

Profitability of Agriculture in a Service-oriented World

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Abstract: In the modern world, the importance of the service sector is increasing, while the significance of the agricultural sector keeps declining. What does this mean for the rural areas? Will every village be forced to abandon traditional farming and pursue touristic or industrial activities in the hope of development or survival? The aim of the study is to answer the question of whether agriculture can have a potential for further development by examining the usual profitability indicators. Through a brief analysis of the village of Zomba, I show that this is a village with a characteristic agricultural profile. By taking a closer look at the companies in Zomba, I am going to confirm using relevant data that the profitability of agriculture is outstanding in suitable areas and high-quality arable lands can still be a valuable resource for a village, and provide long-term livelihood.

Keywords: agriculture, profitability, industrial commons, regional development

1 Introduction

The dominance of the service sector in the economy is typical today. In 2017, 63 percent of the world's total value produced came from services, 30 percent from industry and 7 percent came from agriculture. In the countries boasting the world's largest gross domestic products such as the United States, Germany, France, Japan or the United Kingdom, the weight of the service sector may range from 70 to 80 percent; accordingly, industry account for 10 - 30 percent, and agriculture between 0 and 2 percent [5].

This global economic trend can be observed in Hungary, too, where the agricultural sector accounts for 4.4 percent of total gross domestic product, while 30.9 percent of it comes from industry and 64.7 percent from services [3].

While agriculture and industry were the dominant sectors in the past, today, the service sector has become the most attractive one. Accordingly, a shift of strategic focus has begun in Hungary. From big cities to rural villages, the service sector is now considered the sector with the greatest development potential.

The aim of the study is to show that agriculture continues to be a lucrative sector and traditionally agricultural villages make a mistake if they abandon their lands prematurely. To prove this statement, I am going to research Tolna county, and more specifically the village of Zomba in the Bonyhad region. I will study the profitability of this farm-based settlement through the most commonly used indicators. In addition to simple net profit margin, such indicators include, Return on Assets and Return on Equity [2].

The study consists of four large sections.

In the first part, I will outline the most important concepts that the remainder of the study will rely on, such as the various profitability indicators [2], as well as the concepts of valuable resource [9], strategy [15] and the industrial commons [19].

In the second part I will present the industrial common of the Hungarian and Slovakian automotive industry, whereby I will show that the automotive industry is an immensely significant sector in the national strategy of Hungary. However, places such as Tolna county are excluded from these industrial commons.

In the third part I will briefly review the situation of Tolna county and Zomba using the available data [6][7].

In the fourth part, relying on the previous three parts, I will perform the profitability analysis of the Zomba farming units based on their balance sheets and profit and loss accounts [10].

2 Review of the Relevant Literature

The purpose of this chapter is to provide a brief review of the key concepts the rest of the study relies on.

2.1 Strategy

It is difficult to find a common and frequently used definition for strategy in the literature. Various authors [13][15][17][18] place emphasis on different aspects of strategy. According to Krajewski *et al.* [13], strategy outlines a guideline that connects the company's activities as a framework. In Porter's view [17], the role of strategy is to choose the activities that the company should be doing differently from its competitors. Pisano's opinion [15] is that it involves mutually reinforcing activities aimed at achieving a particular competitive objective. According to Voros [18], strategy is a set of actions that create a dominant economic position through the use of key capabilities.

In this study, based on the above authors [13][15][17][18] I interpret the concept of strategy as a set of synergistic activities aimed at achieving some goal, more specifically, a competitive goal.

It can be seen that, while different companies may pursue a different core business activity, a national, regional, or even a city or village development strategy can be successful if it has a clear objective, and all other activities are calibrated to it.

It is easy to find examples for mutually exclusive activities; for example, it is hard to imagine thriving tourism and an industrial site in the same small town.

At the same time, I argue that it is difficult to imagine the same growth can be achieved both in agriculture and tourism in the same small town. Although the two activities are not mutually exclusive, the heavily limited nature of local governments' funds, and regional funds, and the utility of human resources imply that the efforts to achieve the two strategic goals together can easily result in a situation where neither of the goals is realized. This does not mean, of course, that there would not be or could not exist a geographic unit that provides outstanding results in several industries or branches of the national economy at the same time, only that the development aspirations of local governments and national governments cannot all bear the same significance and to the same extent, therefore a core activity of the regional development strategy has to be selected.

It is therefore preferable to choose a single activity that is the goal of the strategy. This puts small settlements in Hungary at a crossroads: Can they continue their agricultural activities, for example? Can it be a viable model for sustainable development in the long term? Is it necessary to change the strategy of these towns and convert them to be focused on tourism in the long term, for example?

2.2 Profitability

To respond to the questions raised above, I decided to study profitability in this paper. If agriculture can really represent a long-term sustainable model for rural towns and villages, then according to my hypothesis, the companies working in agriculture are profitable and their profitability shows a growing trend in time. If a downward trend is described by these indicators, then strategic change in the core activity is advisable.

Indicators most commonly used to measure profitability include net profit margin, return on assets and return on equity[2].

To calculate these, one needs to have a company's revenues, earnings after taxes (net income), the value of its equity and assets. Revenue and profit after tax can be obtained from the company's income statement, while the value of a given company's equity and assets can be obtained from its balance sheet. Having this

data, in accordance with Brealey et al. [2], the above indicators can be calculated according to formula 1, formula 2 and formula 3 respectively.

$$\text{Net profit margin} = \frac{\text{Earnings}}{\text{Sales}} \quad (1)$$

Net profit margin is the most wide-spread profitability indicator. It shows the quotient of the company's sales revenue and after-tax profit, that is, how much of the revenue flowing through the company during the period is realised as a pure profit.

$$\text{Return on Assets} = \frac{\text{Earnings}}{\text{Assets}} \quad (2)$$

Return on assets measures the company's after-tax results to its total assets. This has the advantage of showing how well a company is using its assets.

$$\text{Return on Equity} = \frac{\text{Earnings}}{\text{Equity}} \quad (3)$$

Finally, the return on equity measures the company's after-tax profit relative to the company's equity. The benefit of it lies in the fact that it excludes the company's capital structure, the company's debt and equity rate from the scope of examination, thus providing a good benchmark for examining companies with different capital structures.

2.3 A valuable resource

Through the examination of profitability indicators, my goal is to answer a general question: Is the land a valuable resource? A resource is valuable if it is difficult to copy, durable, appropriable, difficult to substitute, and better than that of the competitors'[9].

I argue that land can easily fulfill the first four conditions. There is currently no technology available to replace or imitate high-quality lands. The history of mankind is persistently linked to this durable, renewable resource. Where it can be assumed that private property is protected by the state, the profits generated on the land may be appropriated. The only remaining condition is that land should be a more valuable resource than its competitors. In this sense, land's competitors may be other activities that can be carried out by a settlement. If human and material resources can be better exploited, more value is created, for example by utilizing another valuable resource, such as a local tourist attraction, then a shift of strategic focus could be useful or indeed, necessary.

2.4 Industrial commons

In Pisano and Shih [19] industrial commons refer to the critical mass of suppliers, buyers and skilled labour in a geographic area. While Porter [16] emphasized their competition in the first place, Pisano and Shih [19] demonstrated the symbiotic relationship between these economic operators within the industrial commons.

These commons are created by being the most best reponse of competitors when they enter the market: settling somewhere near the centre of the existing competitor's supplier network. This attracts additional suppliers and skilled labour to the area, sooner or later the universities and the relevant infrastructure serving the common will emerge. An essential feature of industrial commons is that all economic players benefit from their existence, for example by the availability of greater human resources, the movement of which between the companies will facilitate the spread of knowledge.

The emergence of industrial commons is a self-strengthening process [19] and their existence in the 21st century is due to the very fact that transport costs are not zero, cross-border trade has to face a great deal of legal, administrative and cultural issues [11], and the mobility of labour is relatively low, thus moving it, for example to China, is unfeasible.

3 A Significant Sector in Hungary's National Strategy

The aim of this chapter is to demonstrate the central importance of automobile manufacturing for Hungary, using the concept of industrial commons.

This chapter is essential to reveal the essence of the problem: By mapping the cities involved in the automotive industry, I will be able to show that some areas of the country fall firmly outside the area of the industrial common proper.

These areas cannot, in any meaningful way, contribute to the operation of the automobile industrial common. This, coupled with the fact that the automobile industry is of such high importance to Hungary means that the areas outside it are of less importance to the central government and have less employment opportunities and long-term growth prospects.

Therefore, the industrial commons shows the very basis of the problem, upon which any further study can be conducted, any solution may be proposed.

Table 1 Distribution of Hungary's export and imports by category, 2015

<i>Main categories of export and import</i>	<i>Export</i>	<i>As percentage</i>
<i>Food, beverages, tobacco</i>	2 048 118	7.3%
<i>Crude materials</i>	634 209	2.3%
<i>Fuels, electric energy</i>	651 722	2.3%
<i>Manufactured Goods</i>	8 703 318	31.0%
<i>Electrical machinery, apparatus and appliances</i>	3 519 691	12.6%
<i>Road vehicles</i>	5 020 712	17.9%
<i>Other machinery and transport equipment</i>	7 459 980	26.6%
<i>Total</i>	28 037 041	

Source: Central Statistical Office (2015): Statistical yearbook of Hungary.

Table 1 shows the magnitude of exports and imports of Hungary's products in billions of HUF in 2015 and their percentage distribution within total exports and imports. According the table, imports and exports of road vehicles in Hungary's foreign trade account for 17.9% of total foreign trade [4].

Hungary's gross domestic product for the same period amounted to 34 324 billion HUF [4], which means that the proportion of import and export to gross domestic product was 74% and 81%, respectively. Table 1 shows, therefore, that in comparison to her economy, Hungary trades heavily and that the automotive industry and related industries are of decisive importance in Hungary's foreign trade and economy.

Table 2 Hungary's eight largest export and import partners, in 2016.

	<i>Export</i>	<i>Import</i>
<i>Germany</i>	27.5%	26.4%
<i>Romania</i>	5%	3.1%
<i>Slovakia</i>	4.9%	5.3%
<i>France</i>	4.8%	4.9%
<i>Italy</i>	4.8%	4.8%
<i>Austria</i>	4.7%	6.4%
<i>Czech Republic</i>	4.1%	4.9%
<i>Poland</i>	4.1%	5.6%

Source: Central Statistical Office (2016): A report on export performance in 2016.

Does the automotive industrial commons around Gyor and Esztergom spread across the border? Although Pisano and Shih [19] argue that national boundaries are not particularly important for industrial commons, Ghemawat [11] points out that cross-border trade is much smaller than trading with domestic regions of the same distance. The question, then, is what the weight of Slovakia within the foreign trade in Hungary?

Table 2 shows the share of the eight largest import and export partners of Hungary in the total exports and imports in 2016. These eight countries together account for 59.9% of exports and 61.4% of imports [5].

The role of Germany is outstanding both in terms of exports and imports. However, it is also important to take into account the high share of states such as Austria, Slovakia or the Czech Republic. Based on the gross domestic products, Germany's economy, for example, is about fifty times bigger than that of Slovakia. In the light of this, the fact that Hungarian exports to Slovakia is 4.9 per cent and the imports is 5.3 per cent, means that these figures are really high compared to the size of the economy, since, according to the gravity models, the size of the economies of the two countries is a decisive factor here. Thus, it can be stated that Slovakia is one of Hungary's key foreign trade partners.

As both countries are strongly integrated, the notion by Pisano and Shih [19], that industrial commons may spread across borders, has to be taken into account in that Slovakia and Hungary has to be examined together.

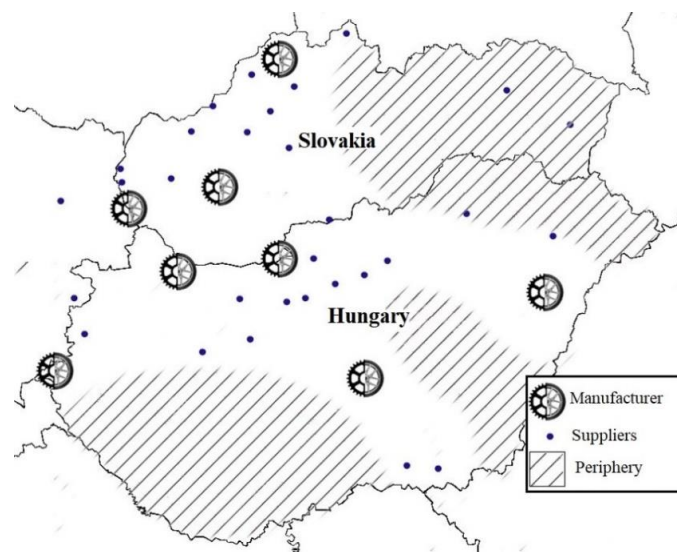


Figure 1 Automotive industrial common of Hungary and Slovakia.

Edited by the author

Figure 1 shows the automotive industrial common of Hungary and Slovakia. It is evident that apart from the the northwestern part of the area, this industrial common extends only towards Kecskemet and Debrecen.

This is an especially serious issue for the southern counties of Hungary and the eastern counties of Slovakia, which are completely left out of the leading industry of the two countries and are unable to take part in the emerging national economic

strategy. In the absence of this, it is particularly important for these regions to independently develop their own strategy based on other sectors of the economy.

One such area left out is Tolna county and the village of Zomba within it. They are not included in the industrial common of this national-strategy sector and therefore must find a different plan for long-term survival.

4 The economic background of Tolna county and the village of Zomba

I chose to study the viability of agriculture by conducting a study of an agricultural village. I chose Zomba settlement, located within Tolna county, in the township of Bonyhad.

The reason for this choice is that Zomba is a typical agricultural village. Tourism is not particularly strong in Zomba, or in its extended area i.e. in the Bonyhad township and Tolna County. These two factors together mean that the profitability of agriculture is vital to Zomba. If it is not supported by the relevant data, the initial investment and time needed to shift strategical focus in this county would be one of the highest. This chapter is aimed to support these statements with the relevant data.

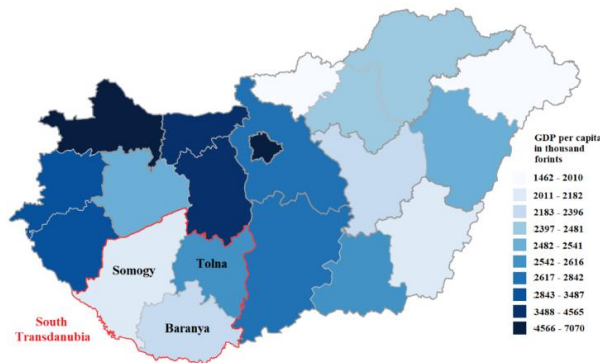


Figure 2 Per capita gross domestic product per county, in 2016.

Source: Central Statistical Office (2018a): Gross Domestic Product Per Capita (GDP per capita), 2016.

Figure 2 shows the gross domestic product per capita in 2016 per county. It is easy to see in the figure that the eastern and southwestern counties of the country are among the poorest. Tolna county, however, occupies the 8th place among counties with 2.57 million forints per gross domestic product. By comparison, the other two counties in the region, Baranya and Somogy, have similar data of 2.18 million and 2.13 million, and occupy the 15th and 16th places of the counties respectively.

Where does Tolna's high gross domestic product come from? The breakdown of gross domestic product by sector can help answer this question.

Table 3 Added value of the counties of the Southern Transdanubian region by sector.

	Baranya	Tolna	Somogy	National average
Agriculture	9.3%	10.4%	11.1%	7.3%
Industry	24.5%	42.0%	23.5%	39.1%
Services	66.2%	47.6%	65.4%	53.6%

Source: Central Statistical Office (2018a): Gross Domestic Product Per Capita (GDP per capita), 2016.

Table 3 shows that the added value of the service sector (47.6%) in Tolna county is lower than the national average (53.6%). While in all three counties of Southern Transdanubia the weight of agriculture is higher than the national average, in Tolna county, due to higher industrial performance, the distribution of added value is different.

As far as Tolna's agriculture is concerned, the cultivation of plants is decisive, while the weight of livestock production in the sector is negligible. 72.9% of agricultural area in 2016 was used to grow and harvest grain. (Central Statistical Office, 2018c).

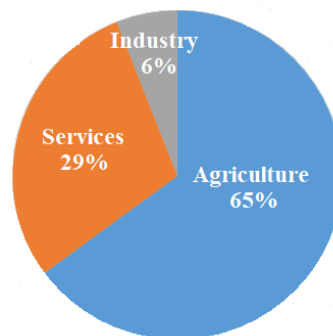


Figure 3 The revenues of different sectors in Zomba:

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Zomba does not reflect the general dominance of industry in Tolna as seen in Figure 3. Figure 3 shows that 65 per cent of the total turnover of the 54 enterprises registered in Zomba was accounted for companies pursuing their activities in agriculture. Similarly to Tolna county, the contribution of the service sector is lower, however, unlike in Tolna county, in Zomba, not the industry, but the predominance of agriculture explains the phenomenon.

In order to understand the general situation of Zomba, an overview of tourism in Tolna county is to be provided.

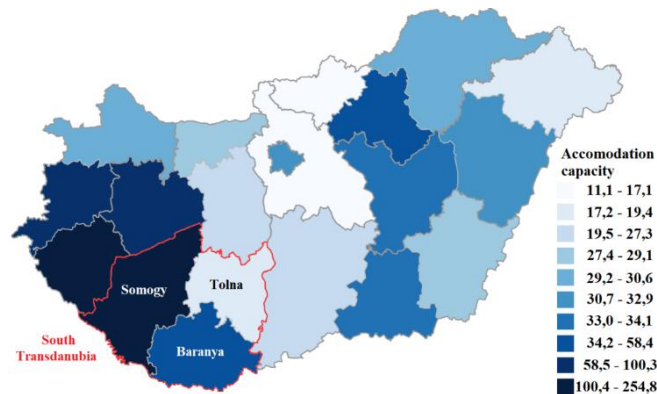


Figure 4 The number of commercial tourist accommodations per thousand inhabitants per county in 2016.

Source: Central Statistical Office (2018b): Commercial tourist accommodations per thousand inhabitants, 31 July 2016

Figure 4 shows the number of commercial tourist accommodations per thousand inhabitants per county. It is clear that the busiest counties are situated around Lake Balaton. Within the South Transdanubian Region, Somogy county had 254.8 accommodations for a thousand permanent residents, while Baranya and Tolna counties had 34.2 and 17.9 accommodations per thousand permanent residents, respectively. The performance of Baranya county is above average in the country and ranks it into the upper third. Tolna county, however, belongs to the last bottom of the rankings, only Nógrád (16.1 accommodations) and Pest county without Budapest (11.1 accommodations) have poorer results.

The poor performance of Tolna county is further reduced by the fact that the ratio of the rooms rented out and available, i.e. room capacity and utilization, is far below the national average (36.6%) in the county (25.5%). The low utilization of a low number of accommodations means that even a relatively small supply of accommodations in Tolna county does not meet consumer demand [7].

Bonyhad township, where Zomba is located, also performs poorly in terms of tourism in the Tolna region, with a total of 10.3 places for a thousand of permanent residents. Overall, it can be said that substantial financial resources would be needed in Zomba to boost tourism, as in Tolna county in general.

At the beginning of this chapter, I made two statements which I wanted to confirm with relevant data. The first claim was that Zomba was an agricultural town. To assess this, I have mapped the structure of the economy of the whole country and Tolna county, and as a result I have shown that Zomba has a strong agricultural dominance as compared to both the county and country. The second claim was that tourism in Tolna county was relatively weak. The national data supported this claim well, both through the number of accommodations and their utilization.

As a result, agriculture and its profitability is of vital importance to Zomba, which leads to the central question of my study: is agriculture profitable, and is land a valuable resource?

5 Calculations, results

The purpose of this chapter is to answer the above question and to demonstrate the way of responding, and the calculation process. In order to produce different index numbers, first some raw data have to be acquired, then a summary of the corresponding data, and then the calculation of the index of the year concerned. This sequence of operations is repeated until all of the indicators we want to examine are acquired for each year to be investigated.

Name of the enterprise	Revenue in 2017
<i>MISOFARM Ltd.</i>	126 787 000 HUF
<i>MISAGRO Ltd.</i>	182 784 000 HUF
<i>TORMASI FARM Ltd.</i>	26 330 000 HUF
<i>ZOM Ltd.</i>	755 923 000 HUF
<i>Zombai Gazdaszovetkezet</i>	88 694 000 HUF
<i>Szucsi-Bor Ltd.</i>	4 366 000 HUF
<i>Szentgal Bor-Lics Pince Ltd.</i>	97 515 000 HUF
<i>Vintis-Agrarium Szoleszeti Ltd.</i>	3 206 000 HUF
MINDOSSZESEN	1 285 605 000 HUF

Table 4 Revenues of agricultural production units in Zomba in 2017. Data are in Hungarian Forint.
Source: Edited by the author based on reports and balance sheets published by the Ceginformacios es az Elektronikus Cegeljarasban Kozremukodo Szolgalat (2018).

Table 4 shows the first step in the creation of aggregate data. From the annual accounts published by the Ceginformacios es az Elektronikus Cegeljarasban Kozremukodo Szolgalat [10], or more specifically from the income statement of the companies concerned, the revenue of the companies can be learned. For example, Misogfarm Limited Liability Company recorded 126.8 million revenue in the period reviewed, while the eight companies recorded a total of 1.285 billion forints in the same period. Similarly, comparable data for other years of the period under review, as well as after-tax profit, equity and total assets for the period under review can be produced. The result of this aggregation is shown in Table 5.

Table 5 Aggregate data of Zomba's agriculture between 2013 and 2017. The data are in million forints.

	2013	2014	2015	2016	2017
Sales	778	945	1 306	1 094	1 285
Profit after tax	94	207	302	294	350
Total assets	1 459	1 674	1 846	2 042	2 378
Equity	1 065	1 204	1 663	1 703	1 943

Source: Edited by the author based on reports and balance sheets published by the Ceginformacios es az Elektronikus Cegeljarasban Kozremukodo Szolgalat (2018).

Table 5 shows the aggregated data of the eight companies that played a decisive role in Zomba's agriculture during the period 2013-2018. The data are in thousand Hungarian forints. In accordance with Table 2, the eight companies made a turnover of 1,285 million forints in 2017. During the same period, their after-tax profit was 350 million forints. The total value of the companies was 2,378 million forints, of which HUF 1,943 million was their equity.

The table shows a clear growth. While in 2013 revenues amounted to 778.9 million forints, in 2017 it was HUF 1 285 million: a 65 percent increase over the period. The after-tax profit is even more spectacular, rising from HUF 94.4 million to HUF 350.5 million during the years reviewed, showing an increase of 271 percent. It is immediately evident that although both data have increased considerably, the rate of increase in after-tax profit outweighs the growth in sales revenue. Considering Formula 1 again, this means that the net profit margin must have increased:

$$\frac{Income}{Sales} < \frac{3,71 \cdot Income}{1,65 \cdot Sales} \quad (4)$$

In Equation 4, on the right hand side, the coefficient 3.71 is derived from the growth of profit after tax, which has grown from 94 in 2013 to 350 in 2017. This means that by 2017 income has grown to 3.71 times the value in 2013. Similarly, sales have grown from 778 in 2013 to 1285 in 2017, in other words, by 2017, sales have increased to 1.65 times value in 2013.

This is explained by the fact that according to formula 1. the net profit margin is the ratio of these two figures. Indeed, based on the data:

$$Net\ profit\ margin_{2013} = \frac{94\ 448}{778\ 858} = 0,1217 \rightarrow 12,13\% \quad (5)$$

$$Net\ profit\ margin_{2017} = \frac{350\ 050}{1\ 285\ 605} = 0,27228 \rightarrow 27,26\% \quad (6)$$

Similar data for other years of the period under review as well as Return on Assets and Return on Equity indices are produced similarly.

Table 6 Profitability indicators for Zomba's agriculture.

	2013	2014	2015	2016	2017
Net profit margin	12,13%	21,91%	23,14%	26,88%	27,26%
Return on Assets	6,47%	12,38%	16,38%	14,40%	14,74%
Return on Equity	8,87%	17,22%	18,18%	17,27%	18,04%

Source: Edited by the author based on reports and balance sheets published by Ceginformacios es az Elektronikus Cegeljarasban Kozremukodo Szolgalat (2018).

Table 6 shows best the dynamic growth of Zomba's agriculture. Increase in sales and after-tax profit could be a result of simple expansion. It is true that Zomba's companies are expanding as their total assets increased by nearly 62 percent, from HUF 1,459 million to HUF 2,337 million. However, it is also true that Zomba boasts an incremental growth in profitability indices, which means that the companies concerned can realise a larger and larger part of their revenue as profits and they use their assets more and more efficiently.

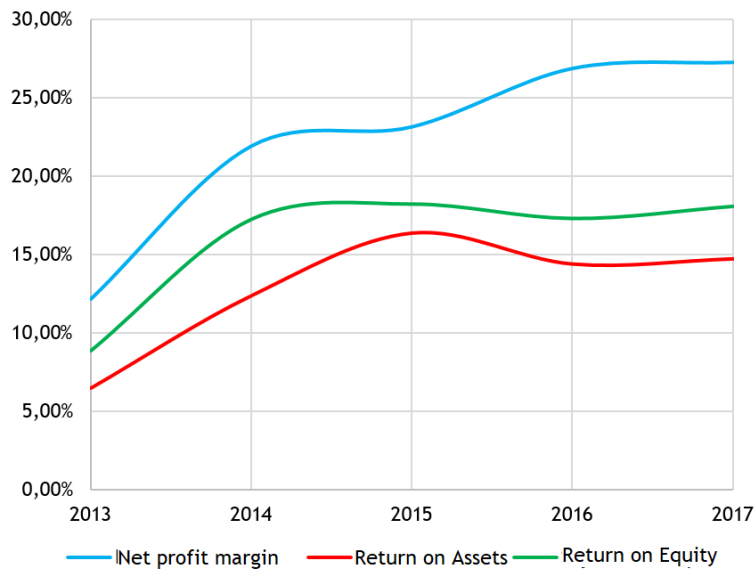


Figure 5 The profitability of the agricultural production units in Zomba in the period 2013-2018.

Source: Edited and calculated by the author based on the raw data of Ceginformacios es az Elektronikus Cegeljarasban Kozremukodo Szolgalat (2018).

Figure 5 is intended to illustrate this incremental growth. It is evident that profitability indicators grow steadily, with net profit margin rising from 12.1 percent to 27.3 percent, return on assets from 6.5 percent to 14.8 percent, and return on equity from 8.9 percent to 18 percent. The data thus justify well that agriculture is a lucrative sector capable of growing.

The figure illustrates well that this rate of growth slowly reaches an upper limit value, for example, the net profit margin, is going to flat out at around 28 percent, based on current data. However, a break in the growth is not particularly worrying, in most industries the double-digit profit margin is considered unusually high [14], thus Zomba can be satisfied if it can keep this profit margin in the long run.

If, in the long run, the profitability of agriculture in Zomba showed a declining path, I would argue that it is worth investing in the diversification of agricultural activity because tourism needs high initial investment.

In Tolna county, for example, 72.9 percent of the land is used for the cultivation of grain, which is the highest in the country[8]. This predominance of the grains puts Tolna and, with it, Zomba in a vulnerable position due to the fluctuation observed on the world market price of such crops. Based on the registered companies [10] growing wine grapes is already emerging as an experimental move. Currently, based on the data available, this is not profitable, but in the long run, it can help Zomba offset the risk of a single crop.

6 Comparison with Eastern Europe

Using the database of the Farm Accountancy Data Network (2018), the net profit margin for each of the 13 countries that have joined the European Union since 2004 can be acquired.

Country	Profitability
Bulgaria	28%
Cyprus	46%
Czech Republic	23%
Estonia	-5%
Croatia	46%
Hungary	51%
Lithuania	50%
Malta	67%
Poland	53%
Romania	67%
Finland	23%
Slovakia	23%

Table 7 Profitability of agriculture in the European Union.

Source: Edited by the author based on the database of the Farm Accountancy Data Network.

Table 7 shows the profitability of agriculture in each of the 10 countries that joined the European Union in 2004, as well as Romania, Bulgaria and Croatia.

Hungary has a profitability ratio of 51 percent, which places it as the fourth most profitable country in Eastern Europe. While Zomba has a net profit margin of about 28 percent, even this modest profit margin can serve as the engine of growth for this region.

Conclusions

Through the investigation of Zomba, I found that the net profit margin for agriculture can be as high as 28 percent and a dynamic growth has been seen even recently.

Since the tourism of the entire Tolna county is rather anemic based on accommodations and their utilization [6], in my view, the strategy of the villages in Tolna county, such as Zomba, could be more effective if, instead of making a huge starting investment needed in tourism they would continue focus on agriculture.

It is critically important for rural areas that cannot take part in the national strategy of Hungary to develop an independent strategy.

One cannot deny that service sector is typically dominant today. But, in my view, the main reasons for this are in urbanization and the limited nature of land. In villages like Zomba, where agriculture has a considerable past and population density is low compared to larger cities, land is still a valuable resource that can provide long-term livelihoods and a solid future.

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