Original Article

Investigate Social Discount Rate for Selective Countries

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ABSTRACT

For correct allocation resources to social projects, to survey the distribution of welfare is so important. Therefore in this paper, I investigate “e” as social discount rate. If we estimate "e" correctly, then recourse allocation between countries will be so well and all of countries in world will reach to economic growth. In this paper, I use from a tax method and estimate social discount rate for selective countries such as India and China.

Keywords: Social Welfare, Social Discount Rate.

INTRODUCTION

“e” is social discount rate, which is used in welfare economic. Social discount rate is so important in source allocation analysis. Gardiner and Cowell (1999) surveyed weights of welfare allocation and estimate "e" for different countries. "e" can be used as rate of time preference. Hotelling (1931) revealed that for fair resource allocation price of social pure should have a linear relation with social discount rate. Therefore "e" limit marginal social welfare when income to increase. In this paper, model is introduces in section 2, estimation results in section3 and conclusion in section 4.

Model
In many studies, three methods are introduced for estimation of "e":

1- Direct method.
2- Behavioral method.
3- Social Values, which is used from tax policies.

In behavioral method, we use from models of survey of household consumption behavioral and in this method “e” is consumption elasticity of substitution. Blurdell et al., (1993)
estimated “e” for different countries and used from time series data of consumption income and interest rate. They concluded that "e" did not have relation with income.

Frisch (1932), Fisher (1927) and Fellner (1967) used from FFF model for investigate "e", which is:

\[ e = \frac{1 - wy}{P} \]  

(1)

In (1) equation, “w” is share of commodity expenditure in household budget, “y” is income elasticity of demand and “P” is price elasticity of demand.

But in behavioral method “e” is introduced as:

\[ e = \frac{by}{P} \]  

(2)

Which, “y” is income elasticity of demand, P is price elasticity of demand and “b” is marginal prefer to consumption and:

\[ b = 1 - b' \]  

(3)

Which b’ is marginal prefer to saving and 

\[ b = 1 - wy \].\)


In social values method, "e" is estimated with tax policies which Stern (1977) used from this method. Assume that income tax method is as:

\[ kyTyuyu = \]  

(4)

If utility function has same elasticities, then we have,

\[ u(y) - u(y - T(y)) = k \]  

(5)

In (5) equation, “y” is income and T(y) is total tax income. Therefore with respect to (4) and (5) equations, we have:

\[ \frac{y^{1-e} - 1}{1 - e} = \frac{[y - T(y)]^{1-e} - 1}{1 - e} = k \]  

(6)

With rewriting equation (6), we have:

\[ y^{-e} - [y - T(y)]^{-e} (1 - t) = 0 \]  

(7)

In (8) equation, “t” is marginal income tax rate, “y” is income and “T(y)” is total tax income. Therefore, with respect to (7), we have:

\[ e = \frac{Ln(1-t)}{Ln[1 - \frac{T(y)}{y}]} \]  

(8)
In (8), \( \frac{T(y)}{y} \) is average income tax rate. Evans and Sezar (2002) estimated “e” for UK nearly 1.51 respect to (8) equation.

**ESTIMATION AND RESULTS**

In this paper, I estimate "e" for some selective countries such as China and India. I select these countries, because these countries have many population and so much workers. For estimation of "e", I use from data of marginal tax rate and worker's wages in selective countries for 2013 and I use from (8) equation. I list estimation of "e" for these countries in table (1).

<table>
<thead>
<tr>
<th>Table 1: Estimation Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Country</td>
</tr>
<tr>
<td>China</td>
</tr>
<tr>
<td>India</td>
</tr>
</tbody>
</table>

As table (1), the highest “e” is for India. As I said, "e" is used for allocation recourses to countries and investment in social projects. If we estimate "e" correctly then recourse allocation between countries will be so well and all of countries in world will reach to economic growth.

**CONCLUSION**

In this paper, I survey three methods for estimation "e". As I said "e" is social discount rate. Therefore we should estimate "e" correctly for countries. Then we can allocate recourses to countries correctly and can reach to welfare improvement.

**REFERENCE**


