

Labor factor efficiency in the agricultural industry

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Abstract: Agricultural problems associated with prospects of the rural population and agriculture in general have recently become an important factor in the modern economic policy development. The urgency of finding ways to improve the labor resource efficiency in agriculture pursuant to the state tasks is determined by the need to restore the agricultural potential of the country and to keep the state's role in the development of agricultural production.

Key words: Human resources; Agriculture; Sustainable development; Human resource management; Potential; Level; Region

1. Introduction

The promising technical interventions in agriculture have repeatedly failed to deliver the benefits they promise because the political environment does not encourage farmers to take up these interventions; such institutions as land or tree tenure mean that farmers would not reap the gains from their climate-smart labor. Inappropriate policies and weak institutions may result in adopting practices that are unsustainable or actively degrade the environment (Campbell, 2013).

The lack of information regarding the quantitative and qualitative characteristics of the capacity of the rural enterprises causes difficulties in forming their development strategy, and, therefore, reduces the opportunities for sustainable growth, and predetermines the use of a qualitatively new approach to the agricultural management with a view to achieve sustainable development.

Economic growth and employment in rural areas are positively influenced by natural resources and environmental quality, various sector structures of the economy and the quality of life. The following factors have negative impact on rural development: demographic trends and the loss of young people, monosectoral economies, poverty, poor infrastructure, low levels of skills, knowledge, entrepreneurship and innovation, underdeveloped social and institutional capital (SEGIRA, 2012).

The solution of food insecurity problem depends to a certain extent on the efficient use of labor resources in regional agriculture.

The foreground tasks for improving the efficiency of agriculture include general cost reduction and the use of cost-effective management mechanisms. One of the elements of such mechanisms implies the improved use or reasonable increase in the

production capacity of agricultural enterprises given limited resources of all kinds. The production increase will significantly reduce the consumption of material, technical, human and financial resources. The formation of indicators with a view to assess the potential level of using the agricultural enterprises and the effectiveness of their management is especially important.

The need to establish the effective mechanism and management tools in field of agriculture is determined by the lack of effective methods to manage uncertainty of its environment. The problem of assessing the potential of the rural enterprise management in conjunction with functional subsystems remains unresolved. The existing methods used for assessing and managing the potential of rural enterprises are very narrow and used only locally.

The regional agriculture needs relevant regulation mechanism and more efficient use of labor resources in the agricultural enterprises, which makes it possible to solve many social and economic issues. This mechanism is intended to:

- Increase the production of agricultural products;
- Provide full-time employment of the rural population;
- Create favorable conditions for the employees;
- Staffing, training and retraining;
- Manage the production resources and to use them;
- Consider the emerging labor market;
- Revive the villages, along with stabilization of the rural population, preservation of their national traditions.

Modern economic development demands rational distribution of productive forces, which will give the possibility to provide greater efficiency, maximize earnings along with careful, rational use of nature resource potential, preservation and improvement of

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the environment. At the same time, the integrated use of natural resources, the introduction of non-waste technologies into the processing of raw materials and fuel are very important. With regard to the present location of production, the emerging market particularly demands restructuring of the entire economic system, socially oriented economy, managing the economic development of certain regions. Improvement of the economy's territorial structure, providing rational combination of economic and social development of each entity in the region, national education should be directed at their effective interaction in the economic sector.

2. Literature survey

Chuenchoksan and Nakornthab (2008) argue that cross-sect oral reallocation of employment made one - third of the 3 percent annual productivity growth during the boom years (2000 – 2007). However, the July 2013 Monetary Policy Report (Bank of Thailand, 2013) notes that the contribution of labor reallocation turned negative in 2008 – 2012. Lathapipat and Chucherd (2013) note the persistent productivity differentiation across sectors and a gradual reduction in the pace of structural transformation.

For centuries, travelers, traders, explorers, conquerors, colonizers, knowledge seekers (students and scholars), job and asylum seekers, and

employees and/or managers of international organizations travelled across borders and had to adapt themselves to living in different societies and new cultures. They had to manage themselves and others, when necessary, in much tougher and more hostile living conditions as compared to the present days. Many empires were partially built on the efficient management of resources across cultures. One of the main reasons that caused their demise was the conflict resulting from misunderstanding or disrespect to cross-cultural differences

However, until the end of the second half of the twentieth century, there were only a few studies, textbooks or courses devoted to cross-cultural management, therefore, the economists, political analysts and international business scholars paid very little attention to this phenomenon. Only after 1980s, the cross-cultural management became a subject of academic research and study; the studied were largely devoted to the management of expatriates and the problems of staffing related to the U.S. multinational companies abroad. (Evans et al., 1989; Bartlett and Ghoshal, 1989; Adler, 2002; Dowling, Schuler and Welch, 1994; Dowling, Festing and Engle, 2008).

The study of modern publications devoted to evaluation, formation and use of labor capacity has allowed determining the potential of labor costs redistribution (Table 1).

Table 1: The growth-redistribution scheme

	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5
	Capital-using technical change	Labor-using technological change	Improved agricultural resource base	Reduced costs for chemicals sourcing	Reduced costs for chemicals distribution
Changes in poverty index	2.07	-3.47	-2.71	-0.13	-1.13
Growth	-1.05	-2.91	-1.76	-2.55	-1.15
Redistribution	3.12	-0.56	-0.94	2.43	0.02
Source: Author's calculation, Journal of Economic Structures 2014 3:8 doi:10.1186/s40008-014-0008-x					

The labor-using technological change (Scenario 2) causes a reduction in the poverty index by 3.47 percent. 2.91 percent out of the 3.47 percent make the poverty index due to the growth effect. This means that if inequality does not change, poverty will be reduced by 2.91 percent. Thus, redistribution was responsible for 0.56 percentage points of poverty reduction. These findings are consistent with earlier data, which evidence that unskilled labor-intensive agricultural activities have higher poverty-reducing capacity, as compared to the high-skilled, capital-intensive activities (de Janvry and Sadoulet [2010]; Loayza and Raddatz [2010]). Similarly, the improved agricultural resource base (Scenario 3) reduces poverty by 2.71 percent. The growth effect contributes to 1.76 percentage points in poverty changes while the income distribution effect contributes to 0.94 percentage points.

he United Kingdom-based Management Charter Initiative (MCI), the independent competence-based management development organization, identifies

seven key roles and required competencies. These include competencies required to manage roles like managing activities, managing resources, managing people, managing information, managing energy, managing quality and managing projects (MCI Mangement Standards, April, 1997). Thus, it is possible to identify the main features of the term "potential", namely:

- Potential as a temporary response, which may vary over the life cycle,
- Potential as a defined set of resources, the use of which is possible only under relevant conditions
- The result of using the potential of the company is to move in the direction of the intended target,
- The purpose of capacity building is to find ways for sustainable enterprise development with preservation of purposeful movement.

3. Methodology

The suggested methodological approach to evaluating the agricultural potential implies classification of the objective factors reflecting the degree of harnessing the potential of each of the selected sub-systems: natural, technological, technical, organizational, socio-economic and financial. During the development of a system of indicators to assess the level of capacity utilization, the author used the following principles, which correspond to the purpose of the study and the nature of the object:

- Causality, i.e. the presence of a distinct link between the factor and potential;
- Independence of existence, in other words, objectivity;
- Proportionality of influence, which implies direct linear relationship between the factors and potential;
- The use of directly measurable data, which gives the possibility to provide the mathematical expression of factors and the availability of information;
- Depletion, ie the finite quotient;
- The absence of multicollinearity between the factors.

The general views of domestic and foreign scholars on the theoretical principles that characterize business functioning under present conditions, led to the systematic approach, which became the methodological basis of this study; that is, the need to study such a complex and multifaceted object as the agricultural industry enterprise, along with its internal and external relationships and interdependence.

4. Results of the study

The strong interdependence of the working hours, wages and productivity is a good example, and as it was previously discussed, interventions made with a view to jointly tackle wages and working hours have also been successful at generating significant commercial gains at the firm level. Secondly, addressing several working conditions together may help balance out the negative commercial impacts of costly improvements in individual labor conditions (e.g., child labor interventions). Moreover, the benefits derived from related labor interventions may be mutually reinforcing, and hence yield greater overall

benefit if tackled together-such as providing training on a range of complementary skill areas (Croucher et al., 2013).

In order to take advantage of the productivity gains through science and innovation, one needs to employ more highly skilled workers. Agricultural improvement, as shown by the present practices, is directly connected with technological and research advancements. Traditional sources of competitive advantages, such as financial and natural resources, technology and large-scale economies can be used to create value. However, the resource-based argument implies that these sources are increasingly accessible and easy to imitate. Thus they are less significant for competitive advantages especially in comparison to the complex social structure such as the employment system. In that case, human resource policies and practices may become an especially important source of sustained competitive advantage (Jackson & Schuler, 1995; Pfeffer, 1994).

Finally, it should be also noted that for any given product, the relationship between improved working conditions and enterprise-level competitiveness depends significantly on the production stage involved. This is evident in the increasing segmentation of workforces in food and garment export supply chains, as previously explained in relation to job security. The “two tiers” of these workforces experience not only differences in job security but also substantial differences in wages and other working conditions (Barrientos et al., 2011; Barrientos and Visser, 2012).

State agricultural enterprises are permanently characterized by certain incoherence of their elements given the impact of many factors. In this regard, the author suggests taking a detailed look at the factors affecting the object. Both the internal and external factors acting on mega-, meso- and micro levels are presented in Table 2, upon the standard classification matrix. The mismatch of enterprise subsystems, given the impact of these factors requires relevant measurement, assessment and management. The study of modern publications devoted to the evaluation, formation and use of agricultural development gave the possibility to determine their potential with regard to the space-time intervals, which indicates the availability of certain conditions for the full utilization of available resources in obtaining the desired results.

Table 1: Potential factors affecting the level of capacity utilization

	External		Internal			
	Mega level (state)	Meso level (region)	Micro level (industry)	Mega level (company)	Meso level (division)	Micro level (separate brigade)
Natural	Climatic conditions, geographical location	Climatic conditions, geographical location, natural resources	Land exploration, pasture quality characteristics	Balancing the conditions, land preparation	Land and grassland bonitation,	Fertility, water cut
Technological	The STP level, governmental	Innovation, regional and	Level of specialization,	The system of	The structure of	The complexity of

	policy in the field of innovation and investment	sect oral environmental infrastructure	cooperation, concentration of agricultural production	plowing and sowing, the level of their combining	the process	the process
Technical	STP development level	Production standards	Technical condition of the equipment, the degree of mechanization and automation of basic processes	Productio n machinery and equipment	Technical condition of the equipment, the level of mechanization	Technical condition of the equipment, advanced technology and innovation
Organizational	Company regulations	Labor legislation	State regulation and organization of production, labor and wages	Scientific organization of labor, rational organization of production processes	Labor organization and the division of labor	Equipment , jobs facilities , labor determination and specialization
Social and economic	Demographic structure, the real income of the population	The unemployment rate, level of education, the quality of life of the rural population	Working conditions, safety, production, operation	Forms and systems of remuneration, motivation, labor, social welfare workers	Qualificati on level, work stability	Labor discipline, psychological climate
<i>Financial</i>	Monetary and fiscal policy, public pricing	Investment climate in the region, the regional tax policy	Pricing, lending, leasing development	Policies aimed at financial resources attraction, income formation and distribution, pricing strategy, individual payment behavior, and reserve and investment policy development.		

Keeping in mind the impact of the mentioned factors, it becomes clear that capacity is a limited characteristic of agricultural enterprises; this means the possibility to quantitatively measure and assess the opportunities. In other words, the condition of the enterprise at every stage of its life cycle is determined by inherent characteristics, which present the strictly fixed quantitative parameters.

Furthermore, the impact of “distance” from the major urban centers, which are usually centers of production or technology and knowledge management, is significant for productivity growth, since it affects the flow of information and the spatial diffusion of progress, and even the adoption of any innovation by relevant businesses (Polyzos, 2003).

Urban centers are the recipients of agricultural products and therefore affect crop type and intensity. In general, agricultural areas situated near large cities are more intensively cultivated, since their proximity to the marketplace ensures a demand for the agricultural products produced, which constitutes one of the main points of the von Thunen theory (Labrianidis 2002).

Fortunately, the long-standing “job dementia” (Amsden, 2010) has started to abate in recent years due to mounting evidence that the challenges of rural poverty within agriculture-based economies are too complex to be addressed by narrow technocratic approaches. Instead, the key question is shifting: how can the ongoing processes of economic growth, structural transformation and the rising labor productivity be stimulated further and, more

importantly, harnessed to create the labor-based pathways out of poverty?

If the state of the company changes, for whatever reason, then the quantitative parameters of this state change as well, that is, the level of capacity utilization is different. Such a transition of the system from one state to another fits the logic of its evolution, when the internal and external perturbations do not exceed the “red line” range, which keeps the system safe and coherent. If the specified range is exceeded, the system becomes unstable, breaks, or the accumulation of quantitative changes leads to a completely different system. For example, diversification of production in significant quantities may cause changes in the company's profile, which may result in the emergence of another entity, having different purposes.

For Wright & McMahan (1992), SHRM refers to “the pattern of planned human resource deployments and activities intended to enable an organization to achieve its goals” (p. 298). To sum up, it appears that some of the frequently cited fundamental elements of SHRM in the literature are: SHRM practices are macro-oriented, proactive and long-term focused by nature; views human resources as assets or investments not expenses; implementation of SHRM practices bears linkage to organizational performance; and focusing on the alignment of human resources with firm strategy as a means of gaining competitive advantage (Nee & Khatri, 1999).

The functional structure of the aggregate rural enterprise capacity is determined by the structure of

the production system and consists of two levels. The first level is presented by the production potential, reflecting the possibility of purposeful functioning of the agricultural enterprise, which includes the following:

1. Natural potential - the availability and quality of natural resources as well as the conditions of their use.

2. Technological capacity - the existing conditions and resources that allow the extraction of minerals from the subsoil with minimal losses and recycle them to the finished product stage. Technological capacity directly depends on the natural factors as the working technology is determined by geological conditions (availability of minerals).

3. Technical potential - the technical security of the production process, which implies the use of advanced means of labor, comprehensive mechanization and automation of production, the introduction of new and modernization of the existing equipment.

4. Organizational potential - the presence of spatial, temporary conditions to provide interaction of the production process elements. This potential depends largely on the parameters and the level of natural, technological and technical capacities of the enterprise.

5. Social and economic potential of a rural enterprise - the social and economic conditions related to obtaining maximum benefit from the use of natural, human, material and information resources. The enterprise also feels the impact of many other potential factors – the internal, certain industrial, organizational, technological, By and large, the external factors are the most substantial - demographic structure, unemployment, working conditions, etc.

The second level is presented by the financial potential, i.e., the availability of financial resources for the rural enterprises to invest in the ongoing activities and future development, which could enhance the productive capacity of the enterprise. Financial capacity of the rural enterprise is defined as the proportion between the enterprise funds and the external impact, determined by the national, regional and global economic policy, public policy, pricing and lending, regional investment climate, direct state regulations and the rural sector development.

The lowest level of using this potential corresponds to the development phase of the enterprise. During this period, it has the largest amount of resources and opportunities, which are exhausted by the beginning of the decay phase. The rural enterprise potential reaches its maximum at a certain operational stage, when the economic growth effect of the system is slowed down due to exhaustion of reserves. At this point, the capacity utilization level is close to its maximum value. Further operation of the system can be carried out within the framework of sustainable growth before moving into the decline phase. The control action in this case is reduced to the rapid elimination of

mismatches in the system and maintaining the use of the potential at the highest possible level.

Since the increase of the life cycle duration in agriculture is not possible, the only way to improve the overall economic performance is to implement qualitative changes in one or more subsystems of the enterprise, without changing the set objectives and programs. This should result in the increase of the total capacity of the enterprise. In addition, there is a time discrepancy at a higher total capacity, which recovery is accompanied by the intensive use of economic benefits. One should keep in mind that the implementation of quality changes should begin even before the complete exhaustion of the relevant potential, in other words, to provide the continuity of the production process.

At the same time, the external environment could also become the source of perturbation, which resulted in the industrial potential increase, i.e. the reserves for increasing the enterprise capacity. This source is a typical scientific and technical progress, the latest developments in the field of labor and wages, institutional changes in the economy, market changes.

Thus, the Kazakh industry produces almost nothing; practically everything is sold as raw materials. The only solution is to establish agricultural production, with regard to the Kazakh territory and climate, which will give the possibility to cultivate crop and breed livestock. Kazakhstan should restore the selection activities, create breeding farms, strengthen the food base, and build a plant for the production of food for animals. If nature resource potential is not a deterrent, the Kazakh government should initiate qualitative changes in the agricultural industry system, bringing it to the new level of sustainable development. The author considers it possible that two sources of increased capacity be distinguished: changes in external and internal conditions of the system and the quantitative and qualitative change in the structure of resources.

Such a formulation of the concept of sustainable growth leads to the realization that growth has its limits. The company has reserves of steady growth, however not all of its subsystems reached the final level of consistency. Having exhausted the possibilities (reserves) for sustainable growth, the company stops growing, thus reaching maximum efficiency. Given this state, the company can exist as long as it is desired; its operation is not accompanied by further increase in efficiency, which supports the process of regulation.

The state employment policy is a part of the socio-economic policy, aimed at resolving the problems of unemployment in the economy by increasing the effectiveness of employment programs, the development of social partnership, promoting mobility of the economically active population and increasing labor market flexibility.

The main factor that determines human resource efficiency is the seasonality of agricultural labor. It is caused by the seasonality of production and

mismatch between the production period and the working period. Annual seasonality reduction and raising the effectiveness of the labor resource utilization can be achieved through improvement of industrial structure, keeping in mind regional and

industrial conditions, development of auxiliary industrial production and fisheries; improvement of economic incentives for employees and business development in rural areas (Fig. 1).

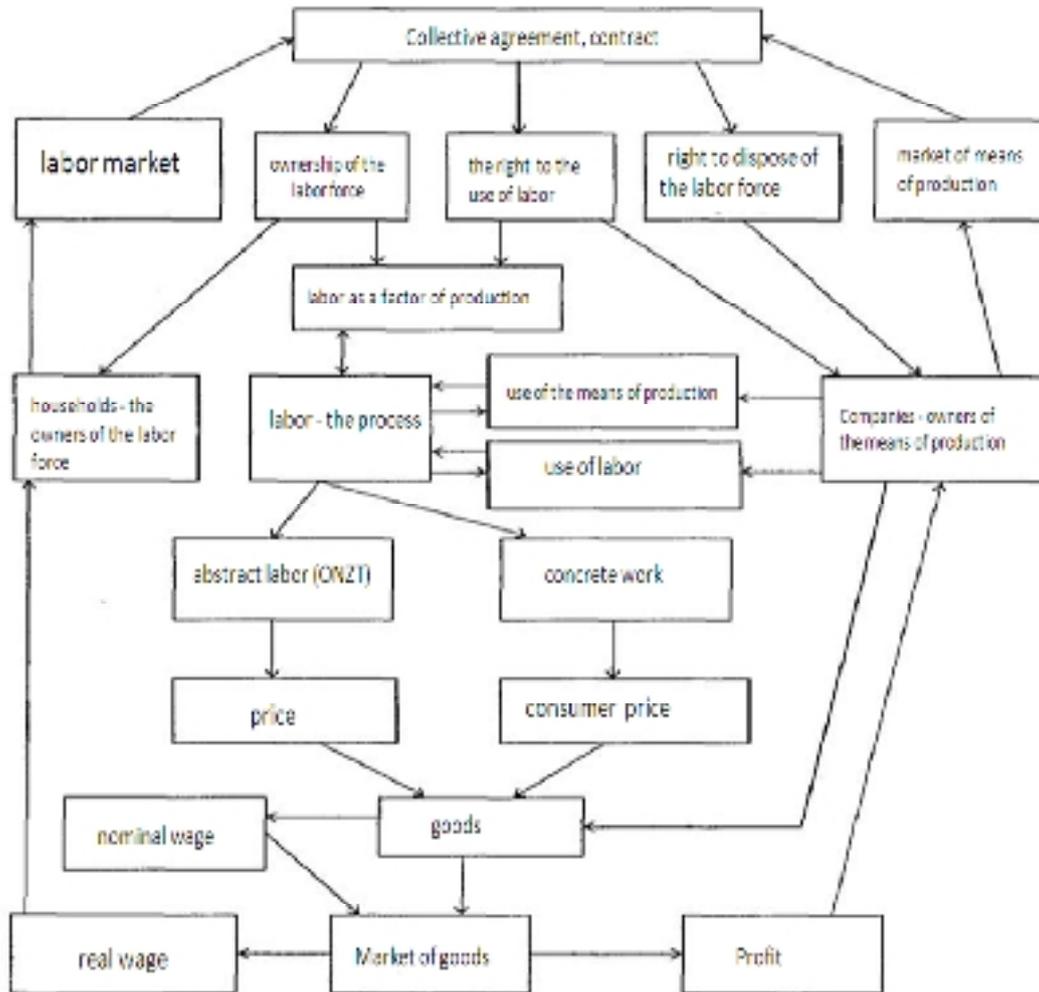


Fig. 1: The interaction of factors of production, income generation and cost recovery in the market economy at the micro level

The main directions of the state employment policy include:

- Labor mobility increase and protection of the national labor market;
- Providing equal opportunities for citizens regarding free choice of employment and labor market;
- Providing decent living conditions and free development for individuals;
- Promoting employment and entrepreneurial initiative of citizens;
- Social protection in the field of employment; prevention and reduction of mass long-term unemployment;
- Encourage employers to keep the existing and to create new jobs;
- Combined independence at the state and local levels with a view to promote employment;
- Regulation of growth and income distribution, prevention of inflation;
- Development and implementation of measures to provide employment and control over this process;

Employment in the areas inhabited by indigenous peoples, with due regard to their national and cultural traditions;
International cooperation in solving the unemployment problems.

Personnel training are an important component of the active state employment policy, along with social support for people who lost their jobs. Many training activities improve the professional quality of employees; enhance competitiveness of the non-working population through providing new skills and retraining, depending on the labor market situation.

Sources of funding aimed at employment promotion in the agricultural sector are shown in the diagram.

Stimulating the creation of new jobs and the promotion of self-employment (entrepreneurship, private entrepreneurship, and farming) should be funded from the state budget. Resources of the Employment Fund should be used for keeping the jobs, and retraining the unemployed individuals.

The growing companies need to organize courses for their future workers to promote their fast training and retraining within a short period. The "continuing education" should become the basic principle of learning, including learning through the labor exchanges. There is a need to create inter-republican school for retraining and advanced training of redundant workers and the unemployed persons based on the existing educational institutions. The labor exchange and the relevant bodies responsible for training with regard to the administrative - territorial divisions, based on the analysis and employment forecast, will determine the thematic focus of training, the list of educational institutions, as well as a set of training programs. Labor exchanges, focusing on the availability of training places may conclude agreements with the redundancies and organize training in their chosen profession.

The primary challenge is to amend labor legislation in order to increase mobility, reduce the hidden processes in the labor market, thus providing sustainable balance between the interests of employees, employers and the state.

Governmental programs aimed at employment promotion need to have due regard to the regional specificities of the labor market and to concentrate financial resources on employment in regions with high unemployment rate.

In order to increase the labor demand, the government should organize and supervise the implementation of new programs, aimed at the scientific rationale of economic efficiency, technology, production and processing of agricultural products.

Rural businesses pursue the survival policy in market conditions, using the extensive way of development. Most of the analyzed companies are characterized by the pre-crisis financial condition, which is displayed by the increasing dependence on the borrowed sources of financial instability and insolvency, which has adverse impact on capitalization of profits; and this hinders the development of such enterprises. The general trend shows the backward technical potential associated with high depreciation of fixed assets. At the same time, there is considerable potential for increasing capacity on the basis of its strategic management.

The British example showed industrialization progress, the proportional contribution of manufacturing increased rapidly while that of agriculture fell. Then the proportional contribution of manufacturing grew less rapidly, agriculture continued to decline, and the proportion arising from commerce, services, the professions, etc., rose. British income estimates (Deane & Cole 1962), for example, show that about 45 percent of income was generated from agriculture in 1770, while 32 per cent was derived from agriculture, forestry, and fishing in 1801; the rate then fell to about 18 percent by 1861, just over 6 per cent in 1901, and only about 4 percent in 1961. At first, the proportion of income derived from industrial pursuits (unhappily, mining

and building are included into the estimate for manufacturing) rose strongly, from 23 percent of the total in 1801 to 36 percent fifty years later. In the next fifty years, the proportion grew slowly, from 40 percent in 1901 to 45 percent by 1961.

In Britain in 1801, 35.9 percent of the labor force was in agriculture and 29.7 per cent was in manufacturing and mining, leaving 34.4 per cent in all other occupations. The industrial sector more or less stabilized at 46.3 percent of the labor force as early as in 1901, but with agriculture still declining proportionately and employing only 8.7 per cent of the labor force, some 45 percent of the labor force was "released" from direct production of goods and food. In 1951, with industry employing 49.1 percent of the labor force and agriculture a mere 5 percent. Thus 45.9 percent of the labor force was released for services, professions, etc.

This particular structural transformation was much more pronounced in the history of industrialization in the United States. There, both agriculture and manufacturing experienced higher person-hour productivity than in Britain, along with easier access to general education (elementary and secondary), a more pronounced movement away from the direct output of goods and food was experienced than in Britain. However, this movement was more dramatic than in Britain because the industrial revolution found the United States more agricultural in terms of labor distribution than Britain was, where a considerable movement into skilled trades, hand manufacturing, and so forth had taken place before the inventions of the classical industrial revolution appeared. In 1820, when 71.8 percent of American "gainful workers" was employed in agriculture and 12.2 per cent in "manufacturing and trades," a mere 16 per cent did not produce either food or goods. Agriculture then declined in importance as an employer while the industrial sector expanded. By 1900, 36.8 per cent of gainful workers were in agriculture, 21.8 percent were in industry, and 41.4 percent had been freed from direct production for trades and services. By 1940, with 16.9 percent in agriculture and 22.4 percent in industry, 60.7 percent of the gainfully employed did not directly produce goods and food. In 1963, with 5.8 percent of the "civilian labor force" in agriculture and 28.4 per cent in manufacturing, 65.8 per cent of the labor force had been released for commerce, services, professions, etc.

Obviously, the productivity growth of agriculture and industry in the United States was very great, and one cannot foresee the limits of the labor release from direct production of food and goods. The "sophisticated or tertiary use of labor resources seems to be characteristic of the industrial development era. The classical Marxist industrial "proletariat" does not grow apace with industrial development but, rather, its growth in proportion to total employment slows down.

As regards the role of education in the most productive nations the possibilities of continuous improvement of the labor force "quality" through

education, thus creating ever more productive societies, are very great (Maizels 1963) and are apparently proceeding apace. Historical statistics on educational achievements in the United States (The U.S. Census Bureau, 1960) show a tremendous change in getting formal education by the labor force in the twentieth century. As late as in 1900, only 6.4 percent of American youths aged 17 had graduated from high school. By 1956, this number had reached the extraordinary level of 62.3 percent. In 1900, only 4 percent of American youths between the ages of 18 and 21 were enrolled in institutions of higher education; by 1956, the figure was 29.9 percent, and by 1964, the figure made approximately 33 percent. If the American society is prototypical as regards the future world industrial society, one of the industrialization results will be vast improvement of the labor force quality and, hence, of productive potential. [SeeCapital, Human.]

Kazakhstan needs to form a developed industrial infrastructure like in the United States to provide steady growth of agricultural production. The formation of the living conditions for workers of the agricultural enterprises is of particular importance. They consist of the work and leisure conditions, material incentives, infrastructure development, and rural social security. The experience of the administrative-command management system would be useful in the new market environment. The author considers this could increase the use of new productivity technologies, sharpening their cost and quality effectiveness through savvy platform design, and capitalizing on growth opportunities in a global market with varying regional needs based on market maturity.

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