



Book Review

GREEN PRODUCTIVITY: APPLICATIONS IN MALAYSIA'S MANUFACTURING

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The book on *Green Productivity: Applications in Malaysia's Manufacturing* is both timely and much needed by researchers and academicians. This book contains detailed information about the changes that is taking place in Malaysia during the last two decades, much of it of great importance to all developing countries and those who have to deal with environmental issues at all levels.

The concept of green productivity is drawn from the integration of two important developmental strategies via productivity improvement and environmental protection. Productivity provides the framework for continued improvement while environmental protection provides the foundation for sustainable development. Therefore, green productivity is a strategy for enhancing productivity and environmental performance for overall social-economic development. In addition, one can say that there are essentially two reasons for the importance of green productivity: firstly, innovation is a primary driver of economic growth. Green Productivity enhances the process of innovation. Under the umbrella of Green Productivity, innovation, a key engine of economic growth, becomes part of a holistic strategy to move towards a sustainable future. Secondly, productivity is essentially a marathon without a finishing line. Just as productivity was the essential strategy that enabled such country like Japan to rebuild after the second war, other Asian nations are being attracted to the lure of their success.

The book under review is the compilation of the author's works presented at various domestic and international seminars and forums. This book is divided into five chapters. It provides an overview of the current issues of green productivity practices in the Malaysian manufacturing sector, looking at economic impacts and discussing on the effects air

and water pollutant emissions on its productivity growth.

Mr. Musa has produced a highly insightful and readable work on green productivity analysis. This book should appeal to researchers, economists, environment specialists, policymakers, and, perhaps most of all, those interested in the intersection between these different disciplines.

The book is divided into five chapters. Chapter 1 traces the Malaysian manufacturing sector performance. It has showed the recorded positive productivity growth in Malaysia. It concludes that increasing investment in human capital and emphasize on the creation of a knowledge-based economy had improved the quality of labour, enabling it to out-perform the capital structure in contributing to Total Factor Productivity (TFP) growth.

Chapter 2 outlines the main impact of haze, environmental policies and management in Malaysia. It mentioned that the current policies provided a special emphasis to the air and water pollutants emissions generated by economic activities. The main causes of such pollutant emissions generated are manifold such as the attitude of ignoring the enforcement of environmental acts and following the traditional method of development. Chapter 3 specifically looks at the Malaysian manufacturing productivity growth. This chapter confirmed that productivity growth of Malaysia's manufacturing sector is input-driven rather than TFP-driven. In addition, it was also found that the slowdown of labour productivity, and TFP per unit of labour growth of the manufacturing sector industries in terms of average annual growth rates was due to the quality of inputs in general and labour-involved in the manufacturing sector industries in particular

Chapter 4 examines the pollutant emissions impact on Malaysia's manufacturing productivity. This chapter aims at contributing to the available literature on the growth accounting method, in that it outlines methods to calculate the real TFP per unit of labour growth by internalizing the pollutant emissions in addition to the input terms in the conventional production function. Accordingly, TFP per unit labour growth became an indicator of Green productivity, which takes into account economic development and environmental protection.

Chapter 5 provides a remarkable conclusion and policy recommendations. It concluded that the productivity growth of Malaysia's manufacturing sector is input-driven rather than TFP productivity growth-driven. In terms of policy recommendations, the author mentioned about applying command and control measures and market-based instruments to curb the pollution through the imposition of environmental taxes and applying the environmental regulations will protect the nation's health and the life of the people. Right now there are many health problems especially during the haze periods that caused a lot of economic losses due to shutting down the economic activities in general and industrial activities in particular which had affected the life of the nation. Economic losses were also found. In the agricultural sector, tourism, industry and other sectors of the Malaysian economy

This book is intended to be empirical attempts to extend productivity measure by taking into account pollutant emissions into production function as un-priced input, which have been ignored in the most of literature. The pollutant emissions under consideration include industrial carbon dioxide (CO₂), Biochemical Oxygen demand and their combination in the form of total pollutant emissions. Many parts of the research have been presented in international referred conferences. More technical revised versions of this research have also been published as articles in some international refereed journals as well. Furthermore, the most obvious deficiency in the growth accounting models used in previous studies was found to be the exclusion of externalities such as pollutant emissions generated by the manufacturing sector. This book is aimed at evaluating and analyzing the productivity growth of Malaysia's manufacturing sector and the impacts of air and water pollutant emissions on its productivity growth.

In terms of methodological development, this study has attempted to close the gap of the *divisia translog* index approach developed by Jorgenson et al (1987), which does not require the explicit specification of a production function.

Thus, a major drawback in the previous studies in Malaysian manufacturing sector productivity growth has to be created, which were not based on statistical theory.

Hence, statistical models cannot be applied to evaluate their reliability, thus casting doubts on their results. Thus, the present study suggested closing these gaps by provided a statistical analysis in the first step of the estimation to get the coefficients of the explanatory variables that had been used by econometric approach.

This book has showed that the higher level of air and water pollutant emission generated by the manufacturing sector impacted the growth rates of total factor productivity that is overestimated in pervious studies by not internalizing these pollutant emissions in measuring it. This impact is due to internalizing the pollutant emissions generated by the sector in addition to the traditional input terms in the form of private input produced. As results of that, the TFP growth showed lower contribution after internalization of these pollutant emissions. This book found that industrial activities are related to the growth rate of pollutant emissions generated by the manufacturing sector.

The book is not intended for a general audience. To appreciate the arguments, prior knowledge in economics is required. Hence, the book is suitable as an additional reference for the postgraduate. Its also good preliminary thought provoking book for those pursuing their postgraduate studies.

This book is recommended to those who are interested in the area of environment economics, macroeconomics and development economics, especially those who are undertaking postgraduate studies because it has a practical approach towards explaining the effect of pollutant emission on the TFP growth. The reader would get an exposure and understand the concepts and framework rather than just explaining the theories. In this case the book focuses more on the applications, practice and its prospects and gives some opportunity in combining the ideas to seal the loophole of the economic analysis with a specific country through researches and experts.

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