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В. Осецький, д-р екон. наук, проф.,
І. Калінкова, асп.
КНУ імені Тараса Шевченка, Київ

ВПЛИВ ШОКІВ НА ЕКОНОМІЧНИЙ СПАД В УМОВАХ ПОШИРЕННЯ РИНКОВИХ СИГНАЛІВ ВІДНОВЛЕННЯ У РОЗВИНЕНИХ КРАЇНАХ

В даній статті представлені деякі із сигналів економічного відновлення в умовах стагнаційної фази бізнес циклу. Однак, більшість даних сигналів змодельовані при відсутності діючої макроекономічної політики. Також, призупинення економічного розвитку аналізується за умов формування тренду домінуючого росту зі сторони країн які розвиваються. Сукупність даних факторів обумовлює архітектуру макроекономічної політики.

Ключові слова: сигнали економічного відновлення; шоки; монетарні шоки; тренд домінуючого темпу зростання країн які розвиваються; стагнаційний тренд; рецесія.

В. Осецький, д-р екон. наук, проф.,
І. Калінкова, асп.
КНУ імені Тараса Шевченка, Київ

ВЛИЯНИЕ ШОКОВ НА ЭКОНОМИЧЕСКИЙ СПАД В УСЛОВИЯХ РАСПРОСТРАНЕНИЯ РЫНОЧНЫХ СИГНАЛОВ ВОССТАНОВЛЕНИЯ В РАЗВИТЫХ СТРАНАХ

В данной статье представлены некоторые из сигналов экономического восстановления в условиях стагнационной фазы бизнес цикла. Однако, большинство данных сигналов смоделированы в отсутствие действующей макроэкономической политики. Также, приостановление экономического развития анализируется при формировании тренда доминирующего роста со стороны развивающихся стран. Совокупность данных факторов предопределяет архитектуру макроэкономической политики.

Ключевые слова: сигналы экономического восстановления, шоки, монетарные шоки, тренда доминирующего темпа роста развивающихся стран, стагнационный тренд, рецессия.

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S. Shakeev, PhD in Economics, Associate Professor
Kazakh Humanities and Law University, Republic of Kazakhstan

SUPPLY LOGISTICS FOR IMPROVEMENT OF IRON AND STEEL ENTERPRISES

This article describes the techniques that help to improve the material and technical supply management of allied industries. Resource endowment of Kazakhmys Corporation had been analyzed. To control physical resources effectively logistics center establishment for allied mining enterprises was offered.

Keywords: logistics; logistics management; material and technical supply; supply logistics; logistics center.

Problem statement. In the current context of increasingly competitive environment, where the strategy of business entities development are formed considering the changing market conditions, an important factor for improving the competitiveness of any company is the effective material and technical supply management. Analysis of existing management practice in enterprises of industrialized countries shows that a lot of attention is paid to the management of logistics, leading to faster turnover of own and borrowed funds, competitiveness, strengthening and expanding its role in the goods, works and services market.

Managing logistics is always a significant part of economic activity, but only recently this feature has become a critical issue for the competitiveness of a business entity. The main reason is the transition from a seller's market to a buyer's market, which makes it necessary to fit the capacity of producers to rapidly changing conditions of production and trading systems.

Analysis of latest discoveries and publications. Theoretical and practical aspects of effective supply logistics assessment, especially the necessity to improve the management system of logistics major enterprises and the development of logistics systems were considered in the

publications of Russian scientists as A.M. Gadzhinskiy [1], Y.M. Nerush [2], Kazakh scientists: O.S. Sabden, Raimbekov Z.S. Raimbekov Z.S. [3], A.N. Tulembaeva [4], R.K. Moldahmetov [5], but in spite of the existing material, some aspects of effective supply logistics assessment of metallurgical enterprises are not developed enough.

Extraction of the unsolved aspects of the problem.

In the current context the management issues of supply logistics industry become highly relevant. The urgency is due to the need to improve the management of supply logistics for industrial competitiveness through the development of a flexible policy for proper ways of finding vendors and consumers of physical resources choice of logistics channels of choice of suppliers and consumers of material resources, and enhance innovative technology support of the material resources use.

The purpose of the study is that the evaluation of supply logistics effectiveness means to develop a science-based approach to organizing the logistics of product metallurgical enterprises distribution to identify ways of optimizing the organization and management of logistics flows.

The main results of the study. In a market economy, managing the logistics of production is determined by the ability to combine the activities of the various departments and services related to the distribution, material support of production. Material supply is one of the logistics elements.

In modern conditions, Western experts identify several types of logistics:

- Logistics related to material support of production (supply logistics);
- Production logistics;
- Sales (marketing, or distribution) logistics;
- Transport Logistics (which, in essence, is an integral part of each of the three types of logistics);
- Information logistics.

At the end of XX century instead of the known and the familiar concept "material and technical support" in the scientific revolution the term "supply logistics" derived. According to the Russian scholar V. Filonenko "there was not

a simple replacement of terms, but the change in the process of material and technical supply". The fact that the enterprise performance started to depend on reliability of material and technical supply was significant.

A characteristic feature of the supply chain in steel companies is the availability of stable economic relations between vendors of basic technological raw materials, equipment and the enterprise.

The largest independent vendors of Kazakhmys Corporation are "Boliden Contek" (Sweden) and "Venmek Systems" (Finland). The company "Boliden Contek" deals with the reconstruction of ore-treatment furnaces (OTF), and the company "Venmek Systems" deals with the replacement of bridge cranes, reconstruction of casting wheels (CW) with the installation of weight measuring devices.

Among the suppliers such countries can also be distinguished: Turkey, Russia, Ukraine, which are involved in the supply of refractory bricks, and Kyrgyzstan, which supplies electricity to the amount of 48.09 mln. Tenge. In addition, a number of small nonproduction materials and equipment are supplied by private companies in Zhezkazgan.

The need of corporation in the materials essential for the production is fully covered by outside vendors.

The largest part of raw materials is supplied by the management of material and technical supply logistics (MTSL) of "Kazakhmys Corporation".

"Kazakhmys Corporation" LLP provides its own 50 structural units of material resources. Therefrom, 42 are provided centrally with help of the management of material and technical supply logistics (MTSL) corporation. The rest of them have own UMTS. These include the following divisions of "Kazakhmys" corporation: Balkhash mining-and-metallurgical integrated enterprise, "Borly" coal department, Department of Electric Power plant, Karaganda foundry and machine factors, "VostokKazmed", Karaganda foundry factory, Copper-Chemical Plant, Zhezkent Mining plant [8].

However, some purchases are made by corporate contracts and purchases are conducted centrally, such as fuel.

Table 1. Logistical status during 2009-2011 years

Material type	2009			2010			2011		
	Planned requirements	Came in from vendors, t	Use*. pract,%	Planned requirements	Came in from vendors, t	Use*. pract,%	Planned requirements	Came in from vendors, t	Use*. pract,%
1	2	3	4	5	6	7	8	9	10
Magnafloc									
Reimpositioned concrete	9032,00	7443,0	82,407	8599,15	6549,61	76,1658	8633,84	3982,00	46,12
Limestone	111480,2	77158	69,212	106138,08	75254,00	70,902	106566,19	71763,00	67,34
Anode paste	1032,23	874,42	84,7116	982,76	975,72	99,2837	986,72	858,32	86,99
Steel sheet	108,64	119,55	66,1825	171,98	100,33	58,3389	172,68	100,78	58,36
Gas pipes	167,74	48,20	28,7355	159,70	80,82	50,6079	160,34	127,46	79,49
Periclase chromite bricks	3019,27	3010,0	99,6931	2874,57	2800,00	97,4058	2886,17	2886,17	100
Refractory felt	12,90	11,20	86,8025	12,28	10,72	87,2644	12,33	7,38	59,83
Barium sulphate	503,98	11,20	86,8025	461,68	10,72	87,2644	463,98	216,50	46,66
Diesel fuel	2116,72	2000,0	94,4859	1939,04	1948,70	100,498	1948,70	1948,70	100,00
Sulphuric acid technical	2539,92	3441,0	135,477	3268,65	3039,00	92,9742	3278,08	3060,60	93,37
Retarded salty acid	81,28	79,01	97,2102	77,48	67,89	92,9742	77,70	37,47	48,22
Sulfourea	20,32	20,55	101,11	21,79	23,19	106,42	21,85	21,27	97,34
Gelatin	20,32	17,89	88,0589	19,37	19,11	98,6331	19,43	20,21	97,34
Polypropylene core	9,65	6,89	71,3605	10,17	6,94	68,1966	10,20	6,96	68,20
Contact mass	101,81	42,00	41,2522	107,31	55,60	51,8102	103,41	84,50	81,72
Air-slaked lime	127266	132115,5	103,811	134143,5	132115,5	98,4882	129260	129260	100,00
Fire-proofed argil	309,67	325,00	103,811	294,83	234,00	79,3683	296,02	275,35	93,02
Disc steel	64,51	62,17	96,3663	61,42	55,81	90,8641	61,67	42,22	68,20
Salamander wool	28,56	34,00	119,052	28,56	34,00	119,052	26,29	23,40	89,00
Stripe fagot	888,97	558,60	62,837	847,43	511,91	60,4076	849,87	503,68	59,27
Abstergent	6,38	6,42	100,75	6,08	3,06	50,3516	6,09	2,95	48,43

Note: [7]

*Source: Use estimates the ratio of supply package to supply.

Provision of material resources in LLP "Kazakhmys Corporation" can be seen in Table 1. Table 1 shows that during the period under review the supply of diesel fuel was timely and comprehensively. Moreover, in 2011 the planned delivery of gelatin has exceeded the demand on 4%, comparing with 2010 it is higher on 5%. Also it can be noticed the short-delivery of certain kinds of materials. For example, in 2011, lignosulfonate (CE) supply was only 46%, compared with 2010 when the delivery fell on 6%. However, the quality of the products is not affected because the purchased materials were of higher quality.

Erratic supply of material resources leads to idle time of equipment, loss of working time, the need for overtime. Payment delays are not the fault of the workers and overtime leads to an increase in the cost of production. To eliminate the above stated situation on the companies it is provided the necessary reserve materials.

To create a stock of materials and equipment on the corporation, there are three central warehouse for major technological equipment and materials:

1. warehouse refractory products
2. metal warehouse and equipment,
3. storage aids.

Capacity of these stores allows to ensure not declining three month supply of related materials. In addition, all the shops have intermediate warehouses, the purpose of which – providing three daily supply of necessary materials.

From the conducted analysis it can be concluded that, it is impractical to store reserves in an amount that would correspond to the optimal solution for each of the positions mentioned in the schedule items. Order department can be overloaded, storage tanks can be used to the limit, and the capital invested in stocks may exceed the amount which the enterprise has. These limitations make it necessary to modify the reserves policy.

The results of the material inventory management processes analysis do not let us confirm that using strategies of controlling inventory does not correspond to the market principles. There is no targeted approach to the formation and storage of inventory. Inventory management of material resources and financial management activities of the enterprise is carried out independently. Rationalization of stocks does not concern as a major reserve of economic upturn. Enterprises do not use this factor of increasing competitiveness, restricted only by the shortage or surplus stocks. No information is available to quantify the influence of inventory level to the final result of the enterprise performance.

Many managers recognize that their enterprise supply system is far from perfect, but at the same time they believe that it corresponds with current market conditions and can

only be improved through evolution. Such underestimation of self-empowerment is costly to companies and they are losing money on almost all stages of the procurement process: planning requirements for materials and equipment for the procurement, inventory management and distribution of materials, their use in the production and the secondary circulation. Our experience in working with companies confirms that the losses caused by poor management in supply, separate categories may reach 30-40% of the total cost of the supply, and it goes on from year to year.

The economy of planning did not stimulate the rational use in the manufacture of materials and resources, so in Soviet enterprises supply system did not attach much importance. Unfortunately, this situation has survived to the present day. Executives of companies are looking at the existing supply system as something inaccessible, and believe that it is impossible to understand and change anything about it and ordinary workers in the absence of attention and monitoring by administration representatives often use existing situation in their own interests. As a result, uncontrollable costs appear in many companies and attempts to partial improvements are unlikely to change anything significantly. To achieve good results is possible only through an integrated supply chain.

Modernization of the supply system must pass at least three stages [9] (see Table 2).

Stage 1: Diagnostics. To determine the amount of necessary reforms, the nomenclature structure of the procurement and the internal processes of the supply chain are diagnosed carefully at the first stage. Predictability of consumption, importance of planning, procurement volume may serve the criteria for the classification of procurement processes. The classification process allows to set clear objectives to optimize each of them, set up an organizational structure in full compliance with the requirements of the process. The diagnostics helps to find main ways to reduce the cost of procurement of the major categories of resources.

Stage 2: Achieving the initial effects. In the next stage, the changes which give effect in the short term and create a foundation for the formation of long-term benefits, occur. Thus, in the above mentioned company procurement processes for the main categories of goods as a priority have been radically altered to reduce the unacceptably high purchase prices and improve the quality of purchased resources. Standardizing criteria for supplier selection, conducting a detailed comparative assessment of the quality of purchased resources and their indirect impact on the total cost of the company, the introduction of transparent procedures of tenders contributed to achieving this goal.

Table 2. Modernization of the supply of "Kazakhmys Corporation"

1 stage	2 stage	3 stage
<p>diagnostics</p> <ul style="list-style-type: none"> - 1.1 Estimate the savings on major purchases: - Raw material - Equipment - Spare parts 	<p>The achievement of the initial effects.</p> <ul style="list-style-type: none"> - 2.1. Applying a "Total Cost of Ownership" (TCO) in respect of the procurement of important articles: - The standardization requirement to MTP - The estimate of total costs over the service period - Quarterly procurement by tender 	<p>Ensuring the long-term effect.</p> <ul style="list-style-type: none"> - 3.1. The widespread introduction of TCO approach to the most important categories of purchases: - Create cross-functional teams to implement the approach TCO - Expanding horizons of procurement - Standardization and tenders for the most part of procurement -Preparation of regulatory documentation to support the process
<ul style="list-style-type: none"> 1.2. Assessment of the potential of the efficiency of the supply chain improvement: - Planning of demand - Making orders - Procurement - Warehouse management - Organization 	<ul style="list-style-type: none"> 2.2. Elimination of the main "bottleneck": - High discipline of orders - Reducing of the excessive orders - Increasing of secondary resources use through increased control - Education of key executives 	<ul style="list-style-type: none"> 3.2. Creating a more efficient supply chain management: - Cross-functional planning and analysis of needs - The transparency of execution of orders - Mechanism of suppliers control - Individual management of procurement - New IT – systems, organizational structures and system of result management

* Source: Compiled by the author.

Stage 3: Ensuring the long-term effect. Finally, the third phase of the work is focused on achieving long-term effect. One of the most important steps in the optimization of procurement in the final stage is usually the creation of cross-functional teams of employees from different departments, such as assistant managers of procurement, manufacturing, technology and financial structures of the company. Regularly interacting, teams exchange critical information and make the best decisions regarding purchases for the entire organization. In order to strengthen the staff of the supply chains in this phase it is necessary to introduce new mechanisms of selection, motivation, performance evaluation and career development of purchasing managers and owing to it improved supply system has gained new energy and its development fell into a self-supporting basis.

Analysis of the status of use of material resources of "Kazakhmys Corporation" shows that if the creation of an integrated information system of logistics flow for many businesses an urgent need to create a single logistics center has appeared. Moreover, measures for saving and rational use of material resources should not only be part of an integrated program to improve the supply chain, but also to make it a basis, to determine the value, priority and hence the sequence of the main events realization.

Solving the problem of improving the efficiency of inventory management in the current economics requires a shift from traditional management to logistics, where the inventory management allows including the main areas to actively implement the strategy of the enterprise market conduct.

In other words it may be said that for many companies urgent need to create a single logistics center escalated. Measures for saving and rational use of material resources should be not only the part of an integrated program to improve the supply chain, but also to make the basis, to determine the value and the priority, and hence, the ranking of the main events implementation.

It is linked mainly to such factors: the most important factor regarding the specifics of mining, it is the close proximity of some of the mines. Furthermore, one of the important factors – it is practically identical copper technology of copper production technology; it makes use of similar material resources from explosives to costly parts of the equipment. Stated differently, it indicates the possibility of a unified logistics center to have an only vendor of material resources that serve multiple customers. The analysis showed that the concentration of multi-billion mass inventory in the form of handicapped floating funds in operation negatively affects not only the performance of the enterprises-consumers (cost, revenue and profitability), but it is becoming increasingly a factor that affecting negatively the growth of production, reinforcing scarce situation in the supply, etc. Therefore, it is necessary to enhance the interest of enterprises in reducing inventories and offer formation of a unified logistics center in the management of material and technical supply.

At the heart of suggested unified logistics center one may notice the access to the logistics services not only from the material resources' vendors, but from the logistics center too. However, a large range of logistics services and supply a significant amount of material resources for large enterprises, or allied industries provides economic efficiency of the logistics center and, consequently, increasing the competitiveness of the enterprises themselves, through the reduction of material production.

According to experts in the logistical field, if to consider the costs as 100%, the relative density of the individual components is as follows [10]:

- transportation 28-48%;

- terminal, transshipment operations and storage of goods 25-40%;
- the cost of packaging and wrapping 5-18%
- management costs 4-15%, etc.

The mentioned input structure indicates the significance of transport, cargo handling and storage costs. To reduce these costs it is proposed to introduce the concept of "just-in-time" (JIT). The concept of JIT is the concept determined to organize the sales of material flows and that all materials, components and semi-manufactured goods will be received in the required quantity, at the right place and exactly the appointed time for the production of finished products with the purpose to reduce the costs associated with inventory.

Conclusions of this research and prospects for future developments in this area. In our opinion, the existing systems of material management on domestic enterprises are controlling logistics operations from procurement of raw materials to the final service of product consumers: delivery of raw materials to the plant, sales forecasting, production planning, production or purchasing of raw materials, inventory management of raw materials and unfinished production. I.e. underdeveloped market mechanism which is primarily expressed in unfair and insufficient competition, adversely affects the system of logistics.

And formation of a single logistics center using the concept of "just in time" for the enterprises of related industries who use the same material resources has many important advantages that allow improving of the system of material resources management, such as:

- A number of technological operations of the supply chain are excluded;
- The reserves are declining in a way, because it reduces the delivery time due to the use of suppliers located near or storage of these suppliers.
- The quality of the goods is improving, because they are certified by reliable vendors.
- The delivery reliability is becoming better, as there is a joint interest in "just in time" functioning.
- Labor productivity is improving by reducing the cost of doing warehousing. This allows reducing the cost per unit of stored or shipped cargo.
- A centralized purchasing system is introduced that would standardize the procurement process, eliminate duplication of functions (such as discussion of all delivery conditions, every time when you want to order), carry out effective monitoring of compliance with the logistics center obligations that will provide workflow improvement.

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С. Шакеев, канд. екон. наук, доц.
Казахський Гуманітарно-Юридичний Університет, Республіка Казахстан

ШЛЯХИ ВДОСКОНАЛЕННЯ ПОСТАЧАЛЬНИЦЬКОЇ ЛОГІСТИКИ МЕТАЛУРГІЙНОГО ПІДПРИЄМСТВА

У статті розглянуто шляхи вдосконалення управління матеріально-технічним постачанням родинних підприємстві промислової. Проаналізовано забезпеченість матеріальними ресурсами корпорації Казахмис. Запропоновано для оптимального управління матеріальними ресурсами створення логістичного центру для родинних гірничорудних підприємстві.

Ключові слова: логістика, матеріально-технічне постачання, постачальна логістика, логістический центр.

С. Шакеев, канд. екон. наук, доц.
Казахский Гуманитарно-Юридический Университет, Республика Казахстан

ПУТИ СОВЕРШЕНСТВОВАНИЯ СНАБЖЕНЧЕСКОЙ ЛОГИСТИКИ МЕТАЛЛУРГИЧЕСКОГО ПРЕДПРИЯТИЯ

В статье рассмотрены пути совершенствование управление материально-техническим снабжением родственных предприятия промышленности. Проанализированы обеспеченность материальными ресурсами корпорации Казахмыс. Предложены для оптимального управления материальными ресурсами создание логистического центра для родственных горнорудных предприятия.

Ключевые слова: логистика, материально-техническое снабжение, снабженческая логистика, логистический центр.

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E. Sojka, PhD in Economics, Professor
University of Economics in Katowice, Republic of Poland

MULTIDIMENSIONAL COMPARATIVE ANALYSIS OF LEVELS OF LIVING OF POPULATIONS IN EU MEMBER STATES

The major purpose of the article is the comparative analysis of levels of living of populations in EU member states, determination of features that differ studied populations and indication of groups of countries of similar levels of living of their inhabitants in the light of diagnostic features assumed for the study.

Keywords: European Union; taxonomy; synthetic variable.

Introduction. Level of living is a complex category, applied both in economic as well as in social sciences, that is defined in the literature of the subject in various ways. In order to understand the scope of this notion, we ought to pay attention to the definition formulated by UN Committee of Experts in 1954, according to which the level of living includes "totality of actual living conditions of people, and degree of material and cultural satisfaction of their needs through the stream of goods and services against payment and also those coming from social funds" [5, p.73]. This concept of level of living became the foundation for a lot of other definitions of this notion.

A. Luszczewicz defined the level of living as the "degree of satisfaction of material and cultural needs of population by a stream of goods and services against payment and by the fund of collective consumption in a particular unit of time and space" (2 p.12). According to the author, numerical ratings of the degree of satisfaction of seven fundamental types of needs, including food, housing, health, educational needs, recreation, social insurance and material management, are the measures of the level of living of populations.

The major purpose of the article is the comparative analysis of the level of living of populations of European Union member states, determination of features that differ studied populations most and indication of groups of countries of similar levels of living of their inhabitants in the light of diagnostic features assumed for the study. Thus, an where:

$$z_{0j} = \begin{cases} \max_i z_{ij}, & \text{if } Z_j \text{ is stimulant} \\ \min_i z_{ij}, & \text{if } Z_j \text{ is de stimulant} \end{cases} \quad i = 1, 2, \dots, n \quad j = 1, 2, \dots, m \quad (2)$$

2. Similarity of objects to the "abstract" best object was analysed through calculation of the distance (most often Euclidean) of every object to the model of development:

$$d_{i0} = \sqrt{\sum_{j=1}^m w_j (z_{ij} - z_{0j})^2} \quad i = 1, 2, \dots, n \quad (3)$$

attempt was made to answer the question of what the distance between Poland and new Community member states that entered the EU (in 2004, Cyprus, Czech Republic, Estonia, Lithuania, Latvia, Malta, Slovakia, Slovenia; in 2007 – Bulgaria and Romania) and the countries of old EU-15 is, and if a significant relationship between the level of life of inhabitants and economic development of the state finds confirmation in the results of the studies.

The analysed phenomenon of the level of living is not a phenomenon that is directly observed. Conclusions about its level can be made on the grounds of the analysis of the set of diagnostic variables that present its various aspects. And that is why the study was performed with the use of the method of multidimensional comparative analysis (Z Hellwig's taxonomic gauge of development and Ward's method), and the studied period of time was the year of 2010.

Research method. For the purpose of formation of the ranking of EU countries and ordering them from "the best" to "the worst" with respect to the level of living of their populations, a synthetic variable was constructed while basing it on the method suggested by Z. Hellwig [1, p. 307-327; 6, p. 129-130]. The stages of proceedings included:

1. On the basis of matrix of standardised *m* initial variables, a model object ("development model") of the "best" values for each variable was determined:

$$z_0 = [z_{01}, z_{02}, \dots, z_{0j}, \dots, z_{0m}] \quad (1)$$

where *d*₁₀ represents Euclidean distance *i*-of this object from the model of development, and *w*_{*j*} is the weight for this *j*-variable determined on the basis of statistical method, that is *w*_{*j*} = *V*_{*j*} / ∑ *V*_{*j*}, where *V*_{*j*} is variability factor of this *j* variable.