
THE AGRICULTURAL PRODUCTS - MARKET STRUCTURE IN SOUTH-EAST EUROPE

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ABSTRACT

Purpose. The research subject is the analysis of exporting performance and international competitiveness of the Industry of agricultural products of SEE countries. Research goal is to examine the trends of total export effect, i.e. competitiveness effect (CE) trend, product effect (PE), geographical effect (GE) and residual effect (RE), as well as their components.

Methodology. Constant market share (CMS) approach is able to explain these effects in the case of the Industry of agricultural products in SEE countries.

Results. The conducted research covered 14 major products obtained from UN Comtrade, separated at four HTS code levels, in the period from 2007 to 2015. Conclusions. However, improvement of exporting competitiveness was still insufficient, considering that there was a more significant loss on other markets (EU, Russia).

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Introduction

Research of competitiveness of the agricultural sector is very complex due to broad micro and macro influence, i.e. the influence on consumers, producers, sector as a whole, related industries, and global economy. It is important to observe the size of a company in order to adequately compare and identify countries that are major exporters (Giannakis, Bruggeman, 2015). In the same way as strong economies have a positive trade balance, countries with a developed Industry of agricultural products

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have a surplus in export of agricultural products. According to Chen and Holden (2018) within OECD countries there are positive trends in Germany, Great Britain and Ireland. In fact, thanks to significant tax incentives towards development of innovations, Ireland became the prime country to invest in the agricultural sector. The numbers are high, out of top 10 agricultural companies, 7 are in Ireland. Regarding Germany, it is necessary to emphasize that the industry of agricultural products have a high share in exports. Within the Danube region, Germany stands out with high share in export of chemical and Industry of agricultural products (Andersen, 2017). Sweden has a significant share in export of agricultural products within overall export. Swedish agricultural sector employs around 5000 people (Ferro, Otsuki, Wilson, 2015). High competitiveness of the agricultural sector is the result of innovations and growing investments in R&D. The agricultural industry's total cost for R&D in 2009 was 6.319 million SEK equal to 11.8% of the Swedish agricultural sector's aggregated turnover (Zanden, Verburg, Schulp, Verkerk, 2017).

A part of the funds was provided by the industry and a part was donated by the state. As Grüner and Muller, (2016) points out, the Industry of agricultural products amounts to 6% of total Swedish export. Even though there were certain oscillations within the period, there was a positive trend. An increase in positive trade balance in countries that export agricultural products was the result of a decrease of import and investment in R&D of new and perfecting existing products. It is quite significant to note that universities participated simultaneously with companies in the research (in 2003 they participated with 22% of total R&D) (Milojević, Mihajlović, Cvijanović, 2012). According Musolino, Massarutto, Carli (2018) the EU's Industry of agricultural products is a strategic asset to the EU economy with its annual output of € 220 billion and its substantial investment in R&D compared to other manufacturing sectors. It's important to note that there is high territorial and sectorial concentration of FDI in India. FDI hasn't helped in solving one of the biggest problems, unbalanced regional development and thus convergence of industrial structures and income among regions. It should be emphasized that the Indian Industry of agricultural products had high growth rate in recent years, thanks to the commitment of MNK agricultural sector to increase the quality and quantity of FDI in R&D.

There was an increase in global agricultural products market in the analysed period. Size of the global agricultural products market reached 1.2 billion \$ in 2017 with a total yearly growth rate of 3-6% and the developing markets are key development carriers. Nominal expenditure value of agricultural products reached 373.9 billion dollars in 2014. Real consumption of agricultural products per capita amounted to 995\$ globally, which is almost triple the amount from 1995. There was an increase in expenditure for agricultural products in Northern America with an average rate of 6.4% a year, Latin America around 6.1% a year and in Western Europe only 2.2% a year from 2014-2017. The development of agricultural programme in China causes an expectation of an increase in expenditure for agricultural items in Asia and Australia for 10%. Large overall investment, especially in developing countries is the result of an increase in

agricultural technology market with expected growth at an average rate of 5.0% a year in the period from 2013-2020, i.e. the projected sales will increase from 363.8 to 513.5 billion dollars and carriers of these activities are multinational companies and FDI. (Shafiullah, Selvanathan, Naranpanawa, 2017)

When traditional exported products are in mind, Croatia had a comparative advantage before the transition period and kept such position afterwards (Andersen, Jensen, Skovsgaard, 2016). Development of the agricultural sector largely depends on procurement of contemporary technology. Researches have shown that in Serbia's case, the state didn't have a long term development strategy and didn't use an active programme of tax policies to help the development of the agricultural sector in the transitional period. In developing countries of Africa, Asia, Latin America and Eastern Europe it is a big problem, because 50% of agricultural products that consumers receive are forgeries, unlike EU where this is less than 1%. As it is pointed out, there is a need for mutual fight and cooperation on national and international level of all participants (Vukoje, 2013).

Research of the agricultural sector in global economy has multiple aspects in literature. Authors examine the role, i.e. significance of the agricultural sector in economic growth, its influence on the healthcare sector, influence of FDI on performances of agricultural companies etc. Majority of authors start in their studies from export of agricultural products analysing competitiveness indexes on the international market. Research of Croatian Industry of agricultural products sector showed that Croatia has expressed comparative advantages, significant added value in exports, i.e. it achieves benefits in international trade of agricultural products, even though the share of this export in total exports is small. As Buturac points out „biggest benefits are achieved in the exchange of agricultural products“ (Andersen, Jensen, Skovsgaard, 2016).

Analysis of competitiveness of the agricultural sector in OECD countries has shown that Germany is the most important trade partner of agricultural products of many countries. Positive results are present in Denmark, Ireland, Slovenia, Sweden and Great Britain, where the share of exports of agricultural products in total exports is high. Schmitz, Zhu and Schmitz, (2016) have pointed out in their competitiveness analysis that Germany has positive comparative advantage in export of agricultural industry, where the Industry of agricultural products has a leading role. Aw and Lee (2017) concluded that highly developed countries achieve positive comparative advantage in exports, thanks to advancement of the sector. It is a general conclusion that the Industry of agricultural products should: encourage transfer of knowledge and technology, promote marketing and other promotional activities, stimulate R&D, train researchers, raise awareness on growing markets and competition, especially in Asian countries and establish strong partnership with important clients in the coming period. In Latin America, the Columbian market is the fourth largest. Competitiveness research on domestic and foreign markets has shown that Columbia imports raw materials for production of generic agricultural products, produces and exports agricultural products of low complexity.

Zekić and Šegrt, (2015) point out that the reason for the high production costs associated with supplies and logistics that affect export growth of the Colombian agricultural sector is that the value of products is the sum of costs and margins that comprise the price paid by the final consumer. Many intermediaries, cost of qualified work force and low level of investment cause additional load. This makes it possible for the Industry of agricultural products to stay competitive only on a local scale. Jiao, Mongol and Zhang (2018) analysed competitive advantages of a company in the agricultural sector in the period from 1971-1989. Researches have shown that R&D and sales force expenditures have indirect and direct effects, respectively, on sustained competitive advantage. Shepherd and Wilson, (2013) point out that on the international market, advertising agricultural products and agricultural products doesn't contribute to exported volume. Instead, quality of product and skill of the work force have a positive and statistically significant influence and FDI have a negative influence on exporting performances of a company. Unlike other industries, it has been noted that in the Industry of agricultural products foreign owned companies export less and are more focused on the domestic market. It is a conclusion that an increase of competitiveness in Indian economy influences global competitiveness of the Indian agricultural industry. Vozarova and Kotulic, (2016) monitored the competitiveness of the Australian Industry of agricultural products in the period from 1975-1992 and concluded that it had a significant increase in size. However, researches of comparative advantage in exports of agricultural products have shown that Australia has a negative position and a small share in export of agricultural products with regard to total exports.

Comparing Italy and Netherlands to OECD countries, it can be concluded that they are net exporters in agricultural products during 1975-1991, and they have very large intra-industry trade indexes for the Western European countries (Belgium, France, Germany, Italy, the Netherlands and the U.K.). On the other hand, Australia exports agricultural products to neighbouring countries such as New Zealand, Hong Kong, Malaysia, Philippines and Thailand. An improvement of infrastructure and technology would have a positive impact on long term comparative advantage. Dealing with exporting performances of agricultural companies, Vozarova and Kotulic, (2016) point out that productivity is an important factor that determines the internationalization strategy.

Strengthening companies on the domestic market, i.e. the companies that manage to leave the low profitability business regime will have a more favourable status on the global market. They concluded that „reducing market barriers, improving factor mobility and providing innovative environment are the basis and assurance of overall improvement of Chinese manufacturing sector“. Caffaro, Mirisola, and Cavallo, (2017) performed a study on the influence of factors on export of agricultural products from Sweden. Analysis covered the period from 1995 to 2010. Empirical findings show that GDP is one of the most significant factors in explaining the value of exported agricultural products. Physical distance from an export destination is in negative relation to export. Price per kilogram is in positive correlation with GDP, while there is no statistical significance of the influence of membership in an union, like for example the EU. However, results have shown that smaller exporting destinations, such as members of the customs union pay lower price per kilo in relation to

other countries. Swedish export is larger in English-speaking countries and the author's conclusion was that cultural similarity doesn't have any influence on the value of export.

Materials and methods

Key features of the Industry of agricultural products in SEE countries in international trade are growth of export orientation, trade deficit (except Slovenia), expressed manufacturing and market concentration. SEE countries have realized 3.2 billion euros in export of agricultural products in 2015. Simultaneously, due to a significantly larger import than export, majority of countries had a relatively low coverage of imports by export. It also indicates that there is a significantly larger consumption than production of agricultural products. Confirmation of the unused export potential and insufficient orientation of the Industry of agricultural products towards export is the share of the analysed country of 0.68% of exports in total world trade. However, it is encouraging to note that there is a mild increase of this share due to above average growth of exports in recent years in all countries (except Montenegro). There is also an increasing significance of the Industry of agricultural products in overall export and economic activity of SEE. For example, share of agricultural products in overall export from 2006-2015 increased from 4.4% to 5.8%.

The authors have shown further in the paper features of export competitiveness and mutual trade with agricultural products in order to research production, geographical factor and influence of competitiveness on total export movements by using the CMS model (Table 1.).

Table 1. Export Performance Indicators in 2015

	Export per capita in 2015 (euro)	Share of total countries export in 2015 (%)	Share in world export in 2015 (%)	Annual export growth rate 2006-2015 (%)	Export share in SEE countries in 2015 (%)	Unit value of export in 2015 (euro/kg)
Bosnia and Herzegovina	14.62	1.12	0.0106	12.12	28.51	29.08
Croatia	133.87	4.90	0.1169	8.71	15.80	113.08
Macedonia	30.79	1.57	0.0131	6.10	76.67	10.69
Montenegro	10.69	2.09	0.0013	-3.04	97.17	5.44
Serbia	27.96	1.65	0.0411	6.82	21.92	11.31
Slovenia	1157.57	10.00	0.4924	7.53	12.84	67.70
SEE Countries	166.68	5.79	0.6757	7.67	14.23	48.99

Source: Authors calculations based on data from the UN COMTRADE Database.

Comparison of the analysed countries reveals that Slovenia has the biggest contribution to global export with 0.49%, then Croatia with 0.11% share. Share of other countries ranges from 0.001-0.05%. According to other export indicators (export per capita, share of total countries export, trade balance) Slovenia shows the best competitive position on exported markets. The only exception is Croatia, who manages to achieve the greatest unit price and thus the biggest value of this indicator.

It is especially interesting to research mutual trade of agricultural products among analysed countries. It's with that purpose that the exporting matrix was constructed.

Analysed countries have cumulatively realised around 466.2 million euros of export on SEE. In relative amounts, it accounts for 14.2% of total export of agricultural products. Comparison of the analysed countries shows significant heterogeneity in absolute value of export and orientation of exports towards mutual markets. Even though the absolute biggest exporters within SEE countries are Slovenia and Croatia, they show significantly smaller orientation of export towards this market, in relation to other analysed countries. For example, out of overall exports of the agricultural industry, Slovenia only refers 12.8% towards this market and Croatia 15.8%. At the same time, other countries show significantly larger orientation of exports towards mutual markets: Montenegro – 97.2%, Macedonia 76.7%, Bosnia and Herzegovina 28.5%, Serbia 21.9%. Part of the reason is that Slovenia and Croatia are members of the EU, letting them have undisturbed placement of goods and therefore an orientation towards this market. On the other hand, the rest of SEE countries are participants of CEFTA agreement so they have partial facilitations of their competitive position on the CEFTA market. Considering that in most of these countries, production and export structure are explicitly concentrated in a few business subjects, such results can partially be explained by existing trade relations and prevailing business policies of agricultural companies.

CMS analysis is applied to quantification of export performance and sources of international competitiveness of the Industry of agricultural products in SEE countries. In economic literature, various factors have been identified as potential factors behind the decrease of share of agricultural export in total world trade:

- a) National exports in agricultural products may be concentrated on products that are experiencing a lack of demand;
- b) The concentration of exports of agricultural products to relatively stagnant regions;
- c) Weak international competitiveness of the domestic agricultural industry.

Constant market share approach (CMS) is able to explain these effects in case of the Industry of agricultural products in SEE countries. Scherer, Verburga and Schulp, (2018) was the first to apply the CMS method in research. Methodological and empirical improvements of the CMS technique are proposed by numerous authors who all used a similar concep.

According to the CMS concept, export performance of a certain industry mainly depends on product composition, geographical distribution of export and the level of international competitiveness. Trends in export of the Industry of agricultural products in SEE countries based on this methodology could be decomposed in three different parts.

According to the revised version of the constant market share (Backović, Vuleta, and Popović, 2014) trends in total exports can be decomposed into four components:

$$TE = CE + PE + GE + RE$$

Where

TE= total effect

CE= competitiveness effect

PE= product effect

GE= geographical effect

RE = residual effect

Total effect is calculated as follows:

$$TE = \left[\frac{\sum_m \sum_p q^t_{m,p}}{\sum_m \sum_p Q^t_{m,p}} - \frac{\sum_m \sum_p q^{t-1}_{m,p}}{\sum_m \sum_p Q^{t-1}_{m,p}} \right] \times 100$$

Competitiveness effect:

$$CE = \sum_m \sum_p 0.5 \times \left[\frac{q^t_{m,p}}{Q^t_{m,p}} - \frac{q^{t-1}_{m,p}}{Q^{t-1}_{m,p}} \right] \times \left[\frac{Q^{t-1}_{m,p}}{\sum_m \sum_p Q^{t-1}_{m,p}} + \frac{Q^t_{m,p}}{\sum_m \sum_p Q^t_{m,p}} \right] \times 100$$

Product effect:

$$PE = \sum_m \sum_p 0.5 \times \left[\frac{q^{t-1}_{m,p}}{Q^{t-1}_{m,p}} + \frac{q^t_{m,p}}{Q^t_{m,p}} \right] \times \left[\frac{\sum_m Q^{t-1}_{m,p}}{\sum_m \sum_p Q^{t-1}_{m,p}} - \frac{\sum_m Q^t_{m,p}}{\sum_m \sum_p Q^t_{m,p}} \right] \times 100$$

Geographical effect:

$$GE = \sum_m \sum_p 0.5 \times \left[\frac{q^{t-1}_{m,p}}{Q^{t-1}_{m,p}} + \frac{q^t_{m,p}}{Q^t_{m,p}} \right] \times \left[\frac{\sum_p Q^t_{m,p}}{\sum_m \sum_p Q^t_{m,p}} - \frac{\sum_p Q^{t-1}_{m,p}}{\sum_m \sum_p Q^{t-1}_{m,p}} \right] \times 100$$

Residual effect equals the difference between total effect and individual components:

$$RE = TE - (CE + PE + GE)$$

where:

q^t =aggregate exports of an industry

q^t_p =exports of the p-th commodity of an industry

Q^t_p = world exports of the p-th commodity

s^t =aggregate exports share of a certain industry in total world exports of the same industry

s^t_p = share of the p-th commodity of a certain industry in the p-th commodity of world exports of the same industry

m = market index

p = product index

t = time

Constant market share model was used to explore export performance of the Industry of agricultural products of SEE countries on the global market from 2007-2015. The analysis of changes in export shares was based on three sub-periods, 2007-2009, 2010-2012, and 2013-2015. The formation of three sub-periods makes the analysis more plausible and avoids issues related to business cycles. The empirical work was focused on fourteen major products. Export data set was obtained from UN Comtrade database. Data set was disaggregated at four HTS code levels. Data values are expressed in current million Euros. The referent period is 2007- 2015.

The CMS method presents a convenient analytical framework, but the application and interpretation of the method has some limitations that must be taken into account. The most significant limitation of the CMS is that it is applied to a discrete time period. Qiu, Zhu, Wang, Cheng, (2007) proposes a satisfactory solution for this limitation, by applying decomposition to discrete observations at the beginning and the end of the period. Qiu, Zhu, Wang, Cheng, (2007) has been extended using dynamic development, with the decomposition method applied to each observation of the time horizon, and the results of the CMS analysis are time series. Interpretation of the residual effect is not as straightforward as the interpretation of competitiveness, product, or the geographical effect. A negative residual effect implies a failure in maintaining constant market shares and according to basic assumption of CMS analysis, this residual effect is related to changes in relative prices. However, the basic assumption ignores the impact of numerous other factors that affect the stability of the country's exports. The most important are: differences in quality, development of new exports; improvements in efficiency of marketing or in the terms of financing export activities. In spite of those limitations and constraints, dynamic consideration of the CMS analysis in general successfully identifies changes in the trade structure and competitiveness over time.

Results

The CMS effects – total effect (TE), competitiveness effect (CE), product composition effect (PE) and geographical distribution effect (GE) have been calculated for export of the Industry of agricultural products on the global market. A positive value of individual effects indicates a gain in market share of the Industry of agricultural products while a negative value indicates a loss.

Regarding total effect (TE) in the global market, negative signs for SEE countries are recorded in 2009 and in the period, from 2014-2015 which is primarily attributable to the negative competitiveness effect (CE). It reveals the inability of the Industry of agricultural products of SEE countries to increase their market share due to competitiveness factors, independently of structural developments in the market or in product trade patterns. A decrease in export competitiveness in 2009 was as expected considering the consequences of global economic crisis which among other things, shed on the Industry of agricultural products of SEE countries. Despite export recovery from 2010-2013, newer movements from 2014 and 2015 confirm an ever increasing competitive pressure on international exported markets and a decrease in exporting competitiveness. Observing the distribution of CMS effect among countries, it can be

said that the biggest contribution to such movements was given by the most developed country in agricultural products – Slovenia. Expectations of positive influences for export of agricultural products due to Croatia's admittance to the EU, were not achieved in its first years of membership (2013, 2014). However, in 2015 with Montenegro, Croatia was the only country in SEE to note a positive total effect (TE) and competitiveness effect (CE). Results for Serbia, Bosnia and Herzegovina and Macedonia also confirm that the competitiveness effect had the biggest effect on export. Even though all SEE countries improved their mutual trade of agricultural products in 2015 and in such a way improved their exporting competitiveness on the SEE market, it wasn't sufficient to increase overall export competitiveness, considering a more significant loss of competitiveness on other exported markets (EU, Russia).

Although product effect (PE), cumulative for SEE countries, was negative in most years of the observed period, it was very close to zero. It can be concluded that product mix of exported agricultural products on the global market is not an obstacle for export expansion. Export of agricultural products of SEE countries is concentrated on commodities in which foreign demand is relatively stable even in periods of economic crisis.

The geographical effect was negative in years 2009, 2012 and in the period from 2014-2015. It reveals an unfavourable geographical export structure of the Industry of agricultural products of SEE countries due to high export concentration to markets in which demand is growing slower (EU) in comparison to fast growing world markets. The EU presents a large share in the export structure of agricultural products of SEE countries, which is as expected considering the closeness of the market, existing trade connection, membership and integration processes of SEE countries in the EU. Negative values of geographical effects (GE) suggest the need of larger investment in research of fast growing markets.

In general, it is obvious that loss or gain of competitiveness of the Industry of agricultural products of SEE countries is the most important factor that determines its share of the international market. The impact of product structure is more or less neutral while regional reorientation of export to countries with stable growth of international trade could be helpful for export performance of the Industry of agricultural products in analysed countries.

The mentioned increase in market share is the result of a very uneven movement during the observed period. After the decrease of exports in 2009, which was the consequence of a drop in foreign demand, the Industry of agricultural products recovered and reached even higher exports than recorded in the prerecession period. The relatively weak domestic demand and highly competitive domestic market are factors that contributed to reorientation of domestic agricultural producers to international markets. Additionally, the integration process to the EU brought new challenges in front of the Industry of agricultural products in SEE countries as well as the reconstruction of production mix and technology, which was needed in order to regain competitiveness on the EU market. Despite an increase from 2007-2015, the newest trends from 2015 confirm a fall in export competitiveness in most of exported products. The fall in competitiveness was partly a consequence of insufficient export orientation on fast growing markets,

as well as insufficient mutual trade with agricultural products, which would be able to significantly contribute to the improvement of overall export competitiveness, considering the closeness of the market, knowledge of tastes and consumer habits (Scherer, Verburg, Schulp, C.J.E. 2018), existing trade connection. At the same time, a negative sign in product effect (PE) in 2015 in most products shows the need of larger investment in product innovation.

Discussions and Conclusions

Agricultural products and agricultural products market in analysed countries is characterised by domination of foreign producers, large market concentration, expressed pressure by competitors, as well as frequent takeovers and mergers of businesses. According to production volume, number of businesses and employment, Slovenia's Industry of agricultural products is the best and Croatia's is right behind her. According to the observed economic structure, Montenegro has the lowest representation of its Industry of agricultural products in its economics structure. In recent years, agricultural producers in SEE countries have moved a major part of their production to foreign markets. Some of the reasons are: relatively small domestic markets, an ever increasing competitive pressure and decreased domestic demand due to recession and slow economic growth. The integration process improved exports on foreign markets. On one side they ease access to foreign markets, and on the other bring larger exposure to competitive pressure on those markets. Therefore an orientation towards export and improvement of export competitiveness are preconditions to successful development of the agricultural industry.

Research results indicate that SEE countries enforced their mutual trade of agricultural products and therefore created prerequisites to promote competitiveness on SEE market. However, there wasn't sufficient increase in competitiveness in the analysed period in order to mitigate the loss made on other exported markets (EU, Russia). With the exception of Slovenia, import is significantly larger than export in SEE countries, which conditions a relatively small coverage of import through export. High import rates point to a significantly larger consumption of agricultural products in relation to their production. Despite that, the Industry of agricultural products has an ever increasing significance on overall export and economic activity of SEE countries. Out of the analysed SEE countries, Slovenia and Croatia have the biggest share in total world export. Analysis of other export indicators (export per capita, share of total countries export, trade balance) has a similar export structure. Value of export of SEE countries on mutual market shows significant heterogeneity. Slovenia and Croatia have the biggest export value, but the lowest export orientation towards mutual market, primarily due to the fact that they are oriented towards EU market. Serbia, Bosnia and Herzegovina and Montenegro have the biggest mutual trade rates thanks to their membership in CEFTA.

Total effect (TE) on the global market is negative for SEE countries in 2009 and in the period from 2014-2015, which is in direct correlation with negative values of competitiveness effect (CE). Analysis of CMS effect distribution in analysed countries

shows positive values in Slovenia throughout the whole period with the exception in 2009 and in the period from 2014-2015. Results for Serbia, Bosnia and Herzegovina and Macedonia are extremely unfavourable and show the presence of negative total effect (TE) and competitiveness effect (CE) correlations. Although product effect (PE), which is cumulative for SEE countries, was negative in most years of the observed period. At the same time, negative value of product effect in most countries shows the need of investing in product innovation. The geographical effect was negative in years 2009, 2012 and in the period from 2014-2015. Competitiveness of the Industry of agricultural products of SEE countries is a deciding factor for positioning of individual economies on the international market. Influence of product structure on total effect (TE) is neutral while geographical orientation is significant for promotion of exporting performances in the Industry of agricultural products of the analysed countries.

The integration process of SEE countries in the EU brings new challenges in front of the Industry of agricultural products as well as the need for reconstruction of production and promotion of technology in order to restore competitiveness. Despite an increase of agricultural products in market share of exports in the analysed period, trends from 2015 confirm a fall in export competitiveness in product. A fall in competitiveness is partially a consequence of insufficient export orientation to fast growing markets, as well as insufficient mutual trade in agricultural products, which would, considering closeness of the market, knowledge of tastes and consumer habits and existing trade connections be able to contribute to a significant improvement of export competitiveness.

Conflict of interests

The authors declare no conflict of interest.

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