RICE PRODUCTIVITY GROWTH AND INSTABILITY IN SELECTED SOUTHEAST ASIAN COUNTRIES

By

MAMMA SAWANEH

Thesis Submitted to the School of Graduate Studies, Universiti Putra Malaysia, in Fulfillment of the Requirement for the Degree of Master of Science

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DEDICATION

This thesis is dedicated to my lovely wife, my daughter and my parents.

Firstly, to my wife Ramatoulie Jallow who have been very instrumental in taking care of my family during my absence from home.

Secondly, to my loving daughter Mariama Sawaneh for patiently been there for me with your lovely mum.

Thirdly, to my Parents for their continuous prayers at all the time most especially during my stay in Malaysia. Mum and Dad I sincerely love you all.
Abstract of the thesis presented to the Senate of Universiti Putra Malaysia in fulfillment of the requirement for the degree of Master of Science

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November 2013

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Productivity estimates are indicators of success of any individual firm from one period to another. It gauges the performance of a Decision Making Unit (DMU) for a period of time. This study aims to investigate rice productivity growth as well as measure production instability among five rice producing countries in Southeast Asia from 1980 to 2010. Contextually, a panel data was used to evaluate the Total Factor Productivity (TFP) growth and production instability in the rice sector from 1980 to 2010. The study measures Malmquist productivity indices as well as its decomposition into efficiency change and technical change using non parametric (Data envelopment analysis) approach. It examines the rice productivity growth of five (5) rice producing countries namely; Malaysia, Myanmar, Philippines, Thailand and Vietnam in Southeast Asia from 1980 to 2010. The study utilized linear programing methods to give estimates of distance functions and thus compute Malmquist productivity indices. The study also use
statistical tools such as coefficient of variations and variance using SPSS, STATA and MS Excel softwares to evaluate the extent of production instability and the sources of instability in each country.

The results indicated that, all the countries with the exception of Malaysia exhibit positive growth in rice productivity over the reference period of 1980 to 2010. A broader examination of total factor productivity in different periods shows that growth was greater in the period 2001-2005. Though on average, the productivity growth in all periods are sustained through technological improvement. The result of this study can now give inferences that there exists efficiency and productivity improvement among rice producing countries in Southeast Asia. However, the differences in the extent of productivity improvement vary from period to period as well as from country to country. In addition to that, the components relating to total factor productivity that is Technical Change (TC) and Efficiency Change (EC), the former turned out to be a more influential source of growth.

In reference to production instability, a time series data on rice harvested area, yield and production of the same countries was used to analyze the components of production changes (area, yield and interaction effects) from 1980 to 2010. The production data was categorized into two (2) periods: (i) 1980/81 to 1994/95 and (ii) 1995/96 to 2009/10. The designated two periods in reference to the post Green Revolution, allow for an examination of sources and changes in instability intra and inter the two periods. The results showed that a significant increase in rice production in all countries has been witnessed during the reference period. However the effect of area and yield to increase
production differs from one country to another. In Myanmar, mainly due to area increase whereas in others (Malaysia, Philippines, Thailand and Vietnam), yield played a dominant role in increasing rice production. It is worthy mention from this instability study that variability in area, yield and production in all countries (except for Malaysia) were positively related. That is to say their decreasing/increasing trend result in decrease/increase instability. Thus, in these countries, an increase in rice production due to an increase in either area or yield would subsequently increase instability. However, in Vietnam, an increase in yield would further help to reduce production instability.

Furthermore, the decomposition analysis indicated that changes in mean yield mainly drove mean production in Malaysia, Philippines, Thailand and Vietnam. However, change in mean area contribution was larger in the case of Myanmar. On other hand, changes in area-yield covariance between periods in the countries made a negligible contribution to the change in rice production. Thus in order to stabilize instability in the region, government policies and programs that increase productivity should be encouraged. These could be done through provision of basic inputs for rice production and also intensifying agricultural research and development in the coming decades. It is hoped that through such programs an increase in mean yield in the countries will be attained thereby stabilizing rice production in the region.
Abstrak tesis ini dikemukakan kepada Senat Universiti Putra Malaysia sebagai memenuhi keperluan untuk ijazah Master Sains

PERTUMBUHAN PRODUKTIVITI DAN KETIDAKSTABILAN PADI NEGARA TERPILIH DI ASIA TENGGARA

Oleh

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Kajian ini mengukur indeks produktiviti Malmquist serta penguraian perubahan kecekapan teknikal dan perubahan kecekapan menggunakan pendekatan bukan parametrik (analisis Data Envelopment Analysis). Kajian ini melibatkan pertumbuhan produktiviti padi untuk lima (5) negara pengeluar beras (Malaysia, Myanmar, Filipina,


selepas Revolusi Hijau membolehkan kajian perubahan dalam ketidakstabilan dalam setiap tempoh serta nilai sumber ketidakstabilan antara kedua-dua tempoh tersebut.

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Finally, my warmest thanks and appreciation goes to my beloved parents, brothers and sisters and all family members who constantly prayed for my success and safe return to The Gambia, my homeland.
I certify that a Thesis Examination Committee has met on 15 November 2013 to conduct the final examination of Mamma Sawaneh on his thesis entitled "Rice Productivity Growth and Instability in Selected Southeast Asian Countries" in accordance with the Universities and University Colleges Act 1971 and the Constitution of the Universiti Putra Malaysia [P.U.(A) 106] 15 March 1998. The Committee recommends that the student be awarded the Master of Science.

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Date:
DECLARATION

Declaration by Graduate Student

I hereby confirm that:

- this thesis is my original work
- quotations, illustrations and citations have been duly referenced
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- there is no plagiarism or data falsification/fabrication in the thesis and scholarly integrity was upheld as according to Rule 59 in Rules 2003 (Revision 2012-2013). The thesis has undergone plagiarism detection software

Signature:…………………………………     Date: 15th November 2013

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Declaration by Members of Supervisory Committee

This is to confirm that:
- the research conducted and the writing of this thesis was under our supervision,
- supervision responsibilities as slated in Rule 41 in Rules 2003 (Revision 2012-2013) were adhered to.

Signature -------------------------------                   Signature -------------------------------

ISMAIL ABD LATIF, PhD               AMIN MAHIR ABDULLAH, PhD
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