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Book Chapter

Critical Analysis for Approaches of Estimating Tax Revenue Potential and Effort

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INTRODUCTION

There are four strategies widely used in the literature to estimate a country's tax potential and effort: Representative taxation system, regression approach, welfare maximization approach and stochastic frontier analysis.

Representative tax system (RTS)

This approach is made possible by the use of the Advisory Commission on Intergovernmental Relations (ACIR, 1962). Tax capacity, consistent with the RTS approach, is described as having been boosted by the hypothetical revenue, quantity of country or neighborhoods provided that all governments have levied an equal effective tax rate on their tax bases. The 1962 RTS method estimated taxability and tax effort at a mixture of tax sales levels. Its scope was improved in the 1971 file with the help of the calculation of those measures for the personal components of combined tax revenue and also for the last sources of revenue, apart from the personal tax revenue of the country and the neighboring governments. In order to determine disaggregated estimates of the tax capacity and the tax effort, the RTS methods assess tax revenue. This approach requires identifying near proxies for each tax basis in order to calculate tax capabilities of each kind of tax.

The RTS technique is criticized since the respective tax bases are correlated with any form of tax income. In reality, however, tax base proxies are used because accurate and credible tax bases are very difficult to identify (Purohit, 2006; Rao, 1993; Thimmaiah, 1979). The estimates of tax ability are subjective in the absence of specifically defined tax bases. The collection of information on their respective tax bases could be complicated if the study is to be done on a sub-national degree.

Regression approach

The traditional regression approach, tax effort is measured by comparing actual tax collection as a percentage of potential tax revenues. That revenue potential is generated from the predicted values based on regression analysis. Some early contributions to this discussion were Bahl (1971) and Lotz and Morss (1970). Later on, Leuthold (1991), Tanzi (1992), Stotsky and WoldeMariam (1997), Ghura (1998), Piancastelli (2001), Eltony (2002), and Gupta (2007) contributed empirical studies using this approach. The advantage of this approach lies in its simplicity. Data on the dependent variables are easily available and the estimation models do not impose much structure on the estimation parameters. By adding to the tax bases various economic features and their relative accessibility to the tax authorities, this approach takes into account structural economic features that are likely to affect the tax effort. In international cross-country settings, this approach to the calculation of tax effort serves the useful purpose of making comparisons on the size of government revenue across countries on the basis of economic structure and other determinants of taxable bases (Cyan et al., 2013). For policy advice, the tax effort determined in this way serves a useful but limited purpose. The traditional approach provides an indicator that is clear but generally has significant limitations to inform policy reform. The exception to this may be whether or not the introduction of a specific tax instrument can be used to explain variations in the tax effort of Keen and Lockwood (2010).

From a specific country perspective, the traditional regression approach does not provide a yardstick of the expected revenues, but generates a notional value of the potential revenue if a number of estimated parameters are to

follow the same pattern in that particular country. In particular, the standard estimated equation, characterized by tax treatments representing the structural features of the economy, is not shown a lot of guidance to governments eager to increase their revenue Cyan et al. (2013). The essential criticism of the regression method is that the residual errors that could include a random factor are taken as the degree of tax effort (Rao, 1993).

The welfare maximization approach

The optimal level of tax revenue is derived from a utility maximization process is equal to the difference between income and consumption, regardless of the prevailing economic, institutional, political and other conditions in each country. In this approach, the tax effort index is computed by taking the ratio of the actual (augmented) tax share to the predicted tax share (Basil, 2019). Thus, the welfare maximization approach appears to collapse to the standard regression approach, as the maximization process is not properly manipulated to provide the optimal level of tax effort. In addition to this, the welfare maximization approach cannot give full information for policy decision makers since they are unable to show the production possibility frontier of taxation represents the maximum level of revenue that the government can achieve, considering a set of different factors in comparison with stochastic frontier analysis.

Stochastic frontier approach (SFA)

A stochastic tax frontier measures the maximum output, i.e. maximum revenue a country can obtain given a fixed of inputs i.e. tax base and other determinants of tax revenues. The distinction between the actual tax collected and the maximum revenue shows the technical inefficiency of those countries in addition to policy troubles (Pessino and Fenochietto, 2010, 2013). The standard econometric stochastic frontier version is offered with the aid of Aigner, Lovell, and Schmidt (1977). Several editions of this version have been applied within the literature to the exclusive structure of the inefficiency term and with distinct distributional assumptions. The technique of stochastic frontier has been carried out to estimate tax capacity in some studies. Pessino and Fenochietto (2010, 2013) have applied this approach to estimate the tax effort and tax potential for ninety-six international locations. In a modern-day look at Cyan et al. (2013), the authors have examined the determinants of tax system throughout 94 countries the use of conventional regression method in addition to the stochastic frontier approach.

The development of the tax frontier is similar to the development of the production frontier, with two main differences. First, output is produced by specific inputs - labor, capital, and land. As Alfirman (2003) points out, the performance determinants are very simple in this case. However, the underlying relationship is less clear in the estimation of the tax frontier. It is clear that per capita GDP and some associated economic indicators, such as the level of education, are determinants (inputs) of revenue collection; however, it is not so clear that inflation and the GINI coefficient are determinants (inputs) requires further investigation.

From these one could recall that there are various strategies can be used to determine tax revenue potential and effort for single international locations, and they range primarily by means of the way wherein the key variable of tax revenue potential is calculated (Bahl, 1971; Lotz and Morss, 1971; Leuthold, 1991; Tanzi, 1992; Stotsky and Woldemariam, 1997; Ghura, 1998; Piancastelli, 2001; Eltony, 2002; Gupta, 2007), stated within the preliminary technique, which may be describe the traditional regression approach, tax effort is calculated by evaluating actual tax collection as a percentage of potential tax revenue. The capacity revenues are made from the expected values based totally on regression evaluation. The authors similarly make clear that for policy recommendation, tax effort, determined in this way serves a useful however constrained cause. The conventional approach offers in a hallmark this is clear however that typically has vital limitations to inform policy reform. From an explicit point of view, the conventional regression approach does no longer offer a yardstick of anticipated revenues, however, it generates a notional price of revenue capacity if the number of predicted parameters had been to comply with the identical sample in that particular country. Therefore, by having the limitation of other approaches to predict tax potential and effort in cross country context, to determine cross country's tax revenue potential and effort the latest method of stochastic frontier regression analysis is suitable.

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