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# Finnish citizens' concerns about various dimensions of agricultural policy

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## **Abstract**

During the last decade, citizens have put a lot of attention to agricultural policy dimensions like multifunctionality, animal welfare, food safety, food security and environmental issues. Based on quantitative survey data set (n=1,623), this research examines Finnish citizens' concerns about various dimensions of agricultural policy. Principal component analysis resulted in a solution of four components. It seems that most worries by citizens relate to policy dimensions, which may cause personal risks in a long-term and which lie beyond personal control. Concerns that are more distant were not very worrying.

Keywords: Agricultural policy dimensions, citizens, public concern

## **1. Introduction**

The Common Agricultural Policy (CAP) of the European Union aims at provision of high-quality and safe food with reasonable prices by supporting farmers while taking environment into account. Agricultural expenditures make a share of EU's total budget. It is important to be aware of consumers' concerns of this extensive and multidimensional policy, since the costs of the CAP are covered by taxpayers and consumers.

CAP consists of several dimensions. During the last decade, citizens have put a lot of attention to multifunctional agriculture, animal welfare, food safety, food security and environmental issues. Concomitantly, many empirical studies focus on the public views of some particular dimension of CAP. Very few studies have dealt with truly multidimensional agricultural policy, however.

As a result of the international food crisis and the global climate change, food security has become an issue in the public discussion. According the Special Eurobarometer 389 - report, about 80 % of citizens in the EU15 countries are concerned about worldwide food security. Finnish citizens are very concerned about global sufficiency of food (84 % are concerned). About 76 % of Finnish citizens also agreed that EU should be less depended on importing food. This concern, however, was lower than the EU average (European Commission, 2012).

The relationships between agriculture and the environment, as well as agriculture and the rural areas, have been widely discussed. According to the Eurobarometer 389 -report, as much as 80 % of Finnish citizens agreed that agriculture is beneficial for the environment and 95 % agreed that agriculture helps to protect rural areas (European Commission, 2012). The Finns also consider the welfare of production animals very important and 84 % of them feel they know about conditions under which animals are farmed in Finland (European Commission, 2007 & 2010).

Food safety issues have gained increasing attention and views and concerns related to food safety dimension (e.g., additives, pesticide residues, GM products, food poisonings) have been examined in several studies. There is a public distrust and concern towards food additives, possible pesticide residues and GM food in Finland. The Eurobarometer report on food-related risks reveals that pesticide residues in food are one of the greatest concerns of citizens' (European Commission, 2010). It seems that citizens are most concerned about the risks they feel they cannot control and additives, for example, are commonly regarded as harmful in Finland (Järvelä et al., 2006 Kajanne and Pirttilä-Backman, 1996).

The attitudes of the Finns, like other Europeans, towards genetically modified (GM) food are mainly negative. According to Gaskell et al. (2006), only 34 % of the Finns agreed that GM food technologies should be encouraged. On the other hand, Europeans' attitudes towards industrial applications of biotechnology in bio-fuels are positive. Citizens are not willing to pay more for bio-fuels, however.

Beyond the general concerns, it seems that Finnish citizens trust the microbiological food safety relatively strongly (European Commission, 2006 & 2010; Järvelä et al., 2006). The study of de Almeida et al. (1997) refers that Finnish citizens also have high trust for most sources of information on healthy eating. Over eight of ten citizens trust health professionals, government agencies, food packages, TV/radio and newspapers.

As it is important to be aware of consumers' concerns of extensive and multidimensional agricultural policy, this study seeks to screen Finnish citizens' concerns in a wider framework, where several dimensions of the policy are evaluated simultaneously.

## **2. Method**

Based on quantitative survey data set (n=1,623), this research examines Finnish citizens' concerns about various dimensions of agricultural policy. The research data was collected via nationwide mail survey in 2007 by the National Consumer Research Center of Finland. To determine the citizens' concern about different policy dimensions, a four-point Likert scale from no cause for concern (1) to extremely worrying (4) was used.

Explanatory factor analysis was conducted to identify different latent components of concern. Principal component analysis (PCA) and factor analysis (called principal-axis factoring in SPSS) are the most common methods of factor analysis and both analyzes were applied to identify different clusters of variables.

The principal component analysis extracts the dimensions with the largest variances and this method produced most logical results. The results of the factor analysis (PCA) are presented in Table 1. The Kaiser's criterion is generally used in deciding the number of components. The criterion proposes to exclude components with Eigenvalues less than one. In this research however, it was decided to select components with Eigenvalues greater than 0,9 for further analysis, as the variances accounted for each component were over five per cent, which is acceptable according to percentage of variance criterion (Hair et al., 1995). The chosen components explain 61,5 % of the total variance, which is a satisfactory result.

The Kaiser–Meyer–Olkin measure (KMO) is generally used to test the validity of the method, and it provides an estimate of the degree of homogeneity of the variables. The measure should indicate values higher than 0.8; however, values higher than 0.55 are also acceptable. In the case of our data, the value was highly satisfactory, (KMO=0.916).

## **3. Results**

Principal component analysis resulted in a solution of four components of concern. A four-component solution was most logical and the variances accounted for by each component were more than five per cent. The components were identified as global dimension, risk dimension, personal dimension and food security dimension. These components explain 61,5 % of the total variance.

**Table 1. The factor analysis of the concern components.**

Component	Mean	S.D.	Component loading	Eigenvalue	% of variance	Cumulative %	Cronbach's $\alpha$
<i>Global</i>				5,149	36,8	36,8	0,837
Effects of food production on the climate change	2,46	0,934	0,828				
Effect of the climate change on the preconditions for food production in different parts of the world	2,66	0,928	0,756				
Loss of biodiversity due to agriculture	2,57	0,954	0,735				
Animal welfare	2,61	0,92	0,714				
Adequacy of food worldwide	2,87	0,946	0,579				
<i>Risk</i>				1,552	11,1	47,9	0,753
Use of gene technology in food production	2,81	1,069	0,755				
Additives, such as preservatives or colourants	2,99	0,892	0,705				
Pesticides	3	0,9	0,605				
Increase in food import	2,52	0,955	0,595				
<i>Personal</i>				0,986	7	54,9	0,605
Price of food	2,6	0,901	0,793				
Food poisonings	2,57	0,974	0,642				
Food allergies	2,48	0,922	0,582				
<i>Food security</i>				0,929	6,6	61,5	0,434
Availability of food in crisis and emergency situations	2,72	0,914	0,665				
Use of food crops for bio-energy	2,36	1,02	0,644				

Kaiser-Meyer-Olkin Measure of Sampling Adequacy = 0,900. Chi-squared = 7414,175. Bartlett's test of sphericity,  $p = 0.000$ .

Citizens were most concerned about the *risk* component, which included the possible use of gene technology in food production, additives and pesticide residues in food. These aspects and ingredients are invisible to consumers, which means that – in order to avoid them – citizens must trust in government's food control and informative product labels. Dimensions of the *personal* component (e.g., food price, food poisonings, food allergies) were not considered very worrying. As these dimensions potentially have a significant direct influence on people's everyday life, citizens seemed to have little truly personal worries about agricultural policy.

Citizens did not rank the *global* and *food security* dimensions very worrying either. The least worrying elements within these components were the effects of food production on the climate change, the loss of biodiversity due to agriculture and the use of food crops for bioenergy. Citizens were more concerned with elements that might have a direct effect on

their daily lives (e.g., adequacy of food worldwide, availability of food in crisis and emergency situations).

#### **4. Discussion**

Taken together, it seems that most worries by citizens relate to dimensions of agricultural policy that may cause personal risks and lie beyond personal control (e.g., long-term health risks of the daily diet and the availability of food in crisis). Järvelä et al. (2006) found out that typical causes for citizens' concern were the chemical and microbiological risks of food. Their results support the idea that citizens are most concerned about the risks they feel they cannot control. The negative effects of these risks appear in the long run because they are invisible (e.g., additives, possible GM related risks and pesticide residues) and, therefore, the risks arouse concern in citizens.

On the other hand, citizens are not very concerned about direct health risks of food (e.g., food poisonings, food allergies). Obviously, citizens seem to have confidence on the microbiological food safety. Järvelä et al. (2006) consider that citizens' trust on food safety is affected by relative scantiness of food crises and smallness of the market. The public food quality control seems to have a strong legitimacy in Finland. Indeed, over eight of ten citizens trust health professionals, government agencies, food packages, TV/radio and newspapers (de Almeida et al., 1997).

Even though many studies confirm that food safety and animal welfare are generally considered important by the Finnish citizens, they are not very concerned with these issues at the personal level. Possibly since the Finnish consumers feel that they know about the conditions affecting the welfare of farm animals (European Commission, 2007), they are not very concerned about animal welfare issues. Concerns that are more distant in time or place (e.g., climate change, biodiversity, global food security) were not very worrying either.

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