

CHAPTER 8

SUMMARY AND CONCLUSION

This study is an attempt to measure productivity growth and also to identify potential sources of such growth for the national economy, for the major sectors and for the administrative divisions of Bangladesh. Mainly non-parametric growth accounting technique is applied for the analysis. Besides, distance function approach towards productivity measurement is applied for analysis at the division level. Since there are inherent limitations of the approaches and limitations accruing from the data sets as well, this study made attempts to check the main analysis with an alternative analysis wherever possible. Analysis at the national level was verified using an alternate analysis using an alternative set of capital stock data, whereas analysis at the division level involving distance functions approach was verified using growth accounting technique. Once the productivity change was measured, attempts were made to identify the sources of productivity growth, if any. The study found positive trend in productivity growth in most of the analyses, the productivity growth being prominent in the later sub-periods of the study. Growth in human capital, growth in public infrastructure and increase in openness of the economy in general have been identified as potential sources of productivity growth in the period under study from observation of relevant data.

8.1 Summary of Findings

8.1.1 Productivity as a Source of Growth

For the national economy, total factor productivity (TFP) has grown in all periods indicating sustainability of growth trend. Also contribution of TFP to output growth has been high, which indicates that the growth of national economy of Bangladesh depends largely on the factors other than capital and labor.

TFPG is also positive for the agricultural sector, although it is lower than national total factor productivity growth (TFPG). Still contribution from TFP to output growth is higher than the national level for this sector indicating that the growth of agricultural sector output in Bangladesh depends largely on the factors other than land and labor. Technical progress in the form of introduction of new varieties of high yielding rice by the national rice research body BRRI and trade liberalization resulting in higher use of irrigation facilities and fertilizer can be identified as important factors contributing highly to the output growth. Besides, significantly positive trend in TFPG for agriculture is observed in the nineties, whereas Coelli et al. (2003) reported negative trend in TFP for agriculture in the eighties. This change in productivity trend also may be attributed to the mentioned technological progress in agriculture.

TFPG is positive for the non-agricultural sector and higher than the national TFPG. But contribution from TFP to output growth is lower than the national level for this sector indicating that growth in non-agricultural sector in Bangladesh depends on factor accumulation. However, a significantly positive trend in TFPG is observed for the non-agricultural sector, whereas HIID-ESEPP, (1988, 1990b, 1990c) reported majority of firms to be experiencing negative TFP in the eighties. This change may be due to phenomenal growth of export lead by readymade garments industry during the nineties.

Although all divisions shows productivity gain in terms of boundary shift term of the Malmquist productivity index, growth accounting approach shows TFP decline in two of the southern divisions – Khulna and Barisal. This decline for these two divisions can be explained by the lack of road transport accessibility in both of these divisions. Very high contribution of TFP for one of the divisions – Chittagong – can be explained by the existence of the major port of the country in this region and high performance of some promising industries.

Table 8.1 shows summary of findings of the study. The table reports GDP growth rate per annum, TFPG per annum and percentage contribution of TFP to output growth for all of the units of observation. The boundary shift term (of Malmquist productivity index), which is the ratio of the last period TFP to the first period TFP, is shown for all the divisions.

Table 8.1
Summary of findings

Unit of Observation	GDP growth /annum ^a (%)	Boundary-Shift term	TFPG /annum ^a (%)	Contribution from TFP (%)
Barisal	6.03	1.008	-0.32	-5
Chittagong	6.54	1.726	5.07	78
Dhaka	6.72	1.549	3.82	57
Khulna	6.35	1.335	-1.45	-23
Rajshahi	4.84	1.218	2.08	43
Sylhet	6.60	1.326	1.98	30
Agriculture	3.51	n.a.	2.85	81
Non-Agr.	8.71	n.a.	4.00	46
Bangladesh	6.54	n.a.	3.67	56

Notes:

a figure is average of 15 years

n.a. Not applicable

Agr. Agricultural

8.1.2 Sources of Productivity Growth

Productivity growth can be termed as the portion of output growth, which cannot be explained by usual factors of production like capital (in case of non-agricultural sector), land (in case of agricultural sector) and labor. From observation of data of various possible sources of such growth, this study finds several potential sources as mentioned below:

- i) human capital in terms of educational attainments and health condition of the population,
- ii) export of goods indicating international competitiveness,
- iii) import of capital goods indicating technological advancements,
- iv) degree of openness of the economy indicating trade regime,

- v) financial sector development,
- vi) infrastructure in terms of number of educational institutions, number of health centers, number of telephones, length of roadway, and capacity to produce electricity.

Since all of these variables show increasing trend in the period under study, these can have significant effect on growth by contributing substantially to TFP growth.

8.2 Policy Implications

The results of the study have shown that, both the national economy and the major sectors experienced productivity growth in the period under study. This indicates that Bangladesh economy has potential to growth in the long run. Since there is substantial contribution of productivity in the output growth as found in this study, special attention has to be paid to factors other than the conventional factors of production. Improvement in factors like human capital, trade activities, public infrastructure can contribute to productivity growth and enable the economy to maintain the present growth trend in the long run.

Like the analysis at the national level, analysis at the division level also shows productivity growth in most of the divisions. However, for two coastal divisions (Khulna and Barisal), lack of transport accessibility within the region and from other parts of the country is identified as potential source of possible decline in productivity. Improvement in accessibility by building bridges and culverts in important points can increase productivity of these regions.

8.3 Limitations of the Study

The study used non-parametric approach to growth accounting and assumed perfect competition and constant returns to scale, whereas the factor income shares may not be equal to the corresponding factor elasticities in the real world situation with imperfect competition. Besides, the models considered only three factors of production – capital, labor, and land, whereas there may be other factors contributing

significantly to output growth such as natural resources, infrastructure, and human capital. Omission of such variables may result in lumping of the growth rates of these variables under the heading of TFP.

Besides, this study suffered from serious data limitations and data had to be either adjusted or estimated in many instances for the purpose of the study. Labor force data had to be adjusted for a key reference point in time, the year 1984-85, due to inconsistency of definition of labor force in different surveys. Due to unavailability of capital stock data from national publications, data had to be obtained from other studies. Factor income shares were known for only one point in time and assumed to be constant for the whole period. Also, price information for the divisions was not known and so the same factor income shares were assumed applicable to all divisions. Due to unavailability of capital stock data for the agricultural sector, this study omitted capital stock as a factor of production in the analysis of the agricultural sector. Lastly, this study could not run a statistical analysis on the variables representing some potential sources of productivity growth because of a very limited number of observations.

8.4 Suggestions for Further Study

Further researches can focus on several aspects of this topic. A reliable estimate for both the agricultural and non-agricultural capital stock is necessary for a comprehensive productivity study. Factor income shares for the divisions should be estimated for a comprehensive productivity study for the regions. The labor force volume in the models can be replaced by total number of hours worked leading to a more accurate analysis. Besides, incorporation of quality of labor force may reduce the productivity measures substantially. Lastly, further researches may incorporate factors like human capital, volume of export, and public and private infrastructure in the model.