yahoo.com

Email: Kh.pirae@gmail.com

Email: Mnonejad.iaushiraz@yahoo.com

Email: abdesahi1349@ramin.ac.ir

1. Introduction

Developmental researchers are looking for growth conditions that have a strong impact on poverty reduction, or a type of economic growth that is preferable for rapid decline in poverty. The concept of "pro-poor growth" is the last attempt to answer the above quandary, which has been raised since the 1990s (Whitefield, 2008). In general, the pro-poor growth strategy includes three basic levels: improving the ability of the poor, reducing transaction costs in the economy, especially between urban and rural areas, and increasing demand for goods and services produced by the poor. One of the factors influencing the third level of this strategy is "macroeconomic policies".

Now the problem is that despite the common goal of all economies to reduce poverty and increase economic growth with justice, in some developing societies including Iran, these goals have not yet been achieved. Therefore, in this study, the effect of macroeconomic variables on pro-poor growth in Iran during the period 1361-1394 was examined to show the weaknesses and strengths of the implemented policies. The studied variables are liquidity, oil revenues, trade openness, government expenditure, transfer payments and foreign debt.

2. Method

Each of the economic policies studied in this paper affects on pro-poor growth via different channels, and these effects can be in any direction. Therefore, after examining how each policy affects, the following hypotheses are tested.

1. Liquidity reduces the pro-poor growth degree.
2. Oil revenues reduce the pro-poor growth degree.
3. External debt reduces the pro-poor growth degree.
4. Government expenditure increases the pro-poor growth degree.
5. Regarding the openness of the economy, according to the theory and experimental studies, one can expect a positive or negative effect. So the question, "What effect does openness have on pro-poor growth in Iran?" remains.

In order to test the above hypotheses, first the pro-poor growth index presented by Kakwani and Pernia was calculated and then the desired model was specified.

The pro-poor growth index is:

$$\varphi = \frac{\eta_G + \eta_I}{\eta_G} \quad (1)$$

Where η_G is the income effect of growth on poverty and η_I is the inequality effect on poverty. Kakwani and Pernia used the following criteria to comment on the degree of pro-poor growth:

If

$\varphi < 0$, growth is anti-poor;

$0 < \varphi < 0.33$, growth is weakly pro-poor;
 $0.33 < \varphi < 0.66$, growth is moderately pro-poor;
 $0.66 < \varphi < 1.0$, growth is pro-poor; and
 $\varphi > 1.0$, growth is highly pro-poor.

The following equation can be used to see the effect of macroeconomic variables on pro-poor growth:

$$\varphi_t = \alpha_0 + \delta_i D_{it} + \tau_K X_{kt} + \omega_t \tag{2}$$

where φ_t is pro-poor growth index, D_{it} is control variables including human development index, terms of trade, Gini coefficient, dummy variable related to war years, democracy index, economic corruption index, X_{kt} represents macroeconomic variables including liquidity volume, foreign debt, government expenditure, government transfers, oil revenues and economic openness, τ_K is the effect of macroeconomic variable on pro-poor growth and ω_t is error terms. In this paper, the model coefficients are estimated by the “Auto Regression Distributed Lag” as follows:

$$\varphi_t = \alpha_0 + \sum_{i=1}^p \alpha_{1i} \varphi_{t-i} + \sum_{j=1}^q \beta_{1j} X_{k,t-j} + \sum_{j=1}^q \beta_{2j} D_{i,t-j} + \varepsilon_t \tag{3}$$

3. Research findings

3-1. Calculating the pro-poor growth index

The data used to calculate the pro-poor growth index was obtained from the Statistics Center of Iran. The results are:

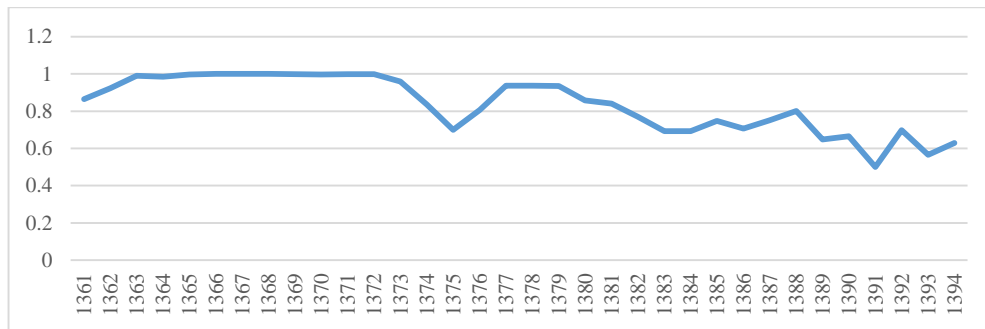


Figure 1: pro-poor growth of Iran during the period of 1361-1394

Resource: Research Calculations

As demonstrated in Figure 1, economic growth in Iran during the period under review has always been pro-poor, with the exception of 1391 and 1394, in which growth has been moderately pro-poor. Therefore, despite the policies of different governments towards justice and equality, the situation of the poor has not improved much due to economic growth.

3-2. Econometric model specification

First, we tested the stationarity of variables with “Augmented Dickey Fuller test” to ensure that all of variables were I(0) and I(1). After that, the “bound test of Pesaran et. al.” was used to test the long-term relationship between the research variables. Optimal lags of variables were determined by Akaike information criteria.

The results of the model estimation are presented below:

The results of estimating the short-term relationship between the variables are presented in Table 1:

Table 1: short run estimation

Variable	Coefficient	t-statistics	Standard error	Prob.
$\varphi(-1)$	-0.02	-0.10	0.20	0.92
$\varphi(-2)$	-0.31	-1.07	0.29	0.31
<i>G</i>	-0.002	-0.003	0.56	0.99
$G(-1)$	-1.66	-2.44	0.68	0.03
<i>T</i>	4.81	2.27	2.11	0.04
<i>Open</i>	0.82	1.85	0.44	0.09
$Open(-1)$	1.04	3.82	0.27	0.004
$Open(-2)$	0.23	3.31	0.07	0.009
<i>Oil</i>	-1.50	-1.70	0.88	0.12
$Oil(-1)$	-1.63	-2.55	0.98	0.03
$Oil(-2)$	-1.45	-1.68	0.86	0.12
<i>M</i>	-0.77	-1.79	0.43	0.10
<i>Debt</i>	-4.80	-1.82	2.63	0.10
$Debt(-1)$	-2.08	-1.37	1.51	0.20
$Debt(-2)$	-0.364	-4.12	0.88	0.002
<i>HDI</i>	4.98	3.90	1.27	0.003
<i>Cor</i>	-0.05	-0.15	0.33	0.87
<i>Gini</i>	6.44	2.70	2.38	0.02
<i>TOT</i>	-0.11	-1.60	0.07	0.14
<i>Democ</i>	0.05	2.22	0.02	0.05
<i>Dum</i>	-0.12	-1.49	0.08	0.17
<i>C</i>	2.65	2.58	1.02	0.02
Jarque-Bera Test: 2.22 (0.32) Breusch-Godfrey LM test: 14.36 (0.20) Breusch-Pagan-Godfrey: 0.95 (0.56)			$\bar{R}^2 = 0.91$ $F = 15.78(0.0000)$	

Resource: Research Calculations

The short-term estimation results showed that the government expenditures have not worked to improve the welfare of the poor. However, the government's transfer has positive and significant effect on pro-poor growth. Economic growth due to the open economy has improved the welfare of poor people by introduction of technology, increased productivity, more efficient allocation of resources, and the promotion of innovation. Oil revenues in each period, as well

as in the first and second lags, have a negative effect on pro-poor growth. Of course, the significance of this variable is only related to its first lag. In fact, the channels of positive impact of oil revenues in Iran have not been effective and oil revenues have acted as a curse of nature in the Iranian economy. Regarding the liquidity variable, it was observed that with the increase of liquidity volume and subsequent increase in inflation rate, instability prevailed in the macroeconomic space. So investment decrease and economic growth is delayed. The effect of this variable along with other macroeconomic variables has not been evaluated in favor of the poor. The effect of foreign debt is similar to oil revenue. Foreign debt in each period and in the first and second lag has a negative effect on pro-poor growth. because these debts have led to a change in the budgeting process to the detriment of the poor. In other words, the government has been forced to cut spending on infrastructures and social spending because its inability to cover its debts due to its inability to improve the efficiency of the tax system and its inability to increase exports due to economic sanctions.

Before estimating long-term coefficients and error correction model, diagnostic tests were performed to ensure the validity of the model. The results of diagnostic tests such as normality, Auto-correlation and heteroscedastisity are presented at the end of the above table, which shows the good fit of the model. Long-term coefficients estimating are presented in the table below. The results show that in the long run, government expenditure, oil revenues, liquidity and foreign debt have a negative effect on pro-poor growth while openness and government transfers have a positive and significant effect on pro-poor growth. A comparison of the short-term and long-term coefficients shows that the size of the transfer payments coefficient in the long-run is less than in the short term, while that for openness is greater.

Table 2: long run estimation

variable	coefficient	t-statistic	Standard error	Prob
G	-1.25	-2.19	0.57	0.05
T	3.60	2.37	1.51	0.04
OPEN	1.57	2.17	0.72	0.05
OIL	-3.44	-4.09	0.84	0.002
M	-0.57	-2.22	0.25	0.05
Debt	-2.43	-1.88	1.29	0.09
HDI	4.98	3.90	1.27	0.003
Cor	-0.05	-0.15	0.33	0.87
Gini	6.44	2.70	2.38	0.02
TOT	-0.11	-1.60	0.07	0.14
Democ	0.05	2.22	0.02	0.05
Dum	-0.12	-1.49	0.08	0.17

Resource: Research Calculations

The results of the error correction model are also given in Table 3. As shown in the table, the error correction coefficient is negative, significant and equal to 0.33, which indicates that in case of shock and equilibrium deviation in each period, 0.33 of the short-term imbalance is adjusted to achieve long-term equilibrium.

Table 3: Error correction model estimation

variable	coefficient	t-statistics	Standard error	Prob
D($\varphi(-1)$)	0.31	2.38	0.13	0.04
D(G)	-0.002	-0.008	0.26	0.99
D(OPEN)	0.82	4.34	0.18	0.001
D(OPEN(-1))	-0.23	-6.50	0.03	0.0001
D(OIL)	-1.50	-4.46	0.33	0.001
D(OIL(-1))	1.45	2.62	0.55	0.02
D(Debt)	-4.80	-4.23	1.13	0.002
D(Debt(-1))	-3.64	-7.31	0.49	0.00
HDI	4.98	7.87	0.63	0.00
Cor	-0.05	-0.28	0.18	0.78
Gini	6.44	5.56	1.15	0.00
TOT	-0.11	-2.33	0.05	0.04
Democ	0.05	5.75	0.009	0.00
Dum	-0.12	-3.38	0.03	0.00
ECM	-0.33	-8.25	0.04	0.00

Resource: Research Calculations

However, since the unstable parameters lead to erroneous conclusions, the structural stability test of the parameters was performed. The results are shown in Figure (2), which confirms their stability at the 95% level.

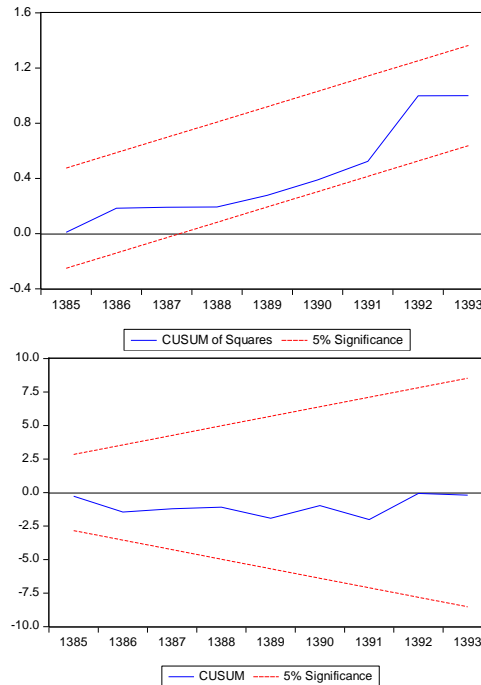


Figure 2: variable stability test result

Resource: Research Calculations

3-3. Conclusion and Recommendations

Based on the results of estimating the long-term model, it can be argued that all of these variables, with the exception of the openness of the economy and transfer payments, had a negative and significant effect on pro-poor growth. Therefore, the following suggestions are provided to improve the situation of the poor:

- Spending government expenditure on improving infrastructures that are used by the poor and increasing government spending on education and health;
- Accurate identification of low-income people and redistribution of income and targeted subsidies to them, creating employment opportunities along with increasing the skills and abilities of this group and pursuing policies to protect economic growth;
- Assigning oil revenues to promotion of health and education in disadvantaged areas;
- Pursuing the policy of removing barriers to free trade as well as membership in the World Trade Organization
- Conducting liquidity to increase production and, thus, create job opportunities
- Future studies examine the impact of other macroeconomic variables on pro-poor growth.

References

- Bagheri, F. and Kavand, H. (2008). The effect of economic development on poverty and inequality in Iran from 1996 to 2005. *Faslname-ye Elmi Pajuheshi-e Refah-e Estemaei*, 7(28), 173-190.
- Piraei, K. and Qena'atian, A. (2006). The effect of economic development on poverty and inequality in Iran: measuring pro-poor growth index. *Faslname-ye Pajuheshha-ye Eghtesadi-e Iran*, 8, 113-141.
- Mahmoudi, V. (2003). Presenting a new method for analyzing the changes in poverty into the effect of growth and redistribution. *Majale-ye Tahghighat-e Eghtesadi*, 63, 165-186.
- Agénor, P. (2002). *Macroeconomic Adjustment and the Poor: Analytical Issues and Cross-Country Evidence*. Washington DC: The World Bank.
- Agénor, P. (2003). *Does Globalization hurt the poor?*, Washington DC: The World Bank.
- Auty, R. (2001). *Resource Abundance and Economic Development*. New York: Oxford University Press.
- Bannister, G. & Thugge, K (2001). *International Trade and Poverty Alleviation. Working Paper 54/2001*. Washington DC: International Monetary Fund.
- Berg, A. & Krueger, A. (2003). *Trade, Growth, and Poverty: A Selective Survey*. IMF working paper.
- Breen, R., Garcia-Peñalosa, C. (1999). *Income inequality and macroeconomic volatility: an empirical investigation*. European University Institute, Oxford.
- Cardoso, E. (1992). *Inflation and Poverty. NBER Working Paper*. No. 4006. Cambridge, MA.
- Claessens, S., Detragiache, E., Kanbur, R. & Wickham, P. (1996). *Analytical aspects of debt problems, in: Iqbal, Zubair, Kanbur, Ravi (ed.), External finance for low-income countries*. Washington DC: International Monetary Fund.
- Collier, P. & Hoeffler, A. (1998). "On economic causes of civil war", *Oxford Economic Papers*, Volume 50(4), 563-573.
- Collier, P. & Hoeffler, A. (2002). "On the Incidence of Civil Wars in Africa". *Journal of Conflict Resolution*, 46, 13-28.
- Dollar, D. & Kraay, A. (2002). "Growth is good for the poor". *Journal of Economic growth*, 7, 195-225
- Fan, S., Brzeska, J. & Shields, G. (2007). *Investment priorities for economic growth and poverty reduction*. Washington D.C.: International Food Policy Research Institute (IFPRI).
- Fearon, J. D. & Laitin, D. D. (2003). "Ethnicity, Insurgency, and Civil War." *American Political Science Review*, 97: 75-90.
- Gomanee, K., Morrissey, O., Mosley, P. & Verschoor, A. (2003). *Aid, Pro-Poor Government Spending and Welfare*. Centre for Research in Economic Development and International Trade, University of Nottingham.
- Gugerty, M. & Roemer, M. (1997). *Does economic growth reduce poverty?*, *CAER II Discussion Paper 50*. Harvard Institute for International Development

- Ghura, D., Leite, C. A. & Tsangarides, C. (2002). *Is growth enough? Macroeconomic Policy and Poverty Reduction, Working Papers 118/2002*. Washington DC: International Monetary Fund.
- Gylfason, T. (2000). *Natural resources, education and economic development. Paper presented at the 15th Annual Congress of the European Economic Association, Bolzano, August-September*.
- Klasen, S. (2006). *Macroeconomic policy and pro-poor growth in Bolivia, Discussion papers*, Ibero America Institute for Economic Research, 143.
- Lam, R. & Wantchekon, L. (1999). *Political Dutch Disease*, Working Paper. Yale University.
- Leite, C. A. & Weidemann, J. (1999). *Does Mother Nature Corrupt? Natural Resources, Corruption, and Economic Growths*, IMF working Paper.
- Loko, B., Mlachila, M., Nallari, R. & Kalonji, K. (2003). *The Impact of External Indebtedness on Poverty in Low-Income Countries*. IMF working Paper. Policy Development and Review Department.
- Maier, R. (2004). *Macroeconomic Policy for Pro-poor Growth*, Ph.D. Thesis in Ludwig-Maximilians University, Munich.
- Manhage, M. (1994). *Is Inflation Bad for Growth*. Working paper. Economic Department at Sveriges Riksbank.
- Manzano, O. & Rigobon, R. (2001). *Resource Curse or Debt Overhang. NBER Working Paper No. 8390*, National Bureau of Economic Research.
- McCulloch, N. & Winters, A. & Cirera, X. (2001). *Trade liberalization and Poverty: A Handbook*. Centre for Economic Policy Research. London.
- Menezes Filho, N., Vasconcellos, L. (2004). *Has Economic Growth Been Pro Poor in Brazil? Why?*, OPPG Working Program. GTZ Commissioned Study.
- Mogues, T., Yu, B., Fan, S. & McBride, L. (2012). *The impacts of public investment in and for agriculture. Synthesis of the existing evidence*. International Food Policy Research Institute.
- Moradi, M. A. (2009). *Oil Resource Abundance, Economic Growth and Income Distribution in Iran*. www.eomod.org. paper No. 990.
- Murphy, K., Schleifer, A., & Vishny, R. W. (1989). "Industrialization and the big Push". *Journal of Political Economy*. 97(5), 1-34.
- Ouattara, W. (2012). "Public Expenditure Contribution to Pro-Poor Growth in Cote d'Ivoire: A Micro Simulated General Equilibrium Approach". *Modern Economy*, 3, 330-337.
- Pirae, K. (2003). "Does Economic Growth Help the Poor People? Evidence from Iran in the First Five-Year Plan", *Iranian Economic Review*, 9, 85-99.
- Rabin, J. & Stevens, G. L. (2002). *Handbook of Monetary Policy*. Public Administration and Public Policy.
- Romer, C. & Romer, D. (1998). "Monetary Policy And Well – Being Of The Poor". *NBER Working Paper*, 6793, 21-49.
- Ross, M. (2003). *How Does Mineral Wealth Affect the Poor?*, Manuscript.
- Simson, R. (2012). *Following the money: Examining the evidence on 'pro-poor' budgeting*. London: Overseas Development Institute.

- Sachs, J. D. & Warner, A. M. (1997). "Sources of slow growth in African economies", *Journal of African Economies*, 6 (3), 335-376.
- Sachs, J. D. & Warner, A. M. (1999). "The big push, natural resource booms and growth", *Journal of Development Economics*, 59, 43-76.
- Sachs, J. D. & Warner, A. M. (2001). "The Curse of Natural resources", *European Economic Review*, 45, 827-838.
- Timmer, P. (2004). "The road to pro-poor growth: the Indonesian experience in regional perspective", *Bulletin of Indonesian Economic Studies*, Taylor & Francis Journals, 40(2), 22-27.
- Whitfield, L. (2008). *Pro-Poor Growth: a review of contemporary debates*, Elites, Production and Poverty research program (www.diiis.dk/epp)
- Winters, L.A. (2000a). *Trade Liberalisation and Poverty*". Discussion Paper No. 7, Poverty Research Unit, Sussex, University of Sussex, UK.
- Winters, L.A. (2000b) *Trade, Trade Policy and Poverty: What are the Links?*, Discussion Paper No. 2382, Centre for Economic Policy Research, London.