

Resilience of the Swiss food system

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1 Introduction

The Swiss food system is increasingly exposed to shocks such as hot and dry summers in 2003, 2015 and 2018 and extended periods of cold weather in 2013 and 2017^{1,2,3}. The regulation of food imports allows ensuring food security⁴, however, the economic vulnerability of agro-input suppliers, farmers and processors remains a challenge. To address it, the project aims to assess the resilience of milk, beef, wine, wheat and potato value chains to shocks by answering the following questions:

1. What are effects of such shocks on different activities?
2. What are factors that explain such effects?

2 Research steps

1. Identification of the most relevant shocks for the five value chains

Five stakeholder workshops were held between May and June 2017. Stakeholders representing input supply, production, processing, retail and consumption activities were gathered to identify relevant shocks that can affect their activities. Based on the workshops, three scenarios were identified: (1) summer dryness, (2) biological diseases and (3) introduction of a free trade on agricultural and food products with the European Union.

2. Questionnaire development and data collection

The three shocks were integrated into the questionnaires in form of scenarios. Respondents were asked to evaluate effects of these shocks on their activities. This project focused on market and socio-economic aspects of resilience. Data collection took place between April and June 2018.

3. Data analysis (ongoing)

In this project we use **anticipated economic effects (AEF)** of a shock as an outcome of resilience because it reflects the resilience of a farmer from a business perspective hence highlighting the hardship for actors in face of a shock. Also, AEF allows comparing resilience of different actors and focus on collaborative, multi-actor pathways to enhance the resilience. AEF was used as dependent (response) variables and tested for relationships (multiple linear regression) with independent variables describing the initial state of an actor – social capital, financial capital, physical capital and diversity.

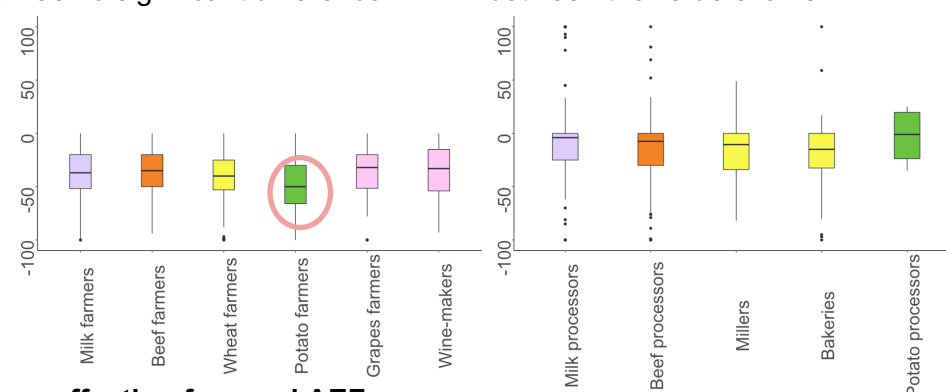
4 Next steps

- To conduct a consumer survey to identify if consumers are willing to support domestic food production if a shock comes;
- To conduct second round of stakeholder workshops to develop set of interventions to enhance the resilience;
- To disseminate results of the study among larger number of stakeholders.

3a Preliminary results: summer dryness

AEF for farmers and processors

Farmers of all value chains anticipate significantly larger negative AEF from the summer dryness scenario than processors. **Potato farmers** anticipate significantly **higher negative AEF** ($p < 0.05$) than milk, beef and wheat farmers. For processors, there was no significant difference in AEF between the value chains.



Factors affecting farmers' AEF

Social capital: market partners was found to affect AEF for the milk farmers: farmers selling their milk to cheese-makers feel more secure. For other farmers, no difference in AEF related to different market partners was identified.

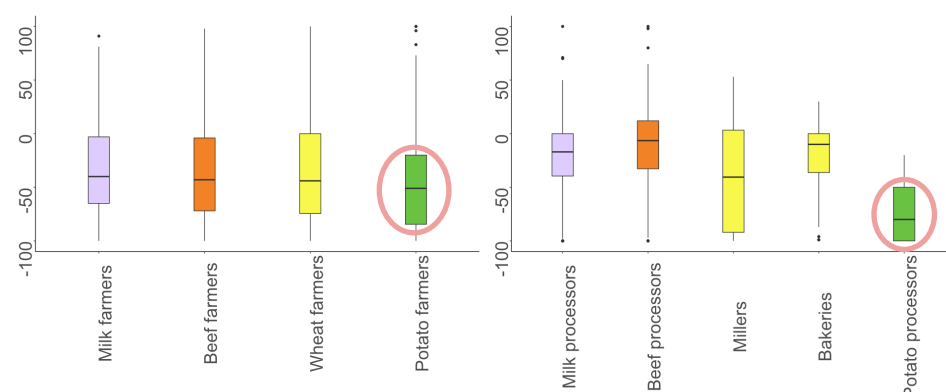
Financial capital: ability to produce at lower costs help milk and beef farmers feel more secure even when controlled for farm size. For wheat farmers, financial success of the previous year positively affects AEF. Curiously, wheat farmers who are more dependent on direct payments expect bigger negative AEF.

Physical capital: efficient mechanization positively affects AEF of potato and grape farmers.

Diversity: grape farmers who are less dependent on one product have more positive AEF than their colleagues with less diversified activities.

3b Preliminary results: free trade with the EU

The scenario suggests an increase of direct payments by 25%. Milk, beef, and wheat farmers report significantly larger negative AEF from the scenario than processors of the respective value chains. Similarly to the summer dryness scenario, **potato farmers** reported to anticipate significantly **higher negative AEF** than milk, beef and wheat farmers ($p < 0.05$). **Potato processors** expect the **largest negative AEF** among all processors ($p < 0.05$).



5 References

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4. Proviande Genossenschaft. 2015. Der Fleischmarkt 2015 Im Überblick.