Developing a Framework for Productivity Measurement in Sri Lankan Public Sector; Insights from Literature

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ABSTRACT

Productivity is commonly defined as a ratio of a volume measure of output to a volume measure of input use. The definition of productivity as being concerned with the relationship between input and output does not cover issues that many people have in mind when they talk about public sector productivity. In many countries, public sector productivity has been assumed to be zero in the national accounts. But recently there have been several attempts to measure it. The aim of this paper is to develop a framework to measure public sector productivity in Sri Lanka. A range of earlier studies on productivity measurement have been critically examined and analyzed to identify a suitable approach. Productivity level vs. productivity change, disaggregated vs. aggregated approach, monetary measurement, Output index method, matrix method and scorecards are some of the methods presented in literature. The authors suggest to use an input output approach to measure productivity in Sri Lankan public sector which will include three basic steps; measuring inputs, measuring outputs and calculating productivity indices. However, there are number of challenges meet in the process including measuring outcomes, intangibility of services, not attributing prices for services, difficulty in including capital costs, managerial perceptions etc. Though cross- national assessments are difficult to carry out, it is recommended at least to measure national, sectoral, and organizational level productivity calculations in Sri Lanka. National Productivity secretariat which is backed by Asian Productivity Organization can operate and lead this task at organizational level while Department of Census and Statistics could measure productivity at national level.

Keywords - productivity measurement, public sector, Sri Lanka

1. INTRODUCTION

According to the Organization for Economic Co-operation and Development (OECD), productivity is commonly defined as a ratio of a volume measure of output to a volume measure of input use, that is, outputs divided by inputs. Public sector productivity is as important to economic performance of a country as that of the private sector (Linna et al., 2009). The interest of developing public sector measurements include; broadening national measures to include public sector, assessing productivity trends in public sector, improving accountability of inputs used, providing feedback on policy initiatives etc. Changes in public sector productivity may have significant implications for the economy. However, within the public sector measuring productivity is a far more challenging task (Asian Productivity Organization, 2016). The literature suggests different approaches to measure public sector productivity. It has been done as comparative cross- national assessments, national and sectoral levels and organizational level. It can either be a top to bottom or bottom-up approach. Public sector in Sri Lanka is spread over a wider range of sectors and plays a

significant role in the economy. Other than the direct contribution to the national economy, public sector contributes indirectly by providing employment, raising capital for investment and controlling inflation through their subsidized services (Mahanama, 2016). However, productivity of public sector in Sri Lanka is frequently questioned through last decades. Efficiency and effectiveness of government service delivery are criticized by the general public often once they reach to offices to get their work done. As no other private authority cannot provide the compulsory services like national defence, issuing national identity cards, passports etc. general public has to depend on government irrespective of the productivity of the service delivered. Major criticism towards government services are inefficiency, ineffectiveness and corruption.

In addition to that Sri Lanka government has nearly 1.8 million servants employed in government sector in order to provide services. Salaries and wages for these employees' costs nearly 22 percent (750 billion rupees) of total government expenditure <http://www.treasury.gov.lk/>. Based on that reason too the productivity of government services is questioned. Therefore, it is of great importance to measure the productivity of public sector in Sri Lankan context. This study investigates how public sector productivity can be measured in Sri Lanka using the productivity measurement frameworks found from different countries highlighting the challenges meet in the process.

2. Productivity In Public Sector

(Thornhill, D., 2006) identifies three main reasons for why public sector productivity is crucial. First, the public sector is a major employer. Second, the public sector is a major provider of services in the economy, particularly business services (affecting cost of inputs) and social services (affecting labour quality). Third, the public sector is a consumer of tax resources.

The definition of productivity as being concerned with the relationship between input and output does not cover issues that many people have in mind when they talk about public sector productivity (Linna et al., 2009). In many countries, public sector productivity has been assumed to be zero in the national accounts. The output of the government sector has been measured as equal in value to the total value of inputs. This output input convention has increasingly come under scrutiny in recent years. The challenge is to devise alternative estimates based on output measurement in a public sector context – where collective services are provided and where there is, in most instances, no market transaction in services provided to individuals (Boyle, 2006).

3. Methods, Frameworks And Approaches In Measuring Public Sector Productivity

Many different methods have been presented in the literature to measure productivity in general. Productivity level vs. productivity change, disaggregated vs. aggregated approach, Monetary measurement, Output index method, Matrix method and scorecards are some of the methods or frameworks presented in literature. Though monetary measurement method seems potentially suitable in-service providing companies it is of no use for public organizations which do not have markets and prices in the same way as companies do (Jääskeläinen, n.d.). Output index method, matrix method and scorecards are commonly practiced methods in countries. (Rosen, E.D., 1993) has proposed a measurement method for better quantifying complex service outputs. Two aspects of output are distinguished: output quantity and output quality. Productivity matrix is a method in which a set of direct and indirect productivity measures are used to compose a single measurement result. Every measure has its own weight (0-100) in the calculations. Performance measurement systems, such as the Balanced Scorecard, were developed in the 1990s for strategic management purposes of companies (Kaplan, and Norton, 1992). They include different strategy-driven perspectives which all have their own objectives and measures.

Approaches in measuring productivity can be identified in different ways; scale on which

productivity is measured, using whether efficiency or effectiveness, whether it is a top down or a bottom up.

(Boyle, 2006) presents three aspects of productivity in an attempt to measure productivity in Irish public sector; comparative, cross-national assessments of public sector efficiency and performance; national and sectoral public sector productivity measurement initiatives; and a more micro-level examination of productivity measurement looking at organization-base. Same author describes cross national assessments and national or sectoral; assessments as top to bottom approaches and organization base aa a bottom-up approach.

(Pritchard, 1995) distinguished three categories for definitions concerning productivity:

1) The techno-economic approach- productivity as an efficiency measure (Output/input)

2) Productivity as a combination of efficiency and effectiveness

3) A wide approach that contains everything that makes an organization function better

One of the important arguments in public sector productivity measurement is on efficiency (output) and effectiveness (outcome). A more general interpretation of productivity encompasses broader concerns about the outcomes achieved by the public sector. In common parlance, many people talking about public sector productivity have in mind the general question of what value they receive from public services in return for the utilization of public funds (Linna et al., 2009). (Putnam, R.D., 1993) rejects the idea of including outcomes in productivity measurement. His argument is that to focus on outcomes (changes in health rather than patients treated; changes in educational status rather than numbers of lessons taught) includes changes over which the government has no control.

(Dunleavy, 2016) presents five essential steps in measuring productivity in the public sector; Identify the 'core' outputs or activities of the agency, develop unit costs or activity accounting for core outputs, develop a cost-weighted total output metric for each agency, Develop an accurate total inputs cost number for the agency, Divide total outputs by total inputs to give a total factor productivity (TFP) number for the organization and Decide on a strategy for controlling quality issues.

However, public sectors have different characteristics in different countries. Therefore, a method, framework or approach used in one country will not be utilized for another country straightforward. Instead, alterations and amendments at required occasions will work.

4. Challenges In Measuring Public Sector Productivity

Many challenges in the measurement of public service productivity have been identified. For example, the intangible nature of services and the complexity of service outputs have been regarded as key reasons for the lack of appropriate productivity measures (Jääskeläinen, n.d.). There are challenges in measurement, both of inputs and outputs. Inputs are made up of three elements: labor, procurement of goods and services and capital consumption (Atkinson, 2005). Measurement of each of these elements may pose particular challenges in practice. For example, with regard to labour, should number of hours worked (differentiated by skill) be used instead of the number of people employed? (Boyle, 2006). A further challenge with regard to output measurement for productivity purposes is how to incorporate changes in the quality of outputs (Boyle, 2006). Another challenge is that Public-sector goods and services mostly do not have prices, or their prices are not a good indicator of value. For example, a public-school education is usually provided free of charge. Consequently, we have to look to other ways to incorporate value and quality in public-sector output measures and to add together the outputs of different goods and services.

Yet another challenge with regard to measurement relates to possible time lags between the inputs and outputs. Money spent on public sector inputs may not have an impact in terms of improved outputs for some time (in some cases years) after the initial expenditure.

(Ammons, D., n.d.) points out that many government managers are inclined to focus on their department's activities or workload – its outputs, rather than on the bigger picture of whether their efforts lead to positive changes in the lives of citizens or produce other results they were designed to bring about (Linna et al., 2009).

5. Developing A Framework For Sri Lanka

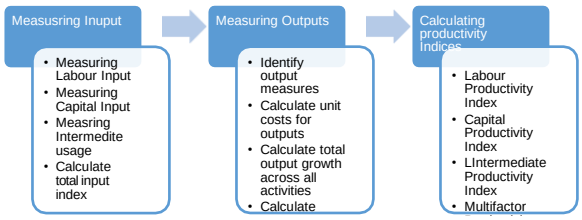

Figure 1. Framework for Measuring Public Sector Productivity in Sri Lanka

In the context of Sri Lanka being a rapidly developing middle income country, adopting continuous changes through policy reforms is essential to improve efficiency and productivity, explore new potentials and sustain a high growth in the economy, in a highly competitive global economic environment (Mahanama, 2016). Productivity promotion in Sri Lanka was emphasized in 1966, after Sri Lanka got the membership of Asian Productivity Organization. However, there are very few evidence in literature measuring public sector productivity so far, the only study found is (Mahanama, 2016) in which he has done a public sector productivity measurement in two of the public sector departments; Inland revenue and Immigration and emigration by analyzing total factor productivity, revenue to expenditure ratio, number of full-time equivalent staff, and labor productivity. In this paper authors are trying to introduce a framework using inputs and outputs to estimate public sector productivity in Sri Lanka. The authors follow Asian Productivity Organization's guidelines in building the following framework and steps (Figure 1).

5.1. Measuring Inputs

Labor should be measured in terms of hours worked or full- time equivalents, if possible. Capital input is often hard to obtain. Consumption of fixed capital or depreciation are reasonably sound measures. If they are not available, a direct measure of the scale of capital, such as number of classrooms or number of hospital beds, can be a good option. Expenditures on intermediates are usually available from financial records. These need to be adjusted for inflation by using a price deflator.

5.2. Measuring Output

Public sector organizations involve different activities producing several different outputs, but not all of them are used here. Most important activities that have the greatest effect on desired outcomes should be identified and prioritized. This assessment can be done considering the organization's objectives to improve broad economic social and environmental outcomes. The identified activities should have relatively large differences in unit costs between activities, but small differences in unit costs within an activity grouping. Next it should be decided how the output is going to be measured, a simple count measure is normally used but there may be options in a count sometimes (ex –Hospital: no pf patients treated or no of patient days). The next step is to calculate the unit costs for each output. Unit costs are calculated by dividing the total cost to produce by the number produced. The outputs of individual service activities cannot be simply added together, because the activities and their outputs are different. Cost shares of the different activities in total agency costs are used as weights to calculate the growth in total outputs as the weighted sum of growth in outputs of individual activities.

5.3. Calculating Productivity Indices

Productivity indices are readily calculated as the ratio of the output index to the input index (multiplied by 100), where the input index can be labor, capital, intermediates or combined inputs. These generate labor, capital, intermediates and multifactor productivity respectively. Where

possible, it is best to rely on an MFP measure, as this will deal with the situation in which there has been a switch in input use. A switch from in-house to contracting out (intermediate use) is common. A labor productivity measure will give a spurious indication of efficiency in these circumstances whereas an MFP measure will indicate efficiency based on use of all three inputs. Capital data is the most likely to be unavailable. In this case, it is still worth proceeding with a multifactor productivity estimate based on the two inputs of labor and intermediates. This will deal with a switch to contracting out.

5.4. Dealing with Quality and How Outcomes are measured

Quality indicators must be viewed alongside productivity measures, rather than be used to explicitly boost or discount productivity measures. We want to know whether productivity results have been achieved while quality has improved or deteriorated and by a little or a lot. There are two types of quality indicators:

1. Output standards reflect the standards of service an agency provides and for which it can be held accountable.
2. Outcome indicators reflect the community objectives that the agency's outputs are targeted at, but, since they are subject to other external influences, the agency is not responsible for all changes.

Outputs can become more effective and so have a greater effect on outcomes. These are changes in the quality of outputs that should rightly be considered as part of output growth. To illustrate a quality change, take longer life expectancy as a desired outcome. Let us say that, as a result of changes in technology, the life expectancy (the outcome) from a hospital treatment (the output) increases by 2 years on average. That 2-year increase is a quality improvement. Indicators of desired outcomes (such as improved life expectancy in this case) should be monitored for changes that can be linked to improvements in the quality of outputs. Outcomes need to be monitored for changes in the effectiveness of outputs. Outcome effects are one form of quality change. The key outcomes to monitor are determined by community and government objectives. However, in monitoring outcomes, the influence of factors other than the public-sector outputs also needs to be considered.

6. Conclusion And Recommendations

Measuring productivity in public sector is quite different from measuring productivity in any private sector service providing organization. There are different approaches to measure productivity in public sector and a country should choose a method without altering the basics. After analyzing literature, the authors suggest to use an input output approach to measure productivity in Sri Lankan public sector which will not focus on outcomes in the primary calculations. This approach includes three basic steps: measuring inputs, measuring outputs and calculating productivity indices. However, there are number of challenges meet in the process including intangibility of services, not attributing prices for services, difficulty in including capital costs, managerial perceptions etc. Though cross-national assessments are difficult to carry out, it is recommended at least to measure national, sectoral and organizational level productivity calculations. National Productivity secretariat which is backed by Asian Productivity Organization can operate and lead this task at organizational level while department of census and statics could measure productivity at national level. However, it is essential to give a comprehensive training to the officers who carry out this task. Further research could be applied in examination on overcoming challenges like identification of outputs.

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