

Factors influencing the adoption of organic farming in Lithuania

dr Wirginia Rozumowska, dr Michał Soliwoda
Department of Corporate Finance
Faculty of Economics and Sociology, University of Lodz

Introduction

In recent years, in many developed countries the consumption model is changing, which is reflected in the growing demand for high-quality food products (i. e., organic products, traditional and regional products and products produced under quality systems), produced in a way that is not harmful to the environment and climate (Kutyk, Dubicki, 2019; Van Stappen et al., 2015). This trend likely will continue in the future as sustainable agriculture is becoming increasingly important in many countries. Sustainable agriculture also plays a central role in the European Green Deal, including organic farming as a key element of transition to more sustainable agriculture.

The study **aims** to evaluate factors influencing the adoption of organic farming in Lithuania.

Data from Lithuanian Farm Accountancy Data Network dataset and logistic regression was used to evaluate factors influencing the adoption of organic farming in Lithuania. Study period was 2009–2019.

Wybrane wyniki badań

Organic farming is a production system that minimizes pressure on the environment. It excludes the use of synthetic fertilizers and plant protection products and requires the use of complex crop rotation and soil protection measures, which positively affects the quality of soil, water, and air (Aplinkos apsaugos politikos centras, 2019; Geissen et al., 2021; Kostensalo et al., 2024). Furthermore, organic farming increases soil organic matter and is beneficial for the climate (Diacono et al., 2019; Gomiero et al., 2011; Lambotte et al., 2023; Squalli, Adamkiewicz, 2023). It also has a positive impact on biodiversity (Adhikari, Menalled, 2020; Mishra et al., 2019; Rotchés-Ribalta et al, 2023).

When analyzing the factors of organic farming, various classifications can be found in the scientific literature, but they can basically be divided into two groups: internal factors that depend on a specific producer, and external factors that do not depend on a specific producer. The first group includes agricultural producers' characteristics, while the second includes factors related to market and policy.

Increase in demand for high-quality products creates an attractive market space for Lithuanian organic producers. However, there is still a gap in organic production in Lithuania and highly developed European Union (EU) countries (Chart. 1). This is due to both supply and demand factors.

In 2019, there were 2 429 certified organic farms in Lithuania. A total of 246.6 thousand ha was in organic production (8.3% of the total agricultural area). During the research period, the production of organic wheat, oats and cereal mixtures prevailed, i. e., products that can be sold unprocessed. The production of organic livestock products was little developed. The area of certified organic production increased by 82.8% during 2009–2019, whereas the number of organic farms changed unevenly, and since 2016 was constantly decreasing (organic farms were getting bigger) (Ekoagros, 2022).

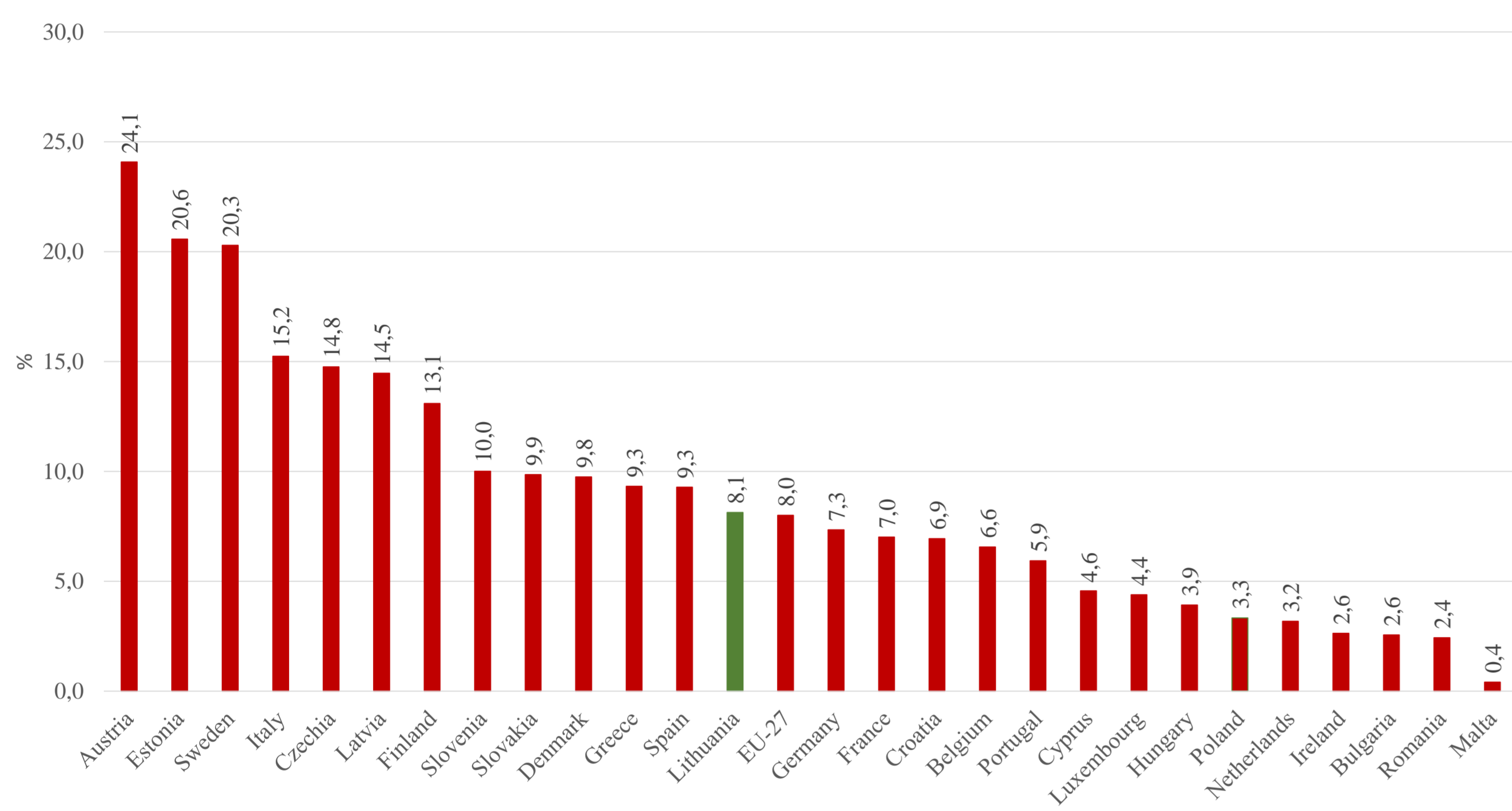


Chart 1. Share of area under organic farming in total UAA in the EU countries in 2018, %

Wykres 1. Udział powierzchni upraw ekologicznych w ogółu powierzchni użytków rolnych w krajach UE w 2018 r., %

As can be seen in Table 1, during the research period, Lithuanian conventional farms were, on average, larger in terms of utilized agricultural area than organic farms. On average, conventional farms generated higher income per 1 ha of UAA. Those farms also had higher costs and liabilities than organic farms. Nevertheless, during 2009–2019 organic producers received, on average, more subsidies than their conventional counterparts. This is an outcome of the possibility to benefit from different measures under the Common Agricultural Policy (CAP). Other indicators, such as age of farm operator, share of crop output in total output, were rather similar between these two groups. Table 1 also shows that most indicators showed an increase during the research period.

Variable	2009		2019		Change 2019, compared to 2009, %	
	Organic farms	Conventional farms	Organic farms	Conventional farms	Organic farms	Conventional farms
Age of farm operator, years	44	45	48	48	9.1	6.7
Total costs per 1 ha of UAA, EUR	448	654	632	951	41.1	45.4
Family labor force, FWU	1.4	1.6	1.3	1.3	-7.1	-18.7
Total utilized agricultural area, hectares	113	137	105	166	-7.1	21.2
Share of crop output in total output, %	74	68	61	69	-17.6	1.5
Income, per 1 ha of UAA EUR	294	601	405	836	37.8	39.1
Total liabilities per 1 ha of UAA, EUR	218	326	462	607	2.1 *	86.2
Total subsidies (excluding on investment) per 1 ha of UAA, EUR	359	163	361	223	0.6	36.8

Table 1. Selected characteristics of Lithuanian organic and conventional farms

Tabela 1. Wybrane cechy litewskich gospodarstw ekologicznych i konwencjonalnych

As shown in Table 2, during the research period, multiple factors affected the probability of adopting organic farming in Lithuania. At the beginning of the research period the probability of adopting organic farming was higher among producers who operate larger farms. This finding corroborates the studies by Genius et al. (2006) and Karki et al. (2011) that showed that larger farms were more likely to adopt organic farming. As noted by Genius et al. (2006), larger farms have greater potential to adopt organic farming due to high costs of conversion. Furthermore, larger farms have less financial pressure to search ways to improve their income, introduce new technologies. Additionally, the adoption of organic farming was more likely for farms having higher liabilities.

At the end of the research period the effect of liabilities on the adoption of organic farming remained unchanged. Additionally, the adoption of organic farming was more likely for producers who have income from off-farm sources. The same results were achieved by Heinze and Vogel (2017) and Sriwichailamphan and Sucharidtham (2014), who suggested that income from off-farm sources were important in encouraging producers to shift towards organic farming. A possible explanation for this is that off-farm income provide financial resources, thus creating incentives to bear risk situations which include, for instance, higher input costs, low market demand. The probability of adopting organic farming was also higher among farms having less family laborers. Finally, the adoption of organic farming was more likely for farms that operate outside less favoured areas. This is mainly due to higher yield variability in less favoured areas.

Note that two factors, namely costs, and subsidies, were significant throughout the research period. As can be seen in Table 2, during 2009–2019, the probability of adopting organic farming was higher among farms that have lower costs. Additionally, the adoption of organic farming was stimulated by higher subsidies. As regards subsidies, the same results were achieved, for instance, by Ferreira et al. (2020) and Malá and Malý (2013), who suggested that subsidies were one of the key determinants leading to the adoption of organic farming practices.

Variable	2009	2014	2019
Age of farm operator	-0.017 (0.012)	-0.012 (0.012)	0.014 (0.009)
Total costs	-0.006 (0.001) ***	-0.006 (0.001) ***	-0.003 (0.000) ***
Family labor force	-0.268 (0.246)	-0.065 (0.292)	-0.519 (0.261) **
Total utilized agricultural area	0.002 (0.001) *	0.003 (0.001) ***	0.001 (0.001)
Share of crop output in total output	0.002 (0.003)	0.036 (0.007) ***	-0.002 (0.003)
Income from off-farm sources	0.268 (0.325)	0.399 (0.333)	0.916 (0.252) ***
Total liabilities	0.001 (0.000) *	0.000 (0.000)	0.000 (0.000) ***
Location in agriculturally less favoured areas	0.034 (0.277)	-1.593 (0.371) ***	-0.677 (0.235) ***
Total subsidies (excluding on investment)	0.027 (0.002) ***	0.045 (0.003) ***	0.017 (0.001) ***

Table 2. Factors influencing the adoption of organic farming in Lithuania

Tabela 2. Czynniki wpływające na rozwój gospodarstw ekologicznych na Litwie

Conclusions

1. During the research period, Lithuanian conventional farms were, on average, larger in terms of utilized agricultural area than organic farms. On average, conventional farms generated higher income per 1 ha of UAA. Those farms also had higher costs and liabilities than organic farms. Nevertheless, during 2009–2019 organic producers received, on average, more subsidies than their conventional counterparts. Other indicators were rather similar between these two groups.

2. During the research period, multiple factors affected the probability of adopting organic farming in Lithuania. At the beginning of the research period the probability of adopting organic farming was higher among producers who operate larger farms. Additionally, the adoption of organic farming was more likely for farms having higher liabilities. At the end of the research period the effect of liabilities on the adoption of organic farming remained unchanged. Additionally, the adoption of organic farming was more likely for producers who have income from off-farm sources. The probability of adopting organic farming was also higher among farms having less family laborers. Finally, the adoption of organic farming was more likely for farms that operate outside less favoured areas. Note that two factors, namely costs, and subsidies, were significant throughout the research period.

3. The results suggest an important role of subsidies in the adoption of organic farming in Lithuania. Therefore, payments for conversion to and maintenance of organic farming should be maintained at an appropriate level during the 2023–2027 programming period. Additionally, the policy measures for the development of organic farming should be targeted to improve the economic condition of organic farms (increase their market potential by investing in the development of farms, processing organic products, and shortening supply chains). It is also important to support demand of organic products and build consumer confidence. Only such a complex approach can ensure the development of this sector in the future.

Czynniki wpływające na rozwój rolnictwa ekologicznego na Litwie

Streszczenie: Europejski Zielony Ład, obejmujący strategię „Od pola do stołu” oraz „Na rzecz bioróżnorodności”, zakładają zwiększenie powierzchni upraw ekologicznych do 25% do 2030 r. Aby osiągnąć ten cel, ważne jest zrozumienie czynników, które prowadzą do rozwoju rolnictwa ekologicznego. Do oceny czynników wpływających na rozwój rolnictwa ekologicznego na Litwie wykorzystano dane z litewskiej sieci danych rachunkowych z gospodarstw rolnych i regresję logistyczną. Okres badań przypadła na lata 2009–2019. Wyniki wykazały, że na rozwój rolnictwa ekologicznego na Litwie wpływa wiele czynników. Ustalenia wykazały także ważną rolę dotacji w rozwoju rolnictwa ekologicznego.

Słowa kluczowe: gospodarstwa rodzinne, regresja logistyczna, rolnictwo ekologiczne, rolnictwo zrównoważone.