The Impact of Food and Non-Food Inflation on Poverty: A Case Study of Sri Lanka

T. Vinayagathasan and S. Priyatharsiny

Department of Economics and Statistics, Faculty of Arts
University of Peradeniya, Sri Lanka

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Introduction

Poverty has become a major concern among the economists and policy makers as it limits the access to basic needs of poor. Since poor people have lack of power in the political and the decision making process, they are generally exposed to misuse by society and state. Poor people often suffer by economic shocks, especially from unpredicted rise in rate of inflation. Therefore, if there is any crisis in the economy, poorer has to pay higher prices than the richest people, whereas they gain generally less compared to rich during the economic booms. In this background, some people prefer inflation than the deflation while other people prefer very low inflation or even deflation. Inflation tends to smash poorest in the society while it badly affects the savings of middle class.

In general, a moderate inflation does not necessarily increase poverty but higher inflation will lead to increase it. Chani et al. (2011) identified a positive and significant relationship between inflation and poverty in the long run and the short run for Pakistan. Choi et al. (1996) confirmed that inflation hits more harshly to poor than the rich and higher income people. Bruno and Easterly (1998) also invented that poor household get more benefits than the rich when there is stabilization policies to control inflation. Gylfason (1998) and Easterly

(1993) found that high economic growth and low inflation tend to decrease poverty. Using the Philippines data, Fuji (2011) showed that poor are vulnerable to the food inflation. When we look at the Sri Lankan context, there is a lack of quantitative studies in the area that investigate the relationship between rate of inflation and poverty. This motivated us to do the quantitative assessment between these variables. In this study, we partition inflation rate into two namely food and non-food inflation to address above issues.

Objective

The purpose of this study is to examine the impact of food and non-food inflation on poverty level of Sri Lanka.

Methodology

Monthly data of Sri Lanka between January 2009 and December 2015 is used for this study. Data of poverty head count ratio, food and non-food inflation (2006/2007 as based year) are collected from Department of Census and Statistics whereas unemployment[1] rate and Gross Domestic Product (control variables) are extracted from Central Bank of Sri Lanka's Annual Reports. The series of poverty, unemployment and GDP are interpolated using the method of Chow and Lin (1971) and Vinayagathasan (2014; 2015). The best linear unbiased interpolation method is adopted in order to get the monthly data. All the data were seasonally adjusted using Census X12 additive approach.

ADF, PP and Ng-Perron unit root test is applied to check stationarity properties of the time series data. Akaike Information Criterion (AIC), Schwarz Information Criterion (SC), Sequential modified LR tests statistics are adapted to determine the optimal lag length. The number of co-integrating relationship is examined using Johansen co-integration approach which is described as below:

[1] Multicolinearity test did not identify any correlation among the regressors. Results are not given here but available upon request

$$\mathrm{POV_t} = \pi_0 + \pi_1 \mathrm{FINF_t} + \pi_2 \mathrm{NFINF_t} + \pi_3 \mathrm{UNEMP_t} + \pi_4 \mathrm{GDP_t} + \mathrm{u_t} \quad (1)$$

Where, POV: poverty head count ratio, FINF: food inflation, NFINF: non-food inflation, UNEMP: unemployment rate, GDP: Gross Domestic Product and u is the white noise error term and t refers the period of time. We used Error Correction Model (ECM) to identify the short-run and long-run relationship as well as long-run equilibrium of the model. The model is given below:

$$\Delta \mathrm{Y_t} = \delta_0 + \Psi \mathrm{Y_{t-1}} + \sum_{i=1}^{p-1} \Upsilon_i^* \, \Delta \mathrm{Y_{t-i}} + \varepsilon_t \quad (2)$$

where, $\Psi = \alpha\beta'$. where, α: error correction term, β': (1×5) vector of cointegrating coefficients, $\mathrm{Y_t} = [\mathrm{POV_t}, \mathrm{FINF_t}, \mathrm{NFINF_t}, \mathrm{UNEMP_t}, \mathrm{GDP_t}]'$ vector of dependent variables, $\mathrm{Y_{t-i}}$: lagged value of $\mathrm{Y_t}$ and ε_t: white noise error term.

Results and Discussions

All three unit root tests method confirmed that all the variables are stationary at their first difference. All lag length selection criteria are suggested to use two lags as optimal lag length. The maximum Eigenvalue statistics of Johansen co-integration technique detected one co-integrating relation in the system of equation at 5 % level of significance. The long run part of the results of ECM shows that increase in UNEMP, FINF and NFINF have positive and significant long-run relationship with POV as expected to theory whereas GDP is negatively and significantly affects POV. The co-integration (i.e., long run part of ECM) result is given by the following Equation:

$$\mathrm{POV_t} = \underset{}{13.8} + \underset{(6.25)}{10.71}\mathrm{FINF_t} + \underset{(6.72)}{8.73}\mathrm{NFINF_t} + \underset{(3.15)}{4.97}\mathrm{UNEMP_t} - \underset{(-5.56)}{0.0016}\mathrm{GDP_t}$$

Note: t-statistics are given in the parenthesis.

Table 1 depicts the ECM results of the long run equilibrium. Accordingly, the coefficient of speed of adjustment of poverty head count ratio is negative as expected which is not statistically significant. This indicates that the external shocks do not bring the model to equilibrium significantly in the long-run.

Table 1: ECM Results of the long run equilibrium

	D(POV)	D(GDP)	D(FINF)	D(NFINF)	D(UNEMP)
Cointegrating Equation	-0.0058	$-4.04\text{E}+10$	-0.0111	0.0364	-0.0264
	$[-0.403]$	$[-2.547]$	$[-0.489]$	$[2.415]$	$[-2.769]$

Note: t-statistics are given in the brackets

Since speed of adjustment coefficient of the dependent variable (POV) is negative, independent variables (GDP, FINF, NFINF, UNEMP) coefficient of speed of adjustment should have positive sign to bring the model to long run equilibrium. However, the results show that GDP, FINF and UNEMP coefficient have negative sign which indicates that poverty model with these regressors as independent variables do not have long-run equilibrium whereas coefficient of NFINF is positive as expected, indicating that model with this variable as a regressor bring the model towards long run equilibrium after the external shocks. However, since the coefficient of the speed of adjustment for POV is insignificant then any external shocks do not have impact on the long run equilibrium significantly. The rise in last month and two month before the FINF and last month NINF increases the current period POV significantly in the short run while other regressors do not have significant impact on it.

Conclusion

This study attempts to examine the impact of food and non-food inflation on poverty head count ratio of Sri Lanka. The unit root tests confirmed that all the variables are stationary at their first difference and all lag length selection criteria suggested to use two lags as optimal

lag length. Johansen co-integration technique detected one co-integrating relationship between the variables considered in this study. The ECM results confirmed that the long-run positive and significant relationship between POV and FINF, POV and NFINF, POV and UNEMP while negative and significant relationship between POV and GDP in the long run. The lagged value of FINF (one and two month) and NFINF (one month) are positively correlated with POV in the short run. This study confirms that the inflation component has significant impact on poverty in long-run and short-run. Therefore, a special attention needs to be given by the government on reducing both food and non-food inflation in order to eradicate the poverty level of Sri Lanka.

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Table 2: The Results of VECM

Cointegrating Eq:	CointEq1
POV(-1)	1.0000
GDP(-1)	0.0016 [5.561]
FINF(-1)	-10.712 [-6.258]
NFINF(-1)	-8.7383 [-6.722]
UNEMP(-1)	-4.9768 [-3.154]
C	-13.841

Panel 1

Error Correction:	D(POV)	D(GDP)	D(FINF)	D(NFINF)	D(UNEMP)
CointEq1	-0.0058 [-0.403]	-0..4040 [-2.547]	-0.0111 [-0.489]	0.0364 [2.415]	-0.0264 [-2.769]
D(POV(-1))	-0.6436 [-2.869]	1.7E+11 [0.735]	0.2723 [0.782]	-0.0777 [-0.335]	-0.0395 [-0.270]
D(POV(-2))	-0.0810 [-0.374]	2.1E+11 [0.925]	0.1865 [0.556]	0.3774 [1.693]	0.0429 [0.304]
D(GDP(-1))	-3.6E-13 [-1.538]	-0.8566 [-3.358]	-9.6E-13 [-2.639]	-5.2E-13 [-2.175]	8.5E-14 [0.558]
D(GDP(-2))	-1.1E-13 [-0.647]	-0.3676 [-2.181]	-6.4E-13 [-2.673]	-5.4E-14 [-0.339]	4.5E-14 [0.450]
D(FINF(-1))	0.4184 [2.636]	4.1E+11 [2.373]	0.5131 [2.083]	-0.0049 [-0.031]	-0.0097 [-0.094]
D(FINF(-2))	0.2885 [2.539]	1.6E+11 [1.328]	0.3279 [1.859]	0.2918 [2.490]	-0.0138 [-0.187]
D(NFINF(-1))	0.5225 [3.637]	1.3E+11 [0.871]	0.1961 [0.880]	0.4031 [2.721]	-0.0167 [-0.179]
D(NFINF(-2))	0.1684 [1.293]	-1.6E+10 [-0.114]	0.0083 [0.041]	0.0810 [0.603]	-0.0857 [-1.010]
D(UNEMP(-1))	0.2549 [0.936]	4.6E+11 [1.558]	0.7812 [1.849]	-0.1270 [-0.452]	-0.0914 [-0.515]
D(UNEMP(-2))	-0.4136 [-1.579]	-2.4E+11 [-0.835]	0.0046 [0.011]	-0.7501 [-2.776]	-0.1884 [-1.103]
C	-0.0060	1.7E+10	0.0817	-0.0254	-0.0441

Panel 2

Panel 3

Note: t statistics are given in the brackets