Impact assessment system for strategic sector regulation

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Abstract: Good performances of food companies depend more and more on the organizational ability of the whole sector to promote common strategies. At the EU level national food sectors are oriented on the same strategic direction by common legislative acts. A new ex-ante regulations' impacts assessment methodology is proposed as part of a decision support system for the policy maker in charge of the sector strategic thinking. The impact assessment system is based on a qualitative approach to rapidly react to markets' dynamism and concerns several domains of impact in economical, social and environmental fields.

1 Introduction

The success of EU food sector relies only partially on scale economies because despite a large number of companies, most are small in scale and few are able to compete on the global market.

Given this background picture, the EU food industry faces many strategic challenges summarized by two questions of the first session 'food for the future' of the Confederation of Food and Drink Industries' (CIAA) 2010 Congress:

- What sort of EU and international regulatory environment is needed to generate a more outward reaching, competitive European food and drink industry?
- How can industry, policy-makers and other interested stakeholders address the innovation challenge? Is there a role for new and emerging technologies?

The questions pinpoint the importance to strength the relations among the food industry and the other actors influencing the food market. The Impact Assessment (hereafter IA) we propose could contribute as a policy maker Decision Support System to nearer the distance between the rulers and the players of the food industry by showing whether or not new regulations match through likely impacts the vision goals of both EU and EU food productive system.

2 Method

Usually Regulatory Impact Assessment follows a top-down approach, focusing exclusively on the macro perspective of the problem. This approach is reversed in our IA system (figure 2.1), hence we follow a bottom-up system to obtain:

1. Information on the probability of compliance of the enterprises affected by the regulation (micro view or horizontal part of the model);
2. Consequences of such compliance on many fields of impact (macro view or vertical part of the model).

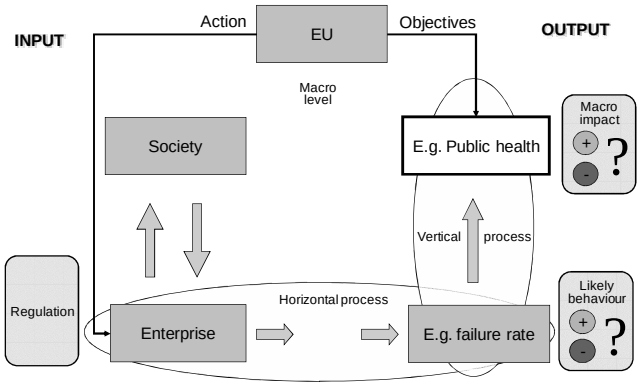

Figure 2.1 Model overview

In this paper we focus mainly on the vertical part. Enterprises compliance prediction model can be obtained through the method suggested by Schiefer (2009).

The vertical part of the model consists of two main operations: a) calculate the impact as consequence of enterprise compliance; b) aggregate several enterprises classes' impact from a chain level to a regional, national and European level. The operational procedure requires three steps of information collection and elaboration (operational procedure paragraph). At the end of the calculation process we present to the decision maker a value judgment concerning seven different domains:

1. Public health
2. Labour
3. Public authorities
4. Innovation and research
5. International trade
6. Firm competition
7. Environment

The list above shown is taken from Mazzocchi and Ragona's Methodological Review on Impact Assessment of food safety regulations (2008). We consider one single domain of impact (firm competition) to clearly explain the operational procedure used in our model.

3 Model's outcome

The output of the model is a qualitative impact for each domain in different levels of aggregation (class of enterprises, supply chain, country, EU). We opted for a qualitative method because the information required in the assessment is detailed and not always available and then the use of discrete values or ordinal scales is suitable (Henson, Caswell 2007). In our impact evaluation, we use the following measure scale: very positive, positive, no impact, negative, very negative. The range of values connected to the judgments is from -1 to +1. Every impact category denomination has a value of 0,5. As we give qualitative statements through experts' opinions we consider a safety overlapping margin for the three intermediate classes: positive, no impact, negative: if we have a value between 0,25 and -0,25, we consider the impact on the domain not very effective. This buffer is necessary since our values are qualitative and not part of precise measurable variables.

4 The operational procedure

The operational procedure (hereon OP) of the vertical part of the model consists of three steps similar for each domain:

1. Quantify the "magnitude" factor,
2. Find the impact direction,
3. Aggregate the impact from class level to EU level.

4.1 Quantifying the magnitude factor

The magnitude corresponds to the number of enterprises classified by classes dimension (micro, small, medium and large). The magnitude has two different functions in the vertical part: to support the expert in answering the questions included in the second step of the OP and to be an impact aggregation criterion. If we refer to the first function we look for the number of enterprises implementing the regulation among classes individualized by the model horizontal process. Since we will need experts' opinions on consequences deriving from implementation in a specific territory and subject, it is important to provide them knowledge on how the system will change. If we refer to the second function of the magnitude, namely the aggregation process, the number of enterprises per class will be used only for the specific domain that considers the enterprises' number as direct link to the impact result (e.g. firm competition, innovation and research, labour market). The number of enterprises per class is not sufficient information in supporting the experts. As a consequence a percentage should be added: we take the chain stage in which they are as 100%. We do the same considering the complying enterprises of the chain stage with respect to the entire supply chain from the country to the EU level.

4.2 Impact direction

To calculate the impact direction, three elements are necessary:

1. The magnitude factor deriving from the previous OP step,
2. A set of questions related to the specific domain,
3. The expert knowledge necessary to answer these questions.

Once the domain has been defined, we list the main causes that positively and negatively affect the society for that specific aspect of interest. On these causes or sub-aspects we formulate questions with closed answers; in the question formulation it is asked if, with respect to the current situation and concerning one sub-aspect of the domain, the future situation will improve, get worse or will not change. The answer of the expert will assume respectively 1, -1 or 0.

After having assigned a question to every specific cause influencing the domain result, it is necessary to give a weight reflecting the relevance of such sub-aspect with regard to the overall phenomenon. By multiplying the answer and the linked value (+1, -1, 0) to the weight, we have a result inside the range +1 and -1 for every sub-aspect. We add all values for each question and we obtain the final result of the domain for a single class of enterprises.

4.3 Impact aggregation

We collect the information coming from the second OP step for every class, and we will use the magnitude factor to weigh the sum between different classes' impacts. Then we aggregate the classes' results to the supply chain stage level; we aggregate from the chain stages to the entire supply chain existent in a country; we aggregate from countries to the EU level.

5 Conclusions

The policy maker has a first rough picture of the proposal direction through an intuitive visualization of the likely impacts of new regulations. Since impacts are calculated embodying enterprises compliance we can get immediately whether or not the regulation proposal will suit to the strategy needs of EU food industry companies.

References

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