Land Use Policy 32 (2013) 207–217

Contents lists available at SciVerse ScienceDirect

Land Use Policy

journal homepage: www.elsevier.com/locate/landusepol

# Farm size, agricultural subsidies and farm performance in Slovenia

Štefan Bojnec[a], Laure Latruffe[b,c,*]

[a] Faculty of Management, University of Primorska, Slovenia
[b] INRA, UMR1302 SMART, F-35000 Rennes, France
[c] Agrocampus Ouest, UMR1302 SMART, F-35000 Rennes, France

ARTICLE INFO

*Article history:*
Received 4 September 2011
Received in revised form
27 September 2012
Accepted 30 September 2012

*Keywords:*
Farms
Size
Subsidies
Performance
Slovenia

ABSTRACT

The paper investigates the links between size, subsidies and performance for Slovenian farms. Slovenian farms have always been small and highly subsidized. A literature review is carried out for the period before accession to the European Union (EU), and new calculations with farm-level data are performed for 2004–2006, the period of adjustment to the EU's Common Agricultural Policy. Our analysis reveals that both pre- and post-accession farms' performance measured in terms of technical efficiency is positively related to farm size in Slovenia. We find that small farms are less technically efficient but more allocatively efficient and profitable. The persistence of small farms in Slovenia may be associated with the provision of generous subsidies, which are negatively related to farms' technical efficiency but positively related to their profitability. The decline in the number of medium-size farms which has been observed since the accession to the EU may be explained by the fact that medium farms cumulate all disadvantages in terms of performance: they are too small to be economically efficient, but they are too large to be profitable.



## Introduction

Transition and restructuring have initiated and strengthened the development of individual farming in Central and Eastern European Countries (CEECs) (e.g. Rizov et al., 2001; Noev et al., 2009; Bakucs and Fertő, 2009). Individualization of farming structures is believed to have increased agricultural performance in some CEECs (Lerman, 2006). In Slovenia, under the socialist era the farming sector had a very different structure than most other CEECs due to the failed communist collectivization process. Similar like in the rest of the former Yugoslavia and in Poland, the Slovenian farming structures were bi-polar, with a great number of small-sized family farms and a few large-scale socialist farms. However, the prevailing small-sized family farming structures were constrained by institutional limitations on their land size, and on the business operations and marketing activities they could undertake (Bojnec and Swinnen, 1997a,b). With the removal of the institutional limitations on land size, and on operational and marketing activities of private farms at the beginning of transition, there was a gradual increase in family farm size. However, on average, the size of Slovenian farms is still among the smallest in the European Union (EU) as well as in Europe (Eurostat, 2011b).

Although Slovenia is economically the most developed ex-socialist country (Eurostat, 2011a), the performance of its agricultural sector is low. According to national accounts' statistics for agriculture, the Slovenian agricultural sector contributes to less than 2% of the country's gross domestic product, whereas the contribution to total employment is greater than 9%. This differential implies relatively low productivity in agriculture vis-à-vis the other activities in the Slovenian economy, as well as in comparison with average productivity in agriculture in the enlarged EU. The low productivity in Slovenian agriculture is one of the reasons why the political demands for budgetary supports to agriculture have been significant. In terms of the relatively high level of subsidy support to agriculture during the transition to a market economy, Slovenia was an outlier among the CEECs. The producer subsidy equivalents for Slovenian agriculture were close to the EU-15 and much higher than for the other CEECs (OECD, 2001). The adjustment of Slovenian agricultural policy to the EU Common Agricultural Policy (CAP) has shifted supports to agriculture from market-price support to budgetary supports, which has increased rapidly (Volk et al., 2008).

This context of slow structural change and high subsidization of agriculture calls for studies on whether such conditions could explain the low performance of the agricultural sector, and, if so, what is the effect of the implementation of the high-subsidizing CAP on farms' behaviour and survival possibilities. As summarised by Gorton and Davidova (2004), the question of farms' productivity and efficiency in post-socialist countries is crucial to understand whether the countries could compete within the enlarged EU after their accession and how farm structures in these countries

* Corresponding author at: INRA - UMR SMART, 4 Allée Bobierre, CS61103, 35011 Rennes cedex, France. Tel.: +33 2 23 48 53 93; fax: +33 2 23 48 53 80.
*E-mail address:* Laure.Latruffe@rennes.inra.fr (L. Latruffe).

0264-8377/$ – see front matter © 2012 Elsevier Ltd. All rights reserved.
http://dx.doi.org/10.1016/j.landusepol.2012.09.016

would evolve. In particular, farms' survival is an important issue, as it is decisive for land use and sustainable rural development, the presence of farms avoiding land abandonment and providing employment and green amenities in rural areas. The primary sector, including agriculture, is still a key employer in rural areas and is a strong supplier of multifunctional services. However, unproductive and/or unprofitable farms may stop using some of their land, or disappear all together, which could lead to dramatic effects in rural areas. Firstly, land abandonment may have strong consequences on the environment, in terms of biodiversity and natural capital loss. Although the reappearance of natural ecosystems and the re-growth of forest may provide advantages such as carbon sequestration, agriculture provides numerous species-rich habitats that would not exist in unutilised land, creates and maintains landscape features, and reduces the risk of wild fires (MacDonald et al., 2000; Gellrich and Zimmermann, 2007; Kuemmerle et al., 2009). Secondly, land abandonment may have important socio-economic and traditional cultural impacts in rural areas. Agriculture is the main contributor to rural vitality, which encompasses social, economic and cultural aspects: it generates rural employment, contributes to the critical population level necessary for the maintenance of public services, provides features (e.g. landscape) attracting tourism, and keeps traditions alive (Cooper et al., 2009). Land abandonment has been relatively high in post-socialist countries after the transition, due to political and economic changes. Kuemmerle et al. (2009) cite declining returns from farming, tenure insecurity and demographic developments as main causes of such phenomenon. In Slovenia figures from the 2000 Agricultural Census indicate that 8.7% of the country's utilized agricultural area (UAA) was abandoned land at this date. Although the figure has decreased over the next 10 years (5.9% according to the most recent Agricultural Census of 2010), it is still a pending issue, particularly in remote hilly and mountainous areas.

The objective of the paper is to investigate the influence of farm size and agricultural subsidies on Slovenian farms' performance, using several indicators of performance. We illustrate firstly, in the next section, the evolution of the farming structures, in particular in terms of farm size, in Slovenia during the pre- and post-accession periods. We highlight the fact that the farming structures are still small in the country and that agricultural support has always been high. It raises the question of the role of farm size and public subsidies on agricultural low performance. We also review Slovenian farms' performance before accession to the EU with the help of a literature review. In the third section we present the methodology and farm-level data used in the empirical analysis carried out for the post-accession period. In the fourth section we then analyze farms' performance, in terms of technical efficiency, allocative efficiency, economic efficiency and profitability, and the role of farm size and subsidies to agriculture on them, in Slovenia after accession during the first years of adjustment to the new agricultural policy 2004–2006. The final section derives conclusions and policy implications.

## Background

### *Farming structures during the transition and after accession to the EU*

The fastest structural changes in Slovenian agriculture were between the beginning of the 1990s and 2003, prior to the entry of Slovenia into the enlarged EU in 2004. Table 1 shows that the number of agricultural holdings has declined largely between 1991 and 1997. The decline affected mainly very small farms (with a utilized agricultural area, UAA, smaller than 1 hectare), while the number of large farms (with a UAA above 10 ha) grew slightly. This decline of small farms, which was accompanied by a growth of large farms, did not increase much the average farm size. In 2003 the majority of the individual Slovenian agricultural holdings had a UAA smaller than 5 ha: they accounted for 57.5% of the farm population. Moreover, the average farm size measured by the UAA per farm was 6.3 ha. This illustrates the small-size of the Slovenian (individual) farms.

Accession to the EU in 2004 seems to have provided some brake to the structural change in the Slovenian farming sector: as seen in Table 2, the number of farms in Slovenia stabilized between 2003 and 2005. This is due to the balancing developments of, on the one hand, the number of medium farms (5–20 ha) which decreased and of, on the other hand, the number of small farms and large farms which increased. This is slightly in opposition to what was observed during the transition, namely a decrease of small and medium farms. Between 2005 and 2010, although the total number of farms was reduced, both opposite developments were still visible: an increase in the number of very small farms (less than 1 ha) and very large farms (greater than 20 ha), but a decrease of medium-sized farms. Within the CEECs that joined the EU in 2004, only Poland shows a similar evolution of its farming structures: an increase of very small and very large farms (Eurostat, 2011b). Such development of small farms implies that the Slovenian agricultural sector is still characterized by a prevalence of individual family farms that are of small size, the average farm size in the country being 6.4 ha of UAA and 5.6 livestock units in 2010 compared to 5.6 ha of UAA and 5.4 livestock units in 2000.

The small Slovenian farming structures are characterized by an agricultural production intended mainly for their own consumption and by a large source of household income stemming from non-agricultural sources. These farms are mostly located in areas with a high population density, such as urban fringe areas. The farms producing mainly for home consumption are rather mixed, i.e. breeding livestock and cultivating a large variety of crops, while the few small farms selling their production are specialised in labour intensive crops such as vegetables and fruits and are generally headed by young and educated farmers. By contrast, large Slovenian farms are often located in less favoured hilly and mountainous areas and are specialised in livestock breeding. They are characterised by a large area mainly made of pastures and rented in, and additional farm income stemming from forest production.

### *Farms' performance pre-accession: a review of the literature*

In general, not much research on the agricultural sector has been undertaken in Slovenia. Due to its small size and high general economic living standards, the country has attracted much less analyses on agriculture and rural development than other CEECs. Compared to Poland, the Czech Republic and Hungary (see for example the reviews by Gorton and Davidova, 2001, 2004), few studies have investigated the performance of farms in Slovenia during the transition period.

The first study in Slovenian agriculture was undertaken by Brümmer (2001), who calculated the technical efficiency of 185 farms for the years 1995–1996, using both the non-parametric method Data Envelopment Analysis (DEA) and the stochastic frontier approach. Although the author found that there was still some space for efficiency improvement in the sample used, the results showed no sharp increase between both years. The average technical efficiency scores calculated with the stochastic frontier were 0.749 and 0.739 in 1995 and 1996, respectively, and the scores calculated with DEA were 0.434 and 0.447, respectively (increasing scores indicate higher efficiency). Analyzing the determinants of technical efficiency, the author showed that full-time farmers and more diversified farms were more efficient, and that cattle farms and farms in the mountains were less efficient. Gocht and