Acta fytotechn zootechn, 21, 2018(4): 142–144
http://www.acta.fapz.uniag.sk

Original Paper

Effects of the tax burden on the production of fattening pigs

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Article Details: Received: 2018-05-07 | Accepted: 2018-05-14 | Available online: 2018-11-26

https://doi.org/10.15414/afz.2018.21.04.142-144

The paper analyses how much tax burden affects production volume and budget revenues. The projections show what happens when a government increases the tax rate (added value tax), i.e. how it reflects on the volume of fattening pig production on the one hand and how it reflects on the level of tax revenue. Fiscal policy represents a complex area through which the state sets out the operating conditions through various instruments. In this paper, the simulation of the tax rates and the effects on the produced quantities is made on pig meat production. By imposing large taxes, taxpayers feel less incentive to make money, because whatever they earn, they go to the state. A more detailed analysis was made on a sample of fattening production of 100,000 animals. Some implications of established empirical links between variables are presented in the paper. The change in tax rate of 10% multiplies an increase in tax reported in cash in amount of 44.4%.

Keywords: added value tax, production of fattening pigs, tax rate, tax revenue

1 Introduction

The production of fatteners in the Republic of Croatia represents a very important part of the economy. Various theoretical studies indicate that at a tax rate of zero percent and at a rate of one hundred percent the tax revenue is equal to zero. With the increase in tax rates, also tax revenues increases, but after some threshold, the tax rate increase does not fill the state budget (Baumol and Blinder, 1991), but vice versa. Namely, high tax rates unstimulate people from working and saving. In a case of high tax rates, people move their economic activity to an area of the unofficial economy, or they decide for more leisure and less work. By increasing the tax rate, the state has therefore failed to reach an acceptable measure of fiscal policy: state revenues are lower, work effort is lower, and also investments and economy growth decreases. In case increasing of the factors of production increase, domestic products are not competitive and the export of agricultural products is reduced (Messere, 2009). Therefore, the aim of this paper was to show the importance of optimization of the added value tax rate in the production of fattened pigs.

2 Materials and methods

The calculation of the sale price of pig meat was made on the basis of 100,000 pigs on an average of 100 kg. Following was calculated: fixed costs, variable costs, mixed costs and earnings. Furthermore, the offer of companies and the offer of the branch was analysed in accordance to the microeconomic model of Varian (2015). Final considerations will be made on the basis of a comparison of the tax rate with the level of tax revenue. This method shows the consequences for the revenue side of the budget if the tax rate varies, and how this reflects on the total volume of production. Analysed data were provided by following producers: Belje d.d., Protein Bobota Ltd., Pivac Ltd. and PIK Vrbovec and refer to average wages. In this study following methods were used: the analytical method and the case study method. Prices are expressed in Euro. The table 1 shows the average costs for the production of fattener live weight 100 kg and the calculated price per kilogram of pig meat.

Table 1 The elements forming the cost price of pig meat

Elements of calculations	Price of fattener, live weight – 100 kg (Euro)	Price of pig meat, kg (Euro)
Fixed costs	10.67	0.11
Variable Costs	94.76	0.95
Mixed costs	12.53	0.13
Cost price	117.96	1.18

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3 Results and discussion

In the analysis of operating costs, the calculation of the selling price of pig meat at different rates of value added tax (hereinafter referred to as VAT) is formed. VAT is a multi-stage sales tax that is calculated at each stage of the production and sales cycle, but only on the amount of value added that was formed at that stage, not on the total production value. It should be noted here that the EU legislation allows each member to apply a reduced VAT rate to certain goods. By analysing the production of 100,000 average fatteners live weighs of 100 kg, the calculation of the sales at different rates of VAT is made, the review is given in the Table 2.

From this analysis it can be seen that at various tax rates (10%, 13%, 15% and 18%) tax varies. The lowest tax is 1.179.586,67 Euro, and the highest tax is 2.123.256,00 Euro. The difference between the largest and the lowest tax is 943.669,33 Euro or 55.56%. Although the difference is the largest compared to the lowest analysed 10% tax rate, the amount of tax is multiplied by 6.5 times. In continuation, at Figure 1 the offer of the branch is shown.

Presented offer of a branch was created on the basis of costs and different tax rates. The parts of the offer marked with red colour presents a taxable part. It is visible that shifts at lower tax rate are more straightforward than those where the tax rate is higher. As the tax rate increases, the bargaining tendency becomes more straightforward and vice versa, when the tax rate drops, the bids become more and more straightforward. In the branch with free entry and expulsion of goods to the market a long-term average cost curve would have to be a straight line at a price level equal to the minimum average cost. This is the long-term supply curve of a company that has constant yields on volume (Varian, 2015). Since our market is free, that is, entry and exit from the market is free, in the short run the supply branch will have a positive slope (upward), while in the long run it becomes more flat at the price level with the same average cost (Barro, 1987).

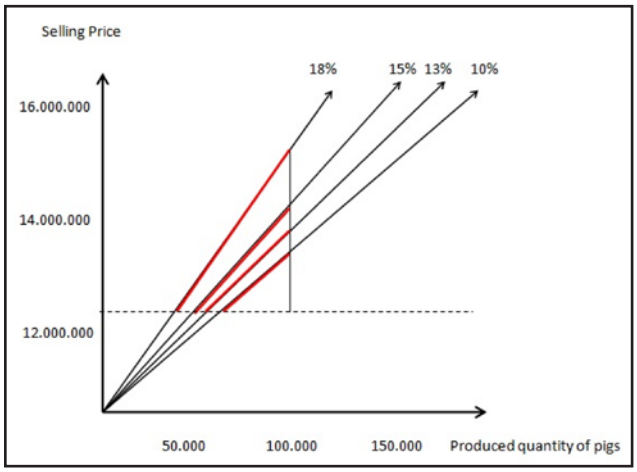

Figure 1 The offer of the branch

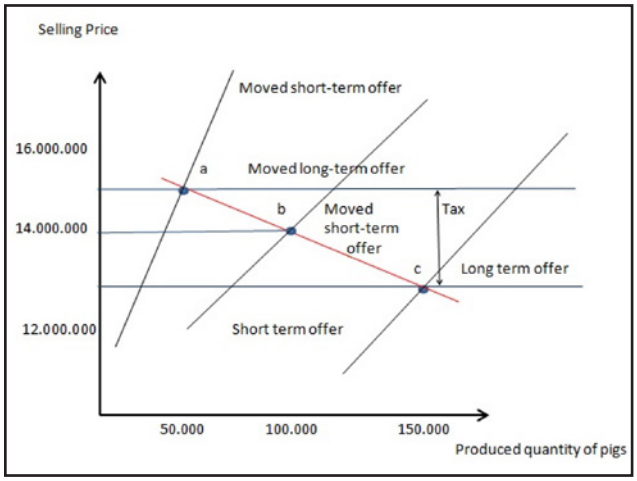

Figure 2 Changes in tax rates and impact on offer and demand of fatteners

The introduction of higher taxation faces end-consumers with higher prices of products (Samuelson, 1992).

Figure 2 shows the behaviour of the offer and demand curve due to changes in the tax rates that reflects on the changes in the prices. Blue horizontal lines represent

Table 2 Calculation of sales price of fatteners (Euro)

Elements of calculations	Calculation of sales prices at different rates of VAT			
	10%	13%	15%	18%
Fixed costs	1.066.666,67	1.066.666,67	1.066.666,67	1.066.666,67
Variable Costs	9.475.866,67	9.475.866,67	9.475.866,67	9.475.866,67
Mixed costs	1.253.333,33	1.253.333,33	1.253.333,33	1.253.333,33
Cost price	11.795.866,67	11.795.866,67	11.795.866,67	11.795.866,67
Amount of VAT	1.179.586,67	1.533.462,67	1.769.380,00	2.123.256,00
Selling Price	12.975.453,33	13.329.329,33	13.565.246,67	13.919.122,67

Made by the author according to the obtained data

long-term offer curves. Black vertical lines represent short-term offer curves. The red line is the demand curve. The point c represents the introduction of tax. At this point, the demand for 150,000 fatteners is projected, while the short-term offer curve is under 45 degrees' slope. Point b represents the pay-price limit for fatteners production, and shows that in case of introduction of tax rate 13%, the price is 13,418,787.92 Euro, the demand is reduced to 100,000 fatteners and the short-term offer becomes steeper. As the price rises higher, because of the introduction of more tax rates the market suffers the pressure, and the demand is reduced to 52,000 fatteners, the short-term curve is completely upright, the long-term curve is shifted upwards and the cross-section with the wrong demand is in point a.

4 Conclusions

The research results indicate that taxable income varies at different tax rates. Based on the analysis of the offer and demand relationships, the long-term and the short-term period it could be concluded that at higher tax rates the offer curve is upward and vertically set, and crosses the demand curve in the higher part of the chart. Otherwise, when the tax rate is low, the short term offer curve is more straightforward and crosses the demand curve in the lower part of the chart resulting in more favourable entrepreneurial conditions.

When determining the tax rate, its creators must be very vigilant and well defined in the short and long term, in order for the fiscal measures to be stimulating and in function of the growth of the economy. State tax policy is a powerful weapon that can act on the market. It is important to emphases that the state can also have negative consequences if it wants to raise the tax rate above the realistic framework.

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