Evaluating the impact of the Value Added Tax reform on raw milk collection in Kosovo

ARBEN MUSLIU [1], EGZON BAJRAMI [2] *, FRANCIS TSIBOE [2], JENNIE S. POPP [2]

1. Introduction

More than half of Kosovo`s livestock were killed or stolen and about 40% of the livestock infrastructure - stockyards, sheds, etc. – destroyed during the 1998-99 Kosovo-Serbia war (Ministry of Agriculture, Forestry and Rural Development [MAFRD], 2003). However, after the war, the livestock sector, specifically dairy production has become one of the leading agricultural sub-sectors in Kosovo, contributing about 10% annually to GDP (Bytyqi *et al.,* 2014). Dairy production increased by 4.4% to €118 million in 2012, compared to €113 million in 2010 (MAFRD, 2014). Kosovo`s dairy production is dominated by small-scale farming, with an average of two cows per household (MAFRD, 2015). MAFRD (2015) estimates that in 2014 there were 63,874 households engaged in dairy production in Kosovo, producing an annual average of 278 MT of milk from 134,393 dairy cows. About 80% of domestic milk consumption is met by domestic production, with the remaining 20% met by imports.

The main formal channels for milk marketing are milk collection centers and dairy plants. Small-scale dairy farmers usually deliver their milk to milk collection centers on a

Abstract

The aim of this study was to assess the impact of the Value Added Tax (VAT) reform in 2013 on raw milk collection in Kosovo. A linear regression with panel-corrected standard errors model (LRPCSE) was used to statistically test the hypothesis of no effect of the 2013 VAT reform on the growth rate of monthly raw milk collection. The study utilizes panel data spanning from January 2011 to December 2015. Company level monthly sales, investment, price and raw milk collection data were collected from eight Kosovo dairy plants. Results revealed confirmatory evidence that the 2013 VAT reform significantly (p<0.05) increased the growth rate of monthly raw milk supplied to 60% of dairy plants by 9.7% for the period under consideration. This tax policy would possibly lead to a further formalization of dairy sector in the future.

Keywords: tax reform, LRPCSE, dairy, Kosovo.

Résumé

Le but de cette étude est d'évaluer l'impact que la réforme de 2013 visant l'impôt sur la valeur ajoutée (TVA) a eu sur la collecte de lait cru au Kosovo. Une régression linéaire utilisant un modèle à erreurs-type corrigées pour panel (LRPCSE) a été utilisée pour tester statistiquement l'hypothèse de l'absence d'effet de la réforme de la TVA de 2013 sur la croissance du taux de collecte mensuelle de lait cru. Cette étude utilise des données de panel chronologiques couvrant Janvier 2011 à Décembre 2015. Des données sur le niveau de vente mensuelle des sociétés, l'investissement, le prix et la collecte de lait cru ont été recueillis dans huit usines laitières au Kosovo. Les résultats ont révélé d'une manière significative (p < 0.05) que la réforme sur la TVA de 2013 a augmenté de 9,7 % le taux de croissance de lait cru mensuel fourni à 60 % des usines laitières pour la période considérée. Cette politique fiscale pourrait conduire à une nouvelle formalisation du secteur laitier dans l'avenir.

Mots-clés: réforme fiscale, LRPCSE, laitier, Kosovo.

daily basis, while large-scale dairy farmers (i.e. those with more than 15 cows) are directly connected with dairy plants facilities. Most of the dairy plants in Kosovo are fairly integrated. They operate in terms of milk collection, pre-cooling, transportation, processing and marketing (wholesaling). Final dairy products are produced by dairy plants, then distributed by dairy plants individually to the retailers.

However, since 2000, more than 50% of Kosovo`s milk production has been sold informally, with two thirds of it either consumed on the farm or traded on the local unregulated markets known as "green markets", while the remainder is delivered to dairy plants for processing into dairy products such as pasteurized milk, cheese, and yoghurt (Oldham *et al.,* 2006). Traditionally, milk sales in the green market, including door-to-door sales attract a large clientele. The USAID (2013a) emphasized that the government of Kosovo did not have the capacity to monitor these milk sales via informal channels, therefore green markets were not taxed.

In contrast to the green market, dairy farmers that delivered milk to dairy processing plants (here after "dairy plants") pay a 16% Value Added Tax (VAT). Since farmers were unregistered for VAT, their sales to dairy plants were without the VAT component. Therefore, upon sales of their finished products, the dairy plants had no way of discounting the tax value of the raw milk as an input. As a result, the dairy plants paid VAT obligations for the farmers in addi-

[1] University of Prishtina, Faculty of Agriculture and Veterinary Science, Pristina, Kosovo.
[2] University of Arkansas, Department of Agricultural Economics and Agribusiness, Fayetteville, Arkansas, USA.
*Corresponding author: bajramiegzon@hotmail.com

tion to that of their finished product. This situation encouraged tax evasion on the part of the dairy plants, through the under-reporting of both purchases of raw milk and sales of dairy processed products. In 2013 alone, the Kosovo Dairy Processors Association (KDPA) estimated that an average of 70,000 litres of daily raw milk were being declared, while an additional 50,000 litres went undeclared by dairy plants (USAID, 2013a).

The aforementioned VAT policy created a difficult market situation for all the actors (government, dairy plants and farmers), specifically for dairy plants who were producing at a competitive disadvantage due to the higher cost of dairy products in the market compared to their imported counterparts. Even though the stakeholders in the dairy sector such as local dairies and farmer associations have been active in terms of lobbying for a different tax policy, the government did not take any action (USAID, 2013b).

After analysing a range of options for improving the function of the VAT in the dairy sector, two Kosovo dairy associations, the Kosovo Association of Milk Producers (KAMP)[1] and the KDPA proposed a scheme of a zero VAT flat rate for the delivered milk supplies from farmers to dairy plants (USAID, 2013b). Their VAT proposal aligned best with the needs of the entire sector and it incorporated the interests of both parties (i.e. dairy plants and farmers) that are directly involved. For the farmers, a simpler system for managing VAT removes the 'barrier' of entering the formal system, while for the processors, it simplifies their dealings with farmers, and in addition it increases their overall competitiveness. Consumers could benefit as well as they could purchase the dairy products at a lower price due to the zero VAT for raw milk. In terms of tax revenues, it is expected that VAT receipts could decrease in the short term; however, VAT receipts from finished dairy products sold through formal commercial channels could increase in the long term (USAID, 2013a).

USAID spent nearly a year promoting the VAT reform for raw milk at the request of the two dairy associations (USAID, 2013c). On September 10th, 2013 the Ministry of Finance introduced the administrative instruction (MoF - NO.05/2013) for the application of the flat rate value added tax for agricultural producers (hereafter "2013 VAT reform"). The main objective of the 2013 VAT reform was to increase agricultural sales through formal channels (USAID, 2014). Three secondary objectives were to decrease the amount of raw milk sold via informal channels, increase the volume of milk transacted through formal business channels, and support the Kosovo dairy sector to increase its regional competitiveness (USAID, 2013a).

Even though USAID initially proposed applying the change only to raw milk, Kosovo officials expanded it to cover other raw agricultural inputs as well (USAID,

2013c). For the dairy sector, the 2013 VAT reform effectively discounts the 16% VAT that dairies previously paid on the raw milk input, since the zero flat rate applies only to dairy farmers that send the milk into dairy plants. However, dairy plants still pay the VAT 16% on the final dairy products sold on the market.

The 2013 VAT reform works by allowing dairy plants to claim credit for VAT owed by the primary producers of the raw milk and all the other inputs that they purchase during the processing. All dairy farmers who sell raw milk to dairy plants and have a Farm Identification Number (FIN) are eligible for zero VAT flat rate. The 2013 VAT reform serves as an incentive to formalize the status of several thousand dairy farmers. In 2013, USAID (2014) estimated that this incentive has formalized the status of more than 3,000 commercial dairy farmers. In addition, this tax reform has made the local dairy industry more cost competitive against imported dairy products (USAID, 2014).

The issue of tax policy has been the focus of several researchers in the last two decades; however the literature is limited when it comes to studies of tax policy in the agricultural sector. To demonstrate it, Keen and Lockwood (2010) used a set of 25 years panel data from 143 countries to show that there is a negative association of revenue with the share of agriculture, demonstrating that agriculture is a hard sector to tax. Thus for a given country, the larger its agricultural sector, the lower its past revenue ratio. In terms of general economy, Boeters et al. (2010) utilized the applied general equilibrium model on observed revenue data for Germany to show that eliminating reduced VAT rates had only a small redistributive effect towards more inequality; thus a differentiated VAT can barely be considered as a suitable means of redistribution policy. Caspersen and Metcalf (1994) applied instrumental variable regression on the Panel Study of Income Dynamics and the Consumer Expenditure Survey data to show that a VAT would be only moderately regressive over the life cycle in a lifetime context. Furthermore, adjustments such as zero rating would be effective at further reducing a VAT's regressivity in the United States.

Focusing on the potential impact of tax policy on consumers' health, Jensen et al. (2014) studied the effect of the tax on saturated fat on the consumption of meat and dairy products in Denmark by utilizing the Linearized Almost Ideal Demand System on a balanced monthly food sales panel data over the period of January 2010 to October 2012. Jensen et al. (2014) found that the introduction of this tax led to a decreased intake of saturated fat from minced beef and cream products. A similar study by Mytton et al. (2007) found that taxing sources of saturated fat may lead to a reduction in the intake of saturated fats and might serve as a tool to prevent thousands of cardiovascular deaths annually in United Kingdom. In contrast, Chouinard et al. (2005) studied the impact of a fat tax on dairy products in the United States and found that this type of tax may be effective at

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[1] The role of KAMP is to promote better policies and provide technical assistance for dairy farmers, while the main activity of KDPA is to lobby for improvement of border protection and taxation (Nushi and Selimi, 2009).

raising revenue, but it will have a low impact on reducing fat consumption.

Even though there have been several studies on the dairy sector of Kosovo, (Musliu *et al.*, 2009; Bytyqi *et al.*, 2010; Miftari *et al.*, 2010; Bytyqi *et al.*, 2011), to date and to the best of our knowledge, the literature is deficient of studies analysing the impact of a tax policy on Kosovo`s dairy sector. Therefore, this study fills this research gap by estimating the effect of the flat rate VAT application in the domestic dairy market. A linear regression model with panel corrected standard errors is applied on monthly raw milk collection data to assess the impact of the 2013 VAT reform on the growth rate of raw milk collection over the period of 2011-15. Furthermore, this study serves as a baseline for future studies that will evaluate the tax reforms in Kosovo and in addition inform policymakers to formulate future policies, particularly the tax legislation in the agricultural sector.

2. Material and methods

2.1. Data

The study utilizes monthly milk collection data (from January 2011 to December 2015) and quarterly milk, cheese, and yoghurt sales data (from October 2012 to December 2015) sourced directly from eight Kosovo dairy plants - K-abi, Abi, Magic Ice, Rona, Sharri, Bylmeti, Rugova, and Eurolona - making up about 60% of the domestic market. In addition, monthly price of raw milk at the farm level, pasteurized milk, cheese, and yogurt were collected from Kosovo's Market Information System (MIS). Trade data and tax revenue were collected from the Kosovo Customs and Tax Administration of Kosovo (TAK), respectively. The primary and secondary collected data were analysed through descriptive analysis, mainly in the form of figures. In addition, econometric analyses were used to formally test the null hypothesis of no effect of the 2013 VAT reform on the growth rate of monthly raw milk collection in Kosovo.

2.2. Descriptive analysis

The summary statistics of milk collection and the price of dairy products are shown in Table 1. The year with the highest and lowest standard deviation for raw milk collection is 2015 and 2011, respectively. Contrary to milk collection, there has been less variability in terms of price changes over the same period.

2.3. Investments and sales

From the period 2003-2007, significant investments were made to increase the capacity of milk processing by private investors, with raw milk collection by dairy plants growing at an annual average of 45% (Nushi and Selimi, 2009). Figure 1(a) shows that a larger amount of investments were made during the period of 2010-12, the period for which the European Union (EU) actively supported – through grant scheme

– the dairy processing industry as part of the IPA 2012 Annual Program for Kosovo. The overall objective of the EU financial assistance was to support efforts for reform towards compliance with EU standards and progress in the implementation of its European reform agenda (European Commission, 2013)[2]. Therefore, the dairy sector was one of

Table 1 - *Descriptive statistics.*				
	Raw milk collection	Prices		
Year		Raw milk (€/1l)	Pasteurized milk (€/1l)	Cheese (€/800gr)	Yoghurt (€/1l)
	(liters)				
	Mean	Mean	Mean	Mean	Mean
2011	207226.41	0.30	0.56	3.1	0.68
	(172384.4)	(0.004)	(0.010)	(0)	(0.038)
2012	217188.28	0.30	0.54	3.1	0.67
	(177432.59)	(0.003)	(0.010)	(0)	(0.043)
2013	229416.33	0.31	0.56	3.37	0.77
	(188031.97)	(0.027)	(0.011)	(0.213)	(0.043)
2014	242739.84	0.31	0.60	3.28	0.73
	(198307.01)	(0.029)	(0.010)	(0.207)	(0.046)
2015	255515.63	0.24	0.53	3.06	0.60
	(208744.22)	(0.024)	(0.024)	(0.147)	(0.055)
Standard deviations are in parentheses.					
Number of observations: 480					

Figure 1 - *Investments and sales as a total value (2015 €) and the annual change in percentage (%): a) investments (2009-15); b) sales (2011-15).*

Source: Constructed by authors using data retrieved from the selected dairy plants.

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[2] IPA 2012 Annual Programme (AP) addresses the approximation of the legislation to European standards, including on veterinary and food safety and free movement of goods (European Commission, 2013).
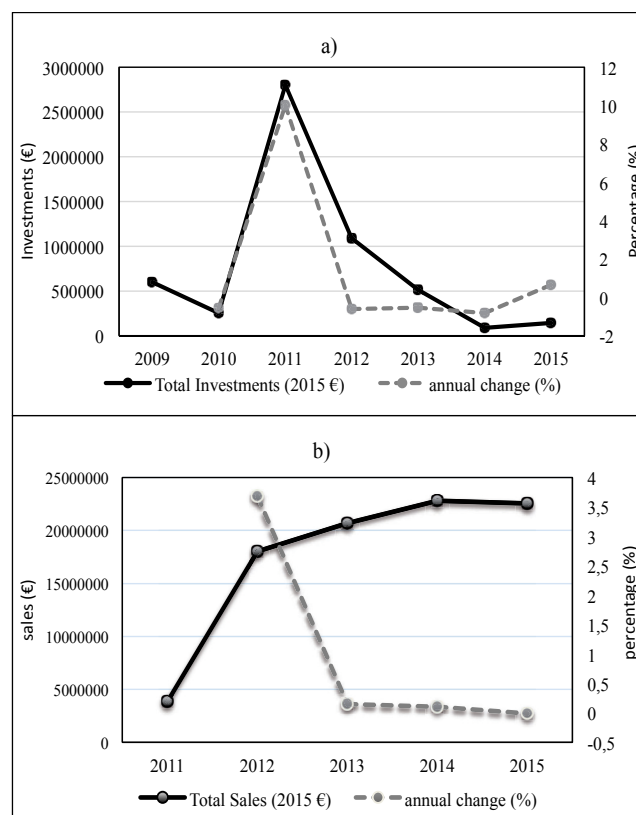
the three sub-sectors of agriculture, which was part of the EU`s multi-annual Rural Grant Scheme (EUR 5 million worth of funding), which supported the development and modernisation of the sector by a variety of investments. These investments included the introduction of products with higher value added, building storage facilities, updating appropriate food safety management systems (HACCP)[3], better marketing of processed food products, and modernising quality control equipment (European Commission, 2013).

During this period, out of eight selected dairy plants for the study, seven were supported with this grant scheme. After 2012, investments declined by an annual average of 23%. Note that, these major investments were made a year before implementation of the 2013 VAT reform, indicating that increase in the milk collection after 2013 might be due to the investments made. High sales of €17 million were recorded in 2012 (Figure 1 (b)) following the huge investments of €2.6 million made in 2011 proves this assertion, albeit there is no statistical evidence. We test the statistical significance of investments on milk collection in the econometric analysis.

2.4. Agricultural Trade of Kosovo

After the war ended in 1999, Kosovo lost its traditional export markets and in addition local marketing channels were disrupted (World Bank, 2010). During this period, due to constrained domestic production, Kosovo relied heavily on imports and donor assistance to meet its consumption needs (European Commission and World Bank, 1999). Even though Kosovo had faced significant trade imbalance since 2000, its agriculture export to import ratio has been declining by an annual average of 0.26% since Kosovo became a member of the Central Europe Free Trade Agreement (CEFTA) in 2007 (GAP, 2011). This membership was supposed to improve access to export markets.

In 2014, dairy products constituted 6% and 0.9% of the total imported and exported value of agricultural products, respectively. Exports of dairy products mainly happen in Albania and they are not very intensive. Some of the exported products are peppers in cream and during the summer months UHT milk, cheese and some other dairy products mainly due to the summer tourism in Albania (USAID, 2008). Figure 3 (a) shows that whilst total imports of agricultural products were increasing at an annual average rate of 7.4%, imports of dairy exports have been increasing as well by an annual average of 5%.

The largest peaks of dairy exports (import) were reached in 2009 (2012) estimated at about €550 thousand (€43 million). However, immediately after the 2013 VAT reform, dairy imports declined by 12.8% whilst exports increased by 168% in 2014. Whilst the changes in Kosovo's dairy trade is not fully attributable to the 2013 VAT reform, it should be noted that, as part of its objectives, the reform also amid at increasing the regional competitiveness of Koso-

[3] HACCP – Hazard Analysis and Critical Control Points.

Figure 2 - *Kosovo's Export to Import Ratio for Agriculture Trade (2007-2014).*
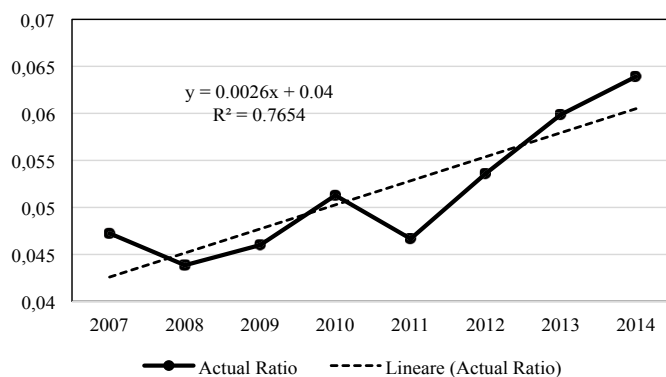
Source: Constructed by authors using data retrieved from ASK, DAESB MAFRD.

vo's dairy products. In terms of dairy products trade, Kosovo had the "best" trade balance over the period 2013-14, following the 2013 VAT reform.

Figure 3 - *Exports and imports in value (€1000): a) Total exports and imports of agricultural products; b) Total exports and imports of dairy products.*
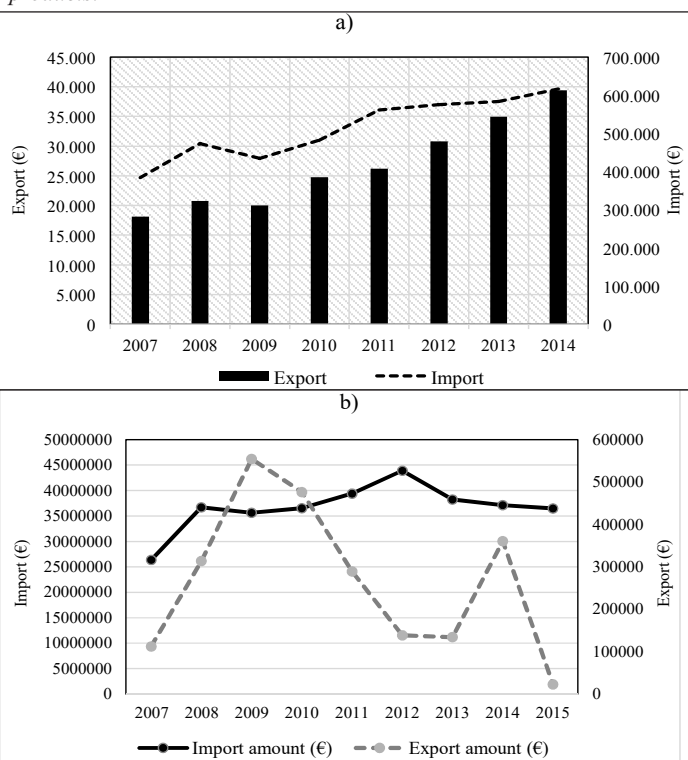
Source: Constructed by authors using data retrieved from ASK, DAESB MAFRD.

2.5. Tax revenue

A major assumption prior to the implementation of the 2013 VAT reform was that tax revenues from raw agriculture inputs will decline in the short run, with tax revenues from value

added products increasing in the long run. This is partly because domestic production is expected to gradually increase over time. As expected tax revenues, following the 2013 VAT reform, further declined by 35% in 2014 following a 15% decline in 2013, and increased by 66% in 2015 (TAK, 2015).

The descriptive analyses presented above suggest that the 2013 VAT reform stimulated Kosovo's dairy trade and its long run tax revenue positively. In addition, increases in dairy sales appear to have been stimulated by past investments. Note that these descriptive analyses provide no statistical evidence for these observations.

2.6. Econometric Analysis

Because of the panel nature of the data - 8 dairy plants - the study utilizes an estimation method that corrects for both heteroskedasticity and autocorrelation. The estimation method is formally referred to as a linear regression with panel corrected standard errors (LRPCSE) for the econometric analysis. LRPCSE is an alternative to feasible generalized least squares (FGLS) for fitting linear cross-sectional time-series models when the disturbances are assumed to be either heteroskedastic across panels or heteroskedastic and contemporaneously correlated across panels. The LRPCSE utilized is specified as:

$$\Delta \ln(y_{pt}) = \alpha + X'_{pt}\beta + u_{pt}, p = 1, \dots, 40, \quad t = 1, \dots, T$$

$$u_{pt} = \rho_p u_{pt-1} + \varepsilon_{pt}, \qquad \mathrm{Cor}(\varepsilon_{pt}, \varepsilon_{ps}) = \sigma_{rs} \qquad (1)$$

where, p is the number of panels (8), t is the number of periods in panel p, and Δ and ln denotes first differences and natural logs, respectively. The outcome variable, y_{pt} is the total raw milk collected by dairy plant at time period t. Note that the values were standardized by the respective market share (number of people) of each dairy plant. The vector X'_{pt} include; monthly changes in the price ratios of raw milk to dairy product (processed milk, cheese, and yogurt) price ratios, a trend and constant term, previous and current investment dummies, and quarterly and dairy plant fixed effects. To ascertain the statistical impact of the 2013 VAT reform, a policy dummy which takes on the value of zero in the pre policy period (January 2011-August 2013) and one in policy period (September 2013-December 2015) is also incorporated in the model. The term, u_{pt} is a disturbance assumed to be panel-specific auto correlated, and ε_{pt} is assumed to be serially uncorrelated but are correlated over p. Note that, the use of changes in the price ratios was motivated by the unit roots inherent in the price data. First difference of the outcome variable is also used ($\Delta\ln(y_{pt})$) to take care of any spurious correlation that may exist in the

data. In addition since we are taking the first difference of the natural log of milk collection, the outcome variable essentially measures the growth rate of milk collection by each dairy plant.

The estimation is done by utilizing the "*xtpcse*" command in Stata, with *"correlation(psar1)"*, *"rhotype(tscorr)"* and "*nmk*" specified as additional options.[4] The estimation utilized produces full FGLS parameters that are conditional on the estimates of the disturbance covariance matrix and the autocorrelation parameter estimated (Judge *et al*., 1985; Davidson and MacKinnon, 1993; Kmenta, 1997; Greene, 2012).

3. Results
3.1. Econometric results

Applying the unit root tests - Augmented Dickey Fuller (Dickey and Fuller, 1979), and using the Akaike Information Criterion to choose the appropriate lag length, the null hypothesis of a single unit root process for all prices in levels cannot be rejected at $p < 0.01$. In addition, test results indicate that each series is stationary in first differences. In addition, the unit root tests for milk collection by each of the eight dairies was rejected at $p < 0.01$. The regression estimates of equation (1) are displayed in Table 2. The coefficients of determination (R^2) is 73.98% and the model is significant (p<0.01). In addition, because the model (LRPCSE) was used, heteroskedasticity and autocorrelation is expected to be at a minimum.

The coefficient that represents the 2013 VAT reform is statistically significant at five percent level (p<0.05), indicating that after its implication, the growth rate of milk collection increased by 9.7% per month for the selected dairy plants. Therefore, we can reject the null hypothesis of no effect of the 2013 VAT reform on the growth rate of raw milk collection in Kosovo. This statistical evidence is predominantly important due to the fact that raw milk is the main input that dairy plants use to further process value added dairy products, it constitutes over

Table 2 - *Regression results for the impact of the 2013 Value Added Tax reform in raw milk collection in Kosovo.*

Variable	Coef.	Std. Err.
Tax reform	0.097**	0.041
Investment made (yes = 1)		
t-0	-0.023***	0.008
t-1	0.021***	0.007
Processed milk to raw milk price ratio		
t-0	-0.338***	0.102
t-1	0.075	0.097
t-2	-0.114	0.092
t-3	-0.404***	0.138
Cheese to raw milk price ratio		
t-0	0.042	0.030
t-1	-0.036	0.026
t-2	0.039*	0.023
t-3	0.071**	0.031
Yogurt to raw milk price ratio		
t-0	0.096	0.066
t-1	0.082	0.069
t-2	-0.027	0.064
t-3	0.000	0.066
Company (base = Abi) (10^{-3})		
Bylmeti	0.531	2.152
Eurolona	0.730	2.362
Kabi	0.666	0.874
Magic Ice	0.366	2.268
Rona	1.107	1.350
Rugove	2.339	1.670
Sharri	0.184	1.182
R-squared	73.98%	
Model Sig.	152.38***	

Significance levels: *p<0.10, **p<0.05, ***p<0.01

Standard Errors (Std. Err.) are corrected for robustness against autocorrelation and heteroskedasticity.

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[4] *"correlation (psar1)"* specifies that, within panels, there is first-order autocorrelation and that the coefficient of the AR(1) process is specific to each panel. *"rhotype(tscorr)"* specifies that time-series method is to be used in calculating the autocorrelation parameter. "*nmk*" specifies that standard errors be normalized by N-k, where k is the number of parameters estimated, rather than N, the number of observations.

70% of total input usage in the production process of dairy plants. An increase in the quantity of collected raw milk strongly could be taken as an indication of growth in Kosovo's dairy sector. Growth, one of the key drivers for dairy sector development, which could possibly lead to a further import substitution, improves trade balance and stimulates Kosovo dairy trade. In addition, dairy sector represents a major source of income and self-employment for many rural families in Kosovo. This policy could further increase and maintain the existing jobs in the whole value chain.

The estimation included a trend variable, constant term, and fixed effect for quarter (four), and year (five). The estimation results for all variables as well as the Stata command for the estimation will be provided upon request.

The estimated coefficients of the investments dummies indicate that investments significantly (p<0.01) decrease the growth rate of milk collection in the current period, however, previous investments increases growth rate in the current period. Investments in the previous period are used to build on the capital stock for the next period (Twimukye *et al*., 2010). The effect of investments is usually not immediate and investments in the dairy processing plants are mainly made to increase production in future periods. These results are consistent with Barać and Muminović (2013), who found a link that investments are made to meet competition challenges, improve productivity and increase profitability. Also Rahimi (2016) claimed that investments in the current period are expected to accrue benefits in future. In addition, Figure 1 (b) supports this relation; the figure shows that 2012 milk sales increased to €17 million following the huge investments of €2.6 million made in 2011.

The changes in price ratios (output price to input price) can be taken as the potential profit margin that could be achieved. As such for dairy plants that produce multiple products from the same input, changes in the output to input price ratios of specific products could potentially influence these dairies to produce more of the product, which has a relatively higher positive change in its output to input price ratio. The estimated parameter representing the change in price ratio between the processed pasteurized milk with the raw milk indicates that, the rate of milk collection decreases by 33% and 40% in the current period (t-0) and subsequent third period (t-3), respectively. Contrary to that of pasteurized milk, change in price ratio between cheese and raw milk indicates that, the rate of milk collection decreases by 3.9% and 7.1% in the subsequent second period (t-2) and third period (t-3), respectively. Concerning the dairy plant fixed effects, the estimates show that on average, Rugove has the highest collection rate of milk among the eight dairy plants. Rugove is followed by Rona, Eurolona, Kabi, Bylmeti, Magic Ice, Sharri, and then Abi. In addition, the quarterly dummies showed significant seasonal effects.

4. Conclusion

The tax reform for the application of flat rate value added tax for raw agricultural products enforced in 2013 represents one of the broadest reforms of tax policy in Kosovo`s agricultural sector. According to USAID (2013d), this VAT reform should strengthen the farm sector by incentivizing domestic production of milk, fruit, vegetables and other raw agricultural products. At the agricultural sector level, it is expected that the 2013 VAT reform will quickly bring formality to the local dairy sector, help improve quality and increase quantities of raw milk supplied to dairy plants (USAID, 2013e). Therefore, in this paper we tested the hypothesis that the 2013 VAT reform had no effect on the growth rate of monthly raw milk collection, by using a linear regression with panel-corrected standard errors. This model, correcting for both heteroscedasticity and autocorrelation was selected due to the monthly panel nature of the data. The results from the estimated model provides confirmatory evidence that the 2013 VAT reform significantly (p<0.05) increased the growth rate of monthly raw milk supplied to 60% of dairy plants present in Kosovo by 9.7%. An increased supply of raw milk implies that there is possibly a growth in Kosovo's dairy sector.

In the light of this significant growth, dairy plants should orient their future production based on dairy consumer patterns in Kosovo and additionally on regional consumer behaviour, which could possibly increase their market share and stimulate the dairy trade. Furthermore, local dairy plants need further investments to modernize dairy processing technology in order to diversify the dairy product lines in the market because the limited varieties of dairy products are allowing foreign exporters to have a competitive advantage in the domestic market. In addition, besides increasing the raw milk supply, the 2013 VAT reform could possibly lead to a further formalization of dairy sector. The descriptive analysis showed patterns of increased sales of domestic dairies, supporting the findings of the empirical approach. Increased sales of dairy products in the formal market could be translated to less sales in the green market, indicating that a larger supply of raw milk is being provided to dairy plants and less raw milk is being sold via informal channels. However, even though there is evidence that VAT reform is on the path to achieve its objectives for increasing agricultural sales through formal channels, green markets including door to door milk sales represent a major barrier for the formalization of the dairy sector in Kosovo. Currently, an estimated 50% to 70% of the raw milk produced in Kosovo is sold through informal channels (USAID, 2013c).

Still the dairy market is constituted by a large percentage of the informal economy, which significantly distorts the market and harms those businesses which comply with laws (World Bank, 2015). Furthermore, the current agricultural policy from MAFRD is not focused on improving the competitive dairy market. Direct payments and investment grant schemes for individual farms constitute the major schemes (measures) in terms of budget allocation. Therefore, in the future, this Ministry should develop market-oriented policies that would lead to the further formalization of the agricultural (dairy) sector and incentivize the farmers to become part of the formal economy.

A limitation for this study derives from the availability of

data (short sample size). Therefore, a follow-up research covering a wider range of dairy companies and a longer period is highly suggested in order to be able to evaluate the long-term effects of the 2013 VAT reform.

Acknowledgments

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