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CAED
Nuremberg, April 26-28, 2012
Corporate Social Responsibility and Firm Performance: An Empirical Analysis of the Quantity-Quality Trade-off on French Data

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• INTRODUCTION

• Corporate social responsibility: growing literature.

• Stakeholders (workers, customers, suppliers, ...., the whole society).

• Externalities $\Rightarrow$ Pareto optimal state.

• INTRODUCTION

• Effect over firms profitability

• Negative effect/Positive effect

• INTRODUCTION

• Why this absence of consensus?

• Quantity-quality trade-off between the various dimensions of corporate responsibility.

• Multi-dimensional concept.

• A complex and ambiguous impact of various CSR profiles on performance.
INTRODUCTION

Isolated CSR dimensions may exert a positive, negative or neutral impact on firm performance.

An aggregate measure of CSR may exert a positive, negative or neutral impact on firm performance.

The interaction among different CSR dimensions may generate complementarity (synergy) or substitutability (trade-offs).

- Complementarity means that the impact of interaction among different CSR dimensions on firm performance is greater than the sum of the impacts of each dimension involved in the interaction.
- Substitutability means that the impact of interaction among different CSR dimensions on firm performance is weaker than the sum of the impacts of each dimension involved in the interaction.
• INTRODUCTION

• Complementarity/Supermodularity :
  • **Theory:** Milgrom (1990), Athey (2002), Amir (2005)
  • **Empirical method:** Athey and Stern (1998)
• THE DATA SETS

• The COI:
  • The French Organizational Changes and Computerization’s (COI) 2006 survey.
  • Matched employer-employee dataset on organizational change and computerization.
  • 7,700 firms, with at least 20 employees, belonging to the private sector.
  • Representative population of French firms from all business sectors except agriculture, forestry and fishing.

• The EAE:
  • Annual Enterprise Survey (2003, 2006).
  • Information on export volumes and profitability.
  • The Merged data set: 4,386 firms.
## THE SCR VARIABLES

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Green (0/1)</th>
<th>Social (0/1)</th>
<th>Client &amp; Supplier (0/1)</th>
<th>Regulation (0/1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environmental standard or ethics label</td>
<td>• the firm has undergone financial restructuring in the form of, for instance, merger, acquisition, transfer or buyback since 2003; • the firm has relocated an office or plant abroad since 2003; • the firm had central databases for human resource, training in 2003; • the firm has had internal and external departments focused on human resource, training since 2003; • the firm used internet for employees learning or training in 2003.</td>
<td>• the firm used labeling tools for goods and services in 2003; • the firm was engaged in the deliver or supply of goods or services to a fixed deadline in 2003; • the firm was engaged in responding to claims or supplying after-sales service to a fixed deadline in 2003; • the firm had a contact or call centre for clients in 2003; • the firm adopted integrated IT-CRM in 2003; the main client demanded firm to comply with a quality standard or quality control procedure in 2003; • the firm signed contract or was engaged with some suppliers on a long term relationship in 2003; • on firm’s demand, the main supplier complied with a quality standard or quality control procedure in 2003; • the main supplier had an IT system (for orders, invoices, etc.) linked to the firm’s one in 2003; • the firm used tools to study client expectations, behaviour or satisfaction in 2003; • the firm had internal and external departments focused on improving customer relations management since 2003.</td>
<td>• the firm has been affected by change in regulations, standards (health, environment, worker rights, etc.) since 2003; • the firm was registered according to ISO 9000 standard; • the firm has had internal and external departments focused on improving environmental and security issues since 2003.</td>
<td></td>
</tr>
</tbody>
</table>

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• **THE SCR VARIABLES**

• **CSR = Green + Social + Client & Supplier + Regulation.**

• The CSR variable counts the number of CSR dimensions.

• It varies from 0 to 4, where CSR\(_j\) = k means that firm \(j\) uses \(k\) dimension(s) of social corporate responsibility.

• **Interaction.**

• We consider all the possible interactions between the 4 dimensions: 16 possible cases (2x2x2x2).
• **THE SCR VARIABLES**

• **Interaction.**

  - $Interaction = 0$ if the firm did not invest in any dimension
  - $Interaction = 1$ if the firm invested only in green practices,
  - $Interaction = 2$ if the firm invested only in social practices,
  - $Interaction = 3$ if the firm invested only in client-supplier practices,
  - $Interaction = 4$ if the firm invested only in regulation practices,
  - $Interaction = 5$ if the firm invested only in green and social practices,
  - $Interaction = 6$ if the firm invested only in green and client-supplier practices,
  - $Interaction = 7$ if the firm invested only in green and regulation practices;
  - $Interaction = 8$ if the firm invested only in social and client-supplier practices,
  - $Interaction = 9$ if the firm invested only in social and regulation practices,
  - $Interaction = 10$ if the firm invested only in client-supplier and regulation practices,
  - $Interaction = 11$ if the firm invested in green, social and client-supplier practices,
  - $Interaction = 12$ if the firm invested in green, social and regulation practices,
  - $Interaction = 13$ if the firm invested in green, client-supplier and regulation practices,
  - $Interaction = 14$ if the firm invested in social, client-supplier and regulation practices,
  - $Interaction = 15$ if the firm invested in all practices: green, social, client-supplier and regulation.
THE EMPIRICAL STRATEGY

a. The first type of estimates: Quantity estimates

Remind: CSR variable counts the number of CSR dimensions. It varies from 0 to 4.

From this variable CSR, we create four binary variables:
- CSR_1_0 which is equal to 1 if CSR = 1 and equal to 0 if CSR = 0;
- CSR_2_0 which is equal to 1 if CSR = 2 and equal to 0 if CSR = 0;
- CSR_3_0 which is equal to 1 if CSR = 3 and equal to 0 if CSR = 0;
- CSR_4_0 which is equal to 1 if CSR = 4 and equal to 0 if CSR = 0.

We run four regressions with respectively CSR_1_0, CSR_2_0, CSR_3_0 and CSR_4_0 as independent variable.

CSR_1_0, CSR_2_0, CSR_3_0 and CSR_4_0 have the same reference: CSR = 0.
THE EMPIRICAL STRATEGY

b. The second type of estimates: Quality estimates

Remind: the variable called “Interaction” includes the 16 possible interactions between the 4 dimensions of corporate social responsibility.

From “Interaction”, we create 15 dummy variables having the same reference: the case where no dimension is implemented.
• THE EMPIRICAL STRATEGY

• Simultaneous Equations Model:

\[
\begin{align*}
(a) \quad Y_1 &= a_1 + \beta_1 X_1 + \delta_1 Z_1 + \mu_1 \\
(b) \quad Y_2 &= a_2 + \beta_2 X_2 + \gamma_2 Y_1 + \mu_2 
\end{align*}
\]

• where \( Y^*2 \) represents business performance (the profit per head); \( Y_1 \) is the corporate and social responsibility practice;
• \( X_1 \) and \( X_2 \) are the vectors of exogenous variables;
• \( Z_1 \) represents the vector of instrumental variables: (1) firm used workgroup tools in 2003; (2) firm’s distance from clients and suppliers in 2003.
The reference is the case where no dimension is implemented. (*) , (**) , (***) indicate parameter significance at the 10, 5 and 1 per cent level, respectively. ns means non-significant.

<table>
<thead>
<tr>
<th>Number of dimensions</th>
<th>Sign</th>
<th>Coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 dimension</td>
<td>ns</td>
<td>1.187</td>
</tr>
<tr>
<td>2 dimensions</td>
<td>ns</td>
<td>0.098</td>
</tr>
<tr>
<td>3 dimensions</td>
<td>ns</td>
<td>0.391</td>
</tr>
<tr>
<td>4 dimensions</td>
<td>+</td>
<td>0.516***</td>
</tr>
</tbody>
</table>

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THE RESULTS: Qualitative estimates

<table>
<thead>
<tr>
<th>Type of interaction</th>
<th>Sign</th>
<th>Coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Green alone</td>
<td>+</td>
<td>1.083***</td>
</tr>
<tr>
<td>Social practices alone</td>
<td>ns</td>
<td>0.331</td>
</tr>
<tr>
<td>Client supplier alone</td>
<td>-</td>
<td>-1.457***</td>
</tr>
<tr>
<td>Regulation alone</td>
<td>-</td>
<td>-2.155***</td>
</tr>
<tr>
<td>Green &amp; Social</td>
<td>ns</td>
<td>1.017</td>
</tr>
<tr>
<td>Green &amp; Client supplier</td>
<td>+</td>
<td>0.681***</td>
</tr>
<tr>
<td>Green &amp; Regulation</td>
<td>ns</td>
<td>0.479</td>
</tr>
<tr>
<td>Social &amp; Client supplier</td>
<td>ns</td>
<td>0.0198</td>
</tr>
<tr>
<td>Social &amp; Regulation</td>
<td>ns</td>
<td>0.566</td>
</tr>
<tr>
<td>Client supplier &amp; Regulation</td>
<td>ns</td>
<td>0.352</td>
</tr>
<tr>
<td>Green, Social &amp; Client supplier</td>
<td>+</td>
<td>0.570*</td>
</tr>
<tr>
<td>Green, Social &amp; Regulation</td>
<td>ns</td>
<td>0.0541</td>
</tr>
<tr>
<td>Green, Client supplier &amp; Regulation</td>
<td>ns</td>
<td>0.270</td>
</tr>
<tr>
<td>Social, Client supplier &amp; Regulation</td>
<td>ns</td>
<td>0.394</td>
</tr>
<tr>
<td>Green, Social, Client supplier &amp; Regulation</td>
<td>+</td>
<td>0.516**</td>
</tr>
</tbody>
</table>
• COMMENTS: Isolated Effect CSR Dimensions

• Comparing to the case where no dimension is implemented:

• 1. Having (only) a green dimension has a positive effect on profit per head.
• 2. The social dimension (alone) has no effect.
• 3. The client & supplier dimension (alone) has a negative effect.
• 4. The regulation dimension (alone) has a negative effect.
• COMMENTS: Aggregated Effect of CSR Dimensions

• Comparing to the case where no dimension is implemented:

• 1. A pure quantitative strategy does not work. It works only for CSR=4.
• COMMENTS: Complementarity (synergy) or Substitutability (trade-off)

• 1. Only three kinds of interactions are associated with a (positive) significant coefficient:
  • Green & Client-supplier;
  • Green Social & Client-supplier;
  • Green, Social, Client-supplier & Regulation.

• 2. Except for Green & Social, the interactions between some or all of the four dimensions generate a synergy (i.e. a complementarity).
• COMMENTS: The marginal effect for moving from one configuration to another

• The question we ask is whether the firm is better off by moving from a started configuration.

• 1. When a firm starts with a green dimension then it is better for her not to move by adding some other dimensions to the green dimension.

• 2. Same conclusion when a firm starts either with green & client-supplier dimensions or with green, client-supplier & social.

• 3. From any other configuration, it is better for her to move directly to the configuration where all dimensions are implemented.
• CONCLUSION

• The profitability of corporate social responsibility investments in French firms seems:
  • **1.** to rely on synergies rather than trade-offs,
  • **2.** to rely on qualitative mix of the corporate social responsibility dimensions rather than quantitative.

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