Government Expenditures and its Impact on Poverty Reduction (Empirical From Sistan and Baluchestan Province of Iran)

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Abstract

Poverty reduction has been one of the most important goals of economic and social development in various policies of government. Although some dimension of poverty such as education, health care, gender quality have been proved remarkably in Iran but poverty reduction has a most goal of government been yet. In Iran poverty still exists and seems difficult to be eradicated although the Iranian government has improved it's trying to solve the problem. Therefore in this study attempts to find the relationship between government spending and poverty rate in Sistan and Baluchestan Province of Iran by examining effects of the budget expenditure in 1978 to 2008 years on poverty reduction. Furthermore this study has investigated income distribution of 420 household in Sistan and Baluchestan region in 2010 and estimated government expenditure impacts on poverty reduction by using of Autoregressive Distributed Lag (ARDL) technique. As shown in the results, constructive expenditures have positive effect on poverty reduction.

Keywords: Poverty reduction, Government Expenditures, Iran

Introduction

As a primary purpose of this study, the cause's income distribution in rural poverty has investigated in Sistan and Baluchestan province of Iran, and particularly to disentangle the role that government investments have played.

In recent decades government policy remarkable has reduced rural poverty in Sistan and Baluchestan. The number of people living below the poverty line fell from 41% in 1996 to 27% in 2000 also poverty gap index fell 17% to 9/2%. But in 2003 rural poverty in S&B Province increased to 29%. (Jafari Sani :2006)

Also income distribution position during years of 1997 to 2001 has shown that Inequality Index for S&B Province increased from 35% to 44% (Kazemi: 2005)
The study of Human Development Index (HDI) in this province during 1980 to 1991 has shown improved from 0/336 to 0/569 that is cause rising in life expectancy, literacy rate and... (Karim Koshteh: 2004)

Government spending can have direct and indirect effects on poverty. The direct effects arise in the form of benefits the poor receive from expenditures on employment and welfare programs. The indirect effects arise when government investments in rural infrastructure, agricultural research, and the health and education of rural people, stimulate agricultural and non-agricultural growth, leading to greater employment and income earning opportunities for the poor, and to cheaper food.

The study of government spending in Agriculture sector of Iran in 2004 show that it leads to falling of rural poverty and as result as, we can emphasis to value added and employment in Agricultural sector for poverty reduction. (Sameti: 2004)

Also Ravallion and Datt surveyed 20 household for India's 15 major states spanning 1960 to 1994 to study how the sectoral composition of economic growth and initial conditions interact to influence how much growth reduced consumption poverty. The elasticities of measured poverty to farm yields and development spending did not differ significantly across states. But the elasticities of poverty to (urban and rural) non-farm output varied appreciably, and the differences were quantitatively important to the overall rate of poverty reduction. States with higher elasticities did not experience higher rates of non-farm growth. The non-farm growth process was more pro-poor in states with initially higher literacy, higher farm productivity, higher rural living standards (relative to urban areas), lower landlessness and lower infant mortality.

Fan and et al. by using state-level data for 1970-93 and a simultaneous equation model that was developed estimate the direct and indirect effects of different types of government expenditure on rural poverty and productivity growth in India. The results show that in order to reduce poverty, the Indian government should give highest priority to additional investments in rural roads and agricultural research. A part from government spending on education, which has the third largest marginal impact on rural poverty and productivity growth, other investments have only modest impacts on growth and poverty per additional rupee spent.

Conceptual framework and model

To empirically analyses the long-run relationships and dynamic interactions among the variables of interest, the model has been estimated by using the bounds testing (or autoregressive distributed lag (ARDL)) cointegration procedure. The autoregressive distributed lag approach to cointegration (ARDL) following the methodology developed by Pesaran and Shin (1995)
The main advantage of this procedure is simple as opposed to other multivariate cointegration techniques such as Johansen and Juselius and it can be applied regardless of the stationary properties of the variables in the sample and allows for inferences on long-run estimates, which is not possible under alternative cointegration procedures. In other words this strategy may applied irrespective of whether the series are \( I(0) \) or \( I(1) \), and this avoids the pre-testing problems related to unit root and cointegration analysis. Another advantage is that the number of variables in the model may be large and it is relatively more efficient in small or finite sample data sizes. It is worth mentioning that the VAR models are not in position to allow for large number of variables.

\[
\phi(L) = 1 - \sum_i \phi_i L^i
\]

The ARDL model in the Pesaran and Shin (1995) framework is defined as:

\[
\phi(L, p) = \sum_i b_i (l, q) x_{it} + c w_i + u_i
\]

Where

\[
\phi(L, p) = 1 - \phi_1 l - \phi_2 l^2 - ... \phi_p l^p
\]

And \( L \) is the lag operator and \( w_t \) is a vector of deterministic variables such as the intercept term, seasonal dummies, time trends or exogenous variables with fixed lags. We can estimate model for all of the position\((m+1)^{k+1}\)time by using Microfit Software. (\( m \) is maximum lags and \( k \) is number of explanatory variable).

\[
\beta(L) = \sum_j \beta_j L^j
\]

Most of the standard model specifications can be easily consequented by imposing restrictions on the parameters.

\[
\delta = \frac{a_i}{\phi(1)}, \theta = \frac{\beta}{\phi(1)} \tag{2}
\]

The standard static model can be obtained by imposing the restriction \( \beta_1 = \phi_1 = 0 \). The restrictions \( \beta_1 = 0 \) and \( \phi_1 = 0 \), on the other hand, implies the partial adjustment mechanism. The corresponding long run solution to equation (1) is invalid but they provide an alternative method, which yields consistent estimates of the parameters and their standard errors.
There are three steps that must be followed for the ARDL approach to cointegration. In particular in the first step the existence of a long run relationship between the variables is established by testing for the significance of lagged variables in an error correction mechanism (ECM) regression. In this step the first lag of the levels of each variable are added to equation to create the error correction mechanism equation and a variable addition test is performed by computing an f-test on significance of all the added lagged variables. Then existence of a long-run relationship should be tested. So the null hypothesis of non-existence of a long-run relationship is defined by

$$H_0: \delta_1 = \delta_2 = 0$$

While

$$H_1: \delta_1 \neq 0, \delta_2 \neq 0$$

(3)

The relevant statistic is the F-statistic for the joint significance of $\delta_1$ and $\delta_2$. The tests are distributed according to a non-standard F-statistic irrespective of whether the explanatory variables are stationary or non-stationary. The critical value bounds for these tests were computed by Pesaran et al (1996). In the case where the F-statistic lies below the lower bound, the long run relationship may be rejected. On the other hand if the F-statistic is higher than the upper bound of the critical value band the null of no long run relationship between the variables can be rejected irrespective of their order integration. In the case that the f-statistic is between the two bounds then a unit root test should be applied.

The second step of this approach involves estimating the ARDL form of (1) where the optimal lag length is chosen according to one of the standard criteria such as the Akaike Information Criterion (AIC) or the Schwartz Bayesian Criterion (SBC). Then the restricted version of the equation is solved for the long run solution.

The third step involves the estimation of the error correction equation using the differences of the variables and the lagged long run solution and determines the speed of adjustment of employment equilibrium.
Empirical Analysis

Social and economic characteristic households

Literacy frequency in investigated households of some city of S&B Province was various between 21/42 to 28/57 whereas the numbers of people that have not ability of write and read were 25/71. (Table 1)

<table>
<thead>
<tr>
<th>City</th>
<th>Percentage of literacy rate</th>
<th></th>
<th></th>
<th></th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Zero person</td>
<td>One person</td>
<td>Two person</td>
<td>Three and more person</td>
<td></td>
</tr>
<tr>
<td>Zahedan</td>
<td>25/71</td>
<td>24/28</td>
<td>21/42</td>
<td>28/57</td>
<td>100</td>
</tr>
<tr>
<td>Zabol</td>
<td>25/51</td>
<td>15/30</td>
<td>18/36</td>
<td>40/81</td>
<td></td>
</tr>
<tr>
<td>Khash</td>
<td>25</td>
<td>30</td>
<td>20</td>
<td>25</td>
<td></td>
</tr>
<tr>
<td>Saravan</td>
<td>28/26</td>
<td>19/56</td>
<td>26/08</td>
<td>26/08</td>
<td></td>
</tr>
<tr>
<td>Chabahar</td>
<td>20</td>
<td>23/52</td>
<td>21/17</td>
<td>35/29</td>
<td></td>
</tr>
</tbody>
</table>

Table (1). Distribution of literacy rate in Household of S&B Province of Iran
Source: finding research

The survey numbers of unemployment household has shown that missing employment person is 34/28% and households with one employment person is 32%. This is show that supported person rate is high. In other wise a few number of household can have investment and contribute in capital market and most of them are pure labor.

<table>
<thead>
<tr>
<th>City</th>
<th>The number of employee</th>
<th></th>
<th></th>
<th></th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Zero person</td>
<td>One person</td>
<td>Two person</td>
<td>Three and more person</td>
<td></td>
</tr>
<tr>
<td>Zahedan</td>
<td>25</td>
<td>15</td>
<td>13</td>
<td>17</td>
<td>70</td>
</tr>
<tr>
<td>Zabol</td>
<td>37</td>
<td>23</td>
<td>20</td>
<td>18</td>
<td>98</td>
</tr>
<tr>
<td>Khash</td>
<td>26</td>
<td>28</td>
<td>16</td>
<td>10</td>
<td>80</td>
</tr>
<tr>
<td>Saravan</td>
<td>31</td>
<td>40</td>
<td>11</td>
<td>10</td>
<td>92</td>
</tr>
<tr>
<td>Chabahar</td>
<td>29</td>
<td>30</td>
<td>18</td>
<td>8</td>
<td>85</td>
</tr>
</tbody>
</table>

Table (2). Distribution of Employment number of household
Source: finding research
Investigation of households has shown that 64% were employed in agriculture sector and less than 21% in commerce and 15% in services and Mining sectors were employed. Income distribution households show that between 60 to 78% sample households have less 1500000 Rial and they are under poverty line. Table (3) shows the distribution income of household.

<table>
<thead>
<tr>
<th>Income (Thousand Rial)</th>
<th>Zahedan</th>
<th>Zabol</th>
<th>khash</th>
<th>saravan</th>
<th>chabahr</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 1500</td>
<td>65%</td>
<td>71%</td>
<td>78%</td>
<td>60%</td>
<td>59%</td>
</tr>
<tr>
<td>Between 1500 to 3000</td>
<td>23%</td>
<td>19%</td>
<td>15%</td>
<td>27%</td>
<td>31%</td>
</tr>
<tr>
<td>More than 3000</td>
<td>18%</td>
<td>20%</td>
<td>7%</td>
<td>13%</td>
<td>1%</td>
</tr>
</tbody>
</table>

Table (3). The Distribution of Income Household.
Source: Finding research

The Results of Estimation Model

The first step involves the imposition of the Dicky Fuller test in order to test the integration properties of the series. Before we proceed with ARDL bounds test, we test for the stationary status of all variables to determine their order of the integration. This is to ensure that the variables are not I(2) stationary so as to avoid spurious results.

Following Pesaran et all (1996), we estimated the Unrestricted Error Correction equations, which were presented in the previous section and applied an F-test on the two lagged level variables in each equation. The results confirm the existence of cointegration between the tested variables. Therefore, the implementation of unit root tests in the ARDL procedure might still be necessary in order to ensure that none of the variables in integrated of order 2 or beyond.

In the next step we test existence of long-run relationship between variables. The implied ARDL models for each one of detected cointegration relationship were next determined based on the Akaike's information criterion. The results, reported in table ( ), suggest an ARDL (1,2,1,1,2,1,0) specification when the dependent variable is Y.

Y is population of under poverty line, X2 is inflation rate, X3 is total factor productivity growth, X4 is wage, X5 and X6 are constructive to current expenditures of government ratio.

In short-run coefficient estimated based Bayesian Information Criteria for dependent variable and X3,X4 and X6 optimum lag is one and variables X2, X5 optimum lag two. Table (4)
Table (4). **Estimated Coefficients of Dynamic model ARDL(1,2,1,1,2,1,0)**

Source: Finding research

For the test the existence of a long-run relationship between variables, whole of the lagged dependent variable coefficients deduct from one and divide to its standard deviation (±9.77) and then compare to Banerjee-Dolado and Master criteria (±4.76). The results above are consistent with the existence of a long-run relationship between variables. Table (5) below shows the estimated long-run coefficients of the ARDL model.

Table (5). **Estimated long-run coefficients of ARDL**

Source: finding research
The estimated coefficients of the long-run relationship show that whole of the variables except inflation and combination of the government expenditures in long-run has a significant relationship with poverty people population.

Total factor productivity, government constructive expenditure, wages an combination of government expenditures have had positive relationship with poverty population whereas current expenditure of government has led to reduction of poverty population.

Finally the Equilibrium Correction Model, estimated -0.5479 (t=-9.77) is highly significant, has the correct sign and imply a fairly high speed of adjustment to equilibrium after a shock. Approximately 55% of disequilibria from the previous year's shock converge back to the long-run equilibrium in the current year.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Statistic t</th>
<th>Coefficients</th>
</tr>
</thead>
<tbody>
<tr>
<td>dX2</td>
<td>5.5091</td>
<td>10934.8</td>
</tr>
<tr>
<td>dX21</td>
<td>3.8014</td>
<td>8694.1</td>
</tr>
<tr>
<td>dX3</td>
<td>1.5847</td>
<td>3744.8</td>
</tr>
<tr>
<td>dX4</td>
<td>-5.2980</td>
<td>-35751.9</td>
</tr>
<tr>
<td>dX5</td>
<td>5.2400</td>
<td>.3998E-3</td>
</tr>
<tr>
<td>dX51</td>
<td>-4.9171</td>
<td>-.5023E-3</td>
</tr>
<tr>
<td>dX6</td>
<td>-7.8106</td>
<td>-.0022786</td>
</tr>
<tr>
<td>dX7</td>
<td>.18350</td>
<td>3915.1</td>
</tr>
<tr>
<td>dC</td>
<td>4.4350</td>
<td>278841.0</td>
</tr>
<tr>
<td>dT</td>
<td>5.0352</td>
<td>24645.6</td>
</tr>
<tr>
<td>ecm(-1)</td>
<td>-9.7736</td>
<td>-0.5479</td>
</tr>
</tbody>
</table>

Table (6). Estimated ECM Model
Source: finding research

Conclusion

This paper has investigated empirically the effect of government expenditures on the poverty population by applying a new econometrics technique developed in a recent paper by Pesaran et al. (2001). This technique allows testing for existence of a long-run relationship between economic time series without having to specify whether these series are individually I(0) or I(1). The associated equilibrium correction was also significant confirming the existence of long-run relationships. The equilibrium correction is fairly fast and is restored by the two year after shock.

The results also denote to constructive expenditures government led to raising of poverty population unexpectedly but current expenditures of government in S&B province at zero and first lags led to poverty reduction.
Indeed in combination of government expenditures and inflation structure of budget destroyed.

In short-run inflation rate at zero lag has a positive relationship whereas at two lag has negative relationship. This means after two lag income raise more than to life costs and inflation led to decreasing of poverty.

Total factor productivity growth in zero and one lag was not significant whereas rising in factor productivity such as labor can led poverty reduction.

Growing wage at zero lag decrease poverty but at one lag for the reason of wages inflation increased. So growing of wage alone isn’t god policy for poverty reduction in S&B province.

Also in long-run except current expenditures other variables led to growing of poverty population. Therefore policy maker should be control policy variable and survey poverty reduction programs in this region of Iran.

References

12) http://www.sci.org.ir