

# Economic Impact of Agricultural Liberalisation Policies on Organic Farming in Switzerland



Jörn Sanders

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**A thesis presented for the Degree of Doctor of Philosophy**

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A thesis presented for the Degree of Doctor of Philosophy

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## ABSTRACT

The poor international competitiveness of Swiss agriculture and the high level of border protection in place have given rise to an ongoing public debate in Switzerland about whether agricultural markets should be comprehensively liberalised. More specifically, three different partial revisions of Swiss legislation on agriculture are currently under discussion (AP 2011 reform, WTO liberalisation agreement, EU agricultural free trade agreement), all of which aim to improve the competitiveness of the agri-food industry. Against this background, the overall aim of this thesis is to analyse the potential impact of these policies on land use, livestock husbandry and the financial performance of organic and non-organic farms. An additional aim of the thesis is to explore the implications of agricultural liberalisation for the relative profitability of organic farming. The research makes use of the sector-consistent farm group model CH-FARMIS, which enables an assessment of the impact of policy measures on different farm types, regions and organic and non-organic farming.

According to the model results, land use and the number of farm animals change in line with projected commodity prices. Due to considerable cost disadvantages, agricultural liberalisation affects arable and pig production in particular. At the same time the amount of grassland as a proportion of total farmland is expected to increase. Furthermore, the model results suggest that organic farms would respond to liberalisation policies in a similar way to non-organic farms. However, changes in land use and livestock husbandry are expected to be somewhat more pronounced on non-organic farms than on organic farms.

Due to falling commodity prices, it is expected that revenues from agricultural production will decrease and cause a significant reduction in agricultural incomes. It is anticipated that organic and non-organic farms are only partially able to compensate for lower commodity prices by lower production costs, higher direct payments or changes in farm management. In line with anticipated producer prices, the highest income losses are expected for farms located in the valley region with large arable or pig production. The lowest income losses are expected for grassland farms in the mountain region. In addition, the results of this research indicate that, on average, organic farms are less severely affected by liberalisation policies than non-organic farms. Accordingly, the relative profitability of organic farms is likely to improve with increased liberalisation.

Differences in prices, yields, production costs, direct payments and non-agricultural outputs are identified as the main determinants of the relative profitability of organic farms. Since revenues from agricultural production are expected to fall, price premiums and lower yields become somewhat less important for the relative economic success of organic farms. The opposite is true for direct payments and revenues from on-farm non-agricultural activities. An increase in direct payment rates, however, does not improve *per se* the relative profitability of organic farms. A positive impact can be expected especially if contributions for (extensive) grassland and animal welfare are increased, while an increase in arable area or dairy cow payments would be more beneficial for non-organic farms.

In view of the prospect that organic farms are likely to be less severely affected financially by liberalisation policies, it can be assumed that the number of organic farms will increase. Furthermore, the results of this thesis suggest that the number of organic / non-organic part-time farms as a proportion of total organic / non-organic agricultural holdings in Switzerland will also rise.

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## LIST OF ABBREVIATIONS AND ACRONYMS

<b>AEG</b>	Applied General Equilibrium
<b>ART</b>	Agroscope Reckenholz-Tänikon
<b>AT</b>	Austria
<b>AWU</b>	Annual Working Unit
<b>BAG</b>	Bundesamt für Gesundheit (Federal Office of Public Health)
<b>BASYR</b>	Base year
<b>BTS</b>	Besonders tierfreundliche Stallhaltungssysteme (Particular animal friendly housing)
<b>CAP</b>	Common Agricultural Policy
<b>CAPRI</b>	Common Agricultural Policy Regional Impact
<b>CGE</b>	Computable General Equilibrium
<b>CH</b>	Switzerland
<b>CHF</b>	Swiss Francs
<b>DE</b>	Germany
<b>DRAM</b>	Dutch Regionalised Agricultural Model
<b>EC</b>	European Community
<b>ECA</b>	Ecological compensation area
<b>EDP</b>	Ecological direct payments
<b>EEA</b>	European Economic Area
<b>EU</b>	European Union
<b>FADN</b>	Farm Accountancy Data Network
<b>FAL</b>	Forschungsanstalt für Landwirtschaft (Federal Agricultural Research Centre)
<b>FAT</b>	Eidgenössische Forschungsanstalt für Agrarwirtschaft und Landtechnik (Federal Research Station for Agricultural Economics and Engineering)
<b>FAWU</b>	Family Annual Working Unit
<b>FWU</b>	Family Working Unit
<b>FiBL</b>	Forschungsinstitut für biologischen Landbau (Research Institute of Organic Agriculture)
<b>FDEA</b>	Federal Department of Economic Affairs
<b>FOAG</b>	Federal Office for Agriculture
<b>FR</b>	France
<b>FSO</b>	Federal Statistic Office
<b>GCE</b>	Generalised Cross Entropy
<b>GDP</b>	General direct payments
<b>GTAP</b>	Global Trade Analysis Project
<b>h</b>	hour
<b>ha</b>	hectare
<b>IT</b>	Italy
<b>k</b>	kilo- (thousand)
<b>K</b>	Potassium
<b>KVL</b>	Kongelige Veterinær- og Landbohøjskole (The Royal Veterinary and Agricultural University)
<b>LHU</b>	Livestock Housing Unit
<b>LP</b>	Linear programming
<b>LU</b>	Livestock Unit
<b>Mg</b>	Magnesium
<b>N</b>	Nitrogen

<b>Org</b>	Organic
<b>P</b>	Phosphor
<b>PDO</b>	Protected Designation of Origin
<b>PEP</b>	Proof of ecological performance
<b>PGI</b>	Protected Geographical Identification
<b>PMP</b>	Positive mathematical programming
<b>PSE</b>	Producer Support Estimate
<b>RAUS</b>	Regelmässiger Auslauf von Nutztieren im Freien (Regular access to outdoor runs)
<b>RGVE</b>	Raufutter verzehrende Grossvieheinheiten (Livestock Units)
<b>SECO</b>	State Secretariat for Economic Affairs
<b>SILAS</b>	Sektorale Informations- und Prognosesystem für die schweizerische Landwirtschaft (Sector Information and Prognosis System for Swiss Agriculture)
<b>SR</b>	Systematische Sammlung des Bundesrechts (Systematic Collection of Federal Law)
<b>TGYR</b>	Target year
<b>TEP</b>	Tierhaltung unter erschwerenden Produktionsbedingungen (Animal husbandry under adverse production conditions)
<b>UAA</b>	Utilised Agricultural Area
<b>UK</b>	United Kingdom
<b>WTO</b>	World Trade Organisation

## CHAPTER ONE

### INTRODUCTION

The aim of the research presented in this thesis is to analyse the impact of agricultural liberalisation policies on organic farms in Switzerland and to explore the implications for the relative profitability of organic farming compared to non-organic farming. This chapter presents the background, main research questions and specific objectives of this work and provides an overview of the structure of the thesis.

#### 1.1 PROBLEM SPECIFICATION

For more than fifteen years, Swiss agricultural policy has been subject to a continuous reform process. This process aims to compensate stepwise the negative effects and shortcomings of the post war policy<sup>1</sup> which led to severe environmental problems, massive overproduction with escalating budgetary costs, and the poor international competitiveness of the agricultural sector (Rieder, 1998; Popp, 2000). The start of the reform process can be attributed to the 7<sup>th</sup> report on agriculture and the subsequent introduction of direct payments in 1992, which was followed by the implementation of the GATT Uruguay agreement between 1995 and 2000, the revision of the Agriculture Act in 2000 (AP 2002) and 2004 (AP 2007), as well as two bilateral agreements with the European Union (EU)<sup>2</sup> in 2000 and 2004. Broadly speaking, the new policy trajectory has two main objectives: first, to improve the competitiveness of Swiss farms and to make agriculture more market-oriented and second, to encourage agriculture to provide various public goods and services. The policy reform undertaken involves the step-by-step decoupling of price support from income support, the partial opening of agricultural markets, the abolition of the milk quota regime, and the introduction of cross-compliance measures.

Thanks to the agrarian reforms, major improvements have been made in recent years, although this has not occurred to the same extent in all areas. The policies implemented have led to a significant reduction in the negative externalities of agricultural production (Flury,

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<sup>1</sup> As a result of the experiences of food insecurity during the two world wars, it was the aim of agricultural policy to ensure a maximum of self-sufficiency until the 1970s. High guaranteed prices and border protection measures were introduced to achieve this aim. Not surprisingly, Swiss agriculture became one of the most protected and most state supported farm sectors in the world. In 1986-1988, overall financial support from public sources, measured in terms of Producer Support Estimate (PSE), was 78% (OECD, 2006). This means that at the end of the 1980s, more than three-quarters of gross farm receipts consisted of direct and indirect state transfers.

<sup>2</sup> In legal terms, Swiss free trade agreements with the EU refer to the European Community (EC) and not to the European Union (EU). However, because the term 'EU' is more common, this term will be used in this work.



2005). Furthermore, various studies have shown that Swiss agriculture makes a significant contribution to rural development and landscape conservation (Mann and Mack, 2004; Rieder *et al.*, 2004). In terms of market orientation and competitiveness, however, the progress achieved has proved to be minimal. Although average producer prices decreased by 20-30% as a result of less direct state intervention in the market, they are still twice as high as in the EU, and three times as high as on the world market (BLW, 2006). Furthermore, Swiss agriculture still enjoys the highest level of government support among the OECD countries. Market price support and output payments still accounted for 68% of the total producer support estimate in 2004, which is more than twice the OECD average (OECD, 2006). Apart from certain processed agricultural products, most primary products are still highly protected by means of out-of-quota tariffs and very low tariff quota volumes. In view of the rather minor changes, the WTO critically concluded in its recent report on Swiss agricultural trade policy that the objectives of the market-oriented reforms have not been met (WTO, 2004b). Since progress in agricultural liberalisation has been slow from an international perspective, it is little surprise that the competitiveness of the Swiss farming sector has not improved significantly. Increase in labour productivity in agriculture has been much lower in Switzerland during the last two decades compared to Germany, France and the UK (Rieder, 2002; Dreher and Sturm, 2006). Swiss farms still produce at much higher costs than their colleagues in neighbouring countries. For example, specialised pig and poultry farms have production costs that are, on average, twice as high as those of comparable farms in the EU (Lehmann *et al.*, 2005). Although dairy production has the lowest comparative cost disadvantages, Gazzarin (2002) reported that EU dairy farms have a break-even point that is 30-38% lower than comparable farms in Switzerland. According to Garmhausen and Gazzarin (2001) even the most competitive Swiss dairy farms have significant cost disadvantages compared to dairy farms in other European countries.

In light of the poor international competitiveness of Swiss agriculture, there is ongoing public debate about a further, more radical liberalisation of food markets and the deregulation of agricultural policies (Wasescha, 2002). More specifically, three different partial revisions of Swiss legislation on agriculture are currently under discussion that all aim to improve the competitiveness of the agri-food industry<sup>3</sup>:

- As part of a new series of reforms aimed at boosting economic growth in Switzerland (SECO, 2004)<sup>4</sup>, a new agricultural policy package, “AP 2011”, was launched in 2005. The principal aim of the reform is to increase competition in the domestic market by further decoupling subsidies from production (mainly related to milk, root crops and oilseeds) and improving opportunities for product differentiation (Schweizerische Bundesrat, 2006). In total, it has been proposed that approximately CHF 330 million

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<sup>3</sup> In the following, these three reform packages are called “future liberalisation policies”.

<sup>4</sup> Given the persistently weak growth of the Swiss economy, the State Secretariat for Economic Affairs (SECO) adopted in 2004 a broad agenda of reform called “Series of reforms to boost growth”. The new reform agenda includes 17 measures that are currently being implemented (OECD, 2006).

be shifted from market support to direct payment measures. Furthermore, the AP 2011 aims to facilitate structural changes in the primary sector.

- Since 2001, the WTO Doha Round seeks to reduce substantially existing trade distorting measures among member states. The latest draft of modalities on agriculture envisages the abolition of export subsidies, a reduction of domestic price support in the region of 50% and a reduction of tariffs in the region of 30% (WTO, 2004a). Negotiations on the Doha Development Agenda were officially suspended in July 2006, mainly because participants were not able to agree on specific targets for market access and domestic support. In February 2007, however, the Doha negotiations have officially been resumed (WTO, 2007). Regardless of the future of the WTO Doha Round, multilateral efforts towards liberalisation remain a highly relevant policy issue for Switzerland for two reasons (Wasescha, 2006). First, in view of the small size of the country, access to foreign markets is essential for the national economy of Switzerland; second, multilateral negotiations provide an opportunity for Switzerland to form alliances with other countries in order to increase its bargaining power.
- In early 2006, the Federal Department of Economic Affairs (FDEA) launched a proposal for agricultural free trade between Switzerland and the EU. Free trade implies that Swiss producer prices would approximate to the EU price level, mainly due to a sharp increase of food imports from the EU. Equally, it is expected that the Swiss agri-food industry would be able to increase its export of high-quality products and Swiss specialities (EVD, 2006). This policy could be understood as a continuation of the two existing bilateral agreements between Switzerland and the EU.

These policy reforms are clearly a major challenge for Swiss agriculture. In the past, various studies have been conducted to analyse the potential impact of the AP 2011, WTO trade agreement and EU free trade agreement (or EU accession) on Swiss agriculture (see Chapter 4). The main emphasis of these studies was on the economic impact on the whole sector, specific regions or typical farms. To date, however, there is still a lack of research showing the impact of agricultural liberalisation policies on different farming systems (i.e. organic vs. integrated or intensive agriculture). Such an analysis, based on differentiations between farming systems, is of special interest because:

- organic farming has become an important farming system in Switzerland. This is particularly true for mountain farms where approximately 20% of the farmland and of the farms themselves are managed organically, as well as for dairy and beef farms, of which 15% and 25% respectively are managed organically (FiBL, 2005). In view of the importance of organic farming, it is appropriate to take this aspect more specifically into account.
- experiences from Austria (Kola *et al.*, 2000) with EU accession as well as experiences from various EU countries with Agenda 2000 (Nieberg *et al.*, 2005) and with the 2003 CAP reform (Offermann and Nieberg, 2006; Schmid and Sinabell, 2007) indicate that organic farms are likely to be less affected financially by liberalisation policies than

non-organic farms if price support is transferred to direct payments. However, due to different economic, geographical, structural and legal framework conditions, these experiences cannot be applied directly to the Swiss situation. Moreover, due to the high level of protection that exists and the extremely high-cost environment, the liberalisation scenarios currently being discussed in Switzerland go beyond the policy changes analysed in the studies mentioned above.

- Swiss organic food has significant export potential, particularly if trade barriers are increasingly removed (Güntert, 2007). This indicates that the expected pressure on domestic prices from increased imports could partly be compensated for through increased exports.
- it is widely acknowledged that organic farming makes a significant and effective contribution towards achieving the objectives of Swiss agricultural policy particularly in terms of food quality, landscape management, enhancement of biodiversity and sustainable land, energy and water use (Stolze *et al.*, 2000; Häring *et al.*, 2001; Pfiffner *et al.*, 2001; Alföldi *et al.*, 2002; Dabbert *et al.*, 2002). In view of the multiple outputs and services that are expected from Swiss agriculture, organic farming can be seen as an “ideal model” for the whole sector (Hugi, 2005; Fuhrer, 2006).

## 1.2 RESEARCH QUESTIONS AND OBJECTIVES

In the setting described above, this thesis aims to analyse the effects of possible future liberalisation policies, with a particular emphasis on organic farming, and thereby to contribute to the ongoing debate about the prospects for agriculture in Switzerland. The main research questions of this thesis can be formulated as follows:

- *What is the impact of future liberalisation policies (AP 2011, WTO Doha agreement, EU free trade agreement) on land use, livestock husbandry and the financial performance of organic and non-organic farms in Switzerland?*
- *How and why would these policies affect the relative profitability of organic farming compared to non-organic farming in Switzerland?*

In order to provide answers to these two questions a number of specific research objectives were established:

- to present an overview of the Swiss agricultural sector;
- to review statistical data and research findings on the financial performance of both farming systems and identify the factors determining the relative profitability of the organic farming system;
- to develop a theoretical framework and outline the current state of the art with regard to the impact of liberalisation policies on Swiss agriculture;
- to define several working hypotheses;
- to develop an appropriate methodological approach;

- to analyse the impact of different liberalisation scenarios on land use, livestock husbandry and the financial performance of organic and non-organic farms;
- to analyse the impact of different liberalisation scenarios on the relative profitability of organic farming;
- to discuss the results and draw conclusions regarding the implications for Swiss agriculture and the future development of organic farming in Switzerland, as well as identify further research needs.

Thus, the overall aim of this thesis is to contribute to existing knowledge by, firstly, developing an appropriate approach to conducting policy impact assessments of organic farming and, secondly, by analyzing the impact of liberalisation policies on organic farming and the determinants of relative profitability.

### **1.3 STRUCTURE OF THE THESIS**

This thesis is structured as follows. Chapter 2 provides an overview of the Swiss agricultural sector. This includes a presentation of the policy and economic framework of Swiss agriculture as well as of land use and livestock husbandry on organic and non-organic farms. Chapter 3 contains a comparison, based on published statistical data, of the financial performance of organic and non-organic farms. This chapter also contains a discussion of the most relevant factors determining the relative profitability of organic farming. In Chapter 4, the basic principles of neoclassical production economics are outlined and applied to the research topic of this thesis. This is followed by a review of the state of the art concerning the effects of future liberalisation policies on Swiss agriculture. Chapters 2 – 4 thus outline the general context and basis for this thesis. Against this background, Chapter 5 is devoted to deriving some working hypotheses for the analysis later on. Chapter 6 is concerned with methodological issues. The strengths and limitations of different modelling approaches that are commonly used for agricultural economic policy analysis are discussed. Furthermore, the modelling approach used in this work is described in detail. The assumptions of the model analysis along with the results are described and explained in Chapter 7 and subsequently discussed in Chapter 8. This chapter contains also a discussion on the adopted model approach. Finally, Chapter 9 describes how this thesis contributes to the existing body of knowledge and what conclusions can be drawn concerning the impact of agricultural liberalisation policies on organic and non-organic farms. Subsequently, implications for Swiss agriculture and the future development of organic farming are described. This is followed by a discussion on the importance of the research results in the wider agricultural policy context. A concluding section outlines further research needs in this area.

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