

## BALANCING MARKET SHARE OF NATIONAL AND FOREIGN PHARMACEUTICAL COMPANIES IN DEVELOPING COUNTRIES ON EXAMPLE OF UKRAINE

Kateryna Chepinoga<sup>1</sup>, Ieva Meidutė<sup>2</sup>

Vilnius University, Economics faculty, Saulėtekio ave. 9, LT-10222 Vilnius, Lithuania  
Email: <sup>1</sup>k.chepinoga@rambler.ru; <sup>2</sup>ieva.meidute@gmail.com

**Abstract.** The article describes a common problem of developing countries which is a negative impact of multinational corporations on the domestic pharmaceutical market and describes specific actions that can be undertaken to protect the interests of national pharmaceutical manufacturers. The problem is shown on the example of Ukraine and the paper discusses solutions presented by the Ukrainian Ministry of Health project which assumes that by the year 2021 production (and consequently, sales) of multinationals should be down-sized to 50% of the total market turnover.

Since the Ukrainian Ministry of Health project only says that by 2021 the parity between national and foreign production (and consequently sales) should be 50 % : 50 %, the main purpose of the paper was to explain what factors determine the level of national production of pharmaceuticals and how to change them to enable national sales to grow to 50 % of the total market turnover.

**Keywords:** Multinational Pharmaceutical Corporation, developing countries, inverse influence, national pharmaceutical market share, foreign pharmaceutical market share.

**Jel classification:** F10, F23, F59

### 1. Introduction

XXth and the beginning of XXI-st century are characterized by a high speed of a new business environment formation, where borders between countries are less visible, more flexible and as a result, the collaboration between them is more productive. The reason of these kinds of tendencies can be explained by the globalization phenomenon and fast development of multinational corporations. As a result, today a lot of research is dedicated not only to the nature and operation of international corporations, but also to the impact that multinationals make on markets of hosting countries. In this paper, we will analyze such an impact on the Ukrainian pharmaceutical market.

The *problem* for developing countries with the pharmaceutical market is that while in developed countries it is one of the most profitable and fast growing markets, in developing countries it is usually underdeveloped, dominated by foreign companies and with a very low rate of return for national manufacturers.

In Ukraine, it is believed that the reason of this situation is the misbalance between national companies and multinational corporations. To thwart these negative trends, the Ukrainian government prepared a project called "Development of the national production for substitution of pharmaceuticals' import by national production" which analyzes the situation and introduces measures to strengthen the position of national pharmaceutical companies. In particular, it has been proposed that by 2021 national producers should reach 50 % of the total pro-

duction of pharmaceuticals (licensed pharmaceuticals and generics) sell in Ukraine.

The aim of the article is to propose specific desired (guideline) values (defined as a percentage of total pharmaceutical market sales) of imports and foreign companies' production of generics for the Ukrainian market that would allow national producers to reach 50 % of the market turnover by 2021 and no more than 25 % share of generics.

In order to do so, we use Borodich (2000) model in which production of national Ukrainian pharmaceutical companies depends mostly on: imports of pharmaceuticals (licensed and generics), sales of nationally manufactured pharmaceuticals (licensed and generics), foreign production of generics and national production of generics.

The model is supposed to be an answer to the public discussion in Ukraine, especially in the Ukrainian professional medical journal "Apteka" about the dangers of completely losing national (Ukrainian-owned) pharmaceutical manufacturers if they do not receive support now, dependency of national manufacturers on foreign import and discussion how should be set proportions between licensed pharmaceuticals and generics.

The model specifically deals with the problem what reduction of imports of pharmaceuticals (import of pharmaceuticals is necessary for national production) is necessary in order to achieve by 2021 the desired 50 % / 50 % parity between national and foreign production of pharmaceuticals as described in the Ukrainian Health Ministry project "Development of the national production for substitution of pharmaceuticals' import by national production".

As it was said before, the project assumes equal share of production between national and foreign pharmaceutical companies by 2021 and it also suggests more stimuli to develop the production of licensed drugs instead of generics.

The main source for data is the Ukrainian National Statistical Bureau, WHO and UNCDAD databases.

## 2. Pharmaceutical market of a developing country on the example of Ukraine

Ukraine is a former member of the Soviet Union, where pharmaceutical industry was in 100% financed by the government. After the break-up of the socialistic system all post-Soviet republics had to create a new economic system that was based on private financing. Ukrainian pharmaceutical market was no exception. Lack of governmental financing and problems with finding private financing made old national companies have huge difficulties with continuing with their production and not being able to satisfy domestic demand. As a result, new companies appeared that filled-in the gap – new Ukrainian private enterprises and multinationals. Since economic reforms and lack of financing created a huge technological gap between the West and Ukraine, multinationals gained competitive advantage and soon, foreign multinationals overwhelmed both: old, still-under-restructuring Ukrainian pharmaceutical companies and new domestic start-ups. More to that, national companies production became import-dependent because domestic market was still transforming itself from governmental into private financing and was not able to provide people with all necessary pharmaceuticals.

Therefore, entrance of multinationals to the Ukrainian market was a mixed blessing. On one hand, it was advantageous for the country, because the population did not experience shortages and had access to modern pharmaceuticals not being produced by Ukrainian-owned firms. On the other hand however, multinational corporations soon became a barrier for the Ukrainian-owned firms' development as they offered very technologically advanced pharmaceuticals at very competitive prices (thanks to the economies of scale) with which Ukrainian-owned firms were unable to compete. In this way, pharmaceutical market was not becoming more diversified or competitive, or profitable for Ukrainian-owned manufacturers but more monopolistic and foreign controlled.

As time passed by, the misbalance between Ukrainian-owned (national) and foreign (import and non-Ukrainian owned firms in Ukraine) shares in pharmaceutical market became more and more unequal to the disadvantage to national producers.

Finally, the government undertook a study to analyze the seriousness of the situation and proposed a project how to improve competitiveness and situation of national (Ukrainian-owned) producers. A policy was proposed which aim would be that by 2021 national companies' production and eventually, national companies' sales would constitute 50 % of the total Ukrainian pharmaceutical market turnover. In other words, by 2021 a 50 % / 50 % parity should be reached between foreign and national manufacturers of pharmaceuticals.

As it was said before, the purpose of this paper is to propose how to achieve this goal through changes of underlying variables and taking into account two important factors:

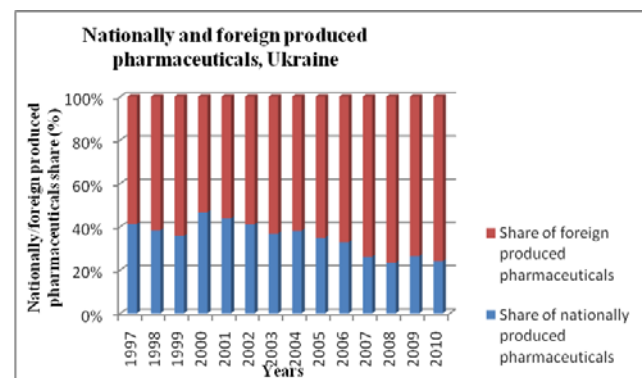
1) Multinational pharmaceutical corporations' activity slows down development of national (nationally-owned) pharmaceutical manufacturers of developing countries.

2) Multinational pharmaceutical corporations' activity makes national (nationally-owned) pharmaceutical firms in developing countries dependent on production and import of MNCs.

## 3. Dependency of developing countries' markets on foreign companies

In order to show the current situation of the Ukrainian pharmaceutical market, in Fig. 1 we presented a relation between sales of nationally produced (that is, produced by Ukrainian-owned manufacturers) and foreign medicines (includes both: licensed medicines and generics imported or manufactured in Ukraine by non-Ukrainian owned manufacturers). They are presented in terms of the total market turnover.

The market share of national pharmaceuticals (that is, sales of medicines manufactured by Ukrainian-owned firms) has been calculated on the basis of the officially presented data, particularly, production reduced by the amount of export and divided by total sales in this market.



**Fig.1.** Nationally and foreign produced pharmaceuticals (Source: Data received from the Ukrainian National Statistical Bureau <http://www.ukrstat.gov.ua/>)

According to Fig. 1, national pharmaceuticals market share (sales of medicines manufactured by Ukrainian-owned firms) is lower than the foreign one, as it is below 50 % of total sales for the entire analyzed period, namely for years 1997 – 2010. Moreover, beginning from the year 2000 domestic firms' share is constantly shrinking.

The graph proves a very negative situation of shrinking of national pharmaceutical industry. On the other hand, foreign sales are growing very fast. According to the UNCTAD data, the number of MNCs in the Ukrainian pharmaceutical market is constantly growing (UNCTAD 2010).

Current market shares will be used in the rest of the paper as subsequently: future acceptable minimum market share of national firms and future acceptable maximum market share of foreign firms.

#### 4. Econometric model determining the path of changes between market shares of Ukrainian-owned and foreign firms to achieve a balance between them

As it was said before, according to the Ukrainian Ministry of Health Care, particularly its project "Development of the national production for substitution of pharmaceuticals' import by national production for the period 2011-2021", by the year 2021 domestic manufacturers' market share should increase from 24.11 % (Fig 1 for 2010) to 50 % (in 2021). Consequently, at the same time, market share of foreign firms should decrease from 75.89 % (Fig. 1 for 2010) to 50 %.

However, as the project enumerates available tools and policies to achieve that goal, it does not give precise guidelines what factors determine the level of national production and consequently, what should be the values of these factors that would allow the national production to grow to 50% of the total market turnover. In other words, the aim of reaching 50 % / 50 % balance between national and foreign production cannot be obtained directly, one has to modify and control other, subordinate to national production determinants and variables.

Modeling the abovementioned determinants of national production is far from being simple, because they depend on each other and on many additional assumptions.

For instance, national production of pharmaceuticals depends on import of pharmaceuticals because national manufacturers still need to import Western pharmaceuticals for their own production. National production depends also on its historical profitability and since in recent years (1997 – 2011) this profitability was very low it limited the growth of national companies and further decreased their market share.

#### 4.1. Econometric model

In order to show how the described before adjustment process should be implemented we used an existing Borodich (2000) model in which national production of pharmaceuticals (licensed and unlicensed ones) depends on four variables:

- a) imports<sup>1</sup> of medicines (licensed pharmaceuticals and generics taken together),
- b) sales of nationally produced medicines,
- c) national production of (unlicensed pharmaceuticals) and
- d) foreign firms production of generics for the Ukrainian market.

All variables are defined in terms of a share in the total pharmaceutical market turnover.

Thus, one can write:

$$y = \beta_0 + \beta_1 * x_1 + \beta_2 * x_2 + \beta_3 * x_3 + \beta_4 * x_4 + \varepsilon, \quad (1)$$

where:

$y$  – represents a share of national production of drugs (licensed medicines and generics) in the total pharmaceutical market turnover (%);

$x_1$  – stands for a share of pharmaceuticals' import in the total market turnover (%);

$x_2$  – stands for the sales of nationally produced pharmaceuticals in the total market turnover (%);

$x_3$  – represents a share of national production of generics in the total market turnover (%);

$x_4$  – stands for a share of foreign firms' production of generics in the total market turnover (%).

$\beta_0, \beta_1, \beta_2, \beta_3, \beta_4$  – coefficients;

$\varepsilon$  – residuals.

The model was estimated with the SPSS.

As it was said, variables used in the Borodich (2000) model represent the most important sources of the national pharmaceutical market formation, particularly, how it is influenced by import of foreign pharmaceuticals, how much income does the national market receive from sales of pharmaceuticals, and how much income is taken by foreign firms. It is worth mentioning that income that goes to national pharmaceutical firms warrants future development of domestic pharmaceutical industry, hence helps to restore balance between domestic firms and MNCs.

<sup>1</sup> It is worth mentioning that import of pharmaceuticals is not equal to foreign sales or foreign production of pharmaceuticals because a significant part of import is necessary for the national production of pharmaceuticals (national production depends on import of certain medicines).

Variables three and four require an additional explanation. According to the definition presented in analytical journal "Apteka" generics represent pharmaceuticals that are produced according to the norms and standards of an original (licensed) pharmaceutical, using the same technologies and materials but after the end of patent term (Ljapunov 2004). Among doctors there exists an opinion that generics show a lower effect in curing diseases. The supposed reason is that in production of generics one add some additional components and those proportions used in generics production may be different from the original formula. Consequently, it is believed that generics represent lower quality pharmaceuticals, compared to original licensed medicines. This opinion, however, was never confirmed by any research. However, the fact remains that the price on this type of medicines is lower (Baranovich 2011).

The division into licensed pharmaceuticals and generics (apart from the division into foreign and domestic market shares) was introduced to include quality issues in the model.

After estimation, we received the following coefficients in the model<sup>2</sup>:

$$y = 8.974 + 0.89x_1 + 0.232x_2 + 0.994x_3 + 0.951x_4 \quad (2)$$

Having found the coefficients  $\beta_n$ , the next step involves determining what should be the values of  $x(i)$ 's that would lead in the future for the national production of pharmaceuticals,  $y$ , to be 50 %.

The  $x(i)$  variables are however interconnected and require additional assumptions ensuing either from the Ministry of Health project or a real-life situation. All these issues will be now discussed in more detail.

Since the national market share has to be 50 % by the year 2021 (according to the Ministry of Health Care project guidelines), then we can state that our optimization goal is as follows:

$$y = 8.974 + 0.89x_1 + 0.232x_2 + 0.994x_3 + 0.951x_4 \rightarrow 50$$

Where:

$$\begin{cases} 50 \leq x_1 \leq 75; \\ 40 \leq x_2 \leq 65; \\ 10 \leq x_3 \leq 25; \\ 10 \leq x_4 \leq 25. \end{cases} \quad (3)$$

$X_1$ , represents import of foreign pharmaceuticals (licensed medicines and generics), and it cannot be less than 50% and it should not exceed 75 %.

The upper limitation imposed on  $x_1$  derives from the fact that in the last 13 years import never fell below 76 %<sup>3</sup> of the total market turnover. Therefore, the market share of 75% is considered to be the value possible to achieve yet to be a relatively high number (Sergienko 2009). The lower limit set on  $x_1$  derives from an earlier research by Shibaeva (2010) who proved that a lower share of import would be very difficult to achieve but at the same time, an import market share of 50 % is possible to achieve without harming national production.

The second limitation concerns  $x_2$  which represents sales of nationally produced pharmaceuticals. Variable  $x_2$  was limited to the range between 40 % and 65 % of the total market turnover. This set of assumptions can be explained by the fact that during the entire analyzed period the maximum sales from nationally produced pharmaceuticals were 57.27 % of the total market turnover (in 1998). Since 1998 this variable was constantly decreasing with the most significant fall from 41.32 % to 26.74 % in 2003 (Shibaeva 2010). Thus, there has been made an assumption that within the next 10 years it won't be possible to increase the national sales of medicines from 26.90 % in 2010 to significantly more than 57.27 % (as it was in 1998). Therefore, the upper and lower boundaries for national sales of pharmaceuticals were chosen to be subsequently, 40 % and 65 %.

The last two limitations, particularly for shares of national and foreign production of generics were set to be 10 % (upper boundary) and 25 % (lower boundary). These limitations partially ensue from the Ukrainian Ministry of Health Care project and partially from other considerations.

Currently, there is a lot of debate in Ukraine between academics and practitioners which type of pharmaceuticals should prevail in the market and each side has its arguments for one type or another. Thus, it seemed reasonable to assume as one possibility equal shares between licensed pharmaceuticals and generics (25 % of the total market for each variable). On the other hand, the Ukrainian Ministry of Health project's objective was to make the Ukrainian pharmaceutical market not only equally shared by national and foreign companies, but also to make it bigger, more technologically advanced, with better quality of pharmaceuticals. This objective led to the conclusion that choosing between licensed drugs and generics the priority should be given to the original pharmaceuticals' production (Ministry of Health Care of Ukraine 2011).

<sup>2</sup>Detailed results of calculations and estimation statistics were not shown in the paper as the model plays only an instrumental role in the paper for further calculations. They are however, available for viewing on demand.

<sup>3</sup>Ukrainian Statistical Bureau, 2011.

As a result, we assumed that within national sales of pharmaceuticals and foreign sales of pharmaceuticals, original medicines should dominate over generics. Hence, the limitations for the generics set to the range between 10 % and 25 %.

#### 4.2. National and foreign market shares changes as a result of modeling

As the results of the performed calculations show, by the year 2021 the following changes in the market should be made to get close to assumed ministerial goal of 50 % share of national production in the total pharmaceutical market turnover:

$$\begin{cases} x_1 = 60.00\%; \\ x_2 = 40.00\%; \\ x_3 = 13.7\%; \\ x_4 = 13.54\%. \end{cases}$$

As it can be seen from the presented results, the import of foreign produced pharmaceuticals should be 60 % of the total market turnover. This means a necessary decrease from the year 2011's share of 92.39 % to 60 % in 2021.

Sales of nationally produced pharmaceuticals should increase from 26.90 % of total market turnover (as it was in a year 2011) to 40 % in 2021 (40 % represented the lowest tolerable level of this variable in 2021).

Production of nationally produced generics has to be increased from 13.23 % of the total market turnover (as it was in 2011) to 13.7 % in 2021.

Production of generics by foreign companies has to be decreased to 13.54 % of the total market turnover in 2021.

The received results of the optimization have shown that Ukrainian pharmaceutical market has to decrease its expenses on foreign medicines by 26.67 %. This money should go to national manufacturers which will allow them to increase sales of national pharmaceuticals.

The quality of offered pharmaceuticals would also improve, because priority would be given to the production of original pharmaceuticals. Total market share of licensed medicines would be 72.76 %. Generics share would be 27.24 % combining both: sales of nationally produces and foreign produces generics.

The graphical illustration of the Ukrainian pharmaceutical market changes is proposed below, which gives an opportunity to see the tendencies and to analyze the sensibility of the created model (Fig.2). Appropriate values are also given in Table 1.

**Table 1.** Current and proposed future production of generics and original pharmaceuticals in Ukraine in years (Source: Medicines professional journal "Apteka" <http://www.apteka.ua/> received as a result of request made on behalf of United Nations Economic Commission for Europe (UNECE); prognosis calculated by the modeling)

Market share/Year	2000	2005	2010	2021
Foreign (%)	53.39	65.22	75.89	50
Generics (%)	43.55	49.93	64.96	13.54
Original pharmaceuticals (%)	9.84	15.29	10.93	
National (%)	46.61	34.78	24.11	50
Generics (%)	13.11	21.31	11.23	13.7
Original pharmaceuticals (%)	33.5	13.47	12.88	

On the basis of the table there have been drawn graphs which show the distribution of market shares and their tendencies during the analyzed period, comparing with projections for the year 2021 and their tendencies during the analyzed period, comparing with projections for the year 2021. Presented above four graphs greatly illustrate the tendency of how market of pharmaceuticals has changed within the analyzed period, particularly in 2000, 2005 and 2010. It is obvious that tendencies were unfavorable for national firms. In 2000 market share between national and foreign market was 46.61% to 53.39%. During the following 10 years national market share decreased to 24.11%. The distribution between original pharmaceuticals and generics also showed a negative tendency, particularly original pharmaceuticals decreased from 43.34% in 2000 to 23.81%.

#### 5. Conclusions

As the authors of this paper attempted to show, quality of the offered pharmaceuticals and protection of diversity of available pharmaceuticals require governmental intervention aimed to protect national manufacturers of pharmaceuticals. It is believed that to balance negative tendencies in the market national firms should make in the future 50 % of the total market turnover.

This situation concerns all developing countries, not only the Ukrainian market; however, for each market one may need to create a separate model of changes.

It is important to enumerate possible governmental actions that can implement proposed changes and policies.

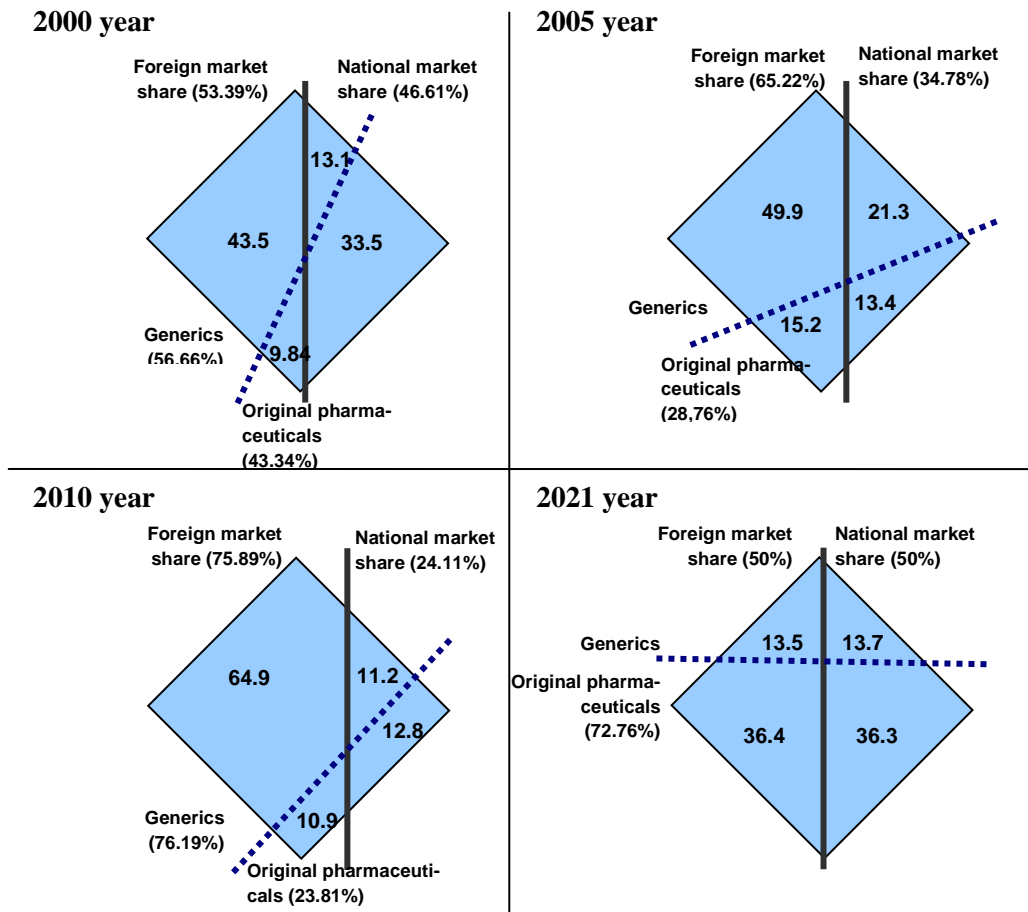


Fig.2. Ukrainian pharmaceuticals’ market share comparable analysis (Source: made by authors)

The government of a developing country has to implement an investment strategy that would encourage national investors to set up new firms and realize new investment projects. This strategy should aim on creation of a positive investment climate for investors (exemption or a partial exemption from taxes and other payments). Positive investment climate would attract additional funds directed on the new technologies procurements, R&D, financing of laboratories and experiments.

A government should support national firms’ procurements of generics licenses, because this can allow a partial replacement of foreign generics by nationally produced generics. It is important to support and encourage joint-ventures between national and foreign firms; foreign firms can provide licenses and technology whereas the production is carried on in the national pharmaceutical factory. This type of cooperation would mean that production would carry on in the framework of existing plant with technologies of the foreign company.

In the middle of the market transformation period (here: the forecast period) it is recommended to switch from investment strategy on the strategy supporting innovation. It would become possible after implementing predominantly investment strategy, what will increase profits from nationally pro-

duced generics sales and reduce expenses on government and distributors procurements. The technology basis would have already been built after investment strategy.

By this time national market would have already a number of scientific projects. This would permit to start to work under the production of original pharmaceuticals. It is recommended to encourage the procurement of original foreign medicines instead of generics. This aim would become possible as a result of national production of original pharmaceuticals.

As original pharmaceuticals are more expensive on one hand but on the other, believed to be more effective and more sought after, this strategy would turn more profitable for the companies and consequently, would be willingly implemented. Production of original, licensed pharmaceuticals should allow national firms to export their pharmaceuticals abroad (at first, predominantly into CIS countries), and high profits would allow them a further market development, particularly R&D activity.

Foreign produced generics share would be partly reduced by means of increasing national market share of original medicines and by means of increasing import of original licensed pharmaceuticals.

## References

- Baranovich, M. 2011. Import substitution within Ukrainian and Russian pharmacy markets: ways of multinational corporations' control. *Apteka* [online] [accessed 29 June, 2011]. Available from Internet: <http://www.apteka.ua/article/86617>
- Borodich, S. 2000. *Introduction to the econometrics course*, Belarus State University, 354 p.
- Gammeltoft, P., Prakash, J. P., Goldstain, A. 2010. Emerging multinationals: home and host country determinants and outcomes, *International Journal of Emerging Markets* 5(3/4): 254-262. <http://dx.doi.org/10.1108/17468801011058370>
- Karmalita, K. 2006. Import, export and production of pharmaceuticals: August 2006, *Apteka* 560(39) [online] [accessed 9 October, 2011]. Available from Internet: <http://www.apteka.ua/article/3708>
- Kunda, E. 2005. Regular result: Import, export and production of pharmaceuticals, *Apteka* 478(7) [online] [accessed 21 February, 2011]. Available from Internet: <http://www.apteka.ua/article/1342>
- Ljapunov, N. 2004. Development and registration of generics in EU and CIS countries, *Apteka* 422(1) [online]. Available from Internet: <http://www.apteka.ua/article/14857>
- Ministry of Health Care of Ukraine 2011, Official web-page [online] Available from Internet: <http://www.moz.gov.ua/ua/portal/>
- Ministry of Health care of Ukraine 2011, Project of the Concept *Development of the national production for substitution of pharmaceuticals' import by national production for the period 2011-2021 years*. [online] Available from Internet: [http://www.moz.gov.ua/ua/portal/Pro\\_20110411\\_0.html](http://www.moz.gov.ua/ua/portal/Pro_20110411_0.html)
- Pharmaceutical market of Ukraine: Import, export and production of pharmaceuticals in 2003, *Apteka* 425(4) [online] [accessed 2 February, 2011]. Available from Internet: <http://www.apteka.ua/article/14974>
- Sergienko, O. 2009. Import, export and production of pharmaceuticals: April, 2009, *Apteka* 695 (24) [online] [accessed 15 June, 2011]. Available from Internet: <http://www.apteka.ua/article/8834>
- Sergienko, O. 2009. What is new on the market? Drug stores' sales of pharmaceuticals: August, 2009, *Apteka* 710 (39) [online] [accessed 5 October, 2011]. Available from Internet: <http://www.apteka.ua/article/30391>
- Sergienko, O. 2011. Building up future! Supervision of generics and original pharmaceuticals market, *Apteka* 798 (27) [online] [accessed 11 July, 2011]. Available from Internet: <http://www.apteka.ua/article/87829>
- Shibaeva, A. 2010. Import, export and production of pharmaceuticals. Outcomes of 2010, *Apteka* 775(4) [online] [accessed 31 January, 2011]. Available from Internet: <http://www.apteka.ua/article/69550>
- Shibaeva, A. 2010. Market pulse. Results of pharmaceuticals' sales, *Apteka* 763 (42), [online] [accessed 1 November, 2011]. Available from Internet: <http://www.apteka.ua/article/59188>
- State Statistic Service of Ukraine 2011, Official web-page [online]. Available from Internet: <http://www.ukrstat.gov.ua/>
- Trofimova, T. 2005. *Pharmaceutical science and production of medicines in Ukraine* [online]. Available from Internet: [http://www.provisor.com.ua/archive/2005/N10/art\\_03.php](http://www.provisor.com.ua/archive/2005/N10/art_03.php)
- Ukrainian medical Time 2011, *State procurements in the sphere of healthcare: the bargaining is still appropriate* [online]. Available from Internet: <http://www.umj.com.ua/article/18991>
- Transnational corporations and export competitiveness*. 2002. United Nations Conference on Trade and Development 2002, World investment report, United Nations & Geneva.
- Transnational corporations and the international challenge*. 2008. United Nations Conference on Trade and Development 2008, World investment report, United Nations, Geneva.
- Transnational corporations, agricultural production and development*. 2009. United Nations Conference on Trade and Development 2009, World investment report, United Nations, New York & Geneva.
- United Nations Conference on Trade and Development*. 2010, World investment report, United Nations, New York & Geneva.
- Fortune 500. 2011, Business journal, *Time Warner Company* [online]. Available from Internet: <http://money.cnn.com>
- World Health Organization 2011, Official web-page [online]. Available from Internet: <http://www.who.int/en/>