

INTERNATIONALIZATION OF THE ECONOMY AND CHARACTERISTICS OF TECHNOLOGICAL DEVELOPMENT IN KAZAKHSTAN

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ABSTRACT

It is shown that Global Economical Crisis along with financial aspects has structural component connected with the beginning of substitution of prevailing technological with the new way and formation new global technological structure on the basis of 6th technological structure. Therefore, leading adaptation of basic technology of new structure is giving a chance for developing countries to have a claim for development of positions in global technology sphere for post-crisis period. And all these is connected with additional burden of redundant force of obsolescent technological structure as for all developing countries so for Kazakhstan.

Examination of technological trajectory of economy developing in Kazakhstan shows that it is more and more deflected from global trajectory because of reinforcement of technological many- structure which appeared after negative structural displacement trends. It leads to predominance of sectors which are connected with 4th technological structure (60%). It is shown that 5th technological structure became dominated and maintained functions of engine in economic development in developed countries at the end of 1980s, while in Kazakhstan ten years later this role take sector of 4th technological structure. Hence, it is obvious that Kazakhstan is behind from world economy more than one technological structure.

It is recommended to take orientation on mixture of several development types (speed) for improvement of technological structure and increase of progressive parts of technological structures. The first type should be subordinated to selective development problems of 4th technological structure. The second type should be used for high selective development industry of 5th technological structure (TS). The third type should be used for formation of precondition of occurrence of future 6th TS. Thus, there will be three types in the economy of country for a long time. However, it is preferable to strive to shift accents on technologies which are on the early stages of life cycle.

KEYWORDS: Technological Structure, Industrialization, Technological Trajectory

INTRODUCTION

Last decades are marked with absolute changes in development of the world. There is unprecedented strengthening of science and technology influence on each side of vital activity, change of character of interrelationship between society and nature, intensive trends for integrity and interdependent in the world. And all of these are not the all list of new global characteristics which are evidence of deep changes happening for a humanity life. One of the most important regularity for long-term social and economic dynamic is rotation of acceleration and deceleration of economic development. These rippling are accompanied with updates in technological structure in economy and changes in directions of techno-economical development.

RESEARCH QUESTION

There are developing different approaches for the search of a new way to understand reality of contemporary world, it's past and future in economical science.

In the famous book of E.Toffler "Third war" there are distinguished three largest revolutions in the history of human civilization.[1, p.21]. The first wave began from neopolitical revolution and put the start of agricultural civilization. Industrial revolution became the start of the second wave. And in the last quarter of XX century came into being the third wave- postindustrial civilization.

Approach to long-term social-economical dynamic from the continuous replacement of large civil cycles' point of view is supplemented with developing suggestions in the scope of theory of long waves. And they are connected with such names as N.D. Kondratyev [2], I. Shumpeter [3], G. Mensha [4], K. Freeman [5] and others. This theory appeared due to actual evidence. Beginning with the first industrial revolution, rotation of acceleration and deceleration of economical development, which was seen in price dynamic, capital percentage, bank deposits, salary and more or less in changes of physical volume value indicators. Changes in household conjuncture repeating in average every half century (45-60 years) were called as kondratyev waves or cycles. Depending on character of economical dynamic indicators there are "decreasing" (going down) and "increasing" (going up) waves or upgrade phase or slump phase cycle.

In the current theory we are not interested in self changes in economical activity. Contrary, how these changes are influenced by updates in technological structure of economy and changes in directions of techno-economy development. Early mentioned theorists pay a lot attention to this aspect. They assign clusters of basis innovations as the key role in the long-term changes, which appear simultaneously and create leading sector (sectors) of economy. Its broadening stipulates the passage to appropriate long wave. Usually, in time of increasing wave or before 5-10 years occurring fundamental science inventions. And according to new inventions after 20-30 years, i.e. in phase of slumps are created basis inventions which open the way for implementation of technical inventions in phases of depression and exhilaration.

Frequency of technological and structural revolutions allows examining economical development as the process of establishment and replacement macroeconomic complex of technologically connected industries. They are cooperated with general technological principles, work culture, industry organization and its orientation on appropriate type of consumption and lifestyle. On such interpretation of economical development are built technological structure concepts and close to it techno-economical paradigm. [6,7]

According to research running in the scope of concepts there is a principal of one-direction happening in different countries of technological changes, national trajectory similarities of techno-economical development and also tendency to synchronization of macroeconomic ripping and technological changes. This is provided due to results of economical internationalization, market globalization, i.e establishment of it as worldwide. Global wide-spread of basis innovations designate integrated rhythm of world economical system by use of individual stream of goods, capital, information, and labor force.

Entrepreneurs of different countries who are the first inter in mastering of basis industry of new technological structure obtained comparative advantages and capture foreign markets. Due to that businessman make their life cycle of technological structure longer. This cycle lasts while opportunities of profitable investments in extension of industry of

given structure in the scope of world market keeps going on. In a consequence of international trade and capital flow everlasting deletion of leaders becomes impossible. Therefore, spread synchronization of technological structure in different countries occurs for a late period of its life cycle. Establishment and replacement of technological structure obtain global character in conditions of contemporary internationalization of household activity. New industry-technical systems are spread from leading countries to outlying districts of world market for few years.

Global economical crisis along with financial aspect has structural component. It is connected with the beginning of replacement of dominant technological structure with the new one. Currently, there is formation of new global technological structure according to 6th technological structure.

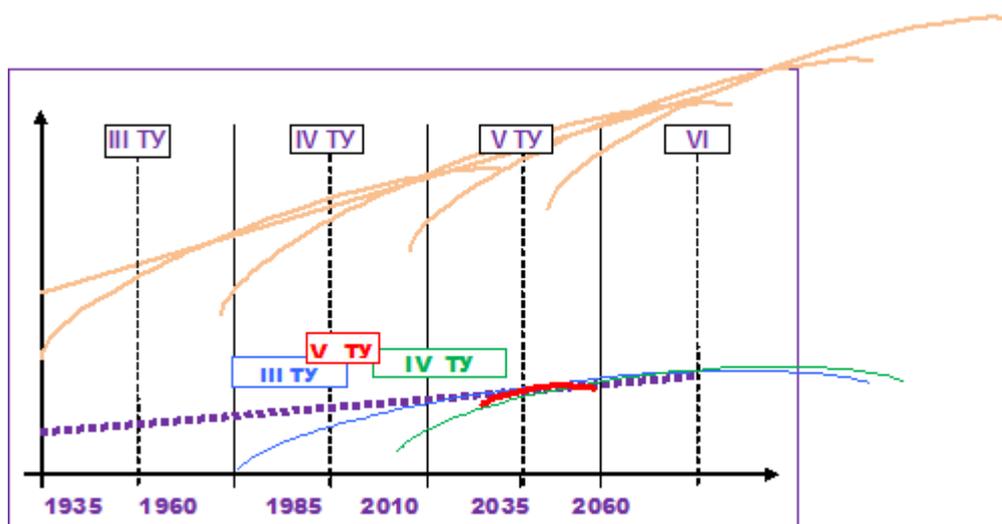
Leading mastering of basis technology of a new structure gives a chance to developing countries in post-crisis period pretend for development of positions in the global competitiveness. These countries more or less are burdened with the redundant force of obsolescent technological structure, so for them are opening additional opportunities of advanced economical growth. It is also related with Kazakhstan.

ANALYSIS

Operating system of statistical calculation does not allow sufficiently assign relationship of technological structure. In this case there are expert's estimations. For instance, it is concerning with Russian economy. According to some of them, the third structure take 55%, the fourth structure 30% and the fifth 5% in Russia.

For today, according to our estimations, the portion of fifth TS is about 1%, fourth TS is about 35% and third one is about 65%.

Degradation of technological structure in Kazakhstan economy is connected with negative trends of structural displacements in economy. Degradation is characterized with deindustrialization, which became shown during 2000 when was economical growth on the basic of gross products factor. As a result, in the structure of economy became dominated oil production, colored metals, e.i. sectors with are related with the fourth technological structure. Its part in the volume of industrial production consists of 60%. While in developed countries from 1980s the fifth technological structure became dominated and maintained function of locomotive economical development. In Kazakhstan after decade this role is taken by sectors of fourth technological structure. Thus, Kazakhstan is behind of world economy for a one technological structure. (Figure 1)



TY- Technological Structures

Figure 1: Technological Trajectory of Kazakhstan

Analogous shifts also took place in economy of others countries of post-Soviet countries. This has lead to changes in their structures, in reality to deindustrialized production. Therefore, there occurred distinctive reconstruction “otherwise” – toward domination of low-technological, power-consuming and ecologically not perfect sectors. [8]

As a result of technological lagging in Rating of Global Competitive ability Positions Kazakhstan is worsening. So in 2011-2012 Kazakhstan take 72nd place, while in 2006-2007 took 50th place. Additionally, according to “Technological level” Kazakhstan changed its place from 82nd to 87th, while in “innovation” indicator it changed its place from 101st to 116th. (Table1)

Widening of scales of new technological structures could be achieved if to continue realization of beginning industrialization program in Kazakhstan. However, industrialization is very similar with Soviet model in the middle of last century. At the same time, it is almost not taken into consideration the experience of new industrialized countries, including Republic of Korea, which have demonstrated more effective industrialized model.

Table 1

	Rang 2006-2007	Rang 2007-2008	Rang 2008-2009	Rang 2009-2010	Rang 2010-2011	Rang 2011-2012	Changes to 2006
Global competitiveness index	50	61	66	67	72	72	-22
I. Basis factors of economical growth and development:							
1. Institution's quality	73	80	81	86	91	94	-21
2. Infrastructure	67	71	76	75	81	82	-15
3. Macro economical stability	14	25	74	59	25	18	-4

4. Health and beginning education	83	94	81	80	85	85	-2
II. Effectiveness intensifier:	49	58	64	69	71	76	-27
5. University diploma and professional preparation	51	57	59	59	65	65	-14
6. Effectiveness of goods market and service	54	63	80	84	86	87	-33
7. Effectiveness of labor force	13	15	12	18	21	21	-8
8. Development of financial market	60	80	97	111	117	121	-61
9. Level of technological readiness	70	77	75	69	82	87	-17
10. Market size	57	56	55	55	55	55	2
III. Innovations and business development:	73	84	77	78	102	114	-41
11. Business development	75	85	86	88	102	109	-34
12. Innovations	65	75	62	64	101	116	-51

Source [9].

Assessing perspectives of economy development in the country, it is useful to take into consideration current place in the scale of world household and regional area. Kazakhstan's location on the scale of world economy is characterized with the volume of per capita GDP according to purchasing power parity (PPP). This indicator in Kazakhstan in 2010 was \$12050 [10,11] providing 70th place within 180 countries. Similarly with Russia (GDP according to PPP - \$19840), according World Bank classification, it is included in the list of countries the average income.

According to level GDP per capita the population of Kazakhstan is possible to compare with such countries as Montenegro and Venezuela. Comparing, we could mention that other post – Soviet countries, especially in Central Asia are much behind. For example, Ukraine and Armenia are on the 97th and 104th places, respectively. Also Moldova (130), Uzbekistan (129), Kyrgyzstan (141) are could be compared with Vietnam, Sudan. Tajikistan in term of GDP per capita is on 144 place and close to Cambodia, which is in the list of least developed countries in the world.

However, there is no reason to be satisfied with early statistics. Especially if to take into consideration difference between size of absolute potentials (general volume GDP) and indexes of economical development level (GDP per capita) (Table 2)

Table 2: Some Basis Characteristic of Central Asia and Other Countries in 2010

Countries	Population (*1000)	Territory (km squared)	GDP According to PPP, 2010	
			Mrld \$	Per capita mlrd \$
Kazakhstan	16593	2724900	196.60	12050
Kyrgyzstan	5482	198500	12.1	2257
Tajikistan	6952	143100	14.7	2147
Azerbaijan	9111	75100	89.3	9869
Uzbekistan	28639	447400	87	3090
Russia	142914.1	17075400	2812.4	19840
Ukraine	45760	603700	305.2	6658
Belorussia	9471.96	207600	131.2	14178
Iran	74196	1648000	818.7	11467
Turkey	73723	780580	960.5	15340
Republic of Korea	48875	99720	1459	30000
China	1346950	9598077	10090	7536
USA	311029	9518900	14582.4	47184

Sources: World Development Indicator Database, World Bank, 1 July,2011;

The World factbook// www.cia.gov/library

These changes become more valuable comparing with large countries. For instance, China is inferior in term of per capita GDP to Kazakhstan. However due to giant population number potential to its population it is inferior to the USA only 2 times less. This gives opportunity to China, which is on the second place on GDP level, India (4th place), Russia (7th place) and Brazil (9th place) to create necessary and enough for formation of diversified industrial, science-technical, info-innovative potential according to the law of replacement of quantity into quality some critical amount.

In this case opportunities of Kazakhstan look really modest. Therefore, widespread comparison between Kazakhstan and Russia choices of their strategically purposes and development priorities looks not correct.

If Kazakhstan could maintain annual continuous economical growth not less than 7% during 10 years this lets achieve current level of economical development of such countries as Slovakia, Portugal, Estonia. For other countries of Central –Asia region such hypothetical growth of GDP would mean achievement for this period only level of contemporary Kazakhstan.

Here is the question: how is it possible to have such exceptional high rate of economical growth? Taking into consideration the practice of 2000s, when annual rate of GDP growth achieved 10%, we could answer this question positively. However, such dynamic of Kazakhstan's economic development was provided primarily due to prosperous conjuncture of world oil market which rapidly went down during global crisis. Even if the demand for oil is increasing again, how it is forecasted by experts in the sphere of global energy problems, unlikely that level of oil prices will come back. Therefore, prior dynamic of economy growth is unachievable only by oil export.

RECOMMENDATIONS

For enhancement of technological structure, rise of progressive technological structure part in Kazakhstan during formation of industry-technological politics preferable take orienteer in mixing several development types (speeds).

It is necessary to subordinate the first type to problems of selective development of fourth technological structure. Its center in the world economy is auto and tractor construction industry, nonferrous metallurgy, long-term consumption goods production, synthetic materials, organic chemistry, production and oil recycling.

The second type should be used in interests of high-selective development of fifth technological structure industry. Its center is electrical industry, computation industry, software, air industry, telecommunication, optical fibers, robot-building, manufacture and gas consumption, informational service.

At last, the third type is reasonable for formation of premises for beginning of sixth technological structure. And its center is biotechnology, nanotechnology and cosmos technology.

We could expect that in technological development of Kazakhstani economy will be three types. But it is preferable to strive to replace accents on technology which are situated on early stages of life cycle. Also spread of technology which embodies the third technological structure (center-steel, electro energy heavy auto-building, inorganic chemistry) should be limited, because they keep increasing technological spread with developed countries.

Strategy of selective development of fourth technological structure does not mean necessarily to force development of all manufacturing departments which it includes. Priority should be given only those manufacturing departments which have good perspectives for distribution on inside and outside markets. For instance, this is oil extraction and processing, and some nonferrous metals. Therefore, achieving growth limits by this structure in the scale of world economy it is effectually to have orient on mellow technologies getting with import during development time. We should realize that in case of predominant development of this structure the competitiveness of the whole Kazakhstani economy will not improved. This is the development way to keep current lag in sphere of technology of developed countries.

High-selective development of fifth technological structure production is more favorable for increasing of technological structure level and reinforcement of Kazakhstani economy's independence. Here should be given priority for modernization which has science-technical groundwork for usage of foreign "now-how". This direction could include semiconducting materials, component and ready parts of electronics, optoelectronic, telecommunications, calculating techniques, info measuring facilities, laser techniques, particularly clean matters, matters with specified characteristics, high effective catalyst, and biotechnologies. Along with this the development of fifth technological structure must be provided with the way of attraction of foreign capital, interring of transnational companies, and corporate entrepreneurship in sphere of organization of assembly production.

The one of the most important development activities is creation of background for advanced existence of leading productions of sixth technological structure. This material is technological background (modern communications, processing manufacture, infrastructure, service sphere) and intellectual (education, science development). On this way lays the downsizing the spread with science- technology leading countries. Having science and educational potential Kazakhstan could rely on definite success in this direction.

CONCLUSIONS

The experience of many developing countries gives evidence that if initial low level of GDP per capita is merging with definite achievements in sphere of national education and health care, it could promote the formation labor force relatively prepared to economical growth. Due to historical circumstances potential and real level of human development

(education, health care) is higher in Kazakhstan than in most developing countries. Moreover, considerable proportion of qualified labor force does not used or used insufficiently and early separately created manufacturing capacity are standing idle. Additionally, Kazakhstan, as many other independent countries, disposes science potential which is not available for many developing countries. Thus, all these factors could be operated for passage to stable economical growth.

Conclusion about world experience looks quite right that Kazakhstan not rejecting priorities of development of fuel-raw material sector must realize other development strategies at the same time, increasing industrial-technological potential. This is possible if raw materials and energy resources coming due to export to direct for technological development, innovations, structural purchases in economy. Also it is important not only to increase extraction and export of fuel and raw materials, but use related incoming currency for equipment and consumption goods import. Desirable that activation of natural usage would bring wide macro effect and give impulse for macro economical and structural-technological transformation.

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