Is Rice Sector in Sri Lanka at Cross Roads?

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Outline

• Sri Lanka: A Rice Eating Nation
  – Rice self sufficiency

• Domestic Rice Supply: Patterns and Recent Trends
  – Drought 2016/2017: Effects on the paddy and rice supply

• Rice Imports into Sri Lanka: Historical partners
  – A glimpse of the world rice market

• Way Forward: Policy options to address contemporary challenges
Sri Lanka: A Rice Eating Nation

- Average Monthly Household Wheat flour Consumption by Survey Period
- Average Monthly Household Wheat Consumption by Survey Period
- Average Monthly Household Rice Consumption by Survey Period
Rice requirement of the country as per 2012/13 consumption

<table>
<thead>
<tr>
<th>Rice Type</th>
<th>Per person requirement in kg</th>
<th>National requirement in mt</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rice - (Kekulu - white)</td>
<td>22.33</td>
<td>473,436.70</td>
</tr>
<tr>
<td>Rice - (Kekulu Samba - white)</td>
<td>2.81</td>
<td>59,517.67</td>
</tr>
<tr>
<td>Rice - (Kekulu - red)</td>
<td>23.28</td>
<td>493,524.42</td>
</tr>
<tr>
<td>Rice - (Kekulu Samba - red)</td>
<td>1.21</td>
<td>25,664.96</td>
</tr>
<tr>
<td>Rice - (Samba)</td>
<td>17.26</td>
<td>365,871.33</td>
</tr>
<tr>
<td>Rice - (Nadu-red)</td>
<td>4.38</td>
<td>92,879.32</td>
</tr>
<tr>
<td>Rice - (Nadu - white)</td>
<td>35.21</td>
<td>746,583.92</td>
</tr>
<tr>
<td>Rice - (Basmathi)</td>
<td>0.12</td>
<td>2,625.78</td>
</tr>
<tr>
<td>Rice - (other)</td>
<td>1.28</td>
<td>27,071.99</td>
</tr>
<tr>
<td>Rice flour</td>
<td>2.32</td>
<td>49,289.34</td>
</tr>
<tr>
<td><strong>Sub-total Rice All</strong></td>
<td><strong>110.20</strong></td>
<td><strong>2,336,465.43</strong></td>
</tr>
</tbody>
</table>
Trends and patterns in rice consumption

• Food ratio
  – Declining over the years and smaller for high income earners

• Structural change in cereal consumption
  – Own price (fairly inelastic: -0.58), cross price (very inelastic: -0.01) and income elasticities of rice (inelastic: 0.58)

• Substitution among various rice types
  – Taste (Basmathi rice, Japonica rice)
  – Nutrition (Traditional rice, Brown rice)
  – Healthy rice types (GI—Basmathi rice)
  – Demand for safe food (Organic rice, fake rice from plastic)
Rice production and supply pattern

• Determinants of rice production—the technical relationship
  – High yielding varieties
  – Climate variables (Rainfall, Temperature and Salinity)
  – Labor, fertilizer, seeds etc.
  – Land size, shape, tenure arrangement
  – Research investments

• Determinants of rice supply—the behavioral relationship
  – Guaranteed price of rice
  – Fertilizer price, agro-chemical price etc.
Paddy production, extent cultivated and average yield of paddy

[Diagram showing trends in paddy production, extent cultivated, and average yield from 1952 to 2014.]
## Paddy Production function Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient value</th>
<th>S.E</th>
<th>t value</th>
<th>P value</th>
</tr>
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<tbody>
<tr>
<td>S</td>
<td>53.17212</td>
<td>28.02992</td>
<td>1.90</td>
<td>0.059</td>
</tr>
<tr>
<td>I</td>
<td>548.1161</td>
<td>54.43545</td>
<td>10.07</td>
<td>0.000</td>
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<tr>
<td>T</td>
<td>17.54718</td>
<td>9.025823</td>
<td>1.94</td>
<td>0.053</td>
</tr>
<tr>
<td>MC</td>
<td>-0.2247506</td>
<td>0.0880692</td>
<td>-2.55</td>
<td>0.011</td>
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<tr>
<td>SR</td>
<td>8.006571</td>
<td>11.40992</td>
<td>0.70</td>
<td>0.48</td>
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<tr>
<td>LB</td>
<td>27.28259</td>
<td>14.02834</td>
<td>1.94</td>
<td>0.053</td>
</tr>
<tr>
<td>UR</td>
<td><strong>10.61295</strong></td>
<td><strong>4.686117</strong></td>
<td><strong>2.26</strong></td>
<td><strong>0.024</strong></td>
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<tr>
<td>TSP</td>
<td>-4.796415</td>
<td>16.52362</td>
<td>-0.29</td>
<td>0.772</td>
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<tr>
<td>MOP</td>
<td>20.73779</td>
<td>15.12347</td>
<td>1.37</td>
<td>0.172</td>
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<tr>
<td>MC*MC</td>
<td>0.0000249</td>
<td>8.28e-06</td>
<td>3.00</td>
<td>0.003</td>
</tr>
<tr>
<td>SR*SR</td>
<td>0.0085397</td>
<td>0.0936012</td>
<td>0.09</td>
<td>0.927</td>
</tr>
<tr>
<td>LB*LB</td>
<td>-0.4584867</td>
<td>0.2360527</td>
<td>-1.94</td>
<td>0.053</td>
</tr>
<tr>
<td>UR*UR</td>
<td>0.0361194</td>
<td>0.0254825</td>
<td>-1.42</td>
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<tr>
<td>TSP*TSP</td>
<td>-0.0193133</td>
<td>0.243163</td>
<td>-0.08</td>
<td>0.937</td>
</tr>
<tr>
<td>MOP*MOP</td>
<td>-0.2820039</td>
<td>0.2060539</td>
<td>-1.37</td>
<td>0.172</td>
</tr>
<tr>
<td>Constant</td>
<td>205.0677</td>
<td>533.3943</td>
<td>0.38</td>
<td>0.701</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Variable Name</th>
<th>notation</th>
<th>Units</th>
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<tbody>
<tr>
<td>Season</td>
<td>S</td>
<td>Dummy</td>
</tr>
<tr>
<td>Irrigation</td>
<td>I</td>
<td>Dummy</td>
</tr>
<tr>
<td>Trend</td>
<td>T</td>
<td></td>
</tr>
<tr>
<td>Machinery cost real</td>
<td>MC</td>
<td>Rs/Ac</td>
</tr>
<tr>
<td>Seed Rate</td>
<td>SR</td>
<td>Kg/Ac</td>
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<tr>
<td>Labour</td>
<td>LB</td>
<td>Manday/Ac</td>
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<tr>
<td>Urea</td>
<td>UR</td>
<td>Kg/AC</td>
</tr>
<tr>
<td>TSP</td>
<td>TSP</td>
<td>Kg/AC</td>
</tr>
<tr>
<td>MOP</td>
<td>MOP</td>
<td>Kg/AC</td>
</tr>
</tbody>
</table>

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Supply elasticities...

- Rajapaksa and Karunagoda (2008) argue that paddy yield is more responsive to output price than to fertilizer price.

- Weerahewa (2004) found that the elasticity of paddy supply with respect to paddy price, though inelastic, is quite a bit higher (0.609) than that of fertilizer price (-0.074).

- Ekanayake (2006) revealed that fertilizer demand elasticities with respect to price vary by type of fertilizer (urea, TSP, or MOP), but they are inelastic with respect to their own prices, output price, and policy changes.
Effects of 2016/2017 drought on extent cultivated (ha) as per the crop forecast estimates of the DoA

![Bar chart showing targeted and achieved hectares for different crop types]

- Major
- Minor
- Rainfed
- Total

Targeted
Achieved

Date: 01/30/2017

Achieved: 11
International trade in rice

• Restricted through various tariffs and para-tariff barriers

• Import mainly from India and Pakistan

• During the global food crisis period, export restrictions were imposed by the India government
List of exporting countries for the selected product in 2015
Product: 1006 Rice

List of supplying markets for a product imported by Sri Lanka in 2015
Product: 1006 Rice
Rice imports into Sri Lanka

1995

India 60%
Thailand 37%

1999

Pakistan 46%

Viet Nam

India 41%
Rice Imports into Sri Lanka

2010

Pakistan 88%
Singapore 4%
Myanmar 3%
Viet Nam 2%
United Arab Emirates 1%

2014

India 80%
Pakistan 12%
Global market situation as per FAO rice market monitor

• International prices of Japonica and Indica rice

• Exports from major producers

• Imports from major consumers
Way Forward: Policies that worked well in the past...

• Production support
  – Guaranteed prices and ceiling prices
  – Government procurement schemes
  – Fertilizer price subsidies
  – Irrigation and land settlement

• Marketing and Distribution of Rice
  – Public distribution systems
  – Import restrictions and buffer stocks

• Consumption
  – Ceiling prices
  – Universal food subsidy schemes
Resulting effects on rice supply (‘000 tons)
Contemporary challenges -- Nutritional and health outcomes

- Children under the age of five: 18% are stunted, 22% are underweight, and 15% are wasted.
- Close to 1 in 5 infants (18%) are born with a low birth weight.
- 35% of preschool aged children, and 23% of pregnant women are deficient in vitamin A
- Current rates of anemia among preschool aged children and pregnant women are roughly 30%
Way Forward: Policies to address present challenges

• Climate smart and sustainable
  – Varietal development to meet the diverse needs of local and global rice consumers
  – Water saving technologies and technologies to minimize environmental and health hazards

• Inclusive and nutrition and health driven
  – Targeted programs for the poor and vulnerable (instead of non-targeted price subsidies)
  – Buffer stocks and public distribution system for the needy
Way Forward: Policies to address present challenges (contd...)

• Efficient in resource allocation and business friendly
  – Competitive market (no market power) and lesser interventions on international trade, marketing and processing
  – Land tenure security
  – Market tagged subsidies (Fertilizer voucher systems)
  – Farmer cooperatives, agricultural insurance, branding

• Scientific evidence based policy designing (as opposed to policy making responding to pressure groups to patch short term issues)
Thank you