AN ECONOMIC ANALYSIS OF COMMODITY EXPORT REVENUE VARIABILITY IN THE SOUTH PACIFIC ISLAND NATIONS

A Thesis Submitted for the Degree of Doctor of Philosophy

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20 September, 1995

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ABSTRACT

This study focuses on the economic analysis of commodity export revenue variability (CERV) and related problems in selected South Pacific island nations (SPINs). The overall objective of this study was to conduct an empirical economic analysis of CERV in the selected SPINs, namely Fiji, PNG, SI and Vanuatu, all in Melanesia. Over the years, government authorities in the SPINs have taken the view that CERV is externally–induced and has affected deleteriously both the macro– and micro–level performance of their open economies. This view prompted the governments to establish commodity–specific price stabilisation schemes as a means of mitigating the deleterious effects of CERV. These schemes were created despite the lack of empirical evidence as to the causes and/or sources of CERV. In addition, evidence as to whether export growth, and hence export instability, caused economic growth and instability in Melanesia has been lacking. There was also little evidence about the factors affecting export sector performance, despite the importance of export sectors in these countries.

Using available time series data sets on specific variables such as GDP, exports, world GDP, world commodity prices, exchange rates, world demand, competitiveness, diversification and various individual commodities, the above relationships were analysed. The analysis was conducted using a range of time series econometric methods and the variance decomposition method. Time series methods consisted of three unit roots methods (Augmented Dickey Fuller, Phillips and Perron, and Park and Choi), three cointegration methods (Augmented Dickey Fuller, Pillips and Perron, and Park, Ouliaris and Choi) and three causally–related methods (Granger causality, forecast error variance decomposition analysis (FEDA) and impulse response analysis (IRA)). While cointegration analysis was used for long–run analyses, Granger causality, FEDA and IRA were used mainly for short–run dynamic analyses, the latter three methods being based on both vector autoregression models in levels and in first differences and error correction mechanisms.

The main findings were: (a) export growth and instability caused economic growth and instability, (b) economic growth and instability caused export growth and instability, (c) both external and domestic factors determined export sector performance, and (d) both external demand and domestic supply factors were important causes and sources of CERV. However, the causes and/or sources of CERV differed across countries, time periods and commodities.

Based on the above findings, appropriate strategic policies to enhance export growth and performance, and economic growth, and to mitigate CERV could include prudent management of both external and domestic factors. The finding that CERV has various

sources which change across countries and over time suggests that the formulation of effective commodity stabilisation policies in the selected SPINs is a complex task. A range of policy options on sector and national priorities and stabilisation policy initiatives, which could guide policy decision making affecting the performance of export sectors and the economies of the selected SPINs, is suggested.

DEDICATION

To my wife Rose Nyamarere, my son Dennis Mokamba, and my daughters Christine Moraa and Juliet Kemunto for their special love, support, patience, inspiration and prayers over the years. To my parents for their constant prayers and encouragement.

ACKNOWLEDGEMENTS

My sincere appreciation and profound gratitude go to Dr Euan Fleming for being instrumental in initiating this study and for agreeing to supervise it throughout the study period up to the day of submission, except during his absence on an overseas study leave.

I am deeply indebted to both Dr Francis In of the Department of Economics, Deakin University, who acted as a co–supervisor and gave some guidance in time series econometric methods, and Associate Professor Roley R. Piggott for being a co–supervisor after the departure of Francis and a sole supervisor for some time thereafter. Roley provided constructive suggestions which helped shape this study.

My sincere indebtedness is extended to Professor J. Brian Hardaker who kindly agreed at short notice to supervise this study through to its end. Notwithstanding his other commitments, Brian provided invaluable guidance on my drafts and personal encouragement without which the completion of this study would have been unduly delayed. Indeed, credit is given for his patience in diligently scrutinising the draft chapters.

I also owe special appreciation to Dr George Antony of the Strategic Economic Policy Unit, Queensland Department of Primary Industries, for reading and criticising my draft chapters and for his personal encouragement, to Dr Alicia Rambaldi of the Department of Econometrics, UNE, for reading and commenting on my time series analytical chapters, to Professor John L. Dillon for reading some of my chapters, and to Sally Bearman for providing editorial assistance at short notice.

While a great number of other people contributed in various ways to this study, I would like to express my gratitude to the following for offering suggestions and comments which enhanced it:

- all the participants (students and staff) of the Graduate Student Workshop of the UNE Department of Agricultural and Resource Economics, Faculty of Economics, Business and Law, during my three seminar presentations.
- various session participants during my presentations of three contributed papers based on this study to the Australian Phd Annual Conference in Business and Economics and to the Australian Agricultural Economics Society Annual Conference (various), at Canberra, Sydney and Wellington, New Zealand.
- various journal editors and referees of several submitted articles based on this study.

Finally, I am extremely grateful to the Australian Government, through AUSAID, for providing financial support as an EMSS scholar to undertake this study in Australia.

I accept responsibility for all the remaining shortcomings in this study.

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ABBREVIATIONS AND ACRONYMS

ACP	African, Caribbean and Pacific countries
ADF	Augmented Dickey–Fuller (a unit roots test)
AIC	Akaike information criterion (for lag length tests)
AID	Agency for International Development (USA)
AIDAB	Australian International Development Assistance Bureau
Anon.	anonymous
AR(1)	autoregressive process of order 1
AR(p)	autoregressive process of order p
ARMA	autoregressive moving average
ASEAN	Association of South East Asian nations
CERV	commodity export revenue variability
CM	competitiveness
CMSA	constant market share analysis
commod.	commodity (as used in most figures)
Coms	commodities (as used mostly in Chapter 9 tables))
cov	covariance operator
DC	District of Colombia
DCs	developed countries
DE	demand effect
df	degree of freedom
Diffs	differences (mostly used in Chapter 8 tables)
DV	diversification
E	expectations operator
ECMs	error correction mechanisms/models
e^d	elasticity of demand
ed.	editor
edn	edition
eds	editors
EPH	export promotion hypothesis
e^s	elasticity of supply
EU	European Union
EXP	exports
EXR	exchange rates
F$	Fiji dollar (approx. F$1.54 per US$ in 1993)
FAO	Food and Agriculture Organisation
FEDA	forecast error variance decomposition analysis
fob	free on board
FPE	Akaike's final prediction error (for lag length tests)
GDP	gross domestic product
GNP	gross national product
GR	gross revenue
ICAs	International Commodity Agreements
ICCO	International Cocoa Organisation
ICO	International Coffee Organisation
IE	interaction effect
IFPRI	International Food Policy Research Institute
IFS	International Financial Statistics
iid	independent and identically distributed
IL	Illinois
IMF	International Monetary Fund
INA	Institute for National Affairs (Port Moresby, PNG)
IRA	impulse response analysis
ISNAR	International Service for National Agricultural Research

ISO	International Sugar Organisation
K	PNG kina (approx. K0.98 per US$ in 1993)
kg	kilogram(s)
LDCs	less developed countries
logs	logarithms
m	metre
MA	moving average
Mass	Massachusetts
mt	metric tonne
na	not available
NCDS	National Centre for Development Studies (Canberra)
NICs	newly industrialised countries
NID	normally and independently distributed
No.	number
NRI	National Research Institute (Boroko, PNG)
ODI	Overseas Development Institute (UK)
OLS	ordinary least square
PC	Park and Choi (a unit roots test)
per comm.	personal communication
PNG	Papua New Guinea
POC	Park–Ouliaris–Choi (a cointegration test)
PP	Philips and Perron (a unit roots test)
RATS	regression analysis for time series
RHS	right hand side
R_i	export revenue for individual sector/commodity
SC	Schwarz criterion (for lag length tests)
SE	supply effect
SI	Solomon Islands
SI$	Solomon Islands dollar (approx. SI$3.19 per US$ in 1993)
SPC	South Pacific Commission
SPINs	South Pacific island nations
sq km	square kilometre
Stabex	stabilisation of exports
TN	Tennessee
TR	total export revenue
UK	United Kingdom
UN	United Nations
UNCTAD	United Nations Conference for Trade and Development
US$	United States dollar
USA	United States of America
USDA	United States Department of Agriculture
V	Vanuatu vatu (approx V121.58 per US$ in 1993)
var	variance operator
VAR	vector autoregression
VARD	VAR models in first differences
VARL	VAR models in levels
VDMs	variance decomposition methods
vol	volume
WCPI	world commodity prices for agricultural raw materials
WD	world demand
WGDP	world gross domestic product
WPCs	Western Pacific countries