The quiet revolution in downstream and midstream of agrifood value chains: Case studies from Asia and Africa

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Introduction

- Food value chains transformed worldwide because of changes in consumption patterns and insistence on food quality/safety
- Rapid increasing importance of rural-urban food value chains because of urbanization
- Relatively little empirical work in this area:
  - in developing countries,
  - on changes that are happening midstream and downstream
  - on domestic staple crops
Introduction

- Objective of this study:
  1/ Document important big-picture changes in rural-urban staple value chains using evidence from 3 major Asian countries and 1 African country
  2/ Focus on major cities and understand these value chains with primary data collected throughout the value chain
Data and methodology

- Stacked surveys with producers, rural traders, mills, urban traders, urban retailers
- Asian countries: China, India, Bangladesh
- Africa: Ethiopia
- Focusing on major rural-urban value chains (Dhaka; Delhi; Beijing; Addis)
- 3,000 observations in 3 Asian countries (relatively small sample); 1,600 observations in Ethiopia
Data and methodology

- Surveys done in 2009/2010 in Asia and in 2012/13 in Ethiopia
- Important domestic crops studied:
  1. Potato and rice in Asia
  2. Teff in Ethiopia
How important off-farm segment in value chains (on average)?

**Most common rice**

- Dhaka
- Beijing
- Delhi

**Better quality rice**

- Dhaka
- Beijing
- Delhi
How important off-farm segment in value chains (on average)?

**Potato harvest period**

- Dhaka
- Beijing
- Delhi

**Potato off-harvest period**

- Dhaka
- Beijing
- Delhi
How important off-farm segment in value chains (on average)?

![Diagram showing the importance of off-farm segments in value chains for different types of crops.](image)
Transformation of technologies

- Rice mill segment technology transformation:
  - Substantial investments in expanding and upgrading milling equipment (especially so by larger mills)
  - Larger mills more expensive equipment; can polish and double polish; increasing grade differentiation (and capturing value added of this)
- More efficient cold storage technologies became available
Transformation of the marketing conduct

- Mill segment marketing transformation:
  - Disintermediation, e.g. decline of village traders (but different over countries)
  - Supermarket procuring directly from mills
  - Emerging vertical integration (large mills and large wholesalers)
  - Emergence of branded rice (especially by medium and large mills); If no brands, still shift from marketing loose to packed rice
Transformation of the marketing conduct

- Trader segment transformation:
  - Geographical lengthening of rice value chains (e.g. Beijing rice market supplied from 1,500 kms away; Agra market has become central in India)
  - Rice wholesalers in urban cities increasingly buy directly from medium and large mills (disintermediation and up-scaling)
  - Price spread for buying and selling paddy and rice rather small (seemingly driven by increased competition and denser road networks)
Transformation of the marketing conduct

- Retail segment transformation:
  - Increased penetration of supermarkets (that source relatively more from large mills; or from off-market rice wholesale companies)
  - Supermarkets two-pronged strategies: 1/ Packaged and cheap or loose rice to lower-income consumers; 2/ High diversity and higher quality for middle class
  - China: Mill branded rice found in both supermarkets and small shops
Transformation of the marketing conduct

- Rapid emergence of brands in these markets (for rice).
- Brands try to create a ‘brand’ value (and charge higher prices)
- Brands are significantly more prevalent for better quality products (e.g. fine rice) than other varieties
Transformation of the marketing conduct

- Retail segment transformation in Ethiopia:
  - Teff retailing in Addis: 61% mills; 29% cereal shops; and 8% consumer cooperatives
  - Traditionally, mills only did milling and households typically would:
    a/ buy teff on market/cereal shop;
    b/ clean teff at home;
    c/ take teff to mill;
    d/ prepare enjera at home
  - Now mills increasingly one-stop shops
  - Supermarkets not yet important
Transformation of the marketing conduct

- Increasing demand for and marketing of more expensive foods (e.g. rice in Bangladesh)

<table>
<thead>
<tr>
<th></th>
<th>% in sales</th>
<th></th>
<th>Mean difference</th>
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<tr>
<td></td>
<td>Years</td>
<td></td>
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<tr>
<td></td>
<td>1999</td>
<td>2009</td>
<td></td>
</tr>
<tr>
<td>Coarse</td>
<td></td>
<td></td>
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<tr>
<td>Producer</td>
<td>36</td>
<td>17</td>
<td>-19</td>
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<tr>
<td>Rural wholesaler off-market</td>
<td>47</td>
<td>31</td>
<td>-16</td>
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<tr>
<td>Rural wholesaler on-market</td>
<td>55</td>
<td>33</td>
<td>-22</td>
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<tr>
<td>Mills</td>
<td>49</td>
<td>34</td>
<td>-15</td>
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<tr>
<td>Urban wholesaler Dhaka</td>
<td>45</td>
<td>28</td>
<td>-17</td>
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<tr>
<td>Urban retailer Dhaka</td>
<td>34</td>
<td>23</td>
<td>-11</td>
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</table>
Transformation of the marketing conduct

- Increasing importance of the more expensive white and *magna* teff in Ethiopia

<table>
<thead>
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<th></th>
<th>Unit</th>
<th>10 years</th>
<th>Now</th>
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<tbody>
<tr>
<td><strong>Farmers</strong></td>
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<tr>
<td>White/magna teff</td>
<td>share (%)</td>
<td>46</td>
<td>68</td>
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<tr>
<td><strong>Rural wholesalers</strong></td>
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<tr>
<td>White/magna teff</td>
<td>share (%)</td>
<td>62</td>
<td>70</td>
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<td><strong>Urban wholesalers</strong></td>
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<tr>
<td>White/magna teff</td>
<td>share (%)</td>
<td>55</td>
<td>63</td>
</tr>
</tbody>
</table>
Transformation of value chain finance

- Increased disappearance of “tied output-credit markets”; share of paddy farmers getting advances from traders very small in all samples (0% in China to 10% in Vietnam)
- Advances from clients to mills and from traders to retailers more common (but still minority)
- Credit from modern cold storages very prevalent
Structural transformation of the value chain

- Mill segment: Share of small mills declining over time in Asia; mills becoming more efficient (see graph Ethiopia)
Structural transformation of the value chain

- Transport: Share of small trucks transporting food declining over time; margins between markets declining

Share types trucks Ethiopia (100% = all trucks)
Structural transformation of the value chain

Storage: Upscaling to large-scale cold storages in Bangladesh and India; have replaced wholesale markets as the center of trade

Capacity expansion cold storages (Bihar)
Structural transformation of the value chain

- Trader segment: 1/ Enlargement of its coverage in space (longer distance trade becoming more important); variation over countries

- Retail segment: 1/ Incipient penetration of supermarkets (e.g. Delhi 7%; however, already 50% in Beijing); 2/ Supermarkets often selling staples more cheaply than traditional shops
Transformation of government role

- Mills/traders: 1/ Little direct role of gov’t in milling, logistics, or storage sector; 2/ Gov’t as trader a limited role except in China and India in rice
- Important role of gov’t in enabling environment (electrification; investments in road and railways)
Conclusions

- Quiet revolution mid- and downstream in staple value chains in developing countries, i.e. grass-roots/small/medium firms investing in wholesale, logistics, and processing
- Driven by similar downstream factors as the modern revolution, i.e. urbanization, diet change, and income growth
- But also midstream and upstream rural factors: roads, diffusion of wholesale markets into rural towns, electricity grids, rapid rise of nonfarm income in rural areas, cell phones