BUSINESS DIVERSIFICATION MODELS FOR FARMS IN ZEMGALE REGION

Anna Liscova¹, Linda Silina²

The present research focuses on applications for assigning the farm model and determination for the direction of the share of Zemgale subregions. Rural area farm models were created based on the criteria of experts and focus group study results. The developed three models showed that the sub-section of small, medium-size, and large farms have a different share of income by type of activity.

Agriculture is the main source of income in the farm models of Zemgale subregions; however, the income level differs by the groups of farms – the larger the farm, the larger the share of income comes from agriculture. Farms of Zemgale-1 and Zemgale-2 subregions are frequently engaged in the same sectors; though the implementation types differ, for example, tourism in Zemgale-1 subregion is based on culture - historic tourism, while recreational and sport tourism dominates in Zemgale-2 subregion.

Key words: business diversification models, rural areas, diversification.

JEL classification: Q01

Introduction

It is important to think about the diversification possibilities in rural areas, since the core of diversification is a possibility to gain regular income, the output produced bears higher value added, the load of labour force in the process of farm diversification is even, and the use of other farm resources like premises, constructions, and technical equipment becomes more rational. The process of diversification provides opportunities for the youth to do business in rural territories.

A. Liscova has done several pieces of research on the structure of rural economy in Zemgale subregions (2008), the structural development of agricultural resources of long-term economic activity in Zemgale planning region (2008), the structural divergence of Zemgale farms (2005), and possibilities for business diversification in the farms of Zemgale-1 and Zemgale-2 subregions in Zemgale planning region (2011).

Many scientists (L. Silina, 2007, 2009; H. Jirgena, 2008; S. Cingule, 2009; D. Saktina, 2009; S. Skesters, 2009; V. Boronenko, 2010) have done research on agriculture, its development possibilities, commercial orientation of agricultural production in several regions, rural environment, its impact on farming, tendencies in farming development in Latvia etc..

The authors of the present research decided to divide Zemgale statistical region into the following two subregions for performing the research tasks:

- subregion Zemgale-1 as a special agricultural region that includes the districts of Jelgava, Dobele, and Bauska;
- subregion Zemgale-2 that has specific natural conditions and an original macroeconomic structure; it includes the districts of Aizkraukle and Jekabpils.

The analysis of the previous research results requires the necessity to determine further development perspectives of Zemgale region farms in close relation to diversification of business activities. Hence, the research aim is as follows:

to develop business diversification models in the farms of Zemgale region.

The following tasks have been advanced to achieve the research aim:

- to assess the possible business directions of rural farms in Zemgale subregions;
- to establish business diversification models in farms of various sizes of Zemgale subregions.

The paper was elaborated applying general research methods in economics, qualitative and quantitative research methods - analysis and synthesis, logical and constructive methods, grouping, and comparison, questionnaires, and also the experts’ questionnaire and a focus group method.

¹Dr.oec. Latvia University of Agriculture
Research fields: rural development, diversification
Mailing address: Faculty of Economics, Latvia University of Agriculture, Svetes iela 18, Jelgava, LV – 3001, Latvia
E-mail address: Anna.Liscova@inbox.lv

²Dr.oec., assistant professor, Latvia University of Agriculture
Research fields: regional development, agricultural economics
Mailing address: Faculty of Economics, Latvia University of Agriculture, Svetes iela 18, Jelgava, LV – 3001, Latvia
E-mail address: Linda.Silina@llu.lv
Research results

A questionnaire of experts and a discussion in a focus group were organised to identify the possible types of farm activities in the farms of Zemgale region. The inquiry of experts’ opinion was also based on the farm owners’ survey (Liscova, 2011) results encompassing 573 respondents. The survey sample equalled to 2.34% of total rural farm number for 20 counties of Zemgale region. Questionnaires were received both from farms of Zemgale-1 subregion (59.9%) and Zemgale-2 subregion (40.1%). The questionnaire was held from April 2010 to October 2010. Respondents received inquiry forms both individually and by groups. The inquiry forms were grouped by counties.

Expert discussion was held in September 2010; farmers, employees from local government and public institutions, a specialist in tourism, a Year 4 student from Latvia University of Agriculture, and specialists in cattle breeding and crop farming from Latvian Rural Advisory and Training Centre were invited as experts in the focus group activity. Farmers who participated in the activity of the focus group were not hired workers. Participants of the focus group represented counties of Aizkraukle, Auce, Bauska, Dobele, Jaunpils, Jelgava, Icava, Sala, Visagines, Gretas, Jekabpils, Rundale, Skrava, and Tervete. The age of participants of the expert group ranged between 22 and 68 years, and represented both female and male opinion.

After the discussion on the need for diversification of rural businesses and its possibilities, and the analysis of promoting and hindering factors were completed, the experts of the focus group expressed their opinion on the present situation of farms in their regions – which diversification industries farmers have to engage now. To provide a report, it was assumed that income from economic activity equals to 100%.

Rural traditional businesses and businesses for diversification are included in this income structure. After summarising the information obtained, the authors produced a report on the existing situation in Zemgale-1 and Zemgale-2 subregions by farm size group.

The expert opinions affirmed the impact of economic and geographic factors on the specialisation of farms diversifying their business.

The survey results (Table 1) showed the trend in business diversification on the farms of the subregions of Zemgale region. Agriculture is by 9.2% more popular in Zemgale-1 subregion compared with Zemgale-2 subregion. Here, mostly crop farming dominates, which is by 23.4% more than in the subregion Zemgale-2. The production of crop-livestock farming products is specific to the subregion Zemgale-2.

The diversification of businesses in the subregion Zemgale-2 is by 11.2% higher than in the subregion Zemgale-1. Rural tourism dominates in the subregion Zemgale-1, while the farmers of the subregion Zemgale-2 are interested in the processing of agricultural produce.

An objective assessment of business diversification possibilities can be obtained comparing the opinions expressed by the experts on small (less than 30 ha) and large farms (more than 200 ha). According to the experts and the authors, there are significant differences in business diversification between small and large farms.

Table 2 shows that based on the lowest values, a possibility to engage in agriculture on the small farms is 2.7 times lower than on the largest farms in the subregion Zemgale-1. Yet, the highest values differ only by 10 percentage points. One of the greatest differences is observed in crop farming where the lowest values

<table>
<thead>
<tr>
<th>Type of economic activity</th>
<th>Zemgale-1</th>
<th>Zemgale-2</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Agriculture</td>
<td>78.0</td>
<td>68.8</td>
</tr>
<tr>
<td>1.1. Crop farming</td>
<td>38.6</td>
<td>13.2</td>
</tr>
<tr>
<td>1.2. Crop-livestock farming</td>
<td>24.7</td>
<td>41.6</td>
</tr>
<tr>
<td>1.3. Livestock farming</td>
<td>14.7</td>
<td>13.6</td>
</tr>
<tr>
<td>2. Business diversification</td>
<td>22.0</td>
<td>31.2</td>
</tr>
<tr>
<td>2.1. Forestry</td>
<td>4.2</td>
<td>5.0</td>
</tr>
<tr>
<td>2.2. Wood-processing, including production of furniture</td>
<td>0.8</td>
<td>1.5</td>
</tr>
<tr>
<td>2.3. Rural tourism</td>
<td>3.1</td>
<td>0.3</td>
</tr>
<tr>
<td>2.4. Off-farm services</td>
<td>3.9</td>
<td>3.7</td>
</tr>
<tr>
<td>2.5. Processing of agricultural produce</td>
<td>3.4</td>
<td>6.5</td>
</tr>
<tr>
<td>2.6. Handicrafts</td>
<td>1.9</td>
<td>1.8</td>
</tr>
<tr>
<td>2.7. Energy production</td>
<td>0.6</td>
<td>0.8</td>
</tr>
<tr>
<td>2.8. Production of fish and crawfish</td>
<td>2.7</td>
<td>2.9</td>
</tr>
<tr>
<td>2.9. Other industries</td>
<td>1.4</td>
<td>2.6</td>
</tr>
</tbody>
</table>

Source: authors’ calculations based on survey results
Table 2. Business diversification possibilities on small and large farms from the viewpoint of
the experts of the subregion Zemgale-1, %

<table>
<thead>
<tr>
<th>Type of economic activity</th>
<th>Small farms with less than 30 ha</th>
<th>Large farms with more than 200 ha</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Agriculture</td>
<td>30 – 85</td>
<td>80 – 95</td>
</tr>
<tr>
<td>1.1. Crop farming</td>
<td>0 – 40</td>
<td>40 – 90</td>
</tr>
<tr>
<td>1.2. Crop-livestock farming</td>
<td>6 – 60</td>
<td>5 – 41</td>
</tr>
<tr>
<td>1.3. Livestock farming</td>
<td>0 – 60</td>
<td>0 – 24</td>
</tr>
<tr>
<td>2. Business diversification</td>
<td>15 – 70</td>
<td>5 – 20</td>
</tr>
<tr>
<td>2.1. Forestry</td>
<td>0 – 7</td>
<td>0 – 9</td>
</tr>
<tr>
<td>2.2. Wood-processing, including production of furniture</td>
<td>0 – 2</td>
<td>0 – 1</td>
</tr>
<tr>
<td>2.3. Rural tourism</td>
<td>2 – 25</td>
<td>0 – 4</td>
</tr>
<tr>
<td>2.4. Off-farm services</td>
<td>0 – 13</td>
<td>0 – 8</td>
</tr>
<tr>
<td>2.5. Processing of agricultural produce</td>
<td>0 – 12</td>
<td>0 – 6</td>
</tr>
<tr>
<td>2.6. Handicrafts</td>
<td>0 – 9</td>
<td>0</td>
</tr>
<tr>
<td>2.7. Energy production</td>
<td>0</td>
<td>0 – 4</td>
</tr>
<tr>
<td>2.8. Production of fish and crawfish</td>
<td>0 – 30</td>
<td>0 – 2</td>
</tr>
<tr>
<td>2.9. Other industries</td>
<td>0 – 4</td>
<td>0 – 2</td>
</tr>
</tbody>
</table>

Source: authors’ calculations based on information provided by the experts

Based on the lowest values, a possibility to engage in agriculture on the small farms is 55 percentage points lower than on the largest farms in the subregion Zemgale-2 (Table 3). Yet, the highest values differ by 15 percentage points. Business diversification is more appropriate in the subregion Zemgale-2. One of the greatest differences is

differ by 40 percentage points, while the highest ones – by 50. The small farms dominate in business diversification where the highest values differ by 50 percentage points.

The situation in the subregion Zemgale-2 is similar (Table 3).
observed in crop-livestock farming where the lowest values differ by 8 percentage points, while the highest ones – by 30. The small farms dominate in business diversification where the highest values differ by 55 percentage points.

Given the economic and geographic position of subregions Zemgale-1 and Zemgale-2, other factors affecting business diversification, and the expert assessments, the authors developed three business models for farms by their area for the subregions Zemgale-1 and Zemgale-2:

- less than 70 ha – small farms;
- 70.1-200 ha – medium farms;
- more than 200 ha – large farms.

The development of models was based on the authors’ pieces of research, information on the results of a survey of agricultural land in the subregions Zemgale-1 and Zemgale-2, changes in the number of hours worked in rural regions as well as on the number of unemployed individuals in the municipalities. The opinion of farmers on the need for and possibilities of business diversification and the factors promoting and hindering business diversification were taken into account: natural and climatic factors, soil resources, human resources, economic and political factors and their criteria.

In all the models, agriculture has the leading and determining role in the structure of income from economic activity. Agriculture is and will be a priority in Zemgale region.

The authors point that the developed models are general and based on a summary of the experts’ opinions. Every farm needs an individual approach, taking into account its endogenous factors.

According to the authors’ calculation results, the income from agriculture ranges within 65.0-80.7% of total income in the diversification model for farms with an area of less than 70 ha in the subregion Zemgale-1 (Figure 1). In the calculation, the authors determined that an optimum level is 70%.

The leading industry is crop farming – winter cereals – food grain, as soils are fertile, a relief is smooth, and fields are large. Soils are appropriate for vegetables and the sales market is closely located to a town.

Crop-livestock farming takes the second place – farms produce both crop and livestock products for the market; crop farming: vegetables, grains. Crop farming is supplemented with livestock farming – production of milk and beef, which is based on wholesome pastures. Non-standard products of crop farming are used for pig feeding, and pork is produced for the domestic market. Poultry and eggs are produced for the consumption of local residents. Farmer cooperation has to be well-developed for milk sales. It is possible to sell dairy products through direct sales – fresh milk, curds, cream, and cheese, as towns are closely located.

The income from business diversification accounts for 15-30% in the business diversification model for farms with an area of less than 70 ha.

Income from the diversification industries:
- off-farm services – machinery services in tilling land, maintenance and repair services, and purchase of felling areas and logging. Farms have a sufficient capacity to provide off-farm services;
- rural tourism services: active tourism and agro-tourism are closely related to other industries – livestock farming: horse riding, small livestock watching, handicrafts, products of agriculture and non-traditional agriculture (production of organic products, drying and packaging of herbs and spice plants, wine and beer production, production and preparation of Roman snails, processing of agricultural produce), forestry, non-traditional agriculture, bathhouse services, and other industries, cognitive tourism – cultural and historical objects, farms of business diversification (small livestock, exotic birds etc.). A good quality infrastructure as well as the proximity to potential customers – Riga and other towns and cities promote rural tourism;
- processing of agricultural produce – processing of dairy industry products – for direct sales: packed milk, curds, butter, cheese, whey, and buttermilk;
- processing of pork – smoked pork, production of sub-products;
- processing of poultry – smoked poultry;
- drying of herbs, spice plants, berries, and fruit – farmers have to cooperate to purchase capacious technologies.

In the subregion Zemgale-2, the income from agriculture ranges within 25-75% of total income. According to the authors’ calculation results, it is 60% on average which is 10 percentage points less than in the subregion Zemgale-1. The economic and geographic factors affect it.

Crop-livestock farming, which generates income, dominates in the agricultural industry:
- crop farming – spring cereals – grain for feed, potatoes; the subregion Zemgale-2 features a more continental climate and less sunshine; therefore, it is more suited for spring cereals as well as its soils are better suited for growing potatoes;
- livestock farming – dairy and meat livestock, sheep and goats, ducks and geese, and rabbits. The relief of the subregion Zemgale-2 is hillier and soil properties are appropriate for growing grasses; therefore, livestock farming is more suited for this subregion.

In the total income structure of the subregion Zemgale-2, the income from business diversification ranges within 25-75%; according to the authors’ calculation results, the average level is 40% of total income.

Processing of agricultural products is associated with crop farming, livestock farming, rural tourism, handicrafts, production of fish and crawfish, and other industries. Cow milk processing is specific to the subregion Zemgale-2 – cheese and butter that have a longer expiration period, since sales markets are far away from suppliers; sheep and goat products: milk processing – cheese; meat products; leather production – raw materials for handicrafts; wool – threads...
and felt for handicrafts; ducks, geese, rabbits – slaughtering, refrigeration – finished products for the market as well as by-products (feather, leather). Bee products – honey and packing of pollen, beeswax - for making candles.

**Rural tourism** – it offers recreation and helps get familiar with the local culture and traditions to interested individuals. Rural tourism is also related to other industries: forestry, wood-processing, including furniture production, off-farm services, processing of agricultural products, handicrafts, production of fish and crayfish, and other industries.

**Forestry** – maintenance and exploitation of forests and reforestation – sanitary fellings and removal of wind-broken trees related also to rural tourism, non-traditional farming (beekeping), and other industries. Preparation of firewood for own consumption on farms and for sales. Additional use of forests – haymaking, livestock grazing, placing of bee-gardens, and picking of berries, hazelnuts, mushrooms, herbs, and moss. According to the significance of resources – production of resin, juices, stumps, bast, peel, tree branches, leafage (leaves, needles), buds, Christmas trees, birch-boughs, and other decorative materials.

According to the authors’ calculation results, the income from agriculture ranges within 60-90% of total income in the diversification model for farms with an area of 71-200 ha in the subregion *Zemgale-1*. In the calculation, the authors determined that an optimum level is 80%.

The income from business diversification accounts for 10%-40% of total income (Figure 2), the average indicator, according to the authors, is 20%.

The main agricultural industry is crop farming – winter cereals – food grain, vegetables as well as rapeseed, but the second one is crop-livestock farming. In the same way as on small farms, products of crop farming and crop-livestock farming are produced for the market: vegetables, grain, and rapeseed. Livestock farming is supplemented with crop farming – production of milk and beef, as this subregion has a sufficient area of wholesome pastures. Non-standard products and rapeseed oil cakes are a resource for producing quality livestock products. Milk is sold in a centralised way through dairy cooperatives or in cooperation with milk processing plants, in exceptional cases farm owners sell dairy products in direct sales.

![Figure 1. Business diversification model for farms with an area of less than 70 ha](image-url)
Yet, in the subregion Zemgale-2 the income from business diversification accounts for 10-30% in the business diversification model for farms with an area of 71-200 ha. The average indicator is 20%.

**Forestry** takes the first position – it generates additional income for farms owing to forest maintenance activities, a rational and planned use of forests as well as harvesting, processing, and sales of wood and non-wood products.

There are also **off-farm services** – use of available resources in tilling land, providing various services etc. **Processing of agricultural produce** – processing of dairy products that are sold in direct sales (on the market) and public catering; dairy and meat products.

According to the authors’ calculation results, the income from agriculture ranges within 70-90% of total income in the subregion Zemgale-2, but the average level in the subregion Zemgale-1 is higher – 90%.

Crop-livestock farming, which produces income, dominates in the agricultural industry:
- crop farming – rapeseed, grain for food and feed, and potatoes. The farms of this size group have a sufficiently large area to introduce crop rotation; therefore, rapeseed may be grown in accordance with agro-technological standards. It is possible to grow winter cereals (in case of being destroyed by frost, a crop is changed for another crop, for example, spring rapeseed or spring cereals);
- livestock farming – dairy and meat farming. The subregion Zemgale-2 is more suited for growing quality grasses and other feed crops.

The income from business diversification accounts for 10-30% of total income, the average indicator, according to the authors, is 20%.

**Forestry** – additional income of farms consists of products of deciduous and coniferous wood (for example, firewood) and non-wood products (berries, mushrooms, moss etc.) as well as other forest resources: juices, bast, Christmas trees, birch-boughs etc.

**Rural tourism** is mainly related to guest houses offering various services – organisation of festivities, various sport and recreational activities requiring a larger room and an outdoor territory.

**Processing of agricultural produce** – processing of milk mostly dominates on farms with an area of 71-200 ha.
71-200 ha. Pressing of rapeseed and flax oils, since yields of the mentioned crops is significantly lower than in the subregion Zemgale-1; thus the value added of products is increased and a quality feed additive is produced for dairy and meat farming.

According to the authors’ calculation results, the income from agriculture ranges within 80-95% of total income in the diversification model for farms with an area of more than 200 ha in the subregion Zemgale-1. In the calculation, the authors determined that an optimum level is 90%.

The dominating agricultural industry is crop farming – cereals and rapeseed, as these farms use modern and progressive technologies and conclude contracts with agricultural processors as well as farm owners are members of cooperatives. The other one is crop-livestock farming - products of crop farming, rapeseed and food grain are sold on the market. Farms are strongly specialised in dairy farming.

Farm owners are cooperative members of the corresponding industries; thus guaranteeing sales of their products.

The income from business diversification accounts for 5-20% in the diversification model for farms with an area of more than 200 ha (Figure 3). According to the authors’ calculation results, 10% of income is gained from the diversification industries in the diversification model for farms with an area of more than 200 ha.

Income from the diversification industries:
- forestry – an additional source of income gained from forest maintenance activities (wind-broken trees), a rational (non-wood forest products) and planned (sanitary fellings) use of forests;
- processing of agricultural produce – cooperatives are established for processing and selling milk and meat. Pressing of rapeseed and flax oils as well as grain processing for the local market;

![Figure 3. Business diversification model for farms with an area of more than 200 ha](image-url)
Energy production – energy facilities, which will meet the needs of farms for thermal and electrical energy, have to be constructed on livestock and crop farms.

In the subregion Zemgale-2, the income from agriculture ranges within 80-90% of total income. According to the authors’ calculation results, it is 85% on average, which is 5 percentage points less than in the subregion Zemgale-1. The larger are the farms, the more there are differences in income from agricultural decline.

Crop-livestock farming dominates in agricultural industry: crop farming - rapeseed, grain for food and feed, and potatoes. The farms of this size group have a sufficiently large area to introduce crop rotation; therefore, rapeseed may be grown in accordance with agro-technological standards. It is possible to grow winter cereals (in case of being destroyed by frost, a crop is changed for another crop, for example, spring rapeseed or spring cereals).

The income from business diversification accounts for 10-20% of total income in the subregion Zemgale-2, the average indicator, according to the authors, is 15%.

Off-farm services – maintenance and repair services for machinery, land tillage, purchase of felling areas and logging etc. Farm owners have sufficient human resources and a sufficient capacity of machinery, but the processing of agricultural produce contains milk, meat, oil plants, grain processing for the consumption of local residents in the subregion Zemgale-2.

Energy production – it is mainly produced for own consumption, using manure and plant resources.

The models were developed for the subregions, taking into account the size of farms, the expert recommendations, and the authors’ calculations. The models are recommendable; when developing a business diversification model for a particular farm, its endogenous factors have to be taken into consideration.

Conclusions

1. Agriculture is by 9.2% more popular in the subregion Zemgale-1 compared with the subregion Zemgale-2. Here, mostly crop farming dominates - 23.4% more than in the subregion Zemgale-2. The production of products of crop-livestock farming is specific to the subregion Zemgale-2.

2. An objective assessment of business diversification possibilities may be obtained comparing the opinions expressed by the experts on small (less than 30 ha) and large farms (more than 200 ha). According to the experts and the authors, there are significant differences in business diversification between small and large farms.

3. The income from agriculture accounts for 70% of total farm income, and income from crop farming dominates in the business diversification model for farms with an area of less than 70 ha in the subregion Zemgale-1. The diversification of business provides 30% of total income; it consists of income from off-farm services, rural tourism, and processing of agricultural produce.

4. The income from agriculture accounts for 80% of total farm income in the business diversification model for farms with an area of 71-200 ha in the subregion Zemgale-1. This is income of farms that sell either crop products, or crop and livestock products. The diversification of business provides only a fifth of total farm income – this is income coming from forestry, off-farm services, and processing of agricultural produce. In this model, the income from agriculture accounts for 80% of total farm income in the subregion Zemgale-2. Such farms are engaged in selling products of crop-livestock farming and livestock farming. The share of diversification industries is 20% of total farm income provided by forestry, rural tourism, and processing of agricultural produce.

5. The income from agriculture accounts for 90% of total farm income in the business diversification model for farms with an area of more than 200 ha in the subregion Zemgale-1. The specialisation of farms is crop farming or production of crop and livestock products. Income from business diversification is provided by forestry, processing of agricultural products, and energy production. In the subregion Zemgale-2, the agricultural industry provides 85% of total farm income, and farms sell crop and livestock products. The income from business diversification accounts for 15%, and it consists of off-farm services, processing of agricultural products, and energy production.

6. Although one and the same industries are included in the business diversification models for the subregions, their directions of activity, affected by the economic and geographic factors, are significantly different.

7. The business diversification models are general and suited for the economic and geographic factors in the subregions Zemgale-1 and Zemgale-2. The endogenous factors of every farm have to be taken into account when introducing the models in the economic activity of a particular farm.

Bibliography