INTERACTION OF PRODUCTION COST, PRICE AND LABOUR FACTORS IN INCREASE OF COMPETITIVENESS IN AGRARIAN SECTOR OF AZERBAIJAN

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Abstract


Production cost, interaction of price and labor factors in increase of competitiveness in agrarian sector of Azerbaijan has been studied in this article. There are theories that reflect role of economic development in this article. Taking into consideration that price and production cost is the main index in comparison competitiveness in agriculture in research; it has been applied to theoretical thoughts and research work about these categories. Among indices used in study of current situation and competitiveness in agriculture it is emphasized role of macroeconomics, economic and financial index. In analysis part it is introduced models that reflect dependent of selling price of agricultural product on prime cost and labor cost which is main factor in increase of agriculture of Azerbaijan and conducted analysis of complex (multiple regression) correlation-regression. Excluding some products, it is defined line dependent of selling price of many agricultural product on prime cost and labor cost.

Key words: agrarian sector; competitiveness; price; prime cost; labor cost; complex (multiple regression) regression

Introduction

In the period of prosperity in industrial revolution, the role of agrarian sector did not have any formal theory in economic development. So there was no development, including in agrarian farm. There is an argument that in the beginning of XIX century approximately 75-90% of population worked in agrarian farm (Johnson, 1997). Classical economists value agrarian sector as traditional sector of low productivity affecting to economic increase, which supply other part of economics with food, labor and capital (Hazell and Thurlow, 2007). Attitude to agrarian sector was changed in the 1950s due to authors like Lewis (1954). He approved that industry revolution is effective joint with agrarian revolution and agrarian revolution will lead to high productivity. That will guarantee food supply for long-term economic increase. Change of attitude to the role of agrarian sector in economics was in progress in the 1960s too. Positive result of green revolution highlighted that agrarian farm was able to play active role in economic development (Hazell and Thurlow, 2007). So, Schultz (1964) emphasized that applying green revolution with science, technology can modify agrarian sector to modern sector in a short period. Besides it Johnston and Mellor (1961) with their famous original articles identified the role of agrarian farm in economic development. In additional, they valued it as main dynamics in different stages of economical increase, especially, of industrialization. Hazell and Thurlow (2007) noted that agrarian sector

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plays active but not passive role in economical increase.

In 1980-1990 debuts about role of agrarian sector in development shifted to villages and proceeded to regional level, regional flatness (Hazell and Röell, 1983; Haggblade and Hazell, 1989; Haggblade et al., 1991).

In 1970 nearly all researchers searched the role of agrarian sector in economic development. In that case they bothered about total product increase, volume of production per capita, but not income distribution (Fields, 2004).

**Literature Summary**

Taking into consideration that price and production cost is main index in comparison of competitiveness of agrarian farm in research, let’s apply to theoretical thoughts and research work about these categories. Price theory is interested in disclosing economic activity in terms of creating and transferring values, including trade in goods and services between different economic agents (Tellis, 1986). Friedman (1990) clarifies how price is generated, formed and how is price functioned to coordinate economic activity. Later Friedman generally explained in details two reasons why we didn’t know pricing and pricing theory. The first reason is that we should comprehend what the society like with what we are surrounded, has been formed. The second reason is that we should understand how the price is defined, how important it is in understanding of many economic problems, prices defined in wrong way is in the root of the several economic mistakes.

Many scientists put forward different conceptions about product price. So according to Agwu and Carter (2014) price is an only generator of profit and is valuation set on product. In addition, price is sum of all value that customer gives for concession to purchase and use product (Kotler et al., 2001). Baker et al. (1996) noted that the price is a mechanism that supplies two powers to stay equal. Stanton (1981) said that the price is just an offer and experiment that seller uses for exchange. Price is a money-credit valuation that a seller uses for exchange. Ezeudu (2005) noted that price is an exchange valuation of commodity and service. Schewe (1987) defined the price as fee for commodity and service.

**Methodology**

Competitiveness means to endurance the world economics, appropriate increase of population’s real life level, fair division of profit, to provide with job the people who desires to work, economic condition stimulates increase of life level of future generation (Landau, 1992). In addition, in order to specify competitiveness in national level, it is needed to search productivity determinates and productivity norms in some sectors of industry and industrial segment but not in general economics (Porter, 1990). However modern real world denies many provisions of comparative domination of trade, agriculture and tax politics. Comparative domination belongs to effective, well-functioned, undistorted markets. Competitiveness belongs to factual, real world (Barkema, 1990). To possess competitiveness in certain sectors means to have customers who are positively different from other potential sellers in foreign countries, to be able to supply with commodity and service in reasonable price, in necessary way and on time. In this case it meant at the worst to return alternative costs to use of recourses (Sharples and Milham, 1990). To be competitive industry is to obtain share in internal and/or external markets and to be able to keep it for a long period (Agriculture Canada, 1991). Competitiveness of economics, its separate areas, also agriculture was researched by several economists. We can group them as following. Competitiveness of agricultural and agrarian product in European Union countries was researched by economists such as Mulder et al. (2004), Ball et al. (2006), Carraresi and Banterle (2008), Drescher and Maurer (1999), Banterle and Carraresi (2007), Wijnands et al. (2008), Venturini and Boccaletti (1998), Mulder et al. (2004).

Among the scientists who researched international competitiveness of separate countries were: Bavorova (2003), Toming (2007), Nivievskyi and Von Cramon-Taubadel (2008).

A lot of scientists, such as Bojnec and Fertó (2009), Van Berkum (2009), Qin et al. (2009) researched competitiveness of agrarian division in Central European and Eastern European countries. Some scientists researched competitiveness of agrarian division of new members of EU (Gorton et al., 2000), Gorton and Davidova (2001). Competitiveness of separate product production was approved by the following scientists: Thorne (2005), Bavorova (2003), Van Berkum (2009).

It is analyzed economic indicator and effect in competitive environment without subsidy and later with subsidy in planting in mountain and less satisfactory regions of Greece (Oxouzi et al., 2012). Kizilaslan et al. (2011) researched competitiveness of cattle-breeding. In addition, it is researched effect of decrease of transport fees on corn’s competitiveness in the world markets (Lopes et al., 2017). It was studied possibilities of decrease of milking cost at the expense of module approach in cattle-breeding in Bulgaria (Sabkov et al., 2016). It was analyzed prime cost, profitability and agrarian industry risks of separate product in plantations (Bendlin et al., 2016). Comparative analysis of agrarian farms was conducted Bulgaria and Norway, factors affecting...
development and state policy was researched (Stoykova and Ashiem, 2011).

Many scientists studied product costs in agrarian farm: Ahearn and others (1990), Cesaro et al. (2008), Gallagher et al. (2006), Sharples (1990). Besides it, Celik and Peker (2009) were studied mushroom production costs in developed countries. Keskin et al. (2010) analyzed tomato product costs and efficiency of manpower. It is researched definition of product unit cost in main areas of production. Erdal et al. (2009) studied potato product production and price proportion.

As we will use complex (multiple regression) regression in research, let us use it in methodology too. According to Pedhazur (1997) regression analysis has 2 using are in scientific literature: prediction and explanation. Complex (multiple regression) regression (MR) with dependent and independent variables is used for analysis of dependent and independent variables on basis of data (Pedhazur, 1997). It is an important component of common line model (Zientek and Thompson, 2009). In fact, MR includes most of the mathematical methods generally taught in education. (Henson et al., 2010). It is impossible not to touch “collinearity” or “multicollinearity” which creates difficulty while we use MR in our research. “Collinearity” or “multicollinear” indicates the non-zero correlation of the free variables. (Thompson, 2006). Independent variables are mostly correlated each other in practice.

Multicollinearity can cause complication of research results and can create difficulty in interpretation of research. Nimonidr (2010) noted that correlated independent variables can complicate interpretation of results. This makes many researchers avoid from multicollinearity among observed variables. Stevens (2009) said that multicollinearity is a real problem for the researcher, who uses complex regression. Nonetheless, Henson (2002) noted that if we consider more analytical information, multicrystallization should not be considered a problem. The essence is that if the researcher additionally adds structural coefficients to the standard weights, multicollinearity will not be problematic during the complex regression and eventually in any other common analysis a linear model.

Although multicollinearity MR does not act as a direct statistical condition, its effect to regression influence makes it difficult to interpret as a function. (Osborne and Waters, 2002). Many researchers interpret MR results as predominantly standardized (beta, β) or non-standard (inclined) regression influence. (Courville and Thompson, 2001; Zientek and Thompson, 2009). When it comes to multicollinearity, focusing on regression influence is a good source of limited information. In some cases, it causes incorrect interpretation. However, in many cases, it is seen that the authors have acknowledged the importance of the free variables based on the results of the statistical significance tests of the zero hypothesis (H0) of the regression, due to the inadequacy of multidimensional complex relationships between free and dependent variables. As a regression line for complicated regression, the following will be used.

\[ y = a + b_1 \times x_1 + b_2 \times x_2 + \ldots + b_n \times x_n \]

**Analysis of the Current Situation and Competitiveness of the Agrarian Sector**

The role of macroeconomic, economic and financial indicators is crucial among the indicators used in the analysis of the current situation and competitiveness of agriculture. They are a comprehensive and extensive database of information about the economy, industries, and agrarian sector. Let’s look at the economic indicators of economic entities in this area, which are the foundation of economic development in the agrarian sector.

The specific weight of service and intermediary organizations has increased at the expense of decrease of special weight of specified special weight. Simply, there was a very small increase in the share of state-owned enterprises.

During the analyzed period, the aggregate profit of agricultural enterprises at actual prices in 2016 increased by 76.0 times compared to 2000, 5.8 times more than in 2005, and by 18.7% compared to 2010, compared with 7.5% in 2013 and 17.3% in 2014.

It should be noted that the aggregate output of agriculture by actual prices of relevant years is 17.3 times more than in 2016, 4.7 times as compared to 2005, 99.5% compared to the year of 2010, labor productivity – total product per employee was 26.9 times in 2016, 5.1 times more than in 2005, and increased by 22.8% compared with the same period last year. 2.2 times more than in 2010, an increase of 17.3 percent compared to 2013 and 0.1 percent compared to 2014. Productivity of main type of agricultural crops for last 16 years categorized into groups and introduced below.

So, in the period between 2016 and 2000 the cotton productivity increased slightly more than 2 times, and the productivity of the remaining plants decreased from 114.4% (tobacco) to – 184.4% (seed for sunflower). The production of tobacco and potato declined by 1.2% and 8.7%, respectively, between 2016-2005, except for sugar beet (287.9%), and the growth of other crops was 7.4-44.8%. However, in 2016-2010 the productivity of potatoes decreased (6.2%), and the productivity of other crops increased from 1.7-52.8%, the decline in tobacco has been 10.6% in the last three years, in potatoes – by 10.5%, in
ing the wages of workers in this field. Thus, labor productivity
to justify the factors of its dynamics and to suggest increas-
petitiveness of agricultural products, it is possible to look at the
by 2.6 times, 56.9%, 15.5% and 11.1% according to this year.
The grape was noted to increase
berries constantly increased. Thus, there was increase in 2016
compared to 2000, 2005 and 2014, decreased by 10.5% and
areas increased by 63.9%, by 2.7 times and by 14.5% in 2016
remained unchangeable compared with 2013 and increased by
0.3%, 4.9% and 3.5% compared with 2010, 2013 and 2014,
labor cost of one centner of weight gain of poultry increased
by 4.5 %, 0.6 % and 0.1 % compared with 2000, 2005 and
2013, decreased 0.4% compared with 2010 and remained un-
changeable compared with 2014.

Labor cost to one centner of weight gain of milk increased
by 11.7% and 0.4% in 2015 compared with 2000 and 2005,
decreased by 0.4%,0.6% and 0.8% compared with 2010, 2013
and 2014, labor cost to one centner of weight gain of wool
decreased by 2.6% in 2016 compared with 2000, increased
by 2.61%, 4.2%, 2.1% and 2.7% compared with 2005, 2010,
2013 and 2014, labor cost to one centner of egg gain (one
thousand pieces) was 5.8% and 0.2% in 2015 compared with
2000 and 2013, decreased by 6.6% and 2.2% compared with
2005 and 2010, remained unchangeable compared with 2014.
As for the selling price for one centner of agricultural
products, we can say that the selling price of centner of cereals
and cereal legumes increased by 2.7 times in 2016 compared
with 2000, by 1.8 times compared with 2005, decreased by
3.3% compared with 2010, 7.0% compared with 2013 and 3.0% compared with 2014, selling price for one centner of raw cotton increased by 3.1 times, 43.8%, 6.5% and 3.8% in 2016 compared with 2000, 2005, 2010 and 2013 and decreased by 3.6% compared with 2014, selling price for one centner of sugar beet decreased by 97.9% and 1.3% in 2015 compared with 2000 and 2010, increased by 65.0%, 1.9% and 0.2% compared with 2005, 2013 and 2014, selling price for one centner of tobacco relevantly increased by 2.3 times, 2.1 times, 43.0%, 30.8% and 27.9%, selling price for one centner of green tea leaf increased by 3.0 times, 3.2 times and 7.2% in 2016 compared with 2005 and 2010, decreased by 10.6%, 11.4% compared with 2013 and 2014, selling price for one centner of weight gain of poultry increased by 87.2%, 2.2 times and 29.7% in 2016 compared with 2000, 2005 and 2013, decreased by 37.1% and 2.9% compared with 2010 and 2014, selling price for vegetable on the open area increased by 3.7 times, 3.5 times, 4.9% and 9.6% in 2016 compared with 2000, 2005, 2010 and 2013 and decreased by 14.3% compared with 2014. Selling price for one centner of melons increased by 3.9 times, 90.3% and 8.0% in 2016 compared with 2000, 2005 and 2014, decreased by 1.5% and 1.2% compared with 2010 and 2013, selling price for one centner of fruit and cherries increased by 7.4 times, 3.7 times, 11.8%, 48.0% and 3.9% in 2016 compared with 2000 relevantly to those years, selling price for one centner of potato increased by 87.2%, 2.2 times and 29.7% in 2016 compared with 2000, 2005 and 2013, decreased by 37.1% and 2.9% compared with 2010 and 2014, selling price for one centner of weight gain of cattle and poultry increased by 2.3 times in 2016 compared with 2000, increased by 46.1% compared with 2005, decreased by 5.3% compared with 2010, increased by 6.6% compared with 2013 and 1.6% compared with 2014, selling price for one centner of weight gain of cattle increased by 3.3 times, 92.3% and 25.7% in 2016 compared with 2000, 2005, 2010, decreased by 13.2% and 4.9% compared with 2013 and 2014, selling price for centner of weight gain of sheep and goat increased by 4.5 times, 2.6 times and 41.0% in 2015 compared with 2000, 2005, 2010, decreased by 4.8% and 3.2% compared with 2013 and 2014, selling price for one centner of weight gain of pig increased by 88.7% and 25.0% relevantly to those years, decreased by 58.0%, 54.5% and 25.7% compared with 2010 and further comparable year, selling price for one centner of weight gain of poultry increased by 75.5%, 42.1%, 6.9% and 0.9% in 2016 compared with 2000, 2005, 2013 and 2014 compared with 2000, 2005, 2013 and 2014, decreased by 6.2 compared with 2010. Selling price for one centner of weight gain of milk decreased by 5.0% in 2015 only compared with 2013, increased by 2.5 times, 2.0 times, 25.1% and 4.8% compared with the rest of the years, selling price increased by 3.6 times, 2.0 times and 2.2% in 2016 compared with 2000, 2005 and 2013, decreased by 5.3% and 1.3% compared with 2010 and 2014, selling price for one centner of egg gain (one thousand pieces) increased by 2.6 times, 86.9%, 13.5%, 15.3%, 15.8% relevantly. It is clear from the above that indices of yearly deviation are natural, but there must be certain legality. All of this calls for a serious approach to this area and elimination of uncertainties, in particular, minimizing differences in economic and financial outcomes in the years. Such difference of gain rates of prime cost, labor cost and selling price for one centner of calculated and introduced agricultural product is evidence to presented deviation. We can note it from dependent models of selling price of one centner of separate agricultural product in prime cost and labor cost.

**Econometric Analysis**

It is clear from analysis (Table 1, Figure 1) that between 1995-2016 gain rate of prime cost of a centner of manufactured product in agricultural prices was average 8.92% annually, gain rate of labor cost to a centner of product was average 0.09% annually, gain rate of selling price for a centner of product was average 16.95% annually. This, naturally, can be evaluated as a result of the intermediaries’ price additions.

In order to increase competitiveness in agriculture and its enterprises it is important to improve structure of cost spent on production. Thus, if we compare with 2015 it appears that special weight of salary payment in structure of cost spent on production of agricultural products approximately increased by 4.2% between 1990–2015, being subject to deviation the material costs increased by 3.5%, amortization of main means 11.8%, insurance cost 27.1%, other costs 30.8%. Special weight of salary costs in structure of cost spent on production of agricultural product in planting increased by approximately 5.7% between 1990-2015, being subject to deviation the material costs increased by 8.8%, amortization of main means 13.5%, insurance cost 19.5%, other costs 5.4%. Special weight of salary costs in structure of cost spent on production of agricultural product in cattle-breeding decreased by approximately 3.8% between 1990-2015, being subject to deviation the material costs increased by 0.5%, amortization of main means 14.8%, insurance cost 60.2%, other costs 2.9%. As special weight of insurance cost is very small, it can leave neglected.

If we add to the general structure of costs for agricultural production (9.33%), payment for services rendered by other organizations and non-residents in the structure of expenses amounted to 13.57% of outsourcing services, which is 19.49%, we can assume that we have significant weight. 22.90%. It is not less.
**Table 1**

**Econometric Analysis**

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<td></td>
<td>(–0.7225)</td>
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<td>(0.8573)</td>
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Table 1
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Note: 1. (t-stat); 2. * p < 0.05; ** p < 0.01; *** p < 0.001
Y1 – Cereals and cereal legumes, Y2 – Raw cotton, Y3 – Sugar been (processing), Y4 – Tobacco, Y5 – Green tea leaf, Y6 – Potato, Y7 – Vegetable (in open area), Y8 – Melons, Y9 – Fruit and berry, Y10 – Grapes, Y11 – Cattle, Y12 – Sheep and goat, Y13 – Pig, Y14 – Poultry, Y15 – Milk, Y16 – Egg (thousand pieces), Y17 – Wool

Fig. 1. Econometric Analysis
Y5A Linear

Y6A Linear

Y8A Linear

Y10A Linear

Y11A Linear

Y13A

Fig. 1. Continued
Fig. 1. Continued
and labor cost is R2>0.5. However in models reflecting the dependency of price of cereal and cereal legumes, raw cotton, tobacco, potato, vegetable (in open area), melons, fruit and berries, grape, cattle, sheep and goat, pork and wool on prime cost and labor cost is R2>0.5. There is no connection price of egg with prime cost and labor cost is introduced in better cube dependent linear equation. It is shown dependence of price of pork, poultry on only prime cost in other models. It is introduced dependent of price of cereals and cereal legumes, sugar been (processing), green tea leaf, potato, melons, grapes, cattle, milk on prime cost and labor cost coefficient of both factors has statistical significance. It is introduced dependent of price of cereals and cereal legumes, sugar been (processing), green tea leaf, potato, melons, grapes, cattle, milk on only prime cost in other models. It is shown dependence of price of pork, poultry on labor cost. In addition, in models reflecting dependence of price of raw cotton, tobacco, vegetable (open area), fruit and berries, sheep and goat on prime cost and labor cost decreased by 0.1%. We can come to conclusion that result of econometric analysis is true. Connection of labor cost with price is very slight. Consequently, it is worthy to think about decrease of price of prime cost and selling price of product in order to increase competitiveness of product. For this purpose we can use perfection of structure of prime cost of product.

**Discussion and Conclusion**

Due to obtained models one can say that in models reflecting dependent of price of cereal and cereal legumes, raw cotton, tobacco, potato, vegetable (in open area), melons, fruit and berries, grape, cattle, sheep and goat, pork and wool on prime cost and labor cost is R2>0.5. However in models reflecting the dependent of price of cereal and cereal legumes, raw cotton, tobacco, potato, vegetable (in open area), melons, fruit and berries, grapes, cattle, sheep and goat, pig and wool on prime cost is given in linear equation. Dependence of price of sugar been (processing) on prime cost and labor cost is introduced in better cube dependent equation. However it is not defined dependence of price of egg (one thousand pieces) on its prime cost and labor cost.

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