Copyright is owned by the Author of the thesis. Permission is given for a copy to be downloaded by an individual for the purpose of research and private study only. The thesis may not be reproduced elsewhere without the permission of the Author.
SPATIAL PRICE TRANSMISSION IN MAJOR EAST AFRICAN HORTICULTURAL MARKETS

A thesis presented in partial fulfilment of the requirements for the degree of

Master of AgriCommerce

at Massey University, Manawatū, New Zealand

Hermence Christopher Lulah

2015
Abstract

The objective of this study is to assess the integration of horticultural markets in East Africa. The analysis is conducted using monthly wholesale prices of fresh tomatoes and fresh onions. Four representative markets (two in Tanzania and two in Kenya) are selected for the analysis. These markets are analyzed in pairs using the bivariate Joe-Clayton copula (BB7). This copula involves two parameters, which control the degree of overall dependence of price shocks as well as the strength of dependence at the extremes of their joint distribution. The overall dependence is assessed by the Kendall’s tau, which is calculated from a number of concordant and discordant pairs of observations. Information about dependence at the lower and the higher ranks is obtained by measuring the upper and the lower tail dependence coefficients. These coefficients give the probability that a price shock in one market will be above (below) a high (a low) quantile if a price shock in another market is also above (below) a high (a low) quantile. When considered together, the overall strength of co-movement and co-movement at the extremes provide information about the degree of market integration. Empirical results of this study suggest that the investigated markets are generally not very well integrated. The overall dependence of price shocks between different pairs of markets varies from low to medium. The pattern of dependence of these price shocks also appears to be predominantly asymmetric.
Acknowledgements

This research would have not been possible without the valuable contribution of the people and institutions that I would like to acknowledge here. First, I would like to express my sincere thanks to my advisors, Associate Professor Panos Fousekis and Dr. Elena Garnevska, for their insightful comments, constructive criticism, encouragement, patience, motivation and immense knowledge. Their guidance helped me throughout the time of research writing and made timely completion of this work possible.

Second, I would like to extend my thanks to the Tanzania Horticultural Association for providing the data that were used in the study. Access to the data has not just made this research possible but also has made a valuable contribution to the generation of the so much needed knowledge on how the East African food markets are organized and function.

Third, my sincere thanks go to the Massey University Human Ethics Committee for ensuring that my research abides to the ethical codes of conduct.

And last but not the least, I would like to place on record, my sense of gratitude to my family and friends for their continued spiritual and moral support, encouragement, prayers and attention throughout writing this thesis and in my school life in general.
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## List of Important Abbreviations

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<thead>
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<th>Abbreviation</th>
<th>Description</th>
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<tbody>
<tr>
<td>ACP</td>
<td>Africa, Caribbean and Pacific</td>
</tr>
<tr>
<td>AfDB</td>
<td>African Development Bank</td>
</tr>
<tr>
<td>ASHS</td>
<td>American Society for Horticultural Science</td>
</tr>
<tr>
<td>COMTRADE</td>
<td>Commodity Trade Statistics Database</td>
</tr>
<tr>
<td>EAC</td>
<td>East African Community</td>
</tr>
<tr>
<td>EU</td>
<td>European Union</td>
</tr>
<tr>
<td>FAO</td>
<td>Food and Agriculture Organization</td>
</tr>
<tr>
<td>FAOSTAT</td>
<td>Food and Agriculture Organization Corporate Statistical Database</td>
</tr>
<tr>
<td>FPEAK</td>
<td>Fresh Produce Exporters Association of Kenya</td>
</tr>
<tr>
<td>GDP</td>
<td>Gross Domestic Product</td>
</tr>
<tr>
<td>HODECT</td>
<td>Horticultural Development Council of Tanzania</td>
</tr>
<tr>
<td>HORTEXA</td>
<td>Horticultural Exporters Association of Uganda</td>
</tr>
<tr>
<td>ICT</td>
<td>Information and Communications Technology</td>
</tr>
<tr>
<td>ISHS</td>
<td>International Society for Horticultural Science</td>
</tr>
<tr>
<td>JICA</td>
<td>Japan International Cooperation Agency</td>
</tr>
<tr>
<td>KNBS</td>
<td>Kenya National Bureau of Statistics</td>
</tr>
<tr>
<td>MT</td>
<td>Metric Tons</td>
</tr>
<tr>
<td>NBS</td>
<td>National Bureau of Statistics</td>
</tr>
<tr>
<td>SADC</td>
<td>Southern African Development Community</td>
</tr>
<tr>
<td>TAHA</td>
<td>Tanzania Horticultural Association</td>
</tr>
<tr>
<td>UAE</td>
<td>United Arab Emirates</td>
</tr>
<tr>
<td>UK</td>
<td>United Kingdom</td>
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<tr>
<td>UN</td>
<td>United Nations</td>
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<td>UNCTAD</td>
<td>United Nations Conference on Trade and Development</td>
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<td>UNdata</td>
<td>United Nations Statistical Database</td>
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<tr>
<td>USA</td>
<td>United States of America</td>
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<tr>
<td>USAID</td>
<td>United States Agency for International Development</td>
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<td>WB</td>
<td>World Bank</td>
</tr>
<tr>
<td>WTO</td>
<td>World Trade Organization</td>
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