South Africa’s agricultural product space: Diversifying for growth and employment

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ABSTRACT

South Africa’s sluggish economic growth and limited structural transformation are at the core of the country’s high levels of unemployment and poverty. Why some countries are able to grow and others not has been the subject of much academic debate, with recent literature throwing fresh light on the phenomenon by exploring the relationship between growth and a country’s productive structure. It is argued that countries’ heterogeneous productive structures stem from differences in entrenched capabilities and know-how in producing and marketing a very specific set of products. Investigating and comparing what countries actually produce and how this supports economic development yield valuable insights into why countries differ and what their transformation priorities should be.

In this study a new analytical approach is adopted to determine the potential growth paths of South Africa’s broader agricultural sector, the so-called agro-complex. Comprising 1 456 primary and processed products as well as production inputs within the food, feed and fibre segments, this broad sector makes an important contribution to economic development through its direct and indirect linkages with other economic sectors as well as its relatively high labour absorption rate.

The wide-ranging economic challenges that South Africa faces have clearly gripped the country’s agro-complex. A growing dependency on imports of higher value, processed food
has led to deteriorating terms of trade, while limited innovation and diversification in agricultural exports (coupled with a high proportion of re-exports) is seriously constraining the positive impact that the agro-complex could have on the country’s growth rate.

In this study, the productive structure of the agro-complex is analysed through the application of the ‘product space’ framework. This methodology investigates the relatedness between products as reflected in the conditional probability of a product being exported in tandem with another product, considering all global trade flows. The proximity value, the measurement of relatedness, between all 1,456 products is used to arrive at the structure and visible evidence of an agricultural product space network. This structure allows potential diversification pathways to be analysed. Research has shown that a country’s diversification process involves moves along pathways to nearby - and thus related - ‘new’ products, which simplifies the redeployment of existing productive capabilities and knowledge. These pathways are identified according to three strategic values, namely structural transformation, market potential and employment creation.

The potential for structural transformation is determined by using a product-level measure of complexity, with higher level complexity (i.e. upgrading) going to the core of structural transformation. The potential market demand is determined by examining the prospects for import substitution; producing re-exported products locally; producing new, high-potential export products; and diversifying into new markets with existing export products (with the latter two categories evident in the results of a Decision Support Model (DSM)). Finally, the potential for employment creation is analysed in the light of labour and human capital intensities at product level.

The study found that South Africa’s position in the agricultural product space is relatively dispersed. This position is characterised by a proportionally high level of core competencies within the primary agricultural cluster and a limited amount of vertical linkages. Furthermore the analyses showed that, especially the products for which South Africa has developed a significant high level of specialisation such as plums and wines are located in the sparser, less promising, parts of the agricultural product space. Notwithstanding, a total
of 60 realistic diversification opportunities are within “reach” from the countries core competencies in the agro-complex.

The analysis on structural transformation established that the level of product complexity within the agro-complex is more important for economic development than product diversity per se. It was revealed that South Africa only ranked 69th globally with regards to the complexity of its agro-complex. It was determined that upgrading within the forestry and agro-processing of food clusters hold the most potential for improving this position.

The investigation into the potential for diversification driven by market potential revealed mostly that the potential for substituting imports as well as re-exports with local production is limited. The market prospects for exporting “new” products and expanding the export destinations of existing products within the agro-complex is much more favourable.

It was estimated that most employment creation could be derived from diversification within the primary agricultural cluster although its number of opportunities are limited. Diversification within both the primary agricultural and agro-processing of food clusters was found to have most favourable prospects for developing the level of human capital within the agro-complex.

Based on all three strategic values, the most promising diversification opportunities are located within the forestry cluster. The range of realistic opportunities within the five clusters of the agro-complex form the core for developing product-level diversification strategies. This will ultimately strengthen the position of the agro-complex and boost South Africa’s growth path for the next decade. Hence, the main contribution of this study includes the determination of the structure of South Africa’s agro-complex from a product perspective and its implications for potential growth and development.

**Key words:** South Africa, agro-complex, economic development, diversification, product space, structural transformation, market potential, employment
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<tr>
<th>Acronym</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>ACI</td>
<td>Agricultural Complexity Index</td>
</tr>
<tr>
<td>ADLI</td>
<td>Agricultural-demand-led-industrialization</td>
</tr>
<tr>
<td>AF</td>
<td>Agro-processing of food</td>
</tr>
<tr>
<td>AGOA</td>
<td>African Growth and Opportunity Act</td>
</tr>
<tr>
<td>AGRA</td>
<td>Alliance for a Green Revolution for Africa</td>
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<td>AgriBEEE</td>
<td>Agricultural Black Economic Empowerment Programme</td>
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<tr>
<td>Agric.</td>
<td>Agriculture</td>
</tr>
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<td>AI</td>
<td>Agricultural inputs</td>
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<td>AN</td>
<td>Agro-processing of non-food</td>
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<td>Agricultural Research Council</td>
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<tr>
<td>ARG</td>
<td>Argentina</td>
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<td>ASGISA</td>
<td>Accelerated and Shared Growth Initiative of South Africa</td>
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<tr>
<td>AUS</td>
<td>Australia</td>
</tr>
<tr>
<td>BFAP</td>
<td>Bureau for Food and Agricultural Policy</td>
</tr>
<tr>
<td>BRA</td>
<td>Brazil</td>
</tr>
<tr>
<td>BRIC</td>
<td>Brazil, Russia, India, China</td>
</tr>
<tr>
<td>CAADP</td>
<td>Comprehensive Africa Agriculture Development Programme</td>
</tr>
<tr>
<td>CEEC</td>
<td>Central and Eastern Europe</td>
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<tr>
<td>CEPII</td>
<td>Centre d'Etudes Prospectives et d'Informations Internationales</td>
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<tr>
<td>CHL</td>
<td>Chile</td>
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<tr>
<td>COMESA</td>
<td>Common Market for Eastern and Southern Africa</td>
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<tr>
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<td>Department of Agriculture, Forestry and Fisheries</td>
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<tr>
<td>DFID</td>
<td>Department for International Development</td>
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<tr>
<td>DRC</td>
<td>Democratic Republic of Congo</td>
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<tr>
<td>DSM</td>
<td>Decision Support Model</td>
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<tr>
<td>DTI</td>
<td>Department of Trade and Industry</td>
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<td>e.g.</td>
<td>exemplī grātiā (<em>for example</em>)</td>
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<tr>
<td>EAC</td>
<td>Eastern African Community</td>
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<td>ECI</td>
<td>Economic Complexity Index</td>
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<tr>
<td>EFTA</td>
<td>European Free Trade Area</td>
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<tr>
<td>EM</td>
<td>Extensive Margin</td>
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<td>Export Marketing and Investment Assistance</td>
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<td>EPA</td>
<td>Economic Partnership Agreement</td>
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<tr>
<td>et al.</td>
<td>et alii (<em>and others</em>)</td>
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<tr>
<td>EU</td>
<td>European Union</td>
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<td>Exp</td>
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<td>FDI</td>
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<td>Federal Reserve Bank, San Francisco</td>
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<td>GDP</td>
<td>Gross Domestic Product</td>
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<td>GMO</td>
<td>Genetically Modified Organism</td>
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<tr>
<td>GSP</td>
<td>Generalised System of Preferences</td>
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<tr>
<td>HS</td>
<td>Harmonised System</td>
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<tr>
<td>HS6</td>
<td>Harmonised System at the six digit level</td>
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<td>i.e.</td>
<td>id est (<em>in other words, that is to say</em>)</td>
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<tr>
<td>ICT</td>
<td>Information and communication technology</td>
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<td>IDC</td>
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<td>IEMP</td>
<td>Index of Export Market Penetration</td>
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<td>International Labour Organisation</td>
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<td>IND</td>
<td>India</td>
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<tr>
<td>IPAP</td>
<td>Industrial Policy Action Plan</td>
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</table>
ISI Import Substituting Industrialisation
LDC Least Developed Countries
LI Labour Intensity
LSU Large Stock Units
MECP Manufacturing Competitiveness Enhancement Programme
MERCOSUR Mercado Común del Sur (Southern Common Market)
n.e.s not elsewhere specified
NAFU National African Farmer’s Union
NAMC National Agricultural Marketing Council
NDP National Development Plan
NEDP National Exporter Development Programme
NPC National Planning Commission
OECD Organisation for Economic Cooperation and Development
ONDD Office National du Ducroire
PA Primary agriculture
PCI Product Complexity Index
PPD Product Process Development Scheme
PPP Purchasing Power Parity
R&D Research and Development
RCA Revealed Comparative Advantage
RPCI Revealed Physical Capital Intensity
RE Re-exports
RHCI Revealed Human Capital Intensity
RLRI Revealed Land Resource Intensity
RMA Revealed Comparative Import Advantage
RTA Revealed Trade Advantage
SA South Africa
SACU Southern African Customs Union
SADC Southern Africa Development Community
SAM Social Accounting Matrix
SIC Standardised Industry Classification
SITC Standardised International Trade Classification
<table>
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<td>Small, Medium and Micro Sized Enterprise</td>
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<td>Support Programme for Industrial Innovation</td>
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