

Таблица 1. Сравнительная характеристика систем моделирования [8]

№ п.п.	Среда моделирования	Производитель программного обеспечения	Особенности и назначение
1	ARENA	System Modeling Corporation	Производство, анализ бизнес-процессов, дискретное моделирование
2	DYNAMO	Expectation Software	Модели системной динамики вычислительного типа
3	EXTEND	Imagine That, Inc	Стратегическое планирование, бизнес-моделирование
4	GPSS	Wolverine Software Corporation	Система общего назначения
5	IThINK ANALYST	High Performance System, Inc	Управление финансовыми потоками, реинжиниринг предприятий, банков и др.
6	PROCESS MODEL	PROMODEL Corporation	Производство, реинжиниринг бизнес-процессов
7	POWERSIM	Powersim Co	Непрерывное моделирование
8	SIMUL	Visual Thinking International	Универсальная среда имитации дискретных процессов
9	TAYLOR SIMULATION	F&H SimulationInc	Производство, анализ финансовых результатов
10	WITNESS	Lanner Group Inc	Бизнес-планирование, производство
11	VENSIM	Ventana Systems	Моделирование системной динамики

Методологической основой для моделирования развития городской инфраструктуры выступает системный анализ, качественной процедурой которого является построение обобщенной структуры объекта исследования.

Настоящая работа позволила авторам подойти к разработке модели городской инфраструктуры. В качестве основы объекта моделирования городской среды будет выбрано муниципальное образование город Ростов-на-Дону. Для решения поставленных задач и формулирования предложений потребуется обработка результатов с использованием данных программ и стратегий развития города Ростова-на-Дону, субъекта Федерации – Ростовской области и РФ в целом.

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**ПРОБЛЕМЫ ФОРМИРОВАНИЯ И ЭФФЕКТИВНОГО РЕГУЛИРОВАНИЯ РЫНКА ТРУДА НА ЭТАПЕ ДАЛЬНЕЙШЕГО СТАНОВЛЕНИЯ УКРАИНЫ КАК ГОСУДАРСТВА С СОЦИАЛЬНО ОРИЕНТИРОВАННОЙ РЫНОЧНОЙ ЭКОНОМИКОЙ**

*Исследованы проблемы формирования и эффективного регулирования рынка труда на этапе дальнейшего становления Украины как государства с социально ориентированной рыночной экономикой. Научные исследования и экономическая практика убедительно доказывают, что дальнейшая эволюция рыночных отношений все больше связывается со становлением социально ориентированного рынка труда, без которого, в принципе, невозможно построение социально ориентированной рыночной экономической системы. Современная модель украинского рынка труда является парадоксальной и характеризуется противоречиями, препятствующих его эффективной интеграции.*

**Ключевые слова:** социально ориентированный рынок труда, формирование рынка труда, историко-эволюционное развитие рынка труда, социально ориентированная рыночная экономика, занятость, безработица, экономическая активность населения, социально-трудовые отношения.

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**PROBLEMS OF LABOUR-MARKET FORMING AND EFFECTIVE ADJUSTING ARE ON THE STAGE OF THE FURTHER BECOMING OF UKRAINE AS STATE WITH THE SOCIAL ORIENTED MARKET ECONOMY**

*The problems of labour-market forming and effective adjusting on the stage of the further becoming of Ukraine as state with the social oriented market economy are investigated. Scientific researches and economic practice prove that the further evolution of market relations is connected with the socially oriented labour-market, the formation of the socially oriented market economic system is impossible without that. A modern model of the Ukrainian labour-market is paradoxical and characterized by contradictions that prevent the effective integration.*

**Keywords:** the social-oriented labour market, labour market formation, historical evolutionary market of labour development, social-oriented market economy, employment, unemployment, economic activity of population, social-labour relations.

Introduction. Ukraine's socially oriented market economy forming provides a concordance and takes into account the interests of all social population groups in forming the public macroeconomic policy. Its essence is to provide the economy growing by the submission of economy to the tasks of society social development. The increase of profits and the standard of living, expansion of consumer demand and high requirements to the commodities and services quality result in the removal of monopolism, increase of producers competition and other forms of activation of economic life. All of these need additional scientific social oriented labour market and the basic stages of its forming researches.

Researches of social problems of labour-market were begun in 1992-1996 by the scientists (V.S. Vasylychenko, V.V. Onikienko, M.V. Shalenko, B.I. Trygubenko) of Employment and Labour-market Research Center of Academy of Science of Ukraine and Ministry of labour of Ukraine. Then the term "the social oriented labour-market" was first introduced in scientific turnover and the methodological approaches of conception development were created.

Labour market is marked by structure of economy, professional and qualified labour force, investment policy, system of labour remuneration, traditions, mutual relations system between social partners, institutional factors. A labour-market, in turn, influences on the other markets through production and consumption, stimulation of investment process and other factors. Therefore on the further becoming of Ukraine as the social-oriented market economy state the problem of labour-market formation and effective adjustment is extraordinarily actual today.

A segregation of unsolved parts of general problem the article is dedicated to. The effective functioning of labour-market is very significant on market transformation stage of Ukraine economy nowadays. Freely selected productive employment of population creates terms for problems solving: the creative potential and talent realization in labour, and economy presentation as the bases for social sphere development. An importance of market labour development problems solving in Ukraine, bringing of social-labour relations to conformity with international norms that are based on the basis of progressive experience of highly developed countries, especially urgent now in connection with confession of Ukraine as country with a market economy, entering into WTO, strengthening of collaboration in ILO, and by other influences of European and world integration. Productive employment for most European states became the top priority of socio-economic politics, fundamental basis of European integration. Market of labour strategy development, reasonable public employment policy acceptance and effective system of labour-market adjusting creation in Ukraine is impossible without historical experience research and lessons of the past, analysis of contradictions of its development in different periods of home history. It should be noted that permanent attention of home scientists that investigate the various aspects of its functioning is spared to the theoretical problems of labour-market, facilities of government control and others. However we have to pay more attention to scientific researches of the problems of forming and effective adjusting of labour-market on the stage of becoming of Ukraine as the states with the social-oriented market economy taking into account peculiarities of the developed states.

The analysis of the last scientific researches and publications affirms that the most well-known works on Economy by S. Brew, D. Keynes, H. Lampertat, K. McConnell, N. Mankew, Smith are devoted to the labour market research. Politically the economic aspects of modern labour-market are widely reflected in scientific works of the Ukrainian and foreign scientists: S. Mochernyi, B. Reisberg, G. Ruzavin, O. Usatenko, S. Fomishyn and other. The significant role in labour-market structure and mechanisms of system functioning comprehension is played by Ukrainian and Russian economists, in particular: D. Bogynya, O. Gryshnova, V. Gerasymchuck, E. Libanova, A. Nykyforova, V. Onikienko, V. Petiuh, G. Slezinger, G.O. etc. The significant role in evolution of scientific approaches comprehension on the problems of labour-market development is played by economists: U. Marshavina, O. Volkova, V. Vasilchenko, O. Gryshnova, V. Gerasymchuck, S. Kalinin, E. Libanova, N. Lukyanchenko, A. Nykyforova, V. Onikienko, V. Petiuh, G. Slezinger, G. Chernichenko, M. Shalenko, etc.

Basic material of research. Strategy of labour market development in Ukraine, reasonable public employment policy acceptance and the effective system of labour-market development is impossible without historical experience research and lessons of the past, analysis of contradictions of its development in different periods of home history

A labour-market came into being during the period of capitalist method of production forming and actually became transition pre-condition from a simple commodity production, when the proprietor of capital goods works and gets profit, to the capitalist form of commodity production, which uses hired labour. Unlike the western countries Ukrainian labour-markets took place not only in the period of initial accumulation of capital but also on the stage of simple co-operation and manufactory production, on cruel serfdom background without state ownership.

Thus, a labour-market has developed since the systematic commodity-money relations of labour force acquires the possibility to offer freely themselves to the proprietors of capital that have a necessary turnover means and the personal qualities. It took place after bourgeois revolutions in Europe, civil war in the USA and serfdom cancellation in Russia. Since the evolution of labour-market began.

Labour-market development in Ukraine took place under socio-political factors and events influence: 1861 - serfdom cancellation; 1917 - social revolution; 1921 - new economic policy; 1929-1930 - the totalitarian political regime constitution, New Economic Policy cancellation, industrialization and collectivization beginning; a middle 1950th is a political "thaw"; 1980-90th is "perestroika", democratization, acquisition of independence. During the independence in Ukraine, labour-market began to regenerate. As Marshavin Y.M. and Vasylychenko V.S. said: "the system of wage regulation did not meet the requirements of a market economy and was a cause of hidden unemployment development through the loss of wage's the stimulant, distributive and social functions.

Present-day functioning of home labour-market has the elements: market subjects; economic and legal decisions; market situation, social payments, infrastructure and is characterized by the contradictions to which is much attention is paid in Ukraine and the world because they touch the main subject of labour-market - a man. With the help of labour-market society chooses the only man's abilities that are needed for certain work implementation. The problems of national labour-market are: low average level of earnings; out-of-control labour force migration; Ukrainian workers' legalization; low tendency of workplace creation. The main problem of labour-market is unfavorable demographic changes in our country. So, according International Center of long-range researches investigation the population of Ukraine swiftly grows short: from 1993 to 2012 - more than 10%.

Till 2050 the prognosis quantity of Ukraine's population will grow short more than one third: from 46 to 29 million persons. By the state on 2025 about a fourth of Ukraine's population will be older then 60, in 2050 - this quantity will attain one third. The reasons of such tendency is: low level of life duration in Ukraine - 66, that is 11 years less than in Western Europe countries; considerable level of child's death - twice as high than middle in Europe, one of the most low levels of birth-rate in the world [1]. The typical indication of labour force quality became the considerable worsening of modern home labour-market, its disparity to the modern requirements, low level of professional grounding together with low level of labour and executive discipline.

We investigated the problems of modern labour-market from one side proceeding from general regularities, peculiar to the market relations, and from other - the Ukrainian specific of market environment forming.

The general feature of labour-market forming in Ukraine is that it passes in the conditions of labour force suggestion increase and demand reduction on with some increase of highly qualified labour demand. In 2009-2011 is labour market is characterized by tendencies[4]:

1. - a decrease of population economic activity as a result of emigrant processes and reduction of population natural increase;
2. - restructuring of enterprises activity, reduction of public sector, increase of service business;
3. - expansion of informal employment;
4. - insufficient investment activity and obsolescence of the production fixed assets;
5. - labour subsidized in majority economy industries;
6. - increase of unemployment;
7. - a high level of employment in private sector of economy, considerable part of manual labour

There are some positive changes caused by way out from a crisis. The staffs are increased and new productions with the set of personnel in food industry and household chemicals enterprises are opened, a situation gets better in the production of building materials. However a situation remains difficult enough at the labour market in the export-oriented industries: metallurgical, machine-building, chemical and oil-

processing, they cannot be out of crisis because of debt to the exporters on VAT, that has already reached 20 milliards hrn.

Key tendencies that characterize employment in the Ukrainian economy are defined as follows:

1) Increase of actual level of population employment with considerable productivity lag in comparison to other European countries from 2009 to 2011.

It is clear from tab.1, that there was a certain height of employment (according to the datum from Government service of statistics) from 2009 to 2011. Also after the 14% falling in 2009 took place acceleration of increase of GDP in 2011 to 5,2% from 4,2% in 2010.

Tab.1 Index dynamics of socio-economic development of Ukraine

Index	Year 2000	Year 2009	Year 2010	Year 2011	Years 2009-2011
Employed, thousand persons	20175	20192	20266	20324	132
Unemployed, thousand persons	2656	1959	1786	1733	-223
Economically active population, thousand persons	22831	22150	22051	22057	-93
GDP is in the costs of 2000p. (mill. hrn.)	170070	249609	259979	273277	23668
GDP is in the actual costs of million.hrn.	170070	913345	1082569	1316600	403255
Middle salary (hrn.)	230	1906	2239	2633	727

At the same time, changes in GDP are in a greater degree related to the vibrations of export, than with the real increase of the labour productivity due to new technologies [5].

In 2012 nominal GDP of Ukraine made 1 trln. 408,889 milliards hrn., the real increase of GDP laid down 0,2%, deflator - 8%. The most article of GDP that showed a most increase (+3,9%) is trade, cars repair, household products and articles of the personal consumption - 219,6 milliards of hrn.

Mining shows the increase in 2,5%, production and distribution of electric power, gas and water in 2,2%. Payment for financial intermediaries services grew short on 12,8%, construction - on 8,8%, agriculture, hunting, forestry - on 4,3% [5].

The Ministry of economic development and trade also estimated the increase of GDP on results 2012 in 0,2%. A department explains the deceleration of economy increase by the strengthening of negative processes influence both of external and internal character. Basic industries, which formed worsening of economic dynamics are an industrial production, construction and transport, agriculture, and preservation of crediting low level is one more additional negative factor.

According to labour productivity index, which is calculated by International monetary fund (IMF) and International Labour Organization (IOL) for 85 countries, Ukraine occupies a 72th place, so we have to pay our attention on the fact that in comparison to the past decade this index has doubled.

2) «Denationalization» of employment sphere. Comparatively with previous periods in 2012 share of employees in a public sector in the average worker and office worker quantity in a national economy reduced from 80,4% to 70,2%. Most share of non-state sectors was in trade, public catering, harvesting and marketing, construction, financing and crediting.

3) Reduction in the standard employment full-time segment due to the rapid development of non-standard forms of employment (home, virtual, distance, temporarily). The trend is confirmed by the steady decline in the number of staff employees. Thus, in 2011, they were 10556 thousand persons, compared with 10526,7 thousand persons in October 2012.

4) Deformalisation of employment. The development of the non-governmental sector is not so much by establishing a system of small and medium business, but by population redistribution in informal employment. According to experts, Ukraine's population receives about 35% of income without registration, especially in construction, trade, hotel and restaurant business and agrarian sector, and the share of informally employed in these industries and sectors of the economy varies from 30 to 60%. The share of the shadow economy reaches almost 60% of GDP. According to the results of labour force researches in Ukraine in 2000, the share of informal employment was 14.8%, and in 2008. - already of 21.8%, and in 2010. - 22,9%. In 2012 the amount of the informally employed rose slightly to 4704,9 thousand people from 4649,2 thousand in 2011.

5) Content of unemployment at a relatively stable level, and the increase in the unemployment level in 2012. In 2009-2011 the unemployment rate has decreased from 8.8 % to 7.9% in relation to the economically active population, and from 9.6 % to 8.6 % to the working-age population. The rate of registered unemployment in 2011 was 2.5 and 1.8 per cent. Higher rate of unemployment is in the so-called «public» production, but more higher is in private subsidiary and household. A positive trend is the decrease in the share of qualified specialists among the registered unemployed. However threatening tendencies remain the increase in long-term, youth, people 50+ unemployment and other socially vulnerable categories of the labour market. A clear increase in employment and income is in new types of economic activity: information-technological sphere, tourism businesses, the pharmaceutical business and agricultural business.

According to official sources, the level of unemployment in Ukraine in accordance with the methodology of the International labour organization (ILO) in the first half of 2012 was 8.4%, this indicator reaches the level of one of the most crisis years - 2009. According to the information of the State Statistics Committee, the total number of registered unemployed on December 1, 2012, compared to 1 November increased by 10.4% to 441,3 thousand person, that on 6,8% more compared with the corresponding date of 2011. The level of registered unemployment in the country as a whole in November increased by 0.2 percentage point on December 1 of the previous year amounted to 1.6% of the population of working age. For 3-5 months this figure may grow to 1.5 million people.

According to experts, the rate of unemployment in the first quarter of 2013 may reach 10-10,5%. The labor market of Ukraine is a little inert and responds to economic shocks with a certain time delay. However, the official unemployment figures is just a faint reflection of the real problems in the sphere of employment. Many companies, as well as during the previous economic crisis, work on the scheme of part-time, part-time employment. It should also be considered that the state does not officially take into account the actual number of unemployed inhabitants of countryside.

It should be noted that 44% of the unemployed in the labour market of Ukraine are young people under the age of 35 years, although the majority of vacancies is targeted exactly at this age [6]. This can be explained by the fact that a significant problem is the imbalance of demand for workers and their professional qualifications. Also, in our opinion, the recruitment and vacancies equipment are complicated by the high requirements of employers for vocational training of jobseekers and their experience of work on the one hand, and on the other hand the low level of remuneration for highly qualified applicants, which offer employers. To solve this problem on labour market, the Ukrainian government proposes the introduction of professional standards, which have perfectly proved in the developed market economy countries.

At the stage of economic growth in Ukraine the implementation of regulatory measures aimed at the elimination of hidden unemployment, a policy of full productive employment acquires special importance. Efforts of state power bodies and, first of all the government should focus on the introduction of effective incentives for creating new workplaces, providing employment guarantee in the process of privatization and restructuring of enterprises, support of entrepreneurship and self-employment of population, the expansion of the practice of public works, the increasing flexibility of the labour market. The goal of the state policy in the informal sector and subsistence economy is in a gradual transfer of the employed population to the higher levels of the organization through the promotion of full, productive and freely chosen employment and the improvement of social protection of vulnerable population [2].

A strong legislative basis for the development of social and labour relations and the labour market is developed in Ukraine. This is

the Law of Ukraine «On employment of population» (updated in 2012), «On compulsory state insurance in case of unemployment», «On labour remuneration», «On collective contracts and agreements», «On social dialogue», «On the professional development of the workers on manufacture», etc. The reform of the Code of labour laws is completing, it will unite the partial laws and regulations and will include new provisions regarding state and market regulation in the labour sphere. It was tasked to promote freely chosen, full and productive employment according to the General course of the development of socially oriented market economy in Ukraine.

Conclusions. The analysis of the evolution of home and European labour markets, its driving forces show that the development of effective employment policies should be gradual, sequential and non-conflict transformation of modern forms and methods, regulation of this sphere to the market mechanisms self-regulation through the mediation of commodity-money relations processes of the turnover of the labour force. Such an approach means first and foremost achievement of equivalence in the exchange of work results to the fund of the subsistence means required for a person to a normal ability to work and to provide for the expanded reproduction of the labour force by lifting the price of the labour force. This will give the opportunity to create the necessary background for the efficient functioning of the labour resources on an parity with other agents of the unique social reproduction process.

At the same time, scientific research and economic practice has convincingly proved that the further evolution of the market relations is more associated with the formation of a socially oriented labour market, without which, in principle, it is impossible to build a socially oriented market economic system. The formation of a socially oriented market is a long and complex process of socialization of social reproduction in the unity of its productive forces and relations of production, which takes place in the interaction of many factors and requires the existence of an appropriate environment. If the degree of socialization of the economic system is determined by the level of employment and incomes of the population, so the socially-oriented labour market is the most adequate of the socially-oriented model of the state.

International experience shows that the labour market cannot exist outside of a competitive, based on private property economy and democratic institutions. The national labour market covers all the social reproduction through which each industry and each company will receive the number of professionally-qualified staff with certain cultural and ethic characteristics that are adequate to the requirements of a civilized and democratic economy [3].

The modern model of the Ukrainian labour market is paradoxical and is characterized by contradictions, preventing its effective integration. Employment policy and the remuneration policy are not coordinated, government and market regulators do not interact, the decisions that are taken, is the reaction to the events, and is not proactive, the labour market is isolated from the housing market, loans, investments, goods and services; the state monitors the income of employers; legislation is being developed, but is violated and does not hold. Researches have shown that the necessary transformations of the labour market coincide with the measures, necessary for the European integration of Ukraine's economy. In the case of their realization the life conditions of labor market functioning and regulation will be close to the European ones. In turn, the European Union countries are interested in having Ukraine as a full partner and not a problematic country at a crossroads.

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#### ЭКОНОМИКО-МАТЕМАТИЧЕСКИЕ МЕТОДЫ И МОДЕЛИ В УПРАВЛЕНИИ КРУПНОТОВАРНЫМИ КОМПЛЕКСАМИ

*Автор выполнила анализ преимуществ и недостатков крупнотоварного агропромышленного производства. В статье показаны результаты исследования методических основ построения экономико-математических моделей. Автором определены группы методов и моделей для усовершенствования управления промышленным производством молока на крупнотоварных комплексах.*

**Ключевые слова:** крупнотоварный комплекс, промышленное производство, принятие решений, управление, моделирование, экономико-математическая модель.

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#### ECONOMIC-MATHEMATICAL METHODS AND MODELS IN LARGE COMMODITY MANAGEMENT COMPLEX

*The author conducted an analysis of the advantages and disadvantages of large commodity agricultural production. The article shows the results of a study teaching the basics of building econometric models. The author defined group of methods and models to improve the management of industrial production of milk on large commodity complexes.*

**Keywords:** large commodity complex, industrial production, decision making, management, modeling, economic and mathematical model.

Постановка проблемы. Молочное скотоводство – важная отрасль сельскохозяйственного производства, которая обеспечивает потребителей ценным и необходимым для поддержания жизнедеятельности продовольственным продуктом, который характеризуется высокой питательностью и незаменимыми составляющими веществами, а также сырьем молокоперерабатывающие предприятия и другие отрасли народного хозяйства.

Вместе с тем на сегодняшний день отрасль находится в очень сложной ситуации. Уменьшается объем валового производства, численность поголовья молочного стада, производительность коров, качество произведенного сырья находятся на низком уровне.

В условиях развития рыночных отношений важным фактором повышения эффективности хозяйственной деятельности агропромышленных предприятий разного направления, в том числе и по производству молока, рост их конкурентоспособности, обеспечение стабильного развития субъектов разных форм собственности и хозяйствования является внедрение новых методов и моделей в процесс принятия управленческих решений. При этом возникает необходимость исследования особенностей методики моделирования производственных процессов соответствующих предприятий, выбора типа моделей, порядка их строения, оценки