Tomato value chain governance and productivity dynamics: the multiactor perspective

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PROCESSED TOMATO: GLOBAL PRODUCTION (2020)

GLOBAL PRODUCTION 38.777 (000 TONS)

NORTH EMISPHERE (36.214)

SOUTH EMISPHERE (2.563)

Top 10

<table>
<thead>
<tr>
<th>Country</th>
<th>Production (000 tons)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CALIFORNIA</td>
<td>10.25B</td>
</tr>
<tr>
<td>CINA</td>
<td>5.800</td>
</tr>
<tr>
<td>ITALIA</td>
<td>5.166</td>
</tr>
<tr>
<td>SPAGNA</td>
<td>2.950</td>
</tr>
<tr>
<td>TURCHIA</td>
<td>2.500</td>
</tr>
<tr>
<td>BRASILE</td>
<td>1.460</td>
</tr>
<tr>
<td>IRAN</td>
<td>1.300</td>
</tr>
<tr>
<td>PORTOGALLO</td>
<td>1.262</td>
</tr>
<tr>
<td>ALGERIA</td>
<td>1.000</td>
</tr>
<tr>
<td>TUNISIA</td>
<td>961</td>
</tr>
</tbody>
</table>
PRODUCTION of Processed Tomato (2020)

ITALY: 49%
SPAIN: 25%
USA: 4%
PORTUGAL: 2%

ITALY: 14% 4.8 ml/t
SPAIN: 8% 2.8 ml/t
CHINA: 11% 3.8 ml/t
PORTUGAL: 4% 1.1 ml/t
OTHERS: 33%

PRODUCTION of Processed Tomato (2020)
Production area in IBO 37,071 ha (2020):

- Emilia-Romagna (70%)
- Lombardy (20%)
- Piedmont (6%)
- Veneto (4%)

**ITALIAN main production areas**

- **NORTH ITALY**: 2,742,000 TONS
- **CENTRE-SOUTH ITALY**: 2,424,000 TONS
Case Study – Governance of Tomato for Processing Food Supply Chain

IBO recognised by the Region Emilia Romagna in 2011, by EU in 2012

Level 1 - Single companies and cooperatives

Level 2 - Producer Organizations (PO)
- Negotiation, bargaining, programming with the processors
- Collection of payments
- Mutualism (solidarity mechanisms are activated)
- Control of the disciplinary of production

Level 3 - Inter-branch Organization Processing Tomatoes of Northern Italy (IBO). It includes:
- Around 2,000 producers
- 13 producer organisations
- 20 processors
- Professional Organizations and Entrepreneurial Associations
- Promotes integration process of the industry
- Does not intervene actively in trade negotiations
IBO Reference Price streamlining

COMMERCIAL RELATIONSHIP

Processed tomato is produced on a contractual basis.

- Framework Contract within the Interbranch Organization sets the general rules
- Detailed Supply/Delivery contracts set specific contract-by-contract conditions

Trading: between the members of IBO. A premium and a penalty on price method is used as an incentive/deterrent against misconduct. Single producers are not allowed to contract directly but through the POs.
PRICE NEGOTIATION BETWEEN PRODUCERS AND PROCESSORS

☐ DISTRIBUTIVE FAIRNESS

Negotiations between producers and processing industry (IBO is not included) → Reference price (raw material): It is based on the historical prices paid in the past.

NB: Reference price is not a minimum price. This price can vary according to qualitative parameters.

☐ Avoid overproduction - Tomato farmers (within the IBO) limit the number of hectares for tomato production.

☐ Avoid overstocking and to minor purchasing of processors the following year

☐ Long term relationship based on collaborations and trust

<table>
<thead>
<tr>
<th>Year</th>
<th>Reference price (€/t)</th>
<th>Volume (t)</th>
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</thead>
<tbody>
<tr>
<td>2011</td>
<td>88</td>
<td>2,570,262</td>
</tr>
<tr>
<td>2012</td>
<td>84</td>
<td>2,412,304</td>
</tr>
<tr>
<td>2013</td>
<td>85</td>
<td>1,948,125</td>
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<tr>
<td>2014</td>
<td>92</td>
<td>2,385,775</td>
</tr>
<tr>
<td>2015</td>
<td>92</td>
<td>2,681,285</td>
</tr>
<tr>
<td>2016</td>
<td>85.2</td>
<td>2,844,754</td>
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<tr>
<td>2017</td>
<td>79.75</td>
<td>2,724,939</td>
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<tr>
<td>2018</td>
<td>79.75</td>
<td>2,446,932</td>
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<tr>
<td>2019</td>
<td>86</td>
<td>2,370,087</td>
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<tr>
<td>2020</td>
<td>88</td>
<td>2,741,982</td>
</tr>
<tr>
<td>2021</td>
<td>92</td>
<td>/</td>
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Looking Ahead – Post Project Exploitation

• EU Code of Conduct for Responsible Business and Marketing Practices foresees the retailers’ involvement
• Initiatives and policies to:
  o support the sustainability of the processed tomato supply chain
  o protect soil and water resources, which are heavily exploited in tomato production
  o adopt integrated production through compensation of consequent reduction in yields and increase in production costs
• Role of IBO as facilitator and guarantor towards the implementation of sustainable practice?
• Role of IBO as promoter of practices to improve the competitiveness and productivity of the sector?
Total factor productivity

- significant productivity improvements for tomato production
- tomato processing experienced minor productivity changes over the analyzed period
- productivity growth in tomato production was driven by a group of small producers
Drivers of productivity: technological change

- technological change is not a significant source of productivity growth in tomato processing
- tomato production is characterized by negative, decelerating technological change that reversed to become positive at the end of the analyzed period
- no significant differences among producers across the different size groups
• technical efficiency estimates indicate considerable room for improvements to be made
• persistent technical inefficiency is more pronounced in tomato production as compared to tomato processing = the presence of high levels of systematic farm management failures
Drivers of productivity: scale effect

- producers exhibit considerable economies of scale = high scale inefficiencies
  - scale inefficiencies in production being pronounced in the group of small tomato producers
- tomato processors are characterized by constant returns to scale = optimal production sizes

• TFP growth in tomato production was driven by an improvement of SE in the group of small producers
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