ISSN 1392-2785 ENGINEERING ECONOMICS. 2006. No 4 (49)
THE ECONOMIC CONDITIONS OF ENTERPRISE FUNCTIONING

Theory of Constraints and its Usage to Evaluate the Governmental Support for Business

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The affirmations of the theory of Constraints (TOC) have a wide usage in the evaluation of different aspects of management. The evaluation of economic processes of the country was not a key to the representatives of this theory. The scientific and practical novelty of this article lies in that the governmental trade support was evaluated with the application of the TOC.

The article gives the domains analyzed by the representatives of the TOC. This theory is well employed to tackle the aspects of strategy development, project management, marketing, finance, quality management, production timing and other sides of company's administration. The main affirmations of the Theory of Constraints are also revealed here. They are extended and related to the evaluation aspects of the governmental trade support. With the application of the chain allegory of the Theory of Constraints it was settled that the support would gain effectiveness only if it increased the permeability in the weakest chain of the industry.

Despite the fact that such kind of support is substantiated one must consider possible issues that may result in failure to increase permeability in the weakest chain (in the Bottleneck). This article gives the analysis of the issues that induce danger when allotting the support not to increase the permeability of the industry:

- *The support will not increase the permeability once it is dedicated to the other branch rather than the Bottleneck.*
- *The governmental trade support can turn to a problem itself. It can cause constraint if the government gives the support to individual companies that run the Bottleneck business of the branch. The companies having gained no support can encounter restricted permeability of themselves.*
- *Increased income of the Bottleneck business of the branch not necessarily can stay with the Bottleneck as the support gained can be repartitioned among the stronger chain participants.*
- *Increased income of the Bottleneck business of the branch not necessarily can be used to enlarge the permeability. They can present additional source of income that will not be invested anywhere.*

Evaluating trade support with the aid of the TOC affirmations it was found that one of the favorable forms of the governmental trade support can be scientific researches sponsored by the government.

Keywords: *theory of Constraints (TOC), governmental trade support.*

Introduction

Theory of Constraints suggests different viewpoint to issues of a company. It recommends that managers do not strive to solve all problems in turn, but try to determine the essential constraint and focus on it. This theory gives a broader comprehension of company's limits rather than the theory of traditional management. With a broader comprehension of a company one can try to apply the philosophy of this theory to solve economic issues relating to the governmental trade support.

The aim of this article is to give the evaluation of trade support by using the Theory of Constraints.

The goals of the article are the following ones:

- to describe the practical aspects of the TOC;
- to set out the essential affirmations of the TOC;
- to relate TOC affirmations to the economic domain analyzed;
- to identify the existence of the support repartition issue among chain participants;
- by using the affirmations of the TOC to establish the causes of inefficient support.

The methods such as scientific literature analysis to give the evaluation of trade support by applying the TOC and the Interview method to estimate fertilizers price fluctuation tendencies are applied in this article.

The core of Theory of Constraints and its applications

One of the TOC originators Eliyahu M. Goldratt together with his colleagues Jeff Cox and Eli Schragenheim wrote the book cycle "The Goal" (1994, 2002, 2003) that was dedicated to the Theory of Constraints. This theory features a wide range of issues analyzed. It can be applicable to solve strategy development, project management, marketing, finance, quality management, production timing and other sides of company's administration. Issues analyzed by the TOC representatives are shown in table.

In Lithuania the TOC applications are also under concern. Sarunas Broga (2005) applied the Theory of Constraints by describing the causes of inefficiency in the public sector. However, nobody from the representatives mentioned above (see table 1) followed the TOC affirmations to evaluate economic processes of the country. In this chapter the main TOC affirmations will be given and in the following one using the Theory of Constraints the support evaluation will be done.

Table

Theory of Constraints and its applications

TOC applications	*Aspect of Strategical Thinking*	*Aspexct of Marketing and Sales*	*Aspect of Production Timing*	*Aspect of Project Management*	*Aspect of Finance and Cost Accounting*	*Aspect of Quality Management*
TOC representatives having analyzed the subject	H.W. Dettmer (1997), H.W. Dettmer (1998), L. Scheinkopf (1999), E. Schragenheim (1999).	N.Rackham (1998), G.I. Kendall (1998), W.A. Woehr (2002).	R.E. Stein (1996), J.F. Cox and M.S. Spencer (1997), M.J. Woeppel (2000), C.A. Ptak, E. Schragenheim (2000), E.Schragenheim and H.W. Dettmer (2000).	E.M. Goldratt (1997), R.C. Newbold (1998), L.P. Leach (2000).	E.Norreen, D. Smith and J.T. Mackey (1995), D.Smith (2000), J.A. Caspari and P Caspari (2004).	R.E. Stein (1994), M.Imai (1997), T.Corbett (1998),

Theory of Constraints similar to other management theories gives the analysis of the directions of the effectiveness of a company. According to the TOC representatives, a company could compete effectively with the other ones only under condition that it is able to control two indicators, that is company's expenditures and permeability[11]. The indicators complement each other and reflect company's profit. They are both important. If the company has small costs and no sales and, on the contrary, meet high income but they will equal costs the company gains no profit in both cases.

E.M. Goldratt (1997) in the book "Critical chain" and H.W. Dettmer (1997) in the book "Goldratt's Theory of Constraints: a systems approach to continuous improvement" compare the company to a chain and every single subdivision determine as a separate chain element.

According to E.M. Goldratt (1994, 1997, 2002, 2003) and T.B.C. McMuller (1998) company's expenditures equal the expenditures sum of all subdivisions in the same way as a whole chain weight equals the weight sum of all its elements. Thus, following this allegory, reducing expenditures in one subdivision the reduction is achieved in total expenses as well. That is, the chain weights less. This affirmation gives the warrant to the philosophy of local optimum researches, or in another words as the TOC representatives call to the philosophy of *the world of costs*.

But, however, as it was mentioned above, the main goal of the company is not the reduction of expenses. To gain a better profit company must earn more income. The latter grows when the company buys raw materials and quickly turns them into product, and as fast as possible sells it to a customer. E.M. Goldratt (1994, 1997, 2002, 2003) and T.B.C. McMullen (1998) called this process *the permeability of the company*. By applying chain's allegory one can imagine the permeability of the company as the solidity of a chain. The permeability of the company (the solidity of the chain) depends on the weakest subdivision (the weakest chain element). That is why having only, improved the performance of the weakest subdivision, there is a hope to increase the permeability of the whole company. Thus, in accordance with the permeability world rules one must search for and focus on the constraint. Sometimes constraint is determined as the Bottleneck or Funnel.

Eliyahu M. Goldratt (1994, 1997, 2002, 2003), H.W. Dettmer (1997) and T.B.C. McMullen (1998) specify the essential management issue, that is the compatibility of the evaluation rates of the company's activity. In line with the *world of costs* rules the only way to achieve good expense rates is to have all local rates high, and following the *permeability world* rules there is no way how to achieve good permeability rates due to high all local rates. The foregone assumption stands on the management account theory and the latter refers to the TOC theory.

The company adjusting performance of other subdivisions to the Bottleneck will not increase permeability but will start expense controlling. This happens because the stock quantity at the Bottleneck is controlled under the Bottleneck permeability speed. Thus, the assumption that the only way to achieve good company rates is high all local rates turn to be false.

According to the TOC representatives the main issue of the companies lies in that managing directors follow wrong assumption and try to increase all local rates ignoring the point of permeability constraint. Accumulated stock processing cannot exceed the Bottleneck permeability speed, despite what the Bottleneck speed is the company's stock flood into the Bottleneck. This increases costs for new raw material purchasing and unfinished goods (stock) warehousing. But having improved subdivision performance that had no constraint, the permeability rate would not be enhanced anyway. Due to these reasons, it is necessary to identify the Bottleneck and subordinate all system to the Bottleneck speed.

Company's constraint can be both physical (the lack of outfits, equipment, personnel, etc.) and nonphysical (improper company's strategy, production quality unconformable to market needs, innovation shortage, etc.). The representatives of Theory of Constraints affirm that physical constraint is easy to notice. However, companies often face nonphysical constraints.

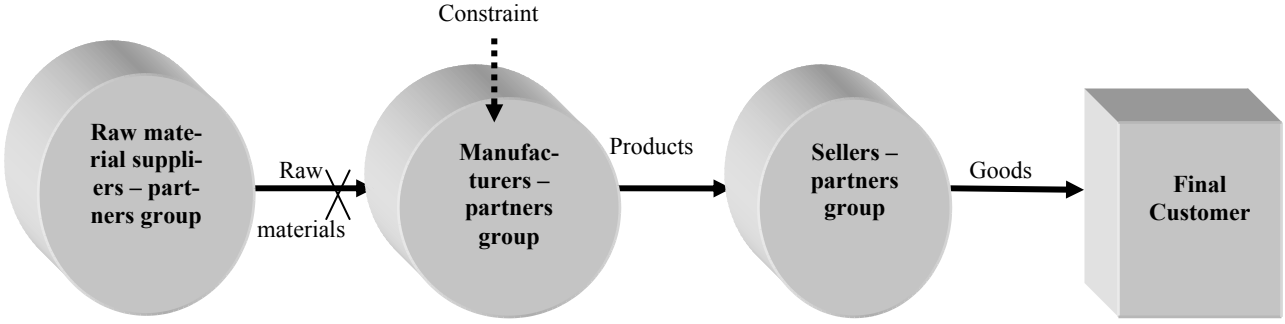
The applications of the Theory of Constraints to evaluate governmental support

E.M. Goldratt (2202) extends company's comprehension limits. The product way to the final customer is often very long. Factories produce goods from raw materials,

[1] Permeability is the speed by which company's raw materials are turned into products and sold to a customer

then production made is purchased by wholesales and finally retailers sell to the final customer. The production brought ex factory in bookkeeping papers is recorded as sold goods. But actually they will be sold when the final customer purchases goods from the retailer. It is important that permeability will speed equally in all chain elements, that is both in the factory and in wholesaler's or retailer's place and nowhere stock will be accumulated. If one of the chain participants – supplier, factory, wholesaler or retailer – has the permeability declining then automatically the permeability of other chain participants will start decreasing as well. Affirming above TOC representatives keep in view all companies' group operating in that branch. This is one of the contact points with economy.

From our point of view the partners operating in the branch can be reckoned as the individual subdivisions of the integrated company where suppliers can be referred to the first subdivision, factories to the second one and sellers to the third one. The allotment can be more detailed. Though there is a competition between the same business running companies but the seller of the production of the factory turns to be the partner of the factory. The supplier (the partner) will not sell his raw materials until the factory (the partner) calls for them. And the demand will come after the sellers (the partners) sell goods to the final customers. Thus, the supplier practically sells his raw materials once the sellers realize production to final customer. ***The integrated partners company of the branch*** will have the immediate constraint of the Bottleneck (of a participant of the companies partners group) that has the smallest permeability (see figure 1).



Source: By the author in reference with the Goal I, the Goal II, the Goal III, Critical chain

Figure 1. The integrated partners company of the branch

Consequently, the company has its own capacities to readjust to the capacities of the Bottleneck partners group in order they do not accumulate stock and do not grow costs.

One of nonphysical constraint of the company can become the government policy and support gained by other companies. Such support can distort market and reduce the permeability of more efficient company. **Due to this reason the governmental trade support will not be substantiated if it is allotted to individual chain participants but not to all Bottleneck business running companies. In this case companies running the same business face different conditions, that is the ones with no support gained will encounter the governmental support made constraint.**

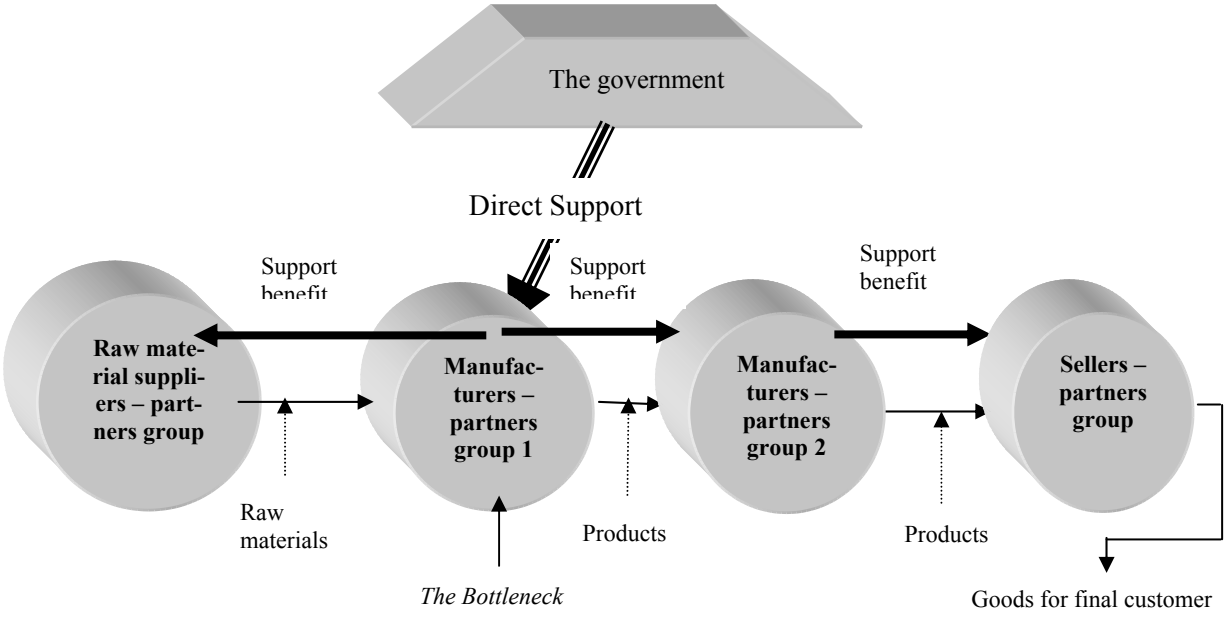


Figure 2. Support repartition in the partners company of the branch

The government supports different trade branches such as agriculture or developing and promising branches, and allots support to all entrepreneurs running that business. **The support pursuant to the Theory of Constraints might be substantiated provided that the branch Bottleneck was promoted** (see figure 2). **Due to this reason the whole branch permeability will expand and the branch will turn to a more competitive one.** In the figure 2 the Bottleneck is the manufacturers partners group 1. Having gained the governmental support manufacturers would acquire productive equipment and that would enable to increase their permeability, and accordingly the whole chain permeability would rise. Suppliers could provide more raw materials, sellers could sell a better quantity of products, and final customer would get more goods. In this case the productivity of the industry would increase and country competitiveness would develop.

With the trade support the government usually aims for increasing country competitiveness, and in accordance with the TOC theory that would be the branch permeability enlargement. But there is a question – is the support necessary for the weakest branch chain is really attained by her? To analyze this the grain farm was chosen.

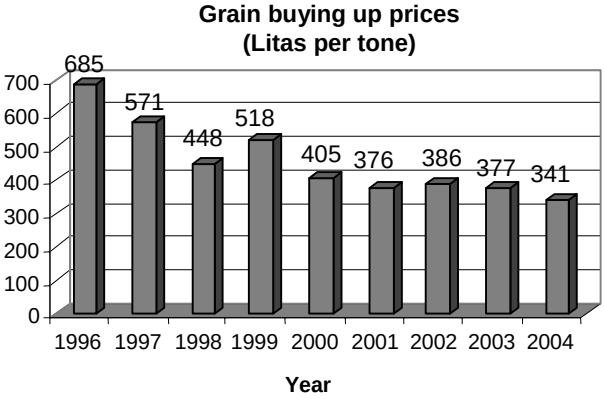
The farmer cultivating grain gets direct payoffs for his crops. As per data of National Paying Agency under the Ministry of Agriculture (2006) direct support payoff for a grain hectare was 335.31 litas. **The support suitability criteria** mentioned in the article such as **the Bottleneck support of the industry and equal conditions allotment to all market participants are implemented** because in this case the support is granted to all grain farmers that properly declared grain crops available.

The government sponsors grain-cultivating farmers in order to increase Lithuanian grain industry competitiveness. Other integrated units of the company such as *suppliers* (fertilizers and chemical manufacturers, land tenants), *manufacturers group 2* (grain remakers, mills), *manufacturers group 3* (bakeries) and *sellers group* (food shops) are not Bottlenecks of the industry. Even though grain farmers are provided with the support the cost price of grain cultivation is growing, as well.

The research fulfilled by R. Matiusaityte and E. Jasinskas (2004) showed that after the establishment of the direct crop payoffs land rent price for Kedainiai district farmers increased up to 100 litas. Similar situation refers to the fertilizers and chemical prices, as well. By the Interview method Prienai district farmer was questioned. It was found that in 2004 and 2005 the prices of fertilizers the farmer used in the farm also grew up.

Despite the cost price of grain cultivation increased the buying up prices not even grew but dropped (see figure 3).

Other chain participants of the industry such as fertilizers manufacturers and grain buyers have increased their profits. According to the data of ELTA (2005) the nitrogen fertilisezs and chemicals producer AB "Achema" has the biggest fertilizers market in Lithuania. During the 9 months in 2005 the company's income amounted to 685 million litas, that is 51 percent more than in the same period in 2004 (454 million litas). The profit of chain participants may have grown due to the innovations and favorable fertilizers prices worldwide. But, however, once the farmers cultivating grain had not gained directs payoffs it would have been unprofitable for them to cultivate grain due to the increased costs and decreased grain prices. Though the direct crops support has been executed just for the second year the bigger profit can exhilarate not grain cultivators but other chain participants. **Stated facts above show that the direct support allotted to the grain cultivators actually comes to other chain participants such as tenants, fertilizers and chemicals producers and grain remakers.**



Source: Department of Statistics Lithuania (2006)

Figure 3. The dynamics of grain buying prices

It is necessary to note that market participants are interdependent. This connection was described before as *the integrated partners company of the branch*. Although the government allotted support to the Bottleneck industry the profit and support among the participants of the integrated company can spread differently. The problem lies in that the strongest chain participants will strive to pocket the bigger portion of profit and support despite the Bottleneck needs support the most. This situation is depicted in figure 2. The government here provides with support the Bottleneck but the benefit is gained by other chain participants.

Due to the governmental direct support to the Bottleneck other subjects can make a fortune. To our mind profit repartition results in that the Bottleneck depends on the other chain participant, which often turns to be the only Bottleneck supplier or wholesaler. Other branch participants being able to replace one partner running the Bottleneck business with another have no need to increase the Bottleneck permeability. That is why they grab the additional income dedicated to the Bottleneck.

Applying the TOC chain allegory we defined inefficiency of the direct support. It does not increase the Bottleneck permeability of the industry as it comes to the stronger chain participants of the industry. Even though the support was not repartitioned among chain participants the Bottleneck with additional income gained not necessarily would increase permeability investing to the new technologies.

When evaluating the support with the TOC affirmations the benefit of the direct support cannot be substantiated to the branch of economics. That is the reason why one more criterion must be applied to the support: it must

be kept by the Bottleneck. The specimen of such support could be the scientific researches financed by the government. Widely spread information about the new branch technologies will result in that only the Bottlenecks of the industry would stay in the market that would be able to practise the information obtained from the researches. There would be no market distortion despite the information had been opened to all enterprises that run the Bottleneck business. Free knowledge as a form of support could not be available to other chain participants that run other than Bottleneck business. Suppliers, production remakers and sellers could access that kind of support only under condition that they start vertical integration and launch the Bottleneck business.

Conclusions

Management theory was related with economics using the integrated chain allegory. According to the allegory industry subjects operating in the separate industries are reckoned the partners. The partners in the branch are considered the individual subdivisions of the integrated company. Suppliers were classed to the first company's subdivision, factories to the second one, sellers to a third one, etc. Despite the competition between the same business running companies the seller of the goods of the factory usually is the partner of the manufacturer. The supplier (the partner) will not sell his raw material until the factory (the partner) calls for them. And the demand will come after the sellers (the partners) sell goods to the final customers.

The support pursuant to the TOC theory may be substantiated provided that it increases the permeability of the Bottleneck of the industry. But it is necessary to note the causes under which the Bottleneck permeability increase will be zero. They are as follows:

- The support will not be substantiated if it is allotted not to the Bottleneck of the industry. The reason is that in accordance with the Theory of Constraints the branch permeability will grow once the permeability in the Bottleneck is increased.
- The governmental trade support can bring constraint itself once the government gives the support to the individual enterprises that run the Bottleneck business of the industry. In this case the permeability of one company will be increased on the account of another one, and total Bottleneck permeability will not rise.
- The support allotted to all enterprises of the Bottleneck business of the industry will be inefficient once it is repartitioned among stronger branch participants.
- The support allotted to tall enterprises of the Bottleneck business of the industry will be inefficient once the permeability of the Bottleneck of the industry is not increased.

To fulfill the governmental support requirements stated above the most suitable support is the scientific researches sponsored by the government that are dedicated to increase the permeability of the industry and the Bottleneck.

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Apribojimų teorija (TOC) ir jos panaudojimas vertinant valstybės paramą verslui

Santrauka

TOC teorija siūlo vadybininkams kitaip pažvelgti į kylančias problemas įmonėje. Nesistengti spręsti visų problemų iš eilės, o nustatyti esminį apribojimą ir sutelkti dėmesį į jį. TOC teorijos teiginiai plačiai naudojami vertinant įvairius valdymo aspektus. TOC teorija pritaikyta sprendžiant strategijos kūrimo, projektų valdymo, marketingo, finansų, kokybės valdymo, gamybos sinchronizavimo ir kitus įmonės valdymo aspektus.

Svarbiausia įmonių problema TOC teorijos atstovai laiko ta, kad vadovai remiasi neteisinga prielaida ir stengiasi padidinti visus vietinius rodiklius, neatsižvelgdami į tai, kur yra laidumo apribojimas. Susikaupusios atsargos negali būti greičiau apdorotos už ,,butelio kakliuko" laidumo greitį. Nepaisant ,,butelio kakliuko" laidumo greičio, įmonėje daugėja atsargų prie ,,butelio kakliuko", tai didina išlaidas skirtas naujoms žaliavoms įsigyti ir nebaigtiems gaminiams (atsargoms) sandėliuoti. Pagerinus įmonės skyriaus darbą, kuris nebuvo ribojamas, įmonės pralaidumo rodiklio nepadidintume. Dėl šių priežasčių įmonei būtina nustatyti ,,butelio kakliuką" ir suderinti visą sistemą su „butelio kakliuko" greičiu.

TOC teorijos atstovai: H.W. Dettmer (1997), H.W. Dettmer (1998), L. Scheinkopf (1999), E. Schragenheim (1999), N.Rackham (1998), G.I. Kendall (1998), W.A. Woehr (2002), R.E. Stein (1996), J.F. Cox ir M.S. Spencer (1997), M.J. Woeppel (2000), C.A. Ptak ir E. Schragenheim (2000), E.Schragenheim ir H.W. Dettmer (2000), E.M. Goldratt (1997), R.C. Newbold (1998), L.P. Leach (2000). E.Norreen, D. Smith ir J.T. Mackey (1995), D.Smith (2000), J.A. Caspari ir P Caspari (2004) R.E. Stein (1994), M.Imai (1997), T.Corbett (1998) TOC teorijos teiginių nevartojo vertinant šalyje vykstančius ekonominius procesus. Šio straipsnio mokslinis ir praktinis naujumas tas, kad taikant šią teoriją įvertinta valstybės parama verslui.

Ryškiausiai atskleisti TOC teorijos atstovų teiginiai, kurie straipsnyje išplėsti ir susieti su valstybės teikiamos paramos verslui įvertinimo aspektais. TOC teorijos atstovai įmonę lygina su grandine, kiekvieną atskirą padalinį apibrėždami kaip atskirą grandinės grandį. Šakoje veikiančius partnerius traktavome kaip sujungtos įmonės atskirus skyrius, žaliavų tiekėjus priskirdami vienam įmonės skyriui, gamyklas - antram skyriui, pardavėjus - trečiam ir t.t. Nors tarp ta pačia veikla užsiimančių įmonių vyksta konkurencija, bet gamyklos prekės pardavėjas yra tos gamyklos partneris. Žaliavų tiekėjas (partneris) galės vėl žaliavas parduoti tada, kai gamyklai (partneriui) jų vėl prireiks, o prireiks tik tada, kai pardavėjai (partneriai) parduos prekes galutiniams vartotojams. Tokia ***sujungta ūkio šakos partnerių įmonė,*** tiesiogiai bus apribota to ,,butelio kakliuko" (įmonių partnerių grupės dalyvio), kurio laidumas yra mažiausias.

Įmonė savo pajėgumus turi priderinti prie ,,butelio kakliuko" partnerių grupės pajėgumo, kad pas juos nesikauptų atsargų ir nedidėtų išlaidų. Ekonomikos šakos konkurencingumas didės didėjant ekonomikos šakos laidumui.

Paprastai vyriausybė, teikdama paramą verslui, siekia didinti šalies konkurencingumą pagal TOC teoriją; tai būtų šakos laidumo didinimas. Tačiau ar išties parama, skirta silpniausiai šakos grandžiai, šiai grandžiai ir atitenka.

Analizei pasirinkome grūdų ūkį. Ūkininkas, turintis grūdų ūkį, gauna tiesiogines išmokas už pasėlius. Valstybė remia javus auginančius ūkininkus, kadangi siekiama didinti Lietuvos grūdų ūkio konkurencingumą. Kitos sujungtos įmonės grandys: *žaliavų tiekėjai* – trąšų, chemikalų gamintojai, žemės nuomotojai, *gamintojų grupė 2* – grūdų perdirbėjai malūnai, *gamintojų grupė 3* - kepyklos, *pardavėjų grupė* – maisto produktų parduotuvės nėra ūkio šakos ,,butelio kakliukai".

Nors teikiama parama grūdų augintojams tačiau kartu auga ir ūkininko grūdų auginimo savikaina, grūdų supirkimo kainos mažėja. Jei grūdus auginantys ūkininkai nebūtų gavę tiesioginių išmokų, tai jiems dėl padidėjusių kaštų ir sumažėjusių grūdų kainų būtų nuostolinga auginti grūdus. Nors tiesioginė parama už pasėlius teikiama tik antrus metus, didesniais pelnais gali pasidžiaugti ne grūdų augintojai, bet kiti grandinės dalyviai. ***Paminėti faktai rodo, kad parama, išmokama tiesiogiai grūdų augintojui, atitenka kitiems grandinės dalyviams: nuomininkams, trąšų ir chemikalų gamintojams, grūdų perdirbėjams.***

Paramą pagal TOC teoriją galima pateisinti, jei ja padidinsime ūkio šakos ,,butelio kakliuko" laidumą, o kartu ir ūkios šakos konkurencingumą. Parama, teikiama visoms įmonėms, užsiimančioms ūkio šakos ,,butelio kakliuko" verslu, bus neefektyvi, jei, teikdami tokią paramą, nepadidinsime ūkio šakos ,,butelio kakliuko" laidumo.

Atlikta valstybės paramos grūdų ūkiui analizė parodė, kad ši parama nedidina grūdų ūkio laidumo. Būtina atkreipti dėmesį, kad rinkos dalyviai yra susiję tarpusavyje. Šią sąsają jau anksčiau apibrėžėme kaip sujungtą ūkio šakos partnerių įmonę. Tarp sujungtos įmonės dalyvių pelnas ir parama gali pasiskirstyti įvairiai, nors valstybė ir teiktų paramą ūkio šakos ,,butelio kakliukui". Problema yra ta, kad, žiūrint iš siauros pozicijos pelno ir paramos, „liūto dalį" stengsis pasisavinti stipriausi grandinės dalyviai, nors parama labiausiai reikalinga „butelio kakliukui". Tai atsitinka tada kai valstybė teikia tiesioginę paramą ,,butelio kakliukui", bet naudą iš paramos gauna ne ,,butelio kakliukas", o kiti grandinės dalyviai.

Valstybei tiesioginę paramą teikiant, „butelio kakliukui", dėl paramos gali pradėti lobti kiti subjektai. Mūsų nuomone, pelnų persiskirstymą lemia tai, kad „butelio kakliukas" priklauso nuo kito grandinės dalyvio, kuris dažniausiai yra vienintelis butelio kakliuko žaliavų tiekėjas ar produkcijos supirkėjas. Kiti šakos dalyviai, galėdami vieną ,,butelio kakliuko" veikla užsiimantį partnerį nesunkiai pakeisti kitu, nejaučia poreikio didinti „butelio kakliuko" laidumo, todėl papildomai gaunamas „butelio kakliuko" pajamas pasisavina sau.

Naudodami TOC teorijos grandinės alegoriją, nustatėme tiesioginės paramos neefektyvumą, nes tiesioginė parama nepadidina ūkio šakos ,,butelio kakliuko" laidumo, kadangi ji atitenka stipresniems ūkio šakos grandinės dalyviams. Net jei parama nepersiskirstytų tarp grandinės dalyvių, „butelio kakliukas", gaudamas papildomų pajamų nebūtinai didins laidumą investuodamas į naujas technologijas.

Šiems iškeltiems valstybės paramos reikalavimams labiausiai tinkama parama – valstybės finansuojami moksliniai tyrimai, skirti ūkio šakos „butelio kakliuko" laidumui didinti.

Vertinant paramą naudojant apribojimo teorijos teiginius, negalime pagrįsti tiesioginės paramos nauda ekonomikos šakai. Todėl paramai turi būti taikomas dar vienas kriterijus – parama turi likti ūkio šakos ,,butelio kakliukui". Tokia parama galėtų būti valstybės finansuojami moksliniai tyrimai. Plačiai skleidžiant žinias apie naujas šakos technologijas, rinkoje liks tik tie ūkio šakos ,,butelio kakliukai" kurie sugebės pasinaudoti šių tyrimų gautomis žiniomis. Rinka nebūtų iškreipiama, nes žinios būtų prieinamos visoms įmonėms, kurios užsiima „butelio kakliuko" veikla. Teikiamomis nemokamomis žiniomis kaip parama negalėtų pasinaudoti kiti grandies dalyviai, kurie neužsiima „butelio kakliukų" veikla. Žaliavų tiekėjai, gaminių perdirbėjai bei pardavėjai šiuo paramos tipu galėtų pasinaudoti tik tada, jei vertikaliai integruotųsi ir užsiimtu ,,butelio kakliuko" veikla.

Raktažodžiai: *apribojimų teorija, valstybės parama verslui.*

The article has been reviewed.

Received in April, 2006; accepted in October, 2006.