Private Requirements by European Retailers: Impact on French agri-food exporters

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Context 1- A development of standards in EU

- An harmonisation of **public standards** in the food sector, notably at the European level:
    - Responsibility of the actors within the food supply chain
    - Traceability of the product

- A specific instrument of **quality assurance** within the food supply chain =
  - Private standards through third party certification

- Various types of **private standards**
  - collective standards (AFNOR, ISO)
  - private standards introduced by big companies themselves (Nestlé : NQS)
  - standards imposed by retailers to their suppliers (BRC, IFS, GlobalGap…)

IATRC, Florida, December 2009
Context 2- A growing market power of retailers

• In Europe, retailers play a key role in the food chain
  • In Finland: they sell \( \approx 89\% \) of food products to final consumers
  • In Great Britain: \( \approx 80\% \) - Germany: \( \approx 67\% \) - France: \( \approx 65\% \)
  • In Poland: \( \approx 20\% \)

• They also play an active role in the production of final goods: by developing their own private label
  • 10-40\% of retail food sales in EU countries (C. Bontemps et al., 2008)
  • a differentiation tool between retailers.
Context 3: What is the impact of private standards on trade?

• A growing literature on developing countries:
  • New barriers to trade at entry to developed markets
  • Conversely, standardization and certification reduce
    • transaction costs
    • upgrade the quality of the exported products
    • and thus enhance market access and competitiveness
  • Trade, standards and impact on the supply chain of the developing countries
    • Marginalization of small businesses, excluded from the export chain
  • Trade, standards and poverty
    ➢ Majority of works: case studies or surveys

• Few (no) papers focus on trade of developed countries and on export behavior of firms
  ➢ Our paper: impact on French agri-food exports
Context 4- still a fragmentation of the EU market.

• Despite positive impact of harmonisation (Henry de Frahan and Vancauteren, 2006), persistence of market fragmentation (Head and Mayer, 2000 and Chen and Novy, 2009)

• Chevassus-Lozza and Latouche (2008) :
  • Access to EU markets for French agri-food firms is explained by
    • distance, size, intensity of the competition in the importing country
    • AND remaining trade costs at entry to the different EU markets.

• One can suppose that these remaining trade costs correspond to
  • product compliance, information on new markets, building new networks…

➢ market structure of the importing country and the way retailers impose their requirements (private standards)
The impact of certification: two main assumptions

The adoption of a certification by a firm can impact its access to export market through two channels:

- **H1: an increase of its productivity** (adoption of a new organisation) Melitz (2003) shows that there is a firm selection to export. Only the most productive firms do export and are able to overcome trade costs.
  - A link between export status and firm’s productivity

- **H2: a decrease of trade costs** (transaction costs, information costs, network access…)
Chaney (2008) shows that there is a firm selection specific to each market: a productivity threshold is market specific
  - A link between productivity threshold and trade costs specific to a market
Two certifications analysed in this paper (processed products)

- **British Retail Consortium requirements (BRC)**
  - Created in 1998 by British Retailers
  - Most of the British retailers: necessary condition to contract with a supplier
  - Version 4: 226 requirements
    - 6 categories: HACCP; Quality management system, Environmental consideration about production site; controle of products; of production process; humane ressource

- **International Food Standard (IFS)**
  - Created in 2002 by German Retailers
  - Adopted by the French Federation of retailers in 2003
  - A basic requirement for supplier of products sold with the retailer brand
  - Version 4: Requirements: HACCP; Quality management systems; direction implication; ressource management; production process
It is necessary to work at the firm level...

• Private standards = part of a commercial agreement between two parties
  • Contrary to public standards which are applied to all trading partners
  • => necessary to work at the firm level

• A detailed dataset on French agri-food firms – EAE database
  • A compulsory and exhaustive survey made by the INSEE
  • Firms located in France with more than 20 employees
  • Main activity of the firm (NACE code), total sales, exports, nb of employees, VA, K, I, and accounting data
    • 2942 French agri-food firms in 2007
… to analyse the export behaviour of certified firms

• The register of French customs identifies
  • All French exporters (importers) *whatever* their size
  • The destination (origin) of their exports (imports) per product (NC8), value

• The list of French plants which are IFS (or/and) BRC in 2007
  • Official website of the two standards
    ▶️ 842 certified firms in 2007 (573 in the EAE database)
### Certified firms in the French agri-food sector, 2007

<table>
<thead>
<tr>
<th></th>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Processing of meat products</td>
<td>803</td>
<td>109</td>
<td>12%</td>
</tr>
<tr>
<td>Processing and preserving of fish</td>
<td>112</td>
<td>28</td>
<td>20%</td>
</tr>
<tr>
<td>Proc. and preserving of F&amp;V</td>
<td>108</td>
<td>58</td>
<td>35%</td>
</tr>
<tr>
<td>Manufacture of oils and fats</td>
<td>25</td>
<td>2</td>
<td>7%</td>
</tr>
<tr>
<td>Manufacture of dairy products</td>
<td>179</td>
<td>115</td>
<td>39%</td>
</tr>
<tr>
<td>Manuf. of grain mill products</td>
<td>86</td>
<td>19</td>
<td>18%</td>
</tr>
<tr>
<td>Manuf. of prepared animal feeds</td>
<td>193</td>
<td>4</td>
<td>2%</td>
</tr>
<tr>
<td>Manufacture of other food prod.</td>
<td>556</td>
<td>166</td>
<td>23%</td>
</tr>
<tr>
<td>Manufacture of beverages</td>
<td>307</td>
<td>72</td>
<td>19%</td>
</tr>
<tr>
<td><strong>Total Agri-food Sector</strong></td>
<td>2369</td>
<td>573</td>
<td>19%</td>
</tr>
</tbody>
</table>
Export status of French agri-food firms – 2007

- All firms (2942)
  - Non exporting firms: 38%
  - Exporting firms: 62%

- Non certified firms (2369)
  - Non exporting firms: 42%
  - Exporting firms: 58%

- Certified firms (573)
  - Non exporting firms: 22%
  - Exporting firms: 78%
H1: Are certified firms more productive and more export-oriented than the others?

• Our questions:
  • In comparison to firms of the same sector, and of same level of productivity, do certified firms export more?

• Methodology:
  • Propensity score matching: firms matched on their characteristics.
  ⇒ Three categories of firms: certified firms, matched firms non certified, non matched firms – Analysis by type of certification
  • Test for different covariates
  • To sum up the characteristics of the firm: the Total Factor Productivity estimated using Olley and Pakes (1996) methodology
BRC certification
Certified firms are more productive…

<table>
<thead>
<tr>
<th>Product</th>
<th>Productivity</th>
<th>Matched Non BRC</th>
<th>BRC</th>
<th>Unmatched</th>
</tr>
</thead>
<tbody>
<tr>
<td>Meat</td>
<td>114.5</td>
<td>114.6</td>
<td></td>
<td>72.5</td>
</tr>
<tr>
<td>Fruit and vegetables</td>
<td>128.0</td>
<td>131.6</td>
<td></td>
<td>83.3</td>
</tr>
<tr>
<td>Dairy</td>
<td>142.4</td>
<td>144.7</td>
<td></td>
<td>86.5</td>
</tr>
<tr>
<td>Other</td>
<td>112.7</td>
<td>114.80</td>
<td></td>
<td>81.7</td>
</tr>
<tr>
<td>Beverages</td>
<td>134.4</td>
<td>135.4</td>
<td></td>
<td>131.9</td>
</tr>
</tbody>
</table>
... and BRC firms export more than the others, and more than firms of same productivity level

<table>
<thead>
<tr>
<th>Industry</th>
<th>Matched Non BRC</th>
<th>BRC</th>
<th>Unmatched</th>
</tr>
</thead>
<tbody>
<tr>
<td>Processing and preserving of meat products</td>
<td>114.5</td>
<td>114.6</td>
<td>72.5</td>
</tr>
<tr>
<td>Export rate %</td>
<td>5.6</td>
<td>&lt; 14.6</td>
<td>&gt; 5.1</td>
</tr>
<tr>
<td>Processing and preserving of fruit and vegetables</td>
<td>128.0</td>
<td>131.6</td>
<td>83.3</td>
</tr>
<tr>
<td>Export rate %</td>
<td>16.2</td>
<td>&lt; 18.6</td>
<td>&gt; 16.1</td>
</tr>
<tr>
<td>Manufacture of dairy products</td>
<td>142.4</td>
<td>144.7</td>
<td>86.5</td>
</tr>
<tr>
<td>Export rate %</td>
<td>8.9</td>
<td>&lt; 16.9</td>
<td>&gt; 8.4</td>
</tr>
<tr>
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<td>112.7</td>
<td>114.80</td>
<td>81.7</td>
</tr>
<tr>
<td>Export rate %</td>
<td>15.8</td>
<td>&lt; 19.5</td>
<td>&gt; 10.3</td>
</tr>
<tr>
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<td>134.4</td>
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<td>131.9</td>
</tr>
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IFS certification
Certified firms are more productive...

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<tr>
<th>Product</th>
<th>Matched Non IFS</th>
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<th>Unmatched</th>
</tr>
</thead>
<tbody>
<tr>
<td>Processing and preserving of meat products</td>
<td>Productivity</td>
<td>106.2</td>
<td>≈ 106.7</td>
</tr>
<tr>
<td>Processing and preserving of fruit and vegetables</td>
<td>Productivity</td>
<td>119.8</td>
<td>≈ 122.3</td>
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<td>≈ 112.9</td>
</tr>
<tr>
<td>Manufacture of beverages</td>
<td>Productivity</td>
<td>140.1</td>
<td>≈ 137.9</td>
</tr>
</tbody>
</table>
... but IFS firms export much less than the others

<table>
<thead>
<tr>
<th>Product Line</th>
<th>Matched Non IFS</th>
<th>IFS</th>
<th>Unmatched</th>
</tr>
</thead>
<tbody>
<tr>
<td>Processing and preserving of meat products</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Productivity</td>
<td>106.2</td>
<td>106.7</td>
<td>67.5</td>
</tr>
<tr>
<td>Export rate %</td>
<td>8.4</td>
<td>≈ 7.3</td>
<td>&gt; 4.8</td>
</tr>
<tr>
<td>Processing and preserving of fruit and vegetables</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Productivity</td>
<td>119.8</td>
<td>122.3</td>
<td>80.3</td>
</tr>
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</tr>
<tr>
<td>Export rate %</td>
<td>15.7</td>
<td>&gt; 11.2</td>
<td>≈ 10.2</td>
</tr>
<tr>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Productivity</td>
<td>109.6</td>
<td>112.9</td>
<td>76.1</td>
</tr>
<tr>
<td>Export rate %</td>
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<td>&gt; 11.6</td>
<td>≈ 10.3</td>
</tr>
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<td>24.2</td>
<td>&gt; 22.0</td>
<td>≈ 22.8</td>
</tr>
</tbody>
</table>
H2: What is the impact of certification on the costs to access some EU markets? an application of Chaney’s model

- **Two sources of heterogeneity**
  - **Firms** distinguished according to their productivity level $\varphi$ (pareto distribution $\gamma$)

- **Markets**: To sell on a market, firms have to face costs specific to this market
  - fixed ($f_j$): compliance costs, networks implementation, knowledge of the markets....
  - variable ($\tau_j$): transport, exchange rate...

\[
\bar{\varphi}_j = \lambda \left( \frac{Y}{E_j} \right)^{1/\gamma} \left( \frac{\psi \tau_j}{\theta_j} \right)^{\sigma} f_j
\]

- Share of the importing country in the world import
- Multilateral resistance index
• **This productivity threshold depends on the market structure**
  • Fixed costs depend on the networks firms can access to.

• Thus, we expect that:
  ➢ the productivity threshold will be reduced because of certification
  ➢ for certified firms (accessing retailer network), the probability to export will be higher

• **Our empirical strategy**: the estimation of the productivity threshold
  • Probability of firms to export to market $j$

\[
\begin{align*}
Y_{ij} &= 1 \quad \text{if} \quad \phi > \overline{\phi}_j \\
Y_{ij} &= 0 \quad \text{if} \quad \phi \leq \overline{\phi}_j
\end{align*}
\]

\[
P(Y_{ij} = 1) = P(\phi > \overline{\phi}_j) = \overline{\phi}_j^{-\gamma}
\]

⇒ With the MLM, we compute the threshold at entry to each EU market
⇒ And then generate the associated probability to export to each market
## Results: impact of certification on the productivity threshold

<table>
<thead>
<tr>
<th></th>
<th>Impact of BRC</th>
<th>Impact of IFS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Importing country size</td>
<td>-0.138 (0.006)</td>
<td>-0.142 (0.006)</td>
</tr>
<tr>
<td>Distance</td>
<td>0.078 (0.007)</td>
<td>0.081 (0.006)</td>
</tr>
<tr>
<td>Potential supply of the</td>
<td>-0.031 (0.010)</td>
<td>-0.037 (0.010)</td>
</tr>
<tr>
<td>competing countries</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Country fixed effects: Belgium as reference

<table>
<thead>
<tr>
<th>Country Fixed Effects</th>
<th>BRC matched</th>
<th>Non BRC</th>
<th>IFS matched</th>
<th>Non IFS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Great-Britain</td>
<td>.0932 (0.016)</td>
<td>.2469 (0.032)</td>
<td>.2826 (0.014)</td>
<td>.176 (0.018)</td>
</tr>
<tr>
<td>Germany</td>
<td>.0857 (0.018)</td>
<td>.1501 (0.027)</td>
<td>.2017 (0.013)</td>
<td>.118 (0.017)</td>
</tr>
<tr>
<td>Other EU15</td>
<td>.0697 (0.011)</td>
<td>.1899 (0.016)</td>
<td>.2631 (0.010)</td>
<td>.142 (0.012)</td>
</tr>
<tr>
<td>New Member States</td>
<td>.3188 (0.020)</td>
<td>.4885 (0.029)</td>
<td>.5968 (0.015)</td>
<td>.535 (0.021)</td>
</tr>
<tr>
<td>Constant</td>
<td>3.328 (0.04)</td>
<td></td>
<td></td>
<td>3.317 (0.04)</td>
</tr>
<tr>
<td>Observations</td>
<td>75164</td>
<td></td>
<td></td>
<td>75164</td>
</tr>
</tbody>
</table>

• **BRC**: requirement imposed by British retailers
  • BRC firms are more productive
  • In comparison to firms of same productivity level, they export more
    • the certification would play through two channels
      • An increase of the productivity
      • A decrease of the fixed export costs
  • BRC firms are more export oriented to this market than the others

  ⇒ **BRC Certification**: an objective included in the export strategy of the firms

• **IFS**: requirement imposed by German and French retailers
  • IFS firms are more productive
  • IFS Certification: not discriminating in terms of export strategy

  ⇒ **IFS Certification**: not an objective included in the export strategy
Conclusions (2/3)
Private standards : a barrier at entry to markets?

• BRC is not a sine qua non condition for French exporters to export to GB
  • non certified firms access to this market
  • but their probability to export is much lower

• Can we extend the conclusions for exporters from developing countries?
  • Note that French firms implement EU public standards (a condition to produce and export on the Single EU market)
  • Private standards for developing countries = quality assurance for EU importers
To go further

- Not only identify exporters BUT also the importers and their relations with the retailers

- Identify the year of firm’s certification in order to introduce dynamics in the analysis

- Compare data for France to other countries
  - Is IFS a trade barrier at entry to French market?
The multilateral resistance index

\[
(\Theta^i_j)^{\gamma_j} = \sum_{k=1}^{N} \left( \frac{Y^k_i}{Y^j} \right) \times \left( \frac{w^k_{ij} \tau^k_{ij}}{\epsilon^k_{ij}} \right)^{\gamma_j} \times \left( f_{kj} \right)^{-\left(\frac{\gamma_j}{\sigma - 1} - 1\right)}
\]

- **Part 1**: supply by potential partners (weighted by distance from k to j, taking into account common language, common border or common history)

- **Part 2**: fixed costs at entry of market j ⇒ importing country fixed effects