ISSN 2241-8873

JOURNAL OF GLOBAL ECONOMY REVIEW

Volume 1, No. 3, 2015

Publication of the Department of Business Administration (Kozani, Greece)

SCHOOL OF MANAGEMENT AND ECONOMICS
TECHNOLOGICAL EDUCATION INSTITUTE OF WESTERN MACEDONIA

JOURNAL OF GLOBAL ECONOMY REVIEW

VOLUME 1, № 3, 2015

JOURNAL OF GLOBAL ECONOMY REVIEW
VOLUME 1, № 3, 2015

The Journal of Global Economy Review (JGER) is a peer-reviewed international scientific journal supported by the State Technological Education Institute of Western Macedonia, Kozani, Greece. Designed for lecturers, researchers, postgraduates and students.

JGER is an open-access journal.

All submissions should be sent via e-mail to jger@teiwm.gr or to the following mailing address:
Editorial office of the «Journal of Global Economy Review», Department of Business Administration (Kozani), Technological Educational Institute of Western Macedonia, Campus Kastoria, Box 30, 52100 Kastoria, Greece
Tel.: +30 (24670) 87181

ISSN 2241-8873

JOURNAL OF GLOBAL ECONOMY REVIEW

VOLUME 1, № 3, 2015

TABLE OF CONTENTS

ARTICLES

RESEARCH MATERIALS

Journal of Global Economy Review, Volume 1, № 3, 2015, pp. 4-9.

Disintegration of Ukrainian and Russian Economies

OLEKSANDR SHNYRKOV[1]
LYUDMYLA SHVORAK[2]

Abstract: This paper analyses tendencies and mechanisms of Ukrainian and Russian economies' disintegration. In particular, decrease in trade in goods and services, mutual investment shares of countries, migration and capital flows. Key factors that stipulate such disintegration are reduction of trade turnover due to trade war of Russia against Ukraine via discrimination of Ukrainian exporters, Russia's deprivation of privileges of Ukrainian workers, etc.

Keywords: Disintegration • Ukraine • Russia • Trade • Economic War • Investment • Integration

Introduction

Interdependence of Ukrainian and Russian economies has deep history, which started much earlier than 1991, when both countries became independent. During more than two decades of their cooperation as sovereign independent countries they still had synergy in different aspects – trade, production, finance, investment, which reflected their long history of being parts of one country.

General level of technological and market dependence of Ukrainian economy on Russian one demonstrated long-term tendency for further derogation of connections. Such trend was not constant and showed certain fluctuations in terms of political changes in relations between the two countries. For a long period Ukraine has been applying to the bivectoral policy of economic cooperation with both Western and Eastern countries. However in 2007 this policy changed as Ukraine commenced the negotiations on further integration with the EU. In 2011 Ukraine-Russian relations under the influence of intentions of Ukraine to integrate with the EU became more complicated and the trend of economical disintegration became more distinctive.

Such tendency directly reflected on the amounts of trade between Ukraine and Russia. In 2011, when the amounts of mutual trade were the highest, the share of Russia in Ukrainian export of goods comprised 29%, in 2013 such the share dropped to 23.8%, in 2014 – to 19.1% and in the first quarter of 2015 – to 10%. Allied situation took place in mutual trade in services between the two countries. In 2011 the share of Russia in Ukrainian export of services was 40,9%. Such share decreased to 36.9% in 2013, to 32% in 2014 and to 31% in the first quarter of 2015. Only in Ukrainian import the share of Russia doesn't demonstrate essential changes: 15.3% in 2011; 15.4% in 2014 and 15% in the first quarter of 2015. It can be explained by modest rate of trade dependence in this sphere comparing to the others.

Research Results

Reduction of Russia's importance in trade partnership with Ukraine is a result of decrease in absolute amounts of trade turnover. In Ukrainian export of goods in 2011-2013 such decrease comprised $4.8 bln

[1] Doctor of Economic Science, Professor, Jean Monnet Professor, Head of the Department of World Economy and International Economic Relations, Institute of International Relations of Taras Shevchenko National University of Kyiv, 36/1 Melnikova str., Kyiv, Ukraine. e-mail: aisch@ukr.net
[2] Ph.D. (economics), Teaching Assistant, Department of World Economy and International Economic Relations, Institute of International Relations of Taras Shevchenko National University of Kyiv, 36/1 Melnikova str., Kyiv, Ukraine. e-mail: lashvorak@gmail.com

and in 2014 – $ 5.2 bln. Export of Ukrainian services dropped $1.9 bln in 2011-2014. Therefore, total losses of Ukrainian export to Russia in the beginning of 2015 were almost $12 bln comparing to 2011. Such decrease is almost 45% and it significantly influences general negative dynamics of Ukrainian economy.

Table 1 Changes in Amount of Trade between Ukraine and Russia (2011-2015)[3]

	2011	2013	2014	2015
Share of Russia in Ukrainian part of goods export	29%	23.8%	19.1%	10%
Share of Russia in Ukrainian part of services export	40.9%	36.9%	32%	31%
Share of Russia in Ukrainian import	15.3%	15.4%	15.4%	15%

Russia has launched a real economic war against Ukraine. Aggression, discrimination, sanctions, blackmailing and blockade are the instruments describing current Russian economic policy towards Ukraine. In 2004-2015 Ukraine has faced more than 40 trade wars and 4 gas wars. Generally 32.4% of Ukrainian exported goods have been discriminated on the level of 10-20%; 41.2% of exported goods – on the level of 20-40% and goods with quota of 13.7% have become the object of market destruction (losses for such goods comprised more than 40%). Generally, 87% of total Ukrainian export to Russia have been more or less discriminated by open or hidden trade limitations on the Russian market and decrease of demand due to the political affairs (See Table 2).

Russia's economic hybrid war is characterized by breaking subregional chains with Ukrainian enterprises in industry and agriculture, increasing the banking and financial control over Ukrainian economy, increasing foreign debt of Ukraine through high gas prices and possible inputs into the hryvnia devaluation.

Moreover, Russia uses Donbass destruction and occupation as an anchor to stop Ukraine's integration with the EU. Such occupation has resulted in more than 20 000 deaths, stop in 25% and destruction of 10% of industrial enterprises. Ukraine will need to invest at least $1.5 bln for the renewal of the destroyed objects, which can make a black hole in the Ukraine's economy. Herewith the possibility of military actions renewal at any time blocks national and foreign investment in the economy of this region and in the Ukrainian economy in general. 17% of state budget expenditure is directed to the process of rigid, quick, deep and comprehensive disintegration of Ukraine and Russia alongside with high military daily expenditure necessary to oppose further destruction in Donbass. Such amount of money is highly important to be invested to solve social, infrastructural and other urgent problems in Ukraine.

Ukrainian import from Russia has also shrunk. In 2011-2014 such shrinking comprised almost $8 bln. Therefore, Russian losses from reduction of Ukrainian import can also be treated as significant. However, such reduction also reflects the negative tendency for Ukraine as it originates from the essential cut of power supply due to decrease of Russian consignments. That also influences the potential of Ukrainian economy to growth and especially development in net of its energy-consuming enterprises.

Lately, we have also been able to observe the tendency to decrease Russian investment share in Ukraine. Only in 2014 the amount of investment decreased for 31% comparing to the previous period (from 7.4% to 6.1%). Such tendency depicts both general disintegrational process and consequences from vast devaluation of hryvnia and ruble to US dollar.

Limiting measures in Ukrainian-Russian economic relations also expand to the sphere of labour migration. Since January 1, 2015 Russian authorities have deprived Ukrainian workers of privileges they had before and apply to them a general regime of employment based on the obtained labour patents. Together with the intensification of control over maintenance of maximum stay term on the territory of Russia (90 days during any 180 days) such deprivation will substantially influence general Ukrainian labour migration to Russia. Some experts forecast 20-30% decrease of Ukrainian migration flow to Russia. Possible losses of Ukrainian workers from such decrease may comprise $11-13 bln.

Despite partial loss of positions on Ukrainian market, Russia keeps influencing the processes in Ukrainian economy. That is stipulated by considerable positions of Russian capital in Ukrainian financial sector. Lately, Ukrainian market has experienced expansion of Russian banking capital. 4 of 15 banks indicated by the National Bank of Ukraine as banks of the first group have Russian capital and origin. These

[3] Calculated upon the data of State Statistics Service of Ukraine. Geographical structure of foreign trade of goods and services – http://www.ukrstat.gov.ua/

Russian banks account for 18% of overall capital (ownership capital and obtained funds), almost 21% of authorized capital and over 20% of issued loans by banks of first group. Only in one year the amount of overall capital of these four banks has grown almost 25% and the amount of their issued loans – 31%. This tendency took place within the general decrease of trade and economic relations between Ukraine and Russia. Russian capital also has a significant influence on Ukrainian stock exchange. Thus, two important Ukrainian stock trading floors – PFTS and Ukrainian Exchange are the affiliated structures to Moscow Exchange.

Table 2 Commodity Items in Ukrainian Export Subjected to the most Significant Losses due to Discriminative Trade Policy of Russia

Commodity item	Share in Ukrainian export to Russia in 2014 (%)	Decrease of export comparing to the relative period in 2013 (%)
1. Significant decrease (10-20%)		
Different food products	0.8	10
Sault; brimstone; soul and stones	3.8	18.1
Fossil fuel and products of its refining	1.6	18.9
Products of inorganic chemistry	7.0	16.9
Different chemistry products	0.4	19.0
Footwear	0.3	19.3
Glass and glass manufacture	0.3	18.6
Nuclear reactors, boilers, machines	17.1	14.1
Optical and photographical devices and apparatuses	1.1	13.9
Total on category 1	**32.4**	
2. Grave crisis (20-40%)		
Meat and fishery products	0.2	22.7
Plastics and polymer materials	2.3	38.2
Caoutchouc, rubber	0.3	35.8
Wood, wood wares	0.7	22.5
Paper, cardboard	5.8	21.3
Carpets	0.1	31.5
Wearing apparel and additional items, textiles	0.1	28.6
Other textile wares	0.1	35.9
Wares of stone, gypsum, cement	0.5	38.1
Ceramics	1.3	31.4
Ferrous metals	14.6	32.4
Iron wares	6.4	21.7
Cooper and coopery wares	0.5	33.7
Aluminum and aluminum wares	0.2	32.1
Tools, blade tools	0.1	30.4
Electrical machinery	6.7	31.6
Means of surface transport except railroad transport	1.3	27.8
Total on category 2	**41.2**	
3. Destruction of market (over 40%)		
Food and edible byproducts	0.7	56.2
Milk and dairy products, eggs and organic honey	1.4	60.9
Flour and grain products	0.1	55.4
Seeds and growths of oil plants	0.2	51.9
Fats and vegetable and animal oils	0.3	44.4
Sugar and confectionary from sugar	0.2	70.7
Cacao and cacao products	1.3	59.1
Products of vegetable processing	0.9	46.1
Alcohol and non-alcoholic beverages, vinegar	1.0	43.5
Organic chemical compositions	0.4	52.4
Wearing apparel and additional objects, knitting objects	0.4	40.4
Railway locomotives	6.3	63.3
Vessels	0.1	76.4
Others	0.1	73.7
Total on category 3	**13.4**	

Russia keeps the high level of control over production networks in key sectors of Ukrainian economy, including nuclear power industry (in nuclear fuel fabrication) and in aircraft and rocket engineering.

In the situation when Ukrainian economy is suffering significant difficulties deepened by slow implementation of system reforms Russian policy is directed on stipulating internal destructive processes,

which will aggravate economic social and labour conditions, and, therefore, generate mass social protests – the premise for further internal political destabilization. Such selected actions may appear in trade, material production, industrial cooperation, money turnover and currency relations.

In trade the abovementioned losses of Ukrainian export to Russia were the result of Russia's implementation of recent limiting trade measures as regards to the most sensitive spheres in Ukrainian export that had high level of dependence on Russian market. In particular, such limiting trade measures were applied to the markets of milk and dairy products (including cheese), pork, vegetable and fish canned food, juices, potatoes, sunflower seeds, confectionary of Roshen, AVK, 'Conti' and beer of 'Obolon' and 'Sun InBev Ukraine'. In addition, Russia has forbidden the transit of Ukrainian airlines via its territory.

However these trade limitations are only the introduction to the new, more extensive ones, which have already obtained the legal base in Russia. This entails regulation of Russian government on withdrawal from the free trade regime of 174 trade lines and positions (including provision, light industry, chemical industry, ferrous metallurgy, machine manufacturing, building materials, etc.) and relative implication of most favoured regime to them (general rates of import tariff provided for the countries-members of the WTO). Such new trade limitations may come into force in case of the Association Agreement implementation upon which deep and comprehensive free trade area between Ukraine and the EU will be created or in case if Russia suspects Ukraine in practical application of the provisions laid in Association Agreement. Such statement allows implementing trade limitations any time convenient for Russia and therefore making another spillover of destruction in Ukrainian economy. Limiting trade measures may also concern the Ukrainian export in service sector where transport services are dominating. Russia most likely will activate the policy of bypass transport routes for transit of gas and other goods.

Negative consequences from such actions of Russia may be significant and result in further economic destabilization including the shutdown of production on big enterprises, mass dismissals or application of nonpaid vacation practice, considerable external payment complications and finally to default.

In spheres of material production and industrial cooperation Russia may provide an incentive to further downfall of Ukrainian enterprises of a real sector and decrease of their market value. Such measures may lead to Russian acquisitions of suffering Ukrainian companies or elimination of them as competitors to Russian companies on the market. The aforementioned aim may be completed through:

• implementation of trade limitations that diminish amounts of sales and decrease profitability of economic activity of Ukrainian enterprises;

• policy of import substitution first of all in sectors where the highest level of dependence on Ukraine is observed;

• suspending contracts on cooperation supplies that may lead to breach of continuity of economic processes and additional costs of Ukrainian enterprises for searching of new suppliers;

• control over mechanisms of financial markets and possibility to influence the stock quotations of Ukrainian companies;

• delays in payments under contracts that may worsen financial conditions of Ukrainian enterprises.

Moreover Russia will organize or stimulate the transfer to its territory of Ukrainian enterprises which are important for creation of production networks especially in military-industrial and aircraft engineering spheres. Such measures are already being taken on the temporarily occupied territories of Donbass and Crimea.

In spheres of money turnover and currency relations Russia maintains influence on Ukraine. Through its widespread network of commercial presence, functioning of affiliated structures of its certain leading banks and control over financial markets in Ukraine Russia has a possibility to influence capital and currency markets due to stipulation of demand on them, acceleration or moderation of payments under commercial contracts and creation of local deficits. Such actions may result in triggering speculating market demand. The latter may also arise from significant Russian influence on Ukrainian informational space and deformation of adequate information brought by media controlled by Russia to Ukrainian citizens who have already lost confidence in Ukrainian currency. Further devaluation of hryvnia may create pricing disproportions of high volume and lead to the uncontrolled fall of all economic connection system as such fall makes the majority of market operations unprofitable.

Considering the high role of external money transmissions by Ukrainian workers migrants for Ukrainian balance of payments, we may expect implementation of procedures that will make such

transmissions from the territory of Russia more complicated.

Conclusions

Obviously the current deep crisis in relations between Ukraine and Russia is not transitional. Such relations have passed the event horizon: radical changes in political climate have taken place, any remains of trust in relations have been destroyed, drastic discrepancies in mental orientations of two societies have been shaped.

Since Ukraine commenced the negotiations with the EU on deep and comprehensive free trade agreement there were several possible ways to develop cooperation between Ukraine and Russia. Despite the implementation of different external-economic strategies in Ukraine and Russia, they still could continue their relations through free trade area of CIS countries or partial preferential zones (free trade areas of customs unions) for selected sectors. However, the current level of economical disintegration of countries challenges not only the perspectives of any Eurasian integration of Ukraine but also the possibilities of partnership and any preferential cooperation. Therefore, under the new political conditions economic relations of Ukraine and Russia will most likely derive exclusively on the bases of generally recognized principles of international law and WTO regulations.

In fact, this means that the era of Ukraine's balancing between two vectors – western and eastern is over and scaled geo-economic reorientation has started. Such process is long-lasting and shouldn't be based on measures of economic war and blocking of economic contacts due to political and ideological circumstances. Considering these principal aspects, the main motivation of system changes, which should appear in relations of Ukraine and Russia in economic sphere, should be confined to the following.

First, Ukraine needs to exempt national economy from a number of entities, formed in the past under other circumstances, which do not reflect the structure of comparative advantages of Ukrainian national economy on the foreign markets today. For example, existence of developed network of enterprises producing of power intensive chemical goods could be effective under granted supply of cheap gas from other republics of former Soviet Union (especially Russia), but now this sector is a source of significant economic disbalance.

The abovementioned problem reflects other necessity – notable decrease of Ukraine's dependence on external power supply. Such dependence on resource import have lately become one of the most important factors of national economy competitiveness depression. The solvation of this problem lies in long-term policy of energy effectiveness increase that would be implemented in production, life and principle change in the structure of economy. Providing significant progress in solving this problem is achieved, Ukraine can totally abandon import of expensive Russian gas or at least compel the rational pricing of this natural resource.

Second, Ukrainian economy should be structurally balanced by decrease in influence of elements that create significant risks for national security. Such problem is correlated with the abovementioned one – energy-intensity decrease. However, it becomes even more important due to existing connections of Ukrainian machine-building enterprises to their partners in the framework of cooperation productive chains formed in the era of Soviet Union not for increase of economic effectiveness, but from the military security point of view. Such connection has become the source of danger for Ukraine in conditions when Russia uses the instruments of artificial trade and economic limitations.

However high dependence of Ukrainian production on supplies to Russia is not the only problem. The majority of main technological centers which have exclusive ownership for technologies that are planned for transboundary production-cooperation systems in machine building is located on the territory of Russia (that especially refers to such strategically important sectors as space-rocket and aircraft, military industrial sector, nuclear power sector). It provides the crucial level of dependence in relative enterprises on the policy of Russia, which can easily block their development by means of technological transfer limitation through prohibition of certain intellectual property objects connected with cooperated production use.

Even if such technologies were not used, further existence of tight cooperation between the majority of Ukrainian and Russian enterprises would still be a problem. Ukraine is now adapting its standards of technical regulation to the EU norms. That is deepening the difference between Russia and Ukraine in the

sphere of technical regulation and is leading to the increase of barriers in mutual production connections. Decrease of such barriers is possible in case of implementation of the approach to harmonization of Eurasian technical standards with the EU ones. However there is no such tendency now.

Third, for Ukraine it is strategically important to diversify its trade and economic connections, develop the new ones, especially on non-traditional supply markets, and find new partners for cooperation, which are technological leaders in relative spheres. Due to the premises of Association Agreement, new possibilities for participation of Ukraine in European programs of innovation, cooperation and cluster production networks will be created. Obviously, it can't but negatively influence Ukrainian-Russian economic connections as regards existence of a number of outdated elements in them. However, in the framework of such policy new possibilities for bilateral relations can be created if the adequate way of incorporating them to threelateral or multilateral relations with the EU are found. Such possibilities exist in the sphere of mutual infrastructure development (transport, informational systems) and in the sphere of new knowledge and innovational decisions (particularly in power and environment) production.

Fourth, Ukrainian-Russian economic relations should be incorporated in a wider frame of global and regional mechanisms of economic relation regulation. The world has become too globalized and the countries have to apply to global forms of regulation instead of the national ones. In this context, it is important to note that Ukraine still does not effectively use regulatory possibilities of international organizations, where Russia is a member. In particular, Ukraine does not use relative WTO procedures provided for cases of breach of obligations, which a country undertakes before entering this organization. Thus, Russia in its economic policy has been systematically violating a number of key regulations of this organization. Obviously, Ukraine also has to commence negotiations on entering the Organization of Economic Cooperation and Development.

Fifth, even in conditions of complication in mutual political relations Ukraine did not initiate artificial decrease of mutual economic outflows. Such decrease does not comply with strategic interests of Ukraine. It is important to apply for a principle of wise sufficiency. Disintegration of Ukrainian and Russian economic relations should lead to creating more productive relations of innovative and developed countries with new premises of independent effective cooperation in future. Ukraine should be ready not only to limit destructive influence of Russia on the economy, but also to return to cooperate with this country if it becomes democratic.

It is important to underline that the abovementioned changes in Ukrainian and Russian relations are possible only in case of successful internal reforms in Ukraine which should trigger the demonstrative influence on Russian society and therefore indicate negative influence of geopolitical expansion course of Russia. If such reforms are not carried successfully in short-term that may lead to political default of Ukraine and its discredit in Europe, which may result in return to political course of 2013 but in a harder format it may even raise a question of integrity of Ukraine.

REFERENCES

Emerson M. (2014) Trade Policy Issues in the Wider Europe – that Led to War and not yet to Peace. CEPS working document 398, pp. 1-12.

Kopiyka V., Shnyrkov O. (2014) External Determinants of the EU-Ukraine DCFTA. NSG, №1.

Ocinka vtrat ta mehanizmi vidbudovi realnogo sektoru ekonomiki shodu Ukraini (2015). Analitichna dopovid – http://www.niss.gov.ua/public/File/2015analit/realniy_sector.pdf.

Oxford Economics (2012) The Impact of an FTA between Ukraine and the EU.

Popescu N. (2013) The Russia-Ukraine Trade. Spat Issue Alert – European Union Institute for Security Studies.

Regulation of Government of Russia Federation 'On Imposing of Imported Customs Duties to Goods Originated from Ukraine' № 959 as of September 19, 2014.

Rosijsko-Ukrainskiy Conflict: Pogliad Diplomativ ta Pozicija Ekspertiv (2014) Nacionalna Bezpeka ta Oborona, №5-6.

Selutin A. (2015) Rosiysko-Ukrainska 'Torgovelna Vijna'. Uridichna Gazeta.

Sidenko V. (2014) Degradacia Ekonomichnih Vidnosin Ukraini ta Rosii: Scho dali? Nacionalna Bezpeka ta Oborona, №5-6.

State Statistics Service of Ukraine. Geographical Structure of Foreign Trade of Goods and Services – http://www.ukrstat.gov.ua/.

Us I. (2014) Schodo Osoblivostej Zovnishnioekonomichnoi Politiki Ukraini v Umovah Stvorennia Novyh Integracijnyh Mega-blokiv. Analitichna zapiska. http://www.niss.gov.ua/articles/1553/.

Vitchizniani ta Mizhnarodni Ekserty pro Vidnosiny Kieva ta Moskvi (2014) Nacionalna Bezpeka ta Oborona, №5-6.

Zagrozi u Sferi Energetichnoi Bezpeki ta ih Vplyv na Stan Nacionalnoi Bezpeky. Analitichna zapiska. http://www.niss.gov.ua/articles/1808/.

Journal of Global Economy Review, Volume 1, № 3, 2015, pp. 10-17.

Financial Development through Shadow Banking: The Choice of Emerging Markets

OKSANA SNIZHKO[4]
IULIIA BUDZ[5]

Abstract: This paper examines shadow banking as a driver for development of financial system. We review the place of shadow banking in financial architecture and reason for it's growth and fall. We analyse differing approaches for definition of shadow banking and its influence on financial development of advanced economies. We discuss whether emerging market economies can benefit from shadow credit intermediation or lose by taking excessive risk. We analyse recent regulatory responses to loopholes in laws and regulations of traditional banking and shadow banking systems which financial crisis revealed.

Keywords: Shadow banking • Financial development • Emerging markets

Introduction

The recent global financial-economic crisis showed that financial system soundness is very important for economic stability and growth. Problems in financial system, through its markets and institutions, affect monetary and fiscal policy, worsen recession, decrease international capital flows and destabilize exchange rates.

It was argued that the worst global financial collapse was a result of quick growth of unregulated shadow banking and overflow of financial innovations that increased system risk. In contrast it's commonly accepted that non-bank credit intermediaries contributed a lot to improvement of financial system.

Advanced economies have experienced the need in balanced laws, regulations and supervision to provide good base for stable financial development and as consequence economic growth. Nowadays emerging economies need to choose whether to apply obsolete approaches to satisfy real sector's need in accessible financial inflows or to find pass of success in shadow banking as complement to traditional banking.

Literature

The linkages between financial development and economic growths were debated over time. For example, Robinson (1952) and Lucas (1988) proved that real economy is a key driver of financial development; Schumpeter (1911), Miller (1998) affirmed that financial sector boosts real sector growth. Recent research papers find the strong interconnectedness of both real and financial development (Levine, 2005 and Gerald, 2006).

Paul McCulley (2007) was the first to apply the term "shadow banking" describing the "whole alphabet soup of levered up non-bank investment conduits, vehicles, and structures". Pozsar, Z. Adrian, T. Ashcraft, A. Boesky, H. (2010, 2012) and Shin and Shin (2012) dedicated much afford to show the nature of shadow banking system and to measure it properly. Financial Stability Board and International Monetary

[4] Dr. of Econ. Sciences, Prof., International Finance Department, Institute of International Relations of Taras Shevchenko National University of Kyiv, 36/1 Melnikova str., Kyiv, Ukraine. e-mail: ovs2010@ukr.net
[5] Degree-seeking Applicant, International Finance Department, Institute of International Relations of Taras Shevchenko National University of Kyiv, 36/1 Melnikova str., Kyiv, Ukraine. e-mail: iuliiabudz@gmail.com

Fund create a wide literature base analysing global shadow banking perspectives.

Financial development end economic growth

Early researches on relationship between economic growth and financial system conclude that finance just follows industry, as response to changing demand on financial services from real sector. For example, J. Robinson (1952) claimed "where enterprise leads, finance follows". Other authors affirm the opposite, that well developed financial markets stimulate economic growth (Miller, 1998).

Nowadays it may be argued that real and financial sector are strongly interconnected and influence each other. Financial development is a source of improvement in performance of main functions financial system performs (savings mobilization and pooling; provision with investment possibilities and capital allocation information; risk managing; payments easing; investments monitoring) (Levine, 2005).

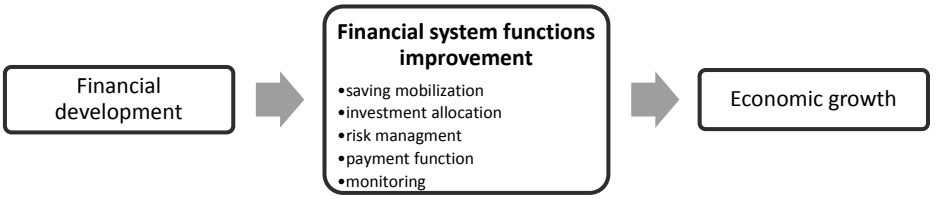

Figure 1. Financial system functions improvement
Source: Levine, 2005

Financial development is a process that improves quantity, quality, and efficiency of financial intermediary services by establishment and expansion of institutions, instruments and markets that support investment and growth process. Banks and non-bank financial intermediaries are institutions responsible for realization of financial system functions (Gerald, 2006). Properly developed financial system heats the economic growth.

Historically there are two types of financial systems: bank-based or market-based. In a bank-based system, banks play the main role in channelling funds from savers to investors, in the market-based, capital users and providers interact through markets. Traditionally, Japan and Germany represent bank system, while the US and UK represent market system (Bijlsma and Zwart, 2013).

The development of financial system is measured with depth, access and efficiency. The depth estimates the size and liquidity of markets. Access analyses the access to financial services. Efficiency shows whether financial institutions provide services at low cost and with sustainable revenues.

Financial depth is commonly used for measurement of financial depth. The greater financial depth is, the higher levels of productivity and thus income per capita are. Figure 2 depicts the financial depth in countries that traditionally represent different types of financial system. Domestic credit provided by banking sector shows the stable ratio to GDP over time. At the same time market capitalization fluctuates over time.

USA, Japan and UK has large portion of financial sector (fraction of GDP) and this may overheat real, because it does not seem to serve its needs. In the United States, banks do play an important role, but USA also uses stock and debt market more compared to other countries. Data of Japan shows that banks do really play the role of the mane intermediary in economy. On the other hand, German stock and bond market grew significantly before crisis (Bijlsma and Zwart, 2013).

Banks and capital markets influence economic growth, but it doesn't seem to matter which financial intermediation prevails in economy, because the overall financial development and efficient legal system stimulate productive capital allocation and industry growth. Laws, policies and regulation create an environment, where interests of savers, investors and intermediaries are supposed to be balanced, and where deregulation and restrictions are favourable for development and growth (Beck, 2002).

Shadow banking

As financial environment changes through time, it stimulates a search by financial institutions for innovations that would satisfy customers and make profit. Financial innovations, concentrated in shadow financial system, had been the main stimulators of financial development before crisis.

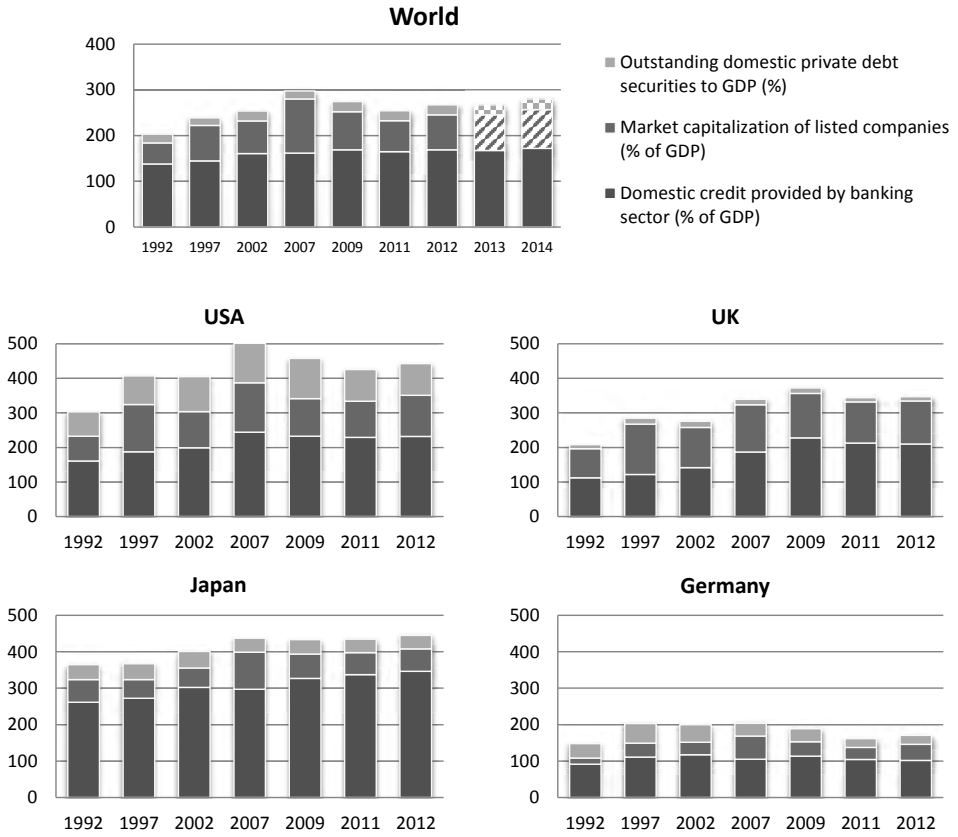

Figure 2. World financial depth, % of GDP
Source: World Bank, DataMarket

Shadow banks are nonbank financial intermediaries that provide services similar to traditional commercial banks, but are not regulated or supervised like a bank, they are hedge funds, money market funds, and structured investment vehicles (SIVs). Shadow banking system is a "system in which bank lending is replaced by lending via the securities market" (Mishkin, 2006). Pozsar Z. and other (2010) defined shadow banking as "financial intermediaries that conduct maturity, credit and liquidity transformation without explicit access to central liquidity of public sector guarantees".

Financial Stability Board proposed the widely used definition of shadow banking as "credit intermediation involving entities and activities outside the regular banking system". Credit intermediation is composed of such functions:

1) maturity transformation;
2) liquidity transformation;
3) leverage;

4) credit risk transfer.

Adrian an Ashcraft (2012) suggest that there are three obvious reasons for the increased role of shadow banking in global financial architecture such as:

1) Innovative nature of financial instruments developed by non-bank credit intermediaries
2) The tax avoidance motivation of non-bank financial institutions as well as accounting rules and capital requirements of banking system
3) The agency problem in financial markets

The role of banks as major financial intermediaries decreased during last two decades. A big part of this business was replaced by parallel or shadow banking, which operates on securities market and is relatively unregulated compared to more straight requirements for traditional banking (Figure 3).

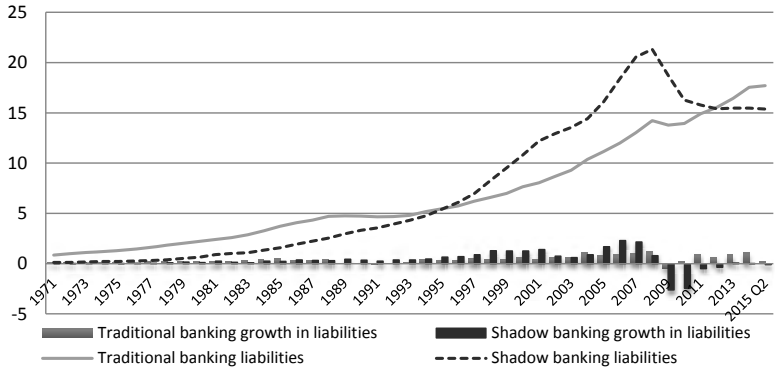

Figure 3. Shadow Banking growth and fall in US, $ trillion
Source: Flow of Fund Accounts of the United States, Pozsar and others (2010) methodology

The favorable regulatory environment at the beginning of 70th was the starting point for financial innovations. Being an important source of funding, liabilities of shadow banking expanded fasted than those of traditional banking since 90th till 2008, when the global creases revealed all weakness of the non-bank credit intermediation. Shadow banking reached its bottom in 2012 and start to recovery slowly. The reasons of weak demand on shadow banking services are slow real economic growth and high risk; the supply is restricted by new regulation. At the same time the growth of traditional banking slows down as a result of increased capital and liquidity standards for depository institutions.

Gorton G. and Metrick A. (2010) defined three important changes in banking: MMMFs, securitization and repos. Money market mutual funds are open-ended MFs that invest in short-term securities (treasury bills, commercial papers and repo), they are alternative to bank deposits. In Europe, approximately 22% of short-term debt governmental and corporate securities are held by MMFs. Securitization is a process of transformation of illiquid financial assets into liquid securities. Repurchase agreement is short-term sale of securities together with an agreement of commitment by the seller to buy back the securities at future date. Figure 4 presents the liabilities of shadow intermediaries in USA (obtained from Federal Reserve Flow of Funds data).

Shadow banking provide market with different types of exotic instruments, such as commercial paper, medium-term notes, asset-backed commercial paper, asset-backed securities, repurchase agreements, total return swaps, hybrid and repo/TRS conduits, ABS CDOs, ABS CDO-squareds, bonds, capital notes, and 1$ NAV shares (shadow bank “deposits”) and other. Pozsar Z. and other (2010) identified three subgroups of the shadow banking system:

1) the government-sponsored shadow banking subsystem. It is represented by the Federal National Mortgage Association (Fannie Mae), the Government National Mortgage Association (Ginnie Mae) and the Federal Home Loan Mortgage Corporation (Freddie Mac). These GSEs securitized their loan and mortgage portfolios, issuing mortgage-backed securities. MBS have high credit rating (usually AAA), because credit risk is retained by the GSEs.

2) the “internal” shadow banking subsystem is represented by large banks (bank holding companies) that use asset management and securitization techniques to obtain high return-on-equity.

3) the “external” shadow banking subsystem is represented by diversified broker-dealers, independent specialists and credit-risk repositories.

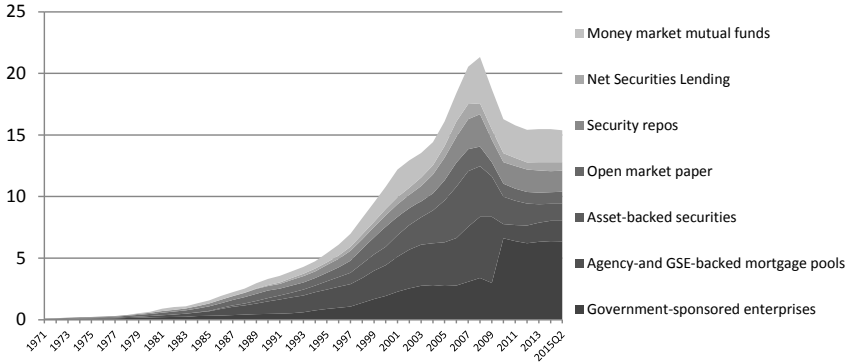

Figure 4: Shadow Banking architecture in US, $ trillion
Source: Flow of Fund Accounts of the United States

Applying the Monitoring Universe of Non-Bank Financial Intermediation (MUNFI) approach The Financial Stability Board (2014) estimated the global shadow banking sector at $ 75 trillion in 2013 (Figure 5). Financial assets of Other Financial Intermediaries (OFIs) represent 120% of GDP and 50% of banking system. As the most developed securities market is the market of USA, 32% of global shadow banking is concentrated there with $ 24 trillion, about 45% are concentrated in UE countries, and 33% in other countries. Following tax optimisation purpose many shadow banking institutions base in offshore zones, we may call them “shadow in shadow”.

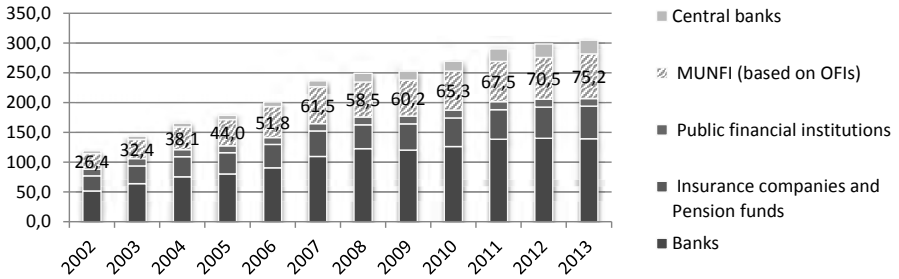

Figure 5. Total financial assets of financial intermediaries
Source: FSB, 2014

Noncore liabilities approach to measure shadow banking was proposed by Shin and Shin (2011). This measure includes noncore liabilities from banks as well as other financial corporation. There two types of measure: 1) narrow, which estimates the size of intermediation between financial and real sector; 2) broad, which includes internal shadow banking credit intermediation.

Shadow banking potential in emerging market economies

To continue grooving emerging markets are searching for cheap and wide available financial services. Shadow banking offer exactly what is needed: low cost loans and a wide range of flexible financial instruments. Are emerging markets ready to scarify financial stability with the aim to fuel real sector growth? Financial sector can develop and improve its efficiency with the growth of shadow banking as it

enables better credit and maturity transformation, risk sharing and deepen market liquidity (IMF, 2014).

Emerging economies show the fast growth rate of shadow banking in comparison with advanced economies as represented in Figure 6.

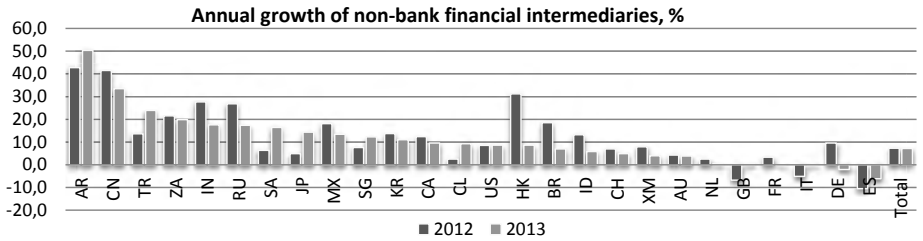

Figure 6. Annual growth of non-bank financial intermediaries, %
Source: FSB, 2014

The rapid growth of shadow banking in China with 41,5% growth in 2012 and 22,5% growth in 2013 is the response to new regulation rules since 2010 that put significant restrictions on the traditional banking system. The numbers in Figure 7 show that more that 70% of shadow banking of China is composed of loans that are originated as a result of regulatory arbitrage of banks.

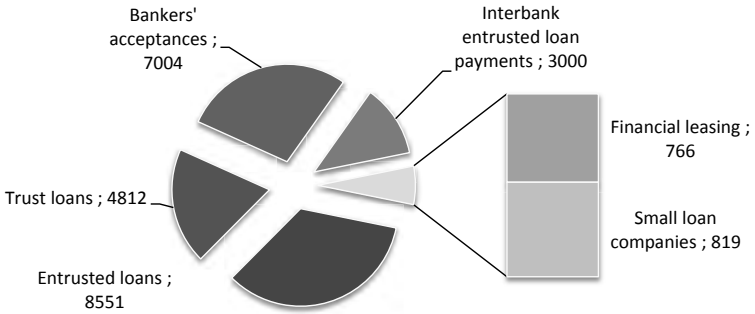

Figure 7. Composition of China's shadow banking, CNY billion
Source: Elliott and others, 2015

Indian market experienced the need in nonbank financial companies that propose accessible credits for specific sectors of economy. Mexican shadow banking is mainly boosted by the governmentally supported mortgage securitisation of lower and middle-income households. The presence of nonbank financial institutions (such as insurance companies and pension funds) allowed to create high demand on non-traditional financial instruments in Brazil (IMF, 2014).

Even though the growth of shadow banking in emerging economies is high there is still a huge potential for development as the size of non-bank intermediaries is relatively small (Figure 8). Financial systems of emerging economies remain bank-dominated.

Non-bank credit intermediaries may be a core factor for financial deepening, but national governments and international community should apply proper monitoring, as risk factors don't evanesce. In emerging economies Shin and Shin (2011) propose to take a precise look on non-core liabilities and foreign currency liabilities of banking sector as a measure of the stage of financial cycle for macroprudential policy, and indicator of vulnerability to risks.

Laws and regulations

Deregulation and financial liberalization during last 50 years played one of key roles in shadow banking formation. Foundation of parallel system to traditional banking system is related to market interest

rate, it is one of the reasons why these markets became very interdependent (Giron, 2012). Shadow banking proposed economy lower cost of borrowing and traditional banking changed its activities as response to higher competition. The traditional model of banking – borrow short, lend long, and hold on to loans – transformed in originate-to-distribute model of banking, that is more risky (Pozsar, 2008).

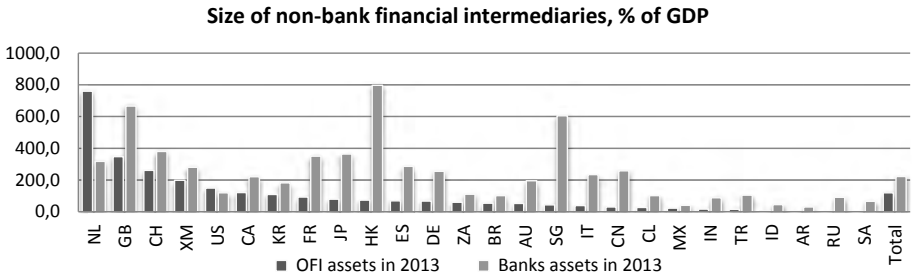

Figure 8. Size of non-bank financial intermediaries, % of GDP
Source: FSB, 2014

Global financial crisis showed that shocks in one market make an impact on other. Example of Lehman Brothers shadow activities with repo operations, overleveraged balance and bad risk management that ended with bankruptcy proofs that all system elements are important. Not only financial markets and institutions but also weak financial regulation was among causes of global financial crisis. As financial system architecture needs to be strengthened on national and international levels, Financial Stability Board (international body responsible for monitoring financial system and making recommendations on regulation reforms) was created in 2009. Another important reform is The Basel III.

The agreement introduces new capital quality, quantity and liquidity requirements that are designed to make banks more resistant to stress situations. The regulation of shadow banking system has made some progress. The Dodd-Frank Act is designed to lower risk in various spheres of the U.S. financial system ("too big to fail", Volker rule), requiring financial intermediaries to be more transparent about the assets, which their products contain. Regulations in the United States and the European Union require credit rating agencies to improve accuracy of ratings of products and institutions.

There is still a need in standardised definition of shadow banking institutions and instruments for proper application of banking and other financial legislation, as non-bank financial institutions require application of other regulation and supervision tools than banks.

With the growing representation of non-advanced countries in FSB there was organized Emerging Market Forum, which considers the issues of financial development in emerging market and developing economies. The main questions "in terms of the day" are financial sector reformation, Basel III implementation and macroprudential regulation. Another initiative of FSB is immediate information sharing about the results of new rules realization among jurisdictions (FSB, 2015).

Conclusion

The development of financial system heats economic growth that is why all components of financial system (markets, institutions, laws, techniques and regulation) have to be properly adjusted. Financial development strongly depends on financial innovations, which are concentrated in shadow banking system.

We have no doubt that financial development has a positive influence on real economy growth. At the same time we assume non-bank credit intermediation to be the main source of financial innovations of advanced economy. The negative characteristic of shadow banking is the creation of systemic risk because of strong interdependence of financial institutions and synthetic instruments.

The are differing approaches for definition of shadow banking as well as for its measuring (flaw of funds approach, MUNFI approach and noncore liabilities approach).

We expect shadow banking to compose a significant part of financial system in financial systems of

emerging market. The strong growth tendency of non-bank credit intermediaries is the answer to regulatory restrictions of banking sector, the lack of cheap and accessible loans, the grooving presence of foreign institutional investors and governmental social programs. Emerging markets have to take advantage of the great momentum to develop their financial systems, increasing depth, easing access and improving efficiency.

To reach financial development through shadow banking in is required to establish proper regulation and remove so-called "loopholes" in laws. All elements of mechanism, especially more complex and exotic ones, must be configured in the way to eliminate systemic risk and to increase the efficiency of financial system.

REFERENCES

Adrian, T. Ashcraft, A., 2012. Shadow Banking: A Review of the Literature Federal Reserve Bank of New York Staff Reports, no. 458 [online] Available at: < http://www.ny.frb.org/research/staff_reports/sr458.pdf >

Adrian, Tobias and Ashcraft, Adam B., 2012. Shadow Banking: A Review of the Literature. FRB of New York Staff Report No. 580. [online] Available at: <http://ssrn.com/abstract=2175144 or http://dx.doi.org/10.2139/ssrn.2175144>

Beck, T., 2002. Industry Growth and Capital Allocation: Does Having a Market- or Bank-Based System Matter? / Working Paper No. 8982 / T. Beck, R. Levine.- Cambridge, MA: NBER

Bijlsma, M. and Zwart G. (2013) The changing landscape of financial markets in Europe, the United States and Japan. Bruegel [online] Available at: <http://www.bruegel.org/>

Datamarket - [online] Available at: <http://datamarket.com>

Elliott, D. Kroeber, A. Qiao, Y. "Shadow banking in China: A primer". The Brookings Institution, March 2015 [online] Available at: <http://www.brookings.edu/~/media/research/files/papers/2015/04/01-shadow-banking-china-primer/shadow_banking_china_elliott_kroeber_yu.pdf>

FRB, Flow of Fund Accounts of the United States. [online] Available at: <http://www.federalreserve.gov/>

FSB, 2014. Global Shadow Banking Monitoring Report 2013. Financial Stability Board, Nov. 4, 2014. [online] Available at: <http://www.financialstabilityboard.org/2014/11/global-shadow-banking-monitoring-report-2014/>

FSB, 2015. FSB Plenary meets in Frankfurt, Germany. 26 March 2015. Ref no: 18/2015 [online] Available at: <http://www.financialstabilityboard.org/2015/03/fsb-plenary-meets-in-frankfurt-germany/>

Gerald, F., 2006. Financial development and economic growth: a critical view, Background paper for World Economic and Social Survey, Oxford University [online] Available at: <http://www.un.org/en/development/desa/policy/wess/wess_bg_papers/bp_wess2006_fitzgerald.pdf >

Giron, A., 2012. Crisis, Dollar and Shadow Financial System. Journal of Economic Issues 2012, vol. 46, issue 2, pages 511-518 [online] Available at: <http://econpapers.repec.org/article/mesjeciss/v_3a46_3ay_3a2012_3ai_3a2_3ap_3a511-518.htm>

Gorton, G. Metrick, A., 2010. Regulating the shadow banking system. Brookings papers on Economic Activity. [online] Available at: <http://www.jstor.org/stable/41012848>

IMF, 2010. Shaping the New Financial System Monetary and Capital Markets Department Prepared by José Viñals, Jonathan Fiechter, Ceyla Pazarbasioglu, Laura Kodres, Aditya Narain, and Marina Moretti October 3, 2010 [online] Available at: < http://www.imf.org/external/pubs/ft/spn/2010/spn1015.pdf>

IMF, 2013. Factsheet Financial System Soundness Factsheet. [online] Available at: <http://www.imf.org/external/np/exr/facts/banking.htm>

IMF, 2014. Global Financial Stability Report – Risk Taking, Liquidity and Shadow Banking: Curbing Excess while Promoting Growth (Washington, October 2014)

Kodres, L. Narain, A. Fixing the System. Finance & Development, June 2012, Vol. 49, No. 2 [online] Available at: <http://www.imf.org/external/pubs/ft/fandd/2012/06/kodres.html>

Levine, R., 2005. Finance and Growth: Theory and Evidence, in Phillipe Aghion and Steven Durlauf (ed), Handbook of Economic Growth, Amsterdam: North- Holland Elsevier Publishers, chapter 12, pp. 865-934. [online] Available at: <http://thannaletchimy.webs.com/Topic%201.pdf>

Lucas, Robert, 1988, "On the Mechanics of Economic Development," Journal of Monetary Economics, 22, pp. 3–42.

Miller, M.H., 1998. "Financial markets and economic growth". Journal of Applied Corporate Finance 11. [online] Available at: <http://onlinelibrary.wiley.com/doi/10.1111/j.1745-6622.1998.tb00498.x/abstract>

Mishkin, Frederic S. (2006), The Economics of Money, Banking, and Financial, 7th ed., Boston et al: Pearson International Edition.

Pozsar, Z. Adrian, T. Ashcraft, A. Boesky, H. "Shadow Banking". Federal Reserve Bank of New York Staff Report 458. July 2010. [online] Available at: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1645337>

Pozsar, Z., 2008. The Rise and Fall of the Shadow Banking System. Moody's. [online] Available at: <http://www.economy.com/sbs>

Robinson, J.,1952. The Rate of Interest and Other Essays. MacMillan, London. Chapter "The generalization of the general theory". [online] Available at: <http://www.questia.com/library/655489/the-rate-of-interest-and-other-essays>

Shin, Hyun Song and Kwanho Shin (2011): "Procyclicality and Monetary Aggregates", NBER Working Paper No. 16836, National Bureau of Economic Research. [online] Available at: <http://www.nber.org/papers/w16836>

World Bank - [online] Available at: <http://databank.worldbank.org/data/home.aspx>.

Journal of Global Economy Review, Volume 1, № 3, 2015, pp. 18-24.

Psychological and Social Dimensions of Marketing Communication

VIKTORIA KRYKUN[6]

Abstract: In modern consumption-based economy competition is becoming stronger and stronger, economic factors of rivalry are replaced by marketing, and immaterial benefits are more important for consumers than their basic material needs. The paper analyses social and psychological aspects of marketing communication; brand as its instrument, which includes psychological and social attributes. Also, the article is devoted to analysis of brand equity one of the main chains in evaluation of brand value, an indicator, which can increase the financial value of a brand and includes social and psychological dimensions of this intangible asset.

Keywords: Marketing communication • Consumer behaviour • Brand • Brand equity • Social psychology

Introduction

New challenges of modern global business and growing general marketing strategies are changing the essence of marketing communication. It becomes wider and accumulates new instruments, technologies and strategies. The wide range of classic and synthetic marketing communication based on marketing, sociological and technological instruments, is widened by social and psychological, which have stronger and deeper subconscious effect that lasts longer and helps to attract new and hold existing clients in conditions of asymmetry of information. So, the research of social and psychological aspects of marketing and implementation of new methods and technologies in company's activities are a very vital issue today.

According to the classic definition, communication is the exchange and flow of information and ideas from one person to another; it involves a sender transmitting an idea, information, or feeling to a receiver. The purpose of communication is to get one's message to others clearly, otherwise it can cause tremendous confusion, wasted effort and missed opportunity for business. Effective communication occurs only if the receiver understands the exact information or idea that the sender intended to transmit. A sender should understand what his message is, what audience he or she is addressing to, and how it will be perceived. One must also weigh-in the communication circumstances, among which only situational and cultural context have been examined so far. But today special attention is paid to psychological aspects and social surroundings.

Basic Results of the Research

One of the first scientists, who indicated the irrational behaviour of customers while choosing goods and activities was Sigmund Freud (1915), a psychologist and influential thinker. In his theory of the unconscious he coined, that such behaviour is determined by hidden causes in the person's mind. So, whenever we make a choice, we are governed by hidden mental processes of which we are unaware and over which we have no control. That's why customers rarely understand the real causes of their deeds. Very often the real reason for buying becomes not a functional value of goods, but hidden desires of people. Therefore, the ability to perceive the real motives of consumers, which should be based on social and psychological analysis of clients' deeds and arguments, is the main characteristic of modern marketing

[6] Ph.D. (economics), Assistant Professor, Department of International Business, Institute of International Relations of Taras Shevchenko National University of Kyiv, 36/1 Melnikova str., Kyiv, Ukraine. e-mail: v.krykun@mail.ru

communications.

Freud's ideas and theories were supported and cultivated by the Swiss psychiatrist and psychotherapist who founded analytical psychology Carl Jung. He created some of the best known psychological concepts, including the archetype, the collective unconscious, and extraversion and introversion, which are very useful not only in psychiatry but also in philosophy, anthropology and marketing. In his works Jung formulated extrovert (gain energy when they engage with the outside world and become flat when left too long on their own) and introvert (find it draining to engage with the outside world and need time to recharge on their own) personalities. Jung also described the ways different individuals prefer to receive information about the world around them – whether primarily through their senses or by deploying their intuition. He also explored how they tend to process the information they have received – in a more thinking, rational mode or in a more feeling and evaluative mode. The central concept of Jung's analytical psychology is individuation – a process of transformation whereby the personal and collective unconscious is brought into consciousness to be assimilated into the whole personality. Jung considered individuation to be the central process of human development. The scientist wrote that our emotional reactions to things tell us about our values and needs. Very interesting for examination of social dimension of marketing communications is Jung's persona concept – a consciously created personality or identity fashioned out of part of the collective psyche through socialization, acculturation and experience. Carl Jung argues, that persona is a mask for the 'collective psyche', a mask that pretends individuality, so that both self and others believe in that identity, even if it is really no more than a well-played role through which the collective psyche is expressed. Jung regarded the 'persona-mask' as a complicated system which mediates between individual consciousness and the social community (Jung, 1971). Thanks to Jung's theories, a lot of instruments appeared in business to analyse and evaluate clients, customers, and workers in order to manage them.

Also, one of the main figures in formation of social and psychological component of marketing communication was Edward Bernays, the pioneer in the field of public relations and propaganda, who combined psychoanalytical ideas of Sigmund Freud, crowd psychology and instruments of marketing. Bernays suggested that people are governed, their minds are molded, their tastes are formed, and ideas are suggested, largely by people who understand the mental processes and social patterns of the masses. According to him, for a specialist in the sphere of communication, knowledge in such areas as philosophy, sociology, psychology are more useful than just skills of a good copywriter, because consumers act on the basis of simple, unconscious rules that can sometimes produce completely irrational results.

Another classic theory in psychology was created by the psychologist Mary Ainsworth (1990), who studied various attachment styles of babies. Her research suggested that secure attachment is the most balanced style and in the future it produces a more psychologically "healthy" adult. A secure attachment has the qualities of trust and a level of free exploration. A marketer's job is to create a secure attachment between a company and a customer so when time comes to buy, the customer feels secure, comfortable, and happy with the relationship. Marketing is about establishing that base of trust, and quickly meeting the needs of their potential customers (Ziman, 2013). Also, this theory and social and psychological dimensions of marketing communication bring us back to Maslow's hierarchy of needs which outlines varying levels of human motivators. According to him, people will always try to satisfy their basic and simple needs first (pleasure, material well-being, security and comfort) and then try to reach higher and higher levels of satisfaction, achieved through more complex and energy-consuming activities, which should ultimately bring happiness. Every marketer should understand their customers' motivation hierarchy to better provide services and products that satisfy those needs.

Using social and psychological instruments in marketing communication gives marketers an opportunity to understand their clients' motivation deeply and manage social opinions and actions. In the context of asymmetry of global business and informational society marketing is a very perspective and unique instrument of communication, which combine not only associative and symbolic attributes of companies or goods, but also such psychological and social factors, as values, philosophy and perception that become a brand. Effective mechanism of brand management makes business more profitable, it helps to realize company's interests through strengthening its non-pricing benefits. Brands have a wide range of uses for businesses, products and individuals in today's dynamic marketing landscape where publishing and message distribution are no longer limited to media entities. Some brands have a life cycle and grow

old like people. Some brands are timeless and never die, they are reinvented, while some brands live a short but powerful life and have an iconic legacy.

In literature there are a lot of different definitions of a brand, depending on the source. The American Marketing Association gives the following definition: a brand is a name, term, design, symbol, or any other feature that identifies one seller's good or service as distinct from those of other sellers. According to David Ogilvy (1983), a brand is the intangible sum of a product's attributes: its name, packaging, and price, its history, its reputation, and the way it's advertised. Phillip Kotler (2010) defines a brand as a name, term, sign, symbol, or design or a combination of them, intended to identify the goods and services of one seller or group of sellers and to differentiate them from those of the competitor. Also, there are such brand definitions, as a known identity of a company in terms of what products and services they offer but also the essence of what the company stands for in terms of service and other emotional, non-tangible consumer concerns. A brand is the essence of one's own unique story. A brand is a reason to choose. Branding is the art of aligning what you want people to think about your company with what people actually do think about your company. Branding is more than a name and symbol. A brand is created and influenced by people, visuals, culture, style, perception, words, messages, PR, opinions, news media and especially social media.

Historical roots of the word 'brand' go to the ancient times, when people, who owned cattle, in order to distinguish their animals, began to brand them, firstly, with paint or pine tar and later with hot irons. That is why, the first meaning of the word 'brand' is 'to burn'. Since the time people created goods to trade or sell, there have been trademarks, symbols and signs, to signify the maker and origin. Such trademarks assured the buyer or trader of the quality of the merchandise. For example, in ancient Egypt, Greece, and Rome, sellers, to explain their offerings and goods to a mostly illiterate population hang pictorial signs (using symbols and pictures) and painted their storefronts. Writing was also used to advertise, as evidenced by writing on walls from the ancient city of Pompeii. In the 13th century there was revival of crafts with formation of craft guilds and emergence of a middle class. During this period, to control trade, guilds made proprietary marks mandatory. Town criers were paid to advertise a merchant's goods, hand-lettered handbills were hung and distributed to advertise and attract customers. The Italians, for example, even used brands in the form of watermarks on paper. The invention of a printing press by Johannes Gutenberg in Germany in 1448 made the process of marketing communication for businesses and customers easier. Printing presses allowed the distribution of information to the public to flourish. From then on, printed information could be easily distributed, and the rise of advertising was ensured.

The first advertisement appeared in a newspaper in 1625 in England, and by the 1700s, trademarks and stamps had become standard practice. A trademark became crucial to governments, producers, and consumers. Governments saw the need to institute patent, trademark, and copyright laws as incentives to encourage development and progress in science, technology, and the arts. Bass & Company, the British brewery, was the first company, which registered its red-triangle brand as the world's first trademark in 1876. The period between 1860 and 1929 was marked by foundation and development of trademarks, known till now , such as Nestle, Coca-Cola, Adidas, Lipton, Puma, etc. Also, in 1869 first umbrella brand – Heinz appeared, and so far 57 of them have become world-renowned. Development of transport, channels of goods' distribution, improvement of industrial processes and goods' quality, and population growth caused positive impact on branding and advertising development. The period after Great Depression and during World War II showed some slow down. Consumers were more sensitive to prices and more demanding to advertising (people thought that they might be manipulated). But exactly during this period the modern discipline of brand management is considered to have been started. Such phrase was coined in the famous memo at Procter & Gamble by the manager of advertisement department Neil H. McElroy, who worked with Camay brand in 1931. In his memo he argued that in addition to having a person in charge of each brand, there should be a substantial team of people devoted to thinking about every aspect of marketing it. This dedicated group should attend to one brand and it alone. The new unit should include a brand assistant, several 'check-up people', and others with very specific tasks. The concern of these managers would be the brand, which would be marketed as if it were a separate business. In this way the qualities of every brand would be distinguished from those of any other. While working on the advertising campaign for Camay soap, McElroy became frustrated with having to compete not only with soaps from Lever and Palmolive, but also with Ivory, P&G's own flagship product. After World War II, on the background of significant economic growth and general income increase (Goldsmith et al., 1954), people started to buy

more, thus consuming more according to their 'wants', rather than according to their 'needs' (According to Butnaru, well-being of people and demand on good goods grew and middle class was formed, branded products became the sign of property, production and quality. Graphic design, advertising, and marketing stimulated this "consumer" economy and new standards of brand management began to form. Neo-Marxist models of consumption describe goods and services not only as commodities, but as social symbols too, used by people as marks of power, prestige and wealth (Featherstone, 2007). In most cases people enjoy consuming goods and services primarily because of the social and symbolic significance of the purchase (Douglas and Isherwood, 1980). In 1966 Lancaster argued that each product comprised a unique set of properties and characteristics from which the utility was derived by the consumer. This view changed traditional approaches of consumer behaviour and ultimately led to a major paradigmatic shift from the initial description of the consumer as passive, receptive and interested in price, quality and the physical utility of goods; to a more comprehensive approach, in which the consumer takes an active role in deciding what to buy and for what purposes – practical, material or symbolic (Butnaru, 2009). After such changes in conception of traditional marketing, social and psychological approaches have integrated into instruments and techniques of marketing communications and especially in branding.

Today, while studying different aspects of nontangible assets, scholars often see that people confuse 'brand' and 'trademark' notions. The two concepts, despite many similarities have different purposes and nature that people either overlook or are not aware of. Using them interchangeably as if the two were synonyms is a big mistake that many people make. Perhaps this happens because of the fact that all brands are trademarks, whereas not all trademarks are brands. A trademark is granted by a trademark and patent office, and is a legal device that protects the owner in case of unlawful use of the trademark. A brand is developed over a course of time with consistent quality that is appreciated by customers. Also, brands help in identification of the product and the company, while trademarks help in preventing others from copying it. A company's brand refers to a combination of tangible and intangible elements such as the trademark, design, logo and also the concept, image and reputation associated with that business. So, comparing with trademark, brand has longer life cycle and gives extra money.

This big gap between the role played by trademark and brand for a company can be explained by social and psychological elements of brand, that influence consumers' minds. One long-standing example of right usage of Jungian-based psychology theories in brand management dates back to 1955 with the advent of the Marlboro Man. The campaign featured an archetypal rugged, straight-shooting, unpretentious American cowboy. Within a short time after its debut on the airwaves and in the print media, sales jumped by over 5,000 percent. Men intrinsically identified themselves with the cowboy archetype. Another example is the fun-loving happy clown archetype embodied in Ronald McDonald. He first appeared on the scene in 1963 and was instrumental in propelling the small hamburger franchise into one of the world's largest multinational corporations. Kids and families believed that McDonald's was a happy place, a place of fun and good food. These brands were created to meet all expectations, characters, needs and dreams of their clients.

Brand as an asset consists of many elements, one of which is brand equity. The first, who proposed and described this category was David Aaker (1991). He defined brand equity as a set of brand assets and liabilities linked to a brand name and symbol, which add to or subtract from the value provided by a product or service. Connecting 'brand' to the concepts of 'equity' and 'asset' radically changed the marketing function. This characteristic is one of the main chains in evaluation of brand value. Brand equity also provides value to customers. It enhances the customers' ability to interpret and process information, improves confidence in the purchase decision and affects the quality of the user experience. Each person, according to what he/she wants to be in terms of his/her identity, status, social relations and appearance chooses brands, which respond to his/her desires and expectations. That is why all elements of brand equity should respond to the target audience. The fact that it provides value to customers makes it easier to justify the brand-building budget. So, brand equity is considered to be one of the major components of modern marketing alongside with the marketing concept, segmentation, and several others (Aaker, 1991).

Therefore, brand equity is one of the factors which can increase the financial value of a brand to the brand owner and indicates the right way for brand management. There are such brand equity benefits, which give extra money to the company, while using social and psychological dimensions of this intangible asset:

• financial benefit enables a company to charge a price premium for that brand

• it helps to expand a company through successful brand extensions and expansions

• company with strong brand equity is also positioned for long-term success because consumers more likely to forgive road bumps when they have deep emotional connections and loyalties to a brand

• the positive brand equity helps a company navigate through macro-environmental challenges far more easily than brands with little or negative brand equity can.

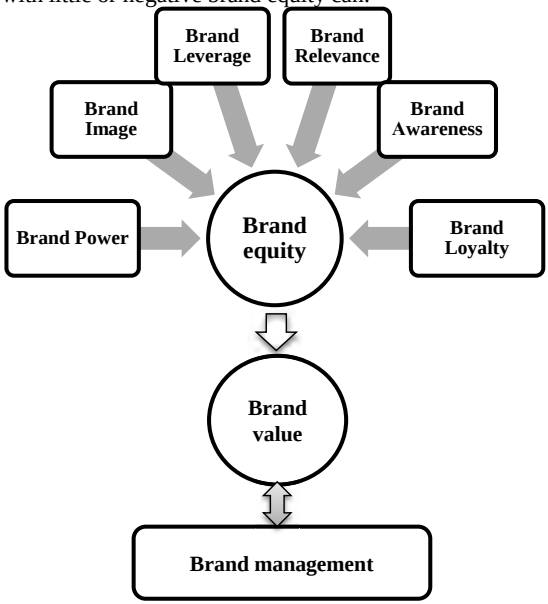

Figure 1 Conception of Brand Equity
Source The chart was developed by the author

In literature there are a lot of approaches to the elements and features of brand equity. We can distinguish such models: Brand Asset Valuator of advertising agency Young & Rubicam, Equitrand of Total Research, Brand Value Tracker of Brand Finance, Brand Equity Ten of David Aaker, 7 indexes of brand equity of Interbrand. Interbrand model is a financial-market-value-based technique for estimating a firm's brand equity. This model is valuable thanks to its consumer-based approach. The evaluation process consists of 3 steps, two of which inspect financal and market components. The third step is a brand strength component, which analyses such elements of brand equity as intangible assets. Brand strength is assessed from seven aspects: market leadership, brand stability, current market prospect, brand extension possibilities, internationalization potential, and adaptation to time, brand support and legal protection. The leadership indicator reflects economies of scale for the first-place brand in communication and distribution. Stability shows long-lived brands with identities that have become part of the fabric of the market and even the culture, are particularly powerful and valuable. The market indicator analyses markets' conditions. Brands are more valuable when they are in markets with growing or stable sales levels and a price structure in which successful firms can be profitable. International brands are more valuable than national or regional brands, partly because of economies of scale. More generally, the broader the market scope of a brand is, the more valuable it becomes. The overall long-term trend of the brand in terms of sales can be expected to reflect future prospects. Brands that have received consistent investment and focused support are regarded as stronger than those that have not. Also, the strength and breadth of a brand's legal trademark protection is critical to the brand's strength. Interbrand group has developed a chart known as the "S-curve" to relate the brand strength and brand multiplier, which give possibility to transform the future contributed revenues of the brand into real income. The Interbrand model is considered to be one of the globally recognized and most comprehensive approaches, it plays a significant role for the development of the study of brand equity evaluation (Interbrand, 2015).

Another independent intangible asset valuation company Brand Finance also evaluates brand equity not only by financial elements but also by behavioural. Brand rating is calculated using Brand Finance's ßrandßeta analysis which benchmarks the strength, risk and potential of a brand, including market concentration, level of sales, marketing support, increase of realization, market share, volume of revenue, consumer awareness, visual and sensual perception, and brand adherence (Brand Finance, 2015).

Young & Rubicam's Brand Asset Valuator is a brand management tool and global database of consumer perceptions of brands. This model measures 4 key pillars of brand health and 48 brand imagery dimensions consistently across markets. That gives a possibility to diagnose brand challenges and opportunities, as well as to provide early warning signs to brand fatigue, for both global and local brands. Four key pillars of Brand Asset Valuator include differentiation, relevance, esteem and knowledge. Differentiation Pillar examines a brand's unique meaning, dynamism and energy which enable it to stand out and capture the attention of consumers. This pillar most relates to brand pricing power, loyalty and cultural currency. Relevance Pillar measures the connection brands have to people, i.e. how meaningful and relevant they are in the lives of consumers. Esteem Pillar captures how a brand lives up to its promise—how highly consumers respect and regard it. Brands held in high esteem are more likely to see repeat usage from consumers. And Knowledge Pillar measures the depth of understanding consumers have for a brand and is the culmination of the brand-building process (Young & Rubicam, 2015).

Method EquiTrend, developed by Total Research, is based on measures of three brand equity assets: salience, perceived quality, and user satisfaction. The first, salience, is the percentage of respondents who have an opinion about the brand. This indicator goes beyond the more conventional concepts of awareness, recognition, and recall by demanding that respondents hold an opinion. The second, perceived quality, is associated with brand liking, trust, pride, and willingness to recommend. It is essentially the average quality rating among those who had an opinion about the brand. The third, user satisfaction, is the average quality rating a brand receives among consumers who use the brand most often. The three measures are combined into an EquiTrend brand equity score.

David Aaker's model suggests that brand equity has five dimensions—brand loyalty, brand awareness, brand associations, perceived quality, and other proprietary assets each providing value to a firm in numerous ways. Once a brand identifies the value of brand equity, they can follow a brand equity roadmap to manage that potential value. Brand Loyalty (the extent to which people are loyal to a brand) is expressed in the following factors: reduced marketing costs, trade leverage, attracting new customers via awareness and reassurance and time to respond to competitive threats. Brand Awareness is the extent to which a brand is known among the public, which can be measured using the following parameters: anchor to which other associations can be attached, familiarity which leads to liking, visibility that helps gain consideration, signal of substance/commitment. Perceived Quality – the extent to which a brand is considered to provide good quality products – can be measured on the basis of the following criteria: the quality, offered by the product, level of differentiation, price, availability in different sales channels, the number of brand extensions. Brand associations –those triggered by a brand – can be assessed on the basis of the following indicators: the extent to which a brand name is able to retrieve associations from the consumer's brain, the extent to which associations contribute to brand differentiation in relation to the competition, the extent to which associations play a role in the buying process, the extent to which associations create positive attitude, and the number of brand extensions in the market. Other Proprietary assets include patents and intellectual property rights, and relations with trade partners (Aaker, 1991).

This big number of approaches to identification and valuation of brand equity and its elements shows the necessity and importance of brand creation and management. In modern consumption-based economy competition becomes stronger and stronger, economic factors of rivalry are replaced by marketing, and immaterial benefits play a greater role than material basic needs for consumers. People will spend available resources (money, time, and power) in order to receive the desired benefits of marketed products not only because of their physical qualities but also social and psychological elements of the brand.

Conclusions

The modern world economy is characterized as the age of symbolic and axiological consumption, in which people seem to buy things in order to achieve happiness and derive immaterial satisfaction from goods

and services. Consumers are waiting that all goods and services will be a priori of high quality and will cover their basic needs, and are looking for brands, which can satisfy their desires and wants and follow consumers' ideas, philosophy and lifestyle. Therefore, the nearer aim for businesses is to explore psychological, social, and moral sides of consumers to attract more clients for a longer period of time. Such marketing strategy may be fulfilled through such instruments and techniques as brand management, advertising and media. Thanks to these marketing channels businesses are able to create beautiful stories, images, meanings, dreams for their customers reflected in their goods and services.

REFERENCES

Aaker D. (1991) Managing Brand Equity; Capitalizing on the Value of a Brand Name. The Free Press, N.Y.

Aaker D. (1996) Building Strong Brands. Free Press, p.400.

Abratt R., Bick G. (2003) Valuing Brands and Brand Equity: Methods and Processes. Journal of Applied Management and Entrepreneurship.

Bernays E.L. (1923) Crystallizing Public Opinion. New York: Boni and Liveright.

Bernays E.L. (1928) Propaganda. New York: H. Liveright.

Best Global Brands 2015, Interbrand http://www.bestglobalbrands.com.

Butnaru C. (2009) Social Psychology and Marketing: the Consumption Game. Understanding Marketing and Consumer Behavior through Game Theory. Review of Economic and Business Studies, Alexandru Ioan Cuza University.

Cravens K. S., Guilding C. (1999) Strategic Brand Valuation: A Cross-Functional Perspective Business Horizons.

Elster J. (2007) Explaining Social Behaviour. More Nuts and Bolts for the Social Sciences. Cambridge University Press.

Featherstone M. (2007) Consumer Culture and Postmodernism, 2nd Edition. Sage Publications.

Freud S. (1915). The Unconscious. SE, 14: 159-204.

Jung C. The Relations between the Ego and the Unconscious. The Portable Jung. New York: Viking Press, 1971, p. 106.

Krykun V. (2012) Diversification of Bank Brands under Asymmetrical Processes in the World Economy. Dissertation, Taras Shevchenko National University of Kyiv.

Shaugnessy J. (2003) The Marketing Power of Emotions. Oxford University Press.

Slater D. (1997) Consumer Culture and Modernity. Cambridge: Polity Press.

Solomon M., Bamossy G., Askegaard S., Hogg M. (2002) Consumer Behaviour – A European Perspective. Pearason Eduction Ltd.

Ziman M. (2013) How Classic Psychology Can Help You Understand Your Buyer. Modern Marketing http://blog.marketo.com/2013/06/how-classic-psychology-can-help-you-understand-your-buyer.html. – Accessed June 21, 2013.

Journal of Global Economy Review, Volume 1, № 3, 2015, pp. 25-34.

Transnationalization Patterns in Automotive Industry

ANASTASIIA GLUSHCHEVSKA[7]

Abstract: The paper concentrates on in-depth analysis of development trends of the global automotive industry from mid-XX century to the beginning of the XXI century. According to the author, drastic change in character of intra-industry intersubjective relations, resulted in a range of significant and serial structural transformations of the industry, is the hallmark of transnationalization of the global auto industry. Progress of system integrators' competence practically fragmented the global value chain into several parts, separated and destroyed the traditional links between final equipment manufactures and lower-tier suppliers. System integrators also became an important focal point for the introduction of innovative solutions at all stages of vehicles manufacturing. Duplication of geographical configuration of international production system of OEMs (follow sourcing) transformed the system integrator into a new global player – a mega-supplier. Therefore, a new wave of structural changes in automotive industry at the beginning of the XXI century was associated with precisely this economic agent and manifested itself in fragmentation and glocalization of international vehicles production systems, and general consolidation processes in automotive industry. The author also envisages that further inevitable increasing interdependence and interrelatedness of OEMs and global mega-suppliers will trigger forthcoming, even-more revolutionary transformations in the global automotive industry, radical changes in its architecture and nature of production relations.

Keywords: Transnationalization • Global automotive industry • Foreign direct investment • Structural transformation • Transnational corporations • Original equipment manufacturers • Global mega-suppliers • Just-in-time system • Reconfiguration of global value chains • Follow sourcing • Duplication effect • Progress of competence • Research and development • Cost innovation • Fragmentation • Consolidation• Glocalness of international production

Introduction

Global automotive industry is the main engine driving the world economy growth. The industry cannot be undervalued, because it is the main source of economic growth and welfare of the nation. While being a high-tech branch of the manufacturing sector, the automotive industry has one of the largest shares of the added value – from 3% in the countries with a GDP per capita up to $1,000, to 11% in the developed countries with the same indicator in $40,000 (IDR, 2013). The high share of exports of automotive products in some countries (e.g., Germany – 18%, Japan – 17%, Brazil – 6%, India – 5%) allows to fill the budget not only by the income from foreign exchange transactions, but also by tax revenues. Thus, in 2012, more than $772 bln of taxes were collected in Japan (10% of total revenues), in the United States – $135 bln (including 13% state tax and 2% federal tax), in India this figure amounts 7-8% of total tax revenues (AT Kerney, 2013). One dollar invested in the automotive industry development automatically increases the gross domestic product by $ 3 (Kondratiev 2011).

Modern automotive industry is characterized by a large number of cross-sectoral industrial relations. The high level of multiplicativity, estimated as 2.2, reveals a strong correlation between the dynamics of the automobile industry and the economic growth in other sectors. It comes as no surprise since on average

[7] Degree-seeking Applicant, Junior Research Fellow, Research Department, Sumy State University, 2 Rymsky-Korsakov str., Sumy, Ukraine. e-mail: a.glushchevska@gmail.com

a modern car comprises almost 10 thousand (sometimes 12.5 thousand details of various composition and functional purposes (WISO-Diskurs 2010) (for comparison: in 1965, the Volkswagen Käfer model was composed of 4893 parts and in 1988 Volkswagen Golf included 6843 components) (Meißner 2009). Therefore, creating a new job in the automotive industry automatically generates demand for 10 new jobs in related sectors of primary and secondary sectors of the economy (mining, metallurgy, petrochemical industry, glass, textile and electronic industries); tertiary sectors of intangible products, providing financial, logistics and advertising services, as well as automotive aftersales service, used car market, as well as leasing and rental) (Kondratiev 2011).

The South Korean 'economic miracle' exactifies the thesis of a high multiplier effect of the industry and strong cross-industry production linkages: a knock-out dose of foreign direct investment in the automotive industry (40% of total investment in 2001) enabled to overcome negative impact of the Asian financial crisis of 1997 and convert the country into the fifth world largest producer of vehicles. Thus, the volume of South Korean cars has increased almost by half, and the sale of components, parts and accessories have risen almost three-fold. The abovementioned became the main reason for the intensive development of metallurgy: the sales increased from 55 thousand tons in 2000 to 210 thousand tons in 2012. Eventually, as of 2011 original equipment manufacturers (OEMs) of South Korea created almost 270 thousand jobs, manufactures of spare parts, components and accessories– 120 thousand, in related and supporting industries this figure exceeded 1,3 mln. Thus, during 2000-2012 the number of people employed in the automotive industry increased fivefold to 1,7mln of workers and accounted for 7% of the total work force (AT Kerney 2013).

The global economic and financial crisis of 2007-2009 illustrated dramatically an undeniable fact of high degree of interdependence and interrelatedness of various economic sectors within the international automotive production at the global level. Thus, the decline in sales of new vehicles to American consumers destabilized not only the auto industries of US, Germany and Japan, but seriously affected the manufacturing industry of Liberia that is the main supplier of rubber for tire production (Jansen, Uexkull 2010).

As can be seen from the above, the study of transnationalization and globalization patterns in the automotive industry is definitely of great scientific and practical importance, enabling identification of major trends and focal areas for the industry development, establishment of a causal link of successive transformations, definition of character of the intersubjective relations, specification of the strategic guidelines for international production expansion, and the reasons for global value chain reconfiguration. The obtained knowledge will enable us to respond adequately to threats, challenges and prospects for the world economy and international economic relations, generated by the cross-border activities of economic entities of the global automotive industry.

Literature Review

Transnationalization of the world economy and its particular industries has always been under discussion of the leading international scientists. The development of automotive industry aroused profound scientific interest in the academic circles because of its critical importance for the global economy in general. The industry was among the first in the early XX century to resort to dynamic overseas expansion of attractive sales markets, however, not at the expense of ordinary export operations, but by means of foreign direct investment and development of production system abroad.

The scientific achievements of R. Aliber, P. Buckley, R. Vernon, S. Hymer, J.H. Dunning, R.E. Caves, J. Cantwell, M. Casson, R. Coase, K. Kojima, C.P. Kindleberger, R. Narula, D. Perlmutter, M. Porter, A.M. Rugman, P. Samuelson, etc. relate to the theories of capital outflow by TNCs in automotive industry.

In particular, through the example of automotive industry, luminary of the Ukrainian School of International Economics, leading expert in the field of international finance A.I. Rogach considers the theoretical issues of international operations of TNCs: historical path of their development, establishment of international production systems, knowledge of introduction of new flexible production systems under global transformation of the world economy and international economic relations, exemplifies transnationalization strategies, executed by the companies, and their institutional and management

structures. The author applies well-match case of vivid behavioral reaction of Toyota and Nissan to support empirically the theory of 'competitive imitation' (Rogach 2005). In 'Transnational Corporations' the researcher notes that in terms of sectoral structure the automotive industry accounts for the most of mergers and acquisitions (Rogach 2008).

Separate publications of 'Transnational Corporations Journal' under UNCTAD auspices deal with irreversible processes of world economy transnationalization as a result of structural changes in the global automotive industry (Mortimore 1997; Maucher 1998) and partly explain the changes in international labor market by transformation of the global value chain of automotive TNCs (Gundlach, Nunnenkamp 1997).

'The industry of industries' appears in the key publications of the United Nations Industrial Development Organization – 'Industrial Development Report' by addressing global challenges of resource endowment (IDR 2011), analyzing directions of material costs optimization in production, monitoring employment dynamics and value creation in high-tech industries of the countries with different income levels (IDR 2013). UNIDO specialists have repeatedly treated the issue of FDI effects on the economic growth of developing countries due to engaging them in the international production system of automotive TNCs (IDR 2009; Humphrey, Memedovic 2003; Wad 2010). Selected UNIDO publications contain a comprehensive macroeconomic impact analysis of the automotive industry on the socioeconomic development of Vietnam (Sturgeon 1998), Thailand (Haraguchi 2009), and India (Roy 2008).

The periodic reports, prepared by audit firms Deloitte (Deloitte 2009; Deloitte 2011; Deloitte 2012; Deloitte 2014), Ernst&Young (EYGM 2013), PricewaterhouseCoopers (PWC 2011; PWC 2012; PWC 2013; PWC 2014) provide evidence of dynamic process of transnationalization of the global automotive industry and high business activity of automotive TNCs.

The dynamic overseas expansion of automotive TNCs, aimed at improving production process efficiency, contributed to that 'automotive industry was one of the first industries to delocalize its activities and become truly 'global' (Richtet, Bourassa 2000), and present-day car emerged as a 'global product' (Vickery 1996). According to experts of the International Chamber of Commerce: 'If any sector can be represented the features of globalization it is the automotive industry' (WTA 2000). It is hardly surprising that the automotive industry has become central target of research for leading international economic organizations in context of international flows of capital as a driving force of internationalization, globalization and transnationalization of the world economy and international economic relations (WIR 2010; WIR 2011; WIR 2012; WIR 2013; WIR 2014).

Basic Results of the Research

The internationalization of automotive industry, dynamic overseas expansion and delocalization of assets of its main economic actors through the extension of global value chains, transformation of multinational companies into a new more sophisticated organizational form of business – transnational corporations, modified the hierarchical model and architecture of automotive industry.

Classical taxonomy of economic entities in global automotive industry of early XXI century appears as follows:

1. Original equipment manufacturers (OEM), exercising control over almost 80% of global vehicles' production and significantly affecting the market conjuncture in the global automotive industry (General Motors Corp., Ford Motor Co., Daimler Chrysler AG, Toyota Motor Corp., Volkswagen AG, Honda Motor Co., Renault-Nissan, PSA);

2. Modular manufacturers (system integrators) are the first-tier suppliers (Tier 1) of complex systems to the OEMs based on firm contracts, represented by financially independent companies with high innovation potential and considerable production facilities. They are generally manufacturers of electronic service systems or parts of internal bodywork (e.g., Continental AG, Robert Bosch GmbH, Delphi Corporation, Johnson Controls, Michelin Group, Lisa Draxlmaier, Valeo, BOS Automotive, Valvetek, Johnson Controls, Sumitomo Electric Industries Ltd, TRW Automotive, Leoni);

3. Individual component manufacturers (Tier-2 suppliers sell directly to Tier-1 suppliers), engaged in manufacturing of individual components of integrated systems, designed by Tier 1 manufacturers (e.g., Coficab and Contitech);

4. Suppliers of components and small assemblies (Tier 3) are mostly small local companies that are

not focused on production of specific products but manufacture individual first marketed consumer goods (FMCG) – textile, metal, and plastic items, etc. (e.g., SPUMOTIM, Nefer Prod, Interpart) (UNIDO 2011).

In automotive industry the traditional system of vehicle manufacturing configured a vertical chain with a flow of semi-finished parts, moving from all categories of suppliers toward OEMs on a just-in-time basis. Generally, it involved arms-length transactions under control and coordination of the corporation – manufacturer of vehicles. It stands to reason that these economic actors of the global auto industry of early XXI century account for about 35% of output on behalf of this sector of the world economy.

A large number of chaotic ties with suppliers at various levels, imperfect logistics network and a time lag in supply of parts and components significantly reduce the efficiency of the original equipment manufacturers. Introduction of innovations under such system of international production was an extremely cost-intensive, labour- and time-consuming process. The increasing complexity of technologies for the vehicle production has revealed significant shortcomings in management of the network of suppliers and practically stated failure of such model of economic relations in automotive industry. Thus, the optimization of the production system in automotive industry requires simplification of relationships between the manufacturer and the supplier, reduction of distinct links of the global value chain, clarity, coherence and transparency of its governance, and, therefore, streamlining and specification of the functional purpose of its every component.

Incremental structural transformation of the global automotive industry, attempting to increase efficiency and to optimize production processes within it, has markedly enhanced the role of suppliers of the highest category, i.e. Tier 1, given that these economic agents became a buffer zone between the original equipment manufacturers and suppliers of lower tiers. System integrators have produced and implemented complex systems and modules for the needs of vehicle manufacturers, and monitored the activities of suppliers of accessories, parts and separate components. Thus, the final product of Tier-1 suppliers has resulted from the strong value chain of hierarchical type composed of lower-tier suppliers. That implies complete responsibility of the supplier before the end vehicle manufacturers not only for the build quality of their own modular systems, but also for the product competitiveness of separate component suppliers of lower tiers, their JIT and proper integrated assembly in close proximity to the installation of vehicles (Humphrey, Memedovic 2003). Close coordination, centralization of intermediate production process has guaranteed positive impact on the performance of automotive industry in general and effectiveness of its every economic entity. The system integrators have become important strategic partners for final equipment manufacturer that prevent the production system from burdening by the excessive amount of inefficient external ties, enable to control the expansion of the internal network (reduce the number of logistics centers and engaged product supply chains), decrease total costs and contribute to capital accumulation by transnational corporations.

The cross-border transaction growth and creation of global denationalized production networks by Tier-1 suppliers are the major premise for generation (emergence) of the new type of players in the automotive market – global mega-suppliers Tier-0,5. In fact, these economic actors are more comprehensive and geographically diversified system integrators and component manufacturers (Humphrey, Memedovic 2003). Therefore, the cooperation of final equipment manufacturer and supplier has moved to a new global economic level that permits to obtain significant benefits for every economic entity in automotive industry.

It should be emphasized that global mega-suppliers, as well as Tier-1 suppliers, had a well-established production ties with suppliers of lower tiers, however, they were characterized by a uniquely high degree of convergence with final product manufacturers. They were the link between the economic entities in automotive industry of different levels of economy – between end manufacturers, performing on meta- and mega- levels of economy, and Tier-1, Tier-2, Tier-3 suppliers, actively operating in micro- and meso- scale environment of the world economy (UNIDO 2011).

Researchers calculate that the share of original equipment manufacturers and their mega-suppliers accounts only for a fifth of production volume in global automotive industry, but the major transformations of global automotive industry of the XXI century have been occurring in the dimension of these economic relations.

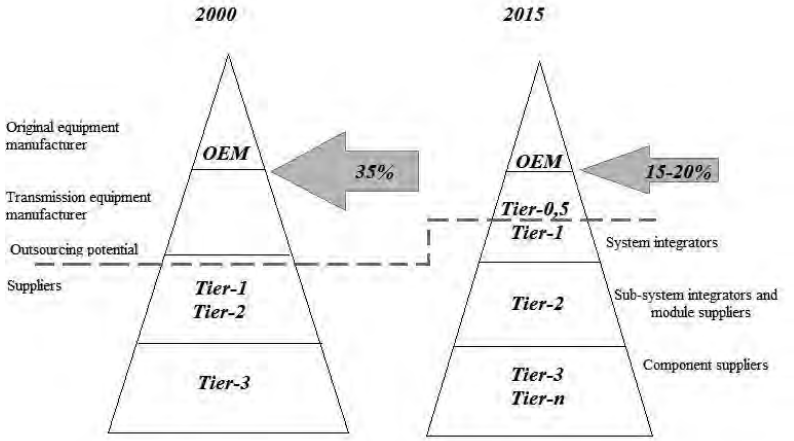

Fig. 1 The Architecture of the Global Automotive Industry in the XXI century
Source: Meißner, 2009.

The automotive industry was the first sector in which vehicle manufacturers have delegated R&D, design and engineering powers to their global mega-suppliers (Humphrey, Memedovic 2003).The introduction of innovation in automotive industry, including not only interest in modification of the final product (functional innovation), but also aspects of improvement of its manufacturing process (cost innovation) (Kondratiev 2011) requires a systematic and integrated approach, applying a wide range of activities related to suppliers of all tiers and categories, from completely knocked down (CKD) part manufacturers to system integrators. Therefore, it is a transition from individual to systemic transformations.

Therefore, the global mega-suppliers became not only the main and unique focal point of innovation introduction within the automotive industry that required coordination with almost every economic entity of the GVC links. A large number of vertical, horizontal and diagonal industrial ties with the manufacturers of various categories and specialization (in some cases even from related industries), acquired in the process of successful application of research results at every stage of production of vehicles, enabled them to become an initiator of large-scale transformations in the industry, a self-sustained powerful center of R&D activities. It is expected that R&D expenditures of components and small assemblies' suppliers will increase from 31% to 36% up to 2025, and the expenditures of OEMs will be reduced from 60% to 47%; the companies providing engineering services will also be able to boost this figure almost twofold to 2025 – from 9% to 17%. Thus, the share of components and small assemblies' suppliers in creation of value within automotive industry will increase from 65 to 71%, while the share of OEMs will fall to 29%, respectively (Wyman 2013).

Transnationalization, internationalization and globalization of the mega-suppliers' activities, as new high power actors of automotive industry, have encouraged dynamic overseas expansion and development of new sales markets. The specific nature of internationalization of the suppliers' activities lay in the fact that, being dependent on demand of OEMs, they completely duplicated geographical configuration of the global value chain of automotive TNCs with intent to cooperate on-site sales of final products (Humphrey, Memedovic 2003). This behavioural concept of the development of mega-suppliers' international production system was named 'follow sourcing'.

From the very first attempt of automobile corporations to enter the market of host countries, the strategic modular manufacturers were forced to follow the original equipment manufacturers (Barragán, Usher 2009) , given that organization of TNC's full cycle production at regional level required availability of reliable suppliers of high-quality products of the 1st category, instead local producers had insufficient experience and skills of the workforce to participate in production of German vehicles (Sturgeon, Florida 2004). Such a system of economic relations between the manufacturer and the supplier continue to be

mutually beneficial, as OEMs satisfied the need for products of an adequate quality, and suppliers received a guaranteed marketing area and sales.

It is proved that revenues of suppliers in the host countries depend on the level of business activity of their partners – car manufacturers in the market. If we compare the income of a manufacturer and German supplier in various host countries and regions, we will arrive at the following conclusions. Thus, the highest revenue of supplier (63%) is recorded in the European Union, where 91% of total production facilities of German TNCs are concentrated. The countries of North America, where 351objects are located, i.e. 20% of all manufacturing entities of German automobile corporations, provide the suppliers with 30% of revenues. The strategic localization of production facilities of German TNCs (400 sites and 24% of foreign assets) and a promising marketing area even prior to the crisis, the Asian region yielded 13% of profits for global suppliers (VDA 2011;Wyman 2008).

Follow sourcing and availability of mega-suppliers in strategic markets of OEMs was a precondition for organization of full production cycle 'within a single nation and between regions' (Vickery 1996). Explicit protectionist policy of the countries with high investment attractiveness, aimed at import substitution, volatility of exchange rates and high transport costs (Deloitte 2009) stimulated automotive TNCs to create production facilities on-site sales of products, provided availability of strategic suppliers from the home country. It should be noted that the intense trade between regions in automotive industry is carried out in semi-finished parts, while the finished vehicles are much sought after on intra-regional scale (Van Biesebroeck, Sturgeon 2010). According to experts, the regional nature of international production system of automotive TNCs will lead to transformation of the international trade structure – in 2020 road-ready cars, not their parts and accessories, will be imported and exported on a large scale (Deloitte 2009).

Thereafter, a full production cycle was localized and concentrated on already established mature US and European markets and markets with high potential for automotive industry development – in Brazil, China and India (Van Biesebroeck, Sturgeon 2010) or within separate trading blocks – NAFTA, ASEAN, MERCOSUR and the European Union (Deloitte 2009).

Within the region production facilities gradually shifted in favour of countries with lower operating costs:

- Southern United States and Mexico in North America,
- Spain and Eastern Europe in the European Union,
- South-East Asia and China in Asia (Van Biesebroeck, Sturgeon 2010).

Although the traditional mode of international production system continues to dominate in automotive industry with R&D and innovation centers within automobile corporations based in developed countries, meanwhile, due to the agreements on liberalization of international trade (GATTS) and cross-border movement of capital (TRIMS) among WTO member countries, the main production facilities have been relocated to developing countries (Van Biesebroeck, Sturgeon 2010). One can observe a persistent trend towards a disproportionate increase in R&D investment of domestic and foreign TNC sites by 14% (up to 10.2 billion) and 6%, respectively, as it happened in German automobile corporations (VDA 2014). The author expects gradual redeployment of innovation centers of automobile corporations to emergent countries with high development potential of the market, such as South Korea and India – countries that demonstrate one of the highest growth rates of automotive industry, combined with high effective demand on unsaturated market of vehicles.

Thus, the global nature of operations in automotive industry has been successfully harmonised with independence of production system in a particular region. Globalization of the value chain has become the dominating trend of the automotive industry development at the modern stage (Humphrey, Memedovic 2003).

Strong links between original equipment manufacturers and system integrators have become a trigger for consolidation and globalization of supply base of spare parts, components and accessories (Sturgeon, Lester 2004; Van Biesebroeck, Sturgeon 2010).As of 1998, the global automotive market involved 30 thousand suppliers of various tiers and categories, 4 thousand remained ten years later. By the middle of the XXI century the estimated number of suppliers will decrease to 26, represented specifically by mega-level suppliers of Tier-0,5 (Nunnenkamp, 2000). A trend towards consolidation among manufacturers of final equipment demonstrates an undeniable fact of increased concentration in the global automotive industry. At the beginning of the XXI century, 13 largest TNCs with annual production exceeded 1mln

cars, accounting for 87% of global production of vehicles (Humphrey, Memedovic 2003), 75% of them are under control of six TNCs (Kondratiev 2011). It is projected that by the middle of the second decade of the XXI century the number of leading manufacturers of vehicles will reduce to 10 that will account for 77% of global production (Meißner 2013), and by 2020, these 10 TNCs, concentrated in six regional markets of the EU, the United States, Japan, China, India, and South Korea, will manufacture 90% of production of the global automotive industry (Deloitte 2009).

In general, consolidation in global automotive industry has contributed not only to a significant contraction of a number of economic entities in the market, reduction of inefficient units of the global value chain, optimization of the production system, but also to enhanced specialization of suppliers. Fragmentation of processing chains has become possible owing to cooperation of original equipment manufacturers with several specialized global mega-suppliers.

For example, the Chinese company Chery in matters of design of its cars cooperates with the Italian Pininfarina and Italdesign (also designers of Ferrari, Maseratti, Alfa Romeo cars), additional engineering is carried out in terms of outsourcing in Lotus Engineering and MIRA in Great Britain and Porsche Engineering in Germany and Austria. AVL from Austria performs supplies of gasoline and diesel engines for Chery. Heuliez from France delivers rigid constructions of sunshine roofs for coupe-cabriolet Chery M14. Chery receives parts and integrated subsystems from corporations Bosch, ZF, Johnson Controls, Luk, Valeo, TRW and Siemens VDO (Van Biesebroeck, Sturgeon 2010). Thus, the Chinese corporation manages to reduce significantly R&D expenditures, obtaining thereby not only unique, but also a true innovative and high technology final product.

The natural processes of consolidation, specification, fragmentation and globalization of automotive industry are simultaneously the cause and effect of the emergence of excess production capacities (Humphrey, Memedovic 2003; Nunnenkamp, 2000). According to the author, the solution to this problem in the global automotive industry lies in the subjective relationships in the sector. In fact, the overproduction crisis is due to the establishment of a new type of production relations in the sector. Consolidation and significant reduction in the number of leading players in the global automotive market, the niche specialization of every subject of the value chain, and strong fragmentation of the production process have enabled to constitute more effective form of cooperation between OEMs and global supplier, optimize the design and assembly of vehicles, as well as improve the performance of its production system, and therefore to terminate unfavourable economic relations and reduce non-competitive production ties.

The degree of interdependence between OEMs and global suppliers will gradually acquire the form of established relations. In fact, the system of production and assembly of vehicles will be organized around them in the form of bilateral relations, surrounded by flexible network of the lower-tier suppliers– manufacturers of standardized semi-finished parts.

Therefore, the retrospective of industrial relation transformation in automotive industry during the XX-XXI centuries, determined by the processes of internationalization, globalization and transnationalization of the world economy and international economic relations, can be represented by the following figure.

Conclusions

Hence, transnationalization of automotive industry undermined the sector traditional mode, implying that all production flows directed to the final equipment manufacturer. That particular economic entity monitored the entire system of international production from supply of CKD standardized parts and components to individual modules and integrated systems. Complication of the global value chain pointed to the lack of effective mechanisms of the network coordination. Chaotic ties between suppliers and manufacturers of vehicles significantly reduced the efficiency of production process and often became a cause of excessive production costs.

The problem was solved gradually by natural progress of the system integrators' competence, which have become a buffer zone between the final equipment manufacturer and suppliers of lower-tiers– Tier-2, Tier-3, Tier-n. They became a great focal point, a heart of automotive industry that took over the management and coordination of the activities of all economic entities in the sector. That implied complete responsibility of the Tier-1 supplier before the end vehicle manufacturers not only for the built quality of

their own modular systems, but also for the product competitiveness of separate component suppliers of lower tiers, their JIT and proper integrated assembly in close proximity to the installation of vehicles.

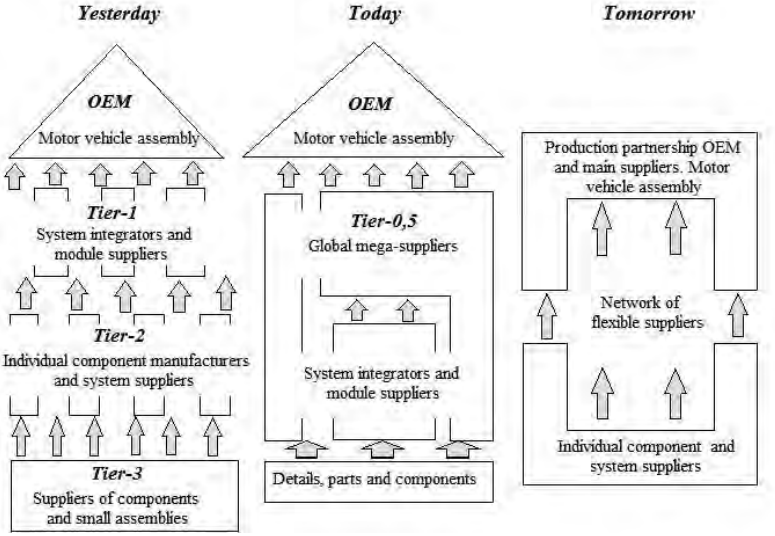

Fig. 2 The Architecture of the Global Automotive Industry in the XXI century
Source: Designed by the author according to Meißner, 2009.

The internationalization of the activities of the final equipment manufacture, its pro-active attitude in the international market and successful overseas expansion required global operations from its close suppliers. System integrators, who managed to compete on a global scale and denationalize their production network, have become global mega-suppliers. Intensification of relationship and interaction of these economic actors have triggered successive transformations in the industry.

The automotive industry was the first sector in which vehicle manufacturers have delegated R&D, design and engineering powers to their global mega-suppliers, because modern innovations were systemic in nature, i.e. related to every value chain link in the automotive industry. Only the mega-suppliers, governing a network of unique cross-sectoral industrial relations, were able to convert the results of scientific research into practice by coordinating their implementation at every stage of the production cycle of vehicles. Isolation and autonomy of some production processes of innovative modules and integrated systems, concentrated around the suppliers of all tiers and categories, contributed to enhanced specialization and fragmentation of the value chain in the global automotive industry. Final equipment manufactures were engaged exclusively in design and assembly of vehicles, selecting from a wide range of modular components proposed by mega-suppliers and using them in its production. Unique characteristics and diversity of car models and brands enabled to combine these complex systems.

Consequently, the mega-suppliers have become an integral part of the global value chain of original equipment manufacturers; in effect, they duplicated the geographical configuration of international production system of powerful automakers. Follow sourcing and overlapping of locations of the leading automobile corporation by the Tier-0,5 suppliers have brought a full production cycle to isolation and concentration within a particular region. Balanced combination of production system regionalization amid global cross-border networks of value creation is unique and specific feature of transnationalization of automotive industry. Glocalness means complementarity of divergent processes of internationalization of the industry, their interdependence and interrelatedness.

Aforesaid close bilateral cooperation of the mega-supplier and manufacturer will lead to such degree of functional interactions of economic actors that eventually their mutual penetration will become prerequisite to a new wave of transformation in global automotive industry.

REFERENCES

2015 car innovation. Innovationsmanagement in der Automobilindustrie (2007). Olyver Wyman, 31p.

A new era. Accelerating toward 2020 – an automotive industry transformed (2009). Deloitte Touche Tohmatsu, 30 p.

Auslandsaktivitäten der Deutschen Automobilindustrie (2011). Verband der Automobilindustrie, Berlin, 18 p.

Automotive M&A. Getting ready for the next wave (2011). Deloitte Development LLC,7 p.

Automotive manager. Trends, opportunities and solutions along the entire value chain cover story: automotive value chain structure changes massively (2013). Olyver Wyman, No. 1/2013, 36 p.

Barragán, S., Usher, J. (2009). The role of multinationals in the host country: Spillover effects from the presence of auto carmakers in Mexico. Contaduría y Administración: 228, pp. 83-104.

Capital confidence barometer. Automotive industry (2013). EYGM Limited, 7th issue, 12 p.

Driving Value. Automotive M&A Insights 2011 (2012).PriceWaterhouseCoopers LLP, 17 p.

Driving Value. Automotive M&A Insights2010 (2011). PriceWaterhouseCoopers LLP, 17 p.

Driving Value. Automotive M&A Insights2012 (2013). PriceWaterhouseCoopers LLP, 17 p.

Driving Value. Automotive M&A Insights2013 (2014). PriceWaterhouseCoopers LLP, 18 p.

Drucker, P. F. (1946). Concept of the Corporation, New York: The John Day Co., 297 p.: P. 149.

General problem of SMES in the automotive component industry – the present situation (2011). United Nations Industrial Development Organization, Vienna, 3 p.

Gundlach, E., Nunnenkamp, P. (1997). Globalization and labour markets in the triad: different adjustment patterns. Transnational Corporations 6 (3): 41-60.

Haraguchi, N. (2010). Impact of the Global Economic Crisis on the Thai Automotive Industry: From the Perspective of the Interplay between Shocks and the Industrial Structure. United Nations Industrial Development Organization. Research and Statistics Branch, Working paper 07/2009 - Vienna, Austria, 2010, 41 p.

Herausforderung Globalisierung. Eckpunkte einer ganzheitlichen Strategie für Automobilzulieferer (2008). Olyver Wyman, 6 p.

Hoffman, D. (2012). Automotive M&A. Transaction Environment. Deloitte Development LLC, 9 p.

Humphrey, J., Memedovic, O. (2003) The Global Automotive Industry Value Chain: What Prospects for Upgrading by Developing Countries? UNIDO Sectoral Studies Series Working Paper, United Nations Industrial Development Organization, Vienna, 62 p.

Industrial Development Report 2009 (2009). Breaking In and Moving Up: New Industrial Challenges for the Bottom Billion and the Middle-Income Countries. United Nations Industrial Development Organization, Vienna, 143 p.

Industrial Development Report 2011 (2011). Industrial Energy Efficiency for Sustainable Wealth Creation: Capturing Environmental, Economic and Social Dividends. United Nations Industrial Development Organization, Vienna, 239 p.

Industrial Development Report 2013 (2013). Sustaining Employment Growth: The Role of Manufacturing and Structural Change. United Nations Industrial Development Organization, Vienna, 246 p.

Jahresbericht 2014. (2014) Verband der Automobilindustrie, Berlin, 268 p.

Jansen, M., Uexkull, E. (2010). Trade and Employment in the Global Crisis. International Labour Office, Academic Foundation, Geneva, Switzerland, 174 p.

Kondratiev, V. (2011) Automotive industry: crisis and innovations. World economy and international relations 3, pp. 12-21.

M&A trends report 2014. A compehensive look at the M&A market (2014). Deloitte Development LLC, 36 p.

Maucher, H. O. (1998) Mergers and acquititions as a means of restructuring and repositioning in the global market: business, macroeconomic and political aspects. Transnational Corporations 7 (3): 153-182.

Meißner, H.-R. (2009). Automobilproduktion in der Prozess- oder Wertschöpfungskette. Vortrag DGB-Rechtsschutz GmbH, Brannenburg, 67 S.

Meißner, H.-R. (2013) Die Bedeutung der Automobilindustrie für die deutsche und europäische Wirtschaft. Publishing PhysicsWeb. http://www.blicklog.com/2013/10/31/die-bedeutung-der-automobilindustrie-fr-die-deutsche-und-europische-wirtschaft/

Mortimore, M. (1997) Getting a lift: modernizing industry by way of Latin American integration schemes. The example of automobiles. Transnational Corporations 7 (2): 97-136.

Nunnenkamp, P. (2000). Globalisierung der Automobilindustrie: Neue Standorte auf dem Vormarsch, traditionelle Anbieter unter Druck? Kiel Working Paper: 1002. Kiel, Germany: Kiel Institute of World Economics.

Richet, X., Bourassa, F. (2000). The Reemergence of the Automotive Industry in Eastern Europe. The Globalization of Industry and Innovation in Eastern Europe. In: From Post-socialist Restructuring to International Competitiveness, pp. 59-94.

Rogach, O. (2005). International investment: Theory and Practice of Business of Transnational Corporations. Lybid, Kyiv, 720 p.

Rogach, O. (2008). Transnational Corporations. Kyiv University, Kyiv, 400 p.

Roy, S. (2008). Investigation into the process of Innovation in the Indian Automotive Component Manufacturers with Reference to Pune as a Dymanic city-region, United Nations Industrial Development Organization, Vienna, Austria, 2008, 52 p.

Sturgeon, T., Florida, R. (2004). Globalization, Deverticalization, and Employment in the Motor Vehicle Industry. In: Global Advantage: Industry Dynamics in a Globalizing Economy, Stanford University Press, California.

Sturgeon, T., Lester R. (2004). The New Global Supply-base: New Challenges for Local Suppliers in East Asia. In: Global Production Networking and Technological Change in East Asia, Washington, DC, World Bank and Oxford University Press, pp. 35–87.

Sturgeon, T.J. (1998). The automotive industry in Vietnam: for development in a globalizing economy. Appendix IV of the Industrial Competitiveness Review. United Nations Industrial Development Organization, Vienna, 43 p.

The Contribution of the Automobile industry to technology and value creation (2013). AT Kerney Korea LLC, 11 p.
UNCTAD. World Investment Report 2010. Investing in a low-carbon economy (2010). United Nations. New York and Geneva, 220 p.
UNCTAD. World Investment Report 2011. Non-Equity Modes of International Production and Development (2011). United Nations. New York and Geneva, 250 p.
UNCTAD. World Investment Report 2012. Towards a New Generation of Investment Policies (2012). United Nations. New York and Geneva, 236 p.
UNCTAD. World Investment Report 2013. Towards a New Generation of Investment Policies (2013). United Nations. New York and Geneva, 236 p.
UNCTAD. World Investment Report 2014. Investing in the SDGs: an action plan (2014). United Nations. New York and Geneva, 2014, 265 p.
Van Biesebroeck J., Sturgeon T.J. (2010). Effects of the 2008–09 Crisis on the Automotive Industry in Developing Countries: A Global Value Chain Perspective. In: Global value chains in a postcrisis world: a development perspective. The World Bank, Washington, USA, pp. 209-244;
Vickery, G. (1996). Globalisation in the Automobile Industry. In: OECD, Globalisation of Industry. Overview and Sector Reports. Paris: pp.153–205
Wad, P. (2010). Impact of the Global economic and Financial Crisis over the Automotive industry in Developing Country. United Nations Industrial Development Organization. Research and Statistics Branch, Working paper 16/2009, Vienna, 35 p.
World Trade Agenda (2000). Global or Not: The Auto Sector Looks Open to New Trade Disputes and Heavy Pressure on Market Opening and Investment Terms. World Trade Agenda Nr. 00/01, Genf, p.1
Zukunft der deutschen Automobilindustrie. Herausforderungen und Perspektiven für den Strukturwandel im Automobilsektor (2010). WISO Diskurs, Berlin, 49 p.

Journal of Global Economy Review, Volume 1, № 3, 2015, pp. 35-43.

International Logistics Technology Transfer and Transport Infrastructure of the Eastern European Economic Area

MAGOMED DASHKUEV[8]

Abstract: This article analyzes the impact of international logistics technology transfer for transport infrastructure of Eastern European economic area (EEEA). We investigate the factors underlying the modern international logistics technology transfer: the combination of various logistics concepts, modelling trade flows for decision making in the field of logistics optimization, planning of international transport corridors and forming integrated (hybrid) logistics management systems with elements of management control, operational and strategic planning. It is proved that the benefits from the proliferation of logistics innovation based on improving current simultaneous global logistics services, information technology during storage, transportation and distribution, and countries that use these benefits get synergetic effect of symbiosis of key factors of production, productivity and competitiveness. The article describes features of the process of development of transport and logistics system models in EEEA countries, as well as current trends and prospects of their logistics market genesis.

Keywords: Logistics • Logistics market • Logistics technology transfer • Global logistics infrastructure • Integrated logistics management system

Introduction

International logistics technology transfer today is, first, part of the global diffusion of codified scientific knowledge and information (as opposed to technology commercialization) using information channels from one of its individual or collective carrier to another by "chain" - "initiation - flow - integration" if clear institutional execution procedures are available. Secondly, it is the cumulative mechanism of logistics business operations distribution, licensing agreements (today about 80% of all types of logistics technologies are transmitted through license sales), multinational R & D or IT alliances and innovation spillovers, ensuring the same final result – the diffusion of innovation. Wherein, if the transfer of logistics innovations is usually international (according to estimates, about 90% of licenses are sold abroad so as not to create competition at the national domestic market), the spillover generally takes place within a country, and can also be intersectoral (although typically it is more spreading knowledge that has no form of finished goods). Certainly, international logistics technology transfer is global, but its impact is differentiated for definite countries, especially for Eastern European Economic Area (Belarus, Moldova, Ukraine), which has only begun to create mechanisms of integration with the EU.

Literature review

The issue of international transport and logistics infrastructure (TLI) is reflected in the works of foreign economists such as Hummels D., De Groot H.L., De Langen P., Sheffi Y., Rodrigue J.P., Bowersox D., Closs D.J., Anikin B., Holubets'ka N. Elovoy I., Ivanov D., N. Karpov, Nerush Yu, L. Skvortsov and domestic scientists – Bidnyak M., Verhun B., Kubiv S., Omelyanenko V., Poruchnyk A., H. Savina, V. Smyrychinskyi, Somov A., Stupnytskyi A., Khromov A., Chuzhykov V., Yaremovych P. At the same time, issues related to the role of innovative component of national intermodal transport and logistics networks

[8] Degree-seeking Applicant, Department of International Business, Institute of International Relations of Taras Shevchenko National University of Kyiv, 36/1 Melnikova str., Kyiv, Ukraine. e-mail: dashkuevma@mail.ru

and influence of international logistics technologies transfer on the formation of national TLI require further research. Approaches to improving comparative evaluation of TLI characteristics and transformation in Eastern Partnership countries in terms of the increasing role of institutional factors in shaping the global network of international transport corridors need further improvement. The article examines TLI of three out of six Eastern Partnership countries (Belarus, Moldova and Ukraine), as they, firstly, have a common set of problems associated with the existing transport and logistics networks and their restructuring and adaptation to the European subregional space; secondly, more efficiently use their TLI compared to other Eastern Partnership countries (Georgia, Armenia and Azerbaijan); thirdly, proximity to Central and Eastern Europe, which have already joined the EU, has temporal and spatial advantages in implementing their logistical structures to European and international transport corridors.

Basic results of the research

The transfer dynamics is determined, firstly, by share of global cargo turnover (sea – 62%, railway – 16% and road transport – 8%) and passengers (car – 71%, air – 18%, rail –10%, sea transport – 1 %); secondly, by the level of development of modern information technology, which facilitates widespread use to provide various types of services, even for those consumers who are too far from the producer; third, the degree of mobility of both production and consumer services not only by reducing transportation costs, but also the increased proportion of services provided remotely; fourth, the increasing demand for services that previously had commodity form (financial services, banks and insurance companies); fifth, the general policy of individual countries and their unions in the transport sector (laws, administrative and legal acts aimed at reducing the public sector in serving the transport industry, the removal of transport barriers, coordination of transport modes, reducing prices and rates). The latter facilitates both development of free competition in transport, creation of large transport and logistics systems and models of integration of international integrated logistics by placing production and distribution centers, and the choice of transport for a particular order, type of service, inventory management, designing appropriate communicative information systems.

The features of modern international logistics technology transfer are:

1) financial benefits expected from transfer (increased productivity, reducing complexity of logistics procedures/operations and cost of material resources, financial savings);
2) the balance between stability, which functioning innovation already guarantees, and expenditure on new ones by means of transfer (transfer logistics innovations targeted on only achievable organizational, economic and technical conditions already existing at the company);
3) reducing the period of adaptation implemented through the transfer of logistics innovations/technologies to the existing organization and technical management structure of the company.

Thus implementation specificity of logistics innovation through transfer is also determined by external, market environment (compliance with the final result of the introduction of specific needs and requirements of the market and transforming innovation into a more perfect logistics product and the ability to implement it at a competitive price) and internal environment of the company (compatibility of implementing innovation by transfer with the goals, objectives and development strategy, types of logistics activities, production capacity and coordination of ‘transfer’ innovation with other logistic innovations implemented at the same time).

Today it is important that if the methods of evaluating results of implementing their own logistics innovations provide two main approaches: the implementation of internal (local development) and external innovation (sectoral, cross-sectoral, wide design), the methods for evaluating implementing results of acquired ‘transfer’ innovation are based on four types of system assessment. First, a system focused on reducing logistics costs (expenditure) – determination of the cost of each technological sphere of logistics chain of goods traffic and their share in total expenditure in movement of goods. Second, the system is oriented on income (profit) – assessment of direct and indirect contribution to the results of implementation of the ‘transfer’ of logistics innovations in the profits earned by the company during the planned period. Third, multi system – a combination of expenditure and profit types in comparing the results of the implementation of acquired logistics innovations. Fourth, the simplified – evaluation of the general outcome of implementation of the innovations ‘transfer’ in the logistics of the company without differentiating

logistics spheres. These systems provide the analysis and use of six groups of indicators: performance (measurement results of implementation of 'transfer' innovation in physical terms), costs (cost parameters of the expenses related to logistics procedures and operations), service (absolute or relative performance), the rationality coefficient of movement of goods (calculated based on the length of the production cycle), utilization of capacity of vehicles (number of overload / shipments of products and specific warehouse turnover, per unit volume of storage or warehouse space) and information capacity factor (the ratio of the amount of information that is widely used to of its total quantity). This allows a company to compare the performance of logistics activities before and after the introduction of innovation 'transfer'. Modern international logistics technology transfer practices are carried out by the following seven steps:
1. Identification Technology → 2. Technology Search → 3. Technology provider choice → 4. Negotiations → 5. Signing the contract → 6. Implementation → 7. Transfer run and adaptation of technology.

Growing globalization accelerates transfer of unique (as opposed to universal) logistics technologies used in different areas and for different logistics of the market in the form of high macrotechnology, intracorporate and complementary technology, giving participants the opportunity to structure logistical services based on sharing innovation (so-called 'counter-transfer'). The analysis shows that three main barriers have been formed, which affect creation and diffusion of logistics innovation and its effective use: methodical (associated with the method of implementation of SWOT-analysis and generalization of the results), information (dealing with difficulties of information support) and management (that defines verification and ranking factors when determining a set of strategic alternatives and their comprehensive evaluation). The coordination and optimization of logistics flows circulating in the supply chain and reducing logistics cycle time is the basis for a company's integrated logistics in the development of its strategic initiatives. According to leading analytical companies' data (AMR Research, Forrester Research), through an integrated logistics companies obtain significant competitive advantages: increased profits from 5 to 15%; cost reduction and order processing time from 20 to 40%; reducing market entrance time by 15 to 30%, which enhances its innovative stability. The innovative logistics toolkit defines forms and methods of forecasting consumer preferences and market opportunities, and implementation of key elements of the innovation strategy of the company is focusing logistics processes on the customers, involving employees in generation of logistics innovation and process approach to management activities. The components of the mechanism of innovations in logistics management is the strategy of logistics subject management (internal and external factors) and innovative logistics business environment (direct and indirect environmental action) and forecasting tools of scientific and technological and market opportunities (material management technique models and management of the creation of added value in the supply chain).

Modern Intelligent Transport Systems (ITS) are the generators of logistics technology transfer based on organization of intermodal transport chains using information and communication technologies on different kinds of transport and in the process of their interaction. In fact, ITS, firstly, provide the electronic exchange of information between the transport infrastructure, rolling stock, transport users and regulatory bodies. Secondly, they play a key role in ensuring the smooth and efficient intermodal transport operations (especially overloaded transport infrastructure) and a high level of safety and reliability intermodal transport chains. For example, the use of ITS for intermodal transport (except traditional logistics areas) facilitates tracking and tracing (including satellite) intermodal loading units and their compliance with customs and transport declarations and permits forecasting transport corridors. Tools for forecasting ITS' scientific, technical and market opportunities are presented in Fig. 1.

Logistics innovation transfer through ITS is based on three kinds of "system compatibility": a) technical and interoperability: the connection of computer systems and services based on technology coordination at national and international levels; b) semantic interoperability: a clear definition of the data and information that is the subject of innovation transfer and exchange, that are clear to all involved systems; c) organizational interoperability: the use of innovative information systems of mutual agreement on processes/purposes of logistics operations. Experience shows that by implementing initiated by governments and international logistics industry ITS projects to improve innovative 'filling' and efficiency of transport chains and combined transport operations (such as KOFRET, Greenfreight Europe, I-Cargo, E -Freight, E-railfreight, Caesar), in fact, have managed to overcome unimodal character and fragmentation of individual logistics systems belonging to different owners. In addition, at the current stage the so-called 'cross-license chains' of bilateral or multilateral international technology regulations transfer have become

an integral feature of the global logistics market.

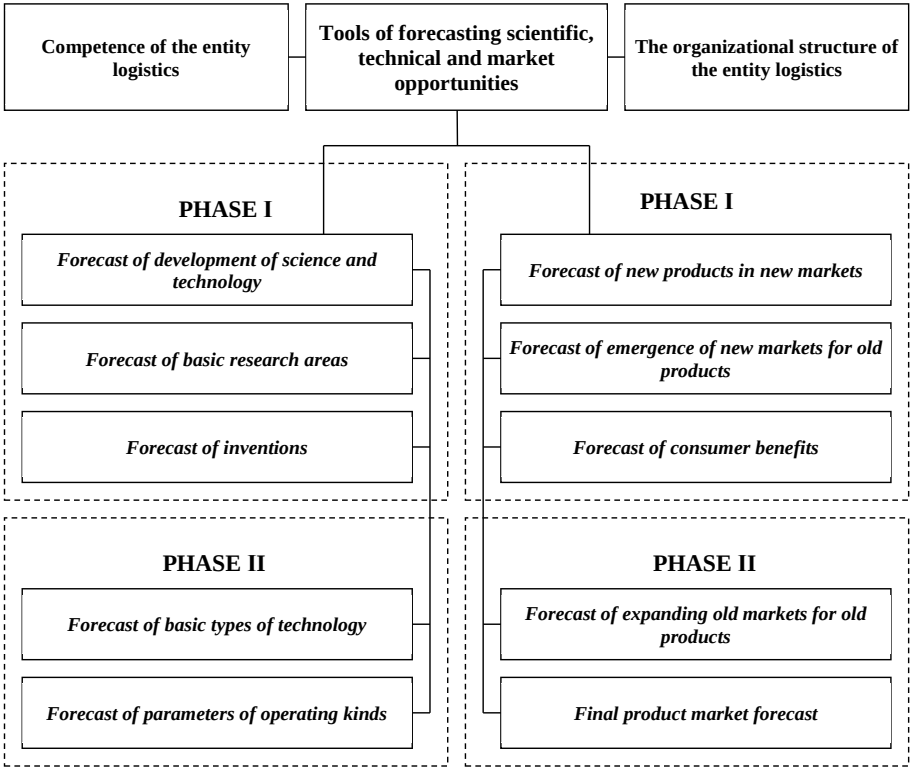

Fig. 1 Tools for forecasting ITS scientific, technical and market possibilities
Source: compiled by the author

The low level of logistics technology transfer in the countries of EEEA (Belarus, Moldova, Ukraine) is caused by a number of factors, including insufficient overall development of innovative processes, inadequate legislation to identify and protect intellectual property rights, distortion of transfer patterns of high-tech services. The difficulty of advanced technology transfer in the field of logistics chains is also linked with the fact that the international management of technology transfer depends on the degree of compliance with cultural values and beliefs of people in the country that receives them. And if earlier it was only defining Western management element transfer to other countries (the effect of simple diffusion), currently a number of approaches to technology transfer possibilities are identified: 1) without any adaptation, when technology is either exactly reproduced or adapted only to local operating conditions and the recipient-country's national culture; 2) adaptation mainly to the internal organizational environment by changing the organizational culture; 3) adaptation considering features not only the external and internal environment of the parties transmitting and receiving the technology, but also the specifics of the technology transferred (mixed approach); 4) adaptation to industry specifics.

Research of the aspects of management technology transfer in countries EEEA has shown that both formal and informal transfer channels are used in practice. The informal channels include industrial espionage and copying (’everse engineering’), the formal are trade channels (e.g. through business format franchising, direct exports); investment channels (for example, through creation of a subsidiary or joint venture companies); information channels in a form of open and accessible information sources (e.g. academic, scientific, educational publications). Even formal channels of management technology transfer can not always be unambiguously positively estimated from the position of organizations transmitting these

technologies. The decision on the logistics chain management technology transfer is determined by fullness of management and organizational forms of transmission - full (complex) or partial (elements). That is, the transfer of full organizational and management form is opening branches of the foreign logistics company FedEx, and partial is the transfer of management systems software for separate logistics chains by 'CARGO' and 'Caesar' companies. The process is easy if the transfer of technology is determined by the stage of its life cycle (commercialization, market entry, modification), low integrity, availability, since the direct developer initiates the transfer. It is difficult at the late stage of the life cycle (standardization and universalization), it depends on the level of difficulty and degree of integrity, radical if the transfer is initiated by the recipient.

In modern terms, western logistics TNCs use the practice of 'combined' conditions, when the technology is rendered to independent national logistic operators on condition that they cooperate with them within the supply chain and logistics corridors in the markets of Belarus, Moldova and Ukraine. National logistics operators in these countries, though legally independent, actually get a significant dependence on TNCs as the licensed product does not motivate development of their own new technology without the consent of the foreign supplier. By limiting the scope of the use of 'transfer' technology, TNCs are able to distribute its scope among their subsidiaries and independent firms so (technological outsourcing), as if they were a single set, reporting its strategic activities to the Headquarters (for example, Ukrainian technology is not protected by international legal acts, making 99% of international transfers impossible).

For EEEA countries logistics industry is relatively new, and there are no any state and/or public institutions to contributed to its development (stage 'catch-up' development stage). The analysis shows that for efficient national logistics networks it is necessary to have, firstly, a systematic approach and knowledge of logistics (logistic level of education here lags 10-15 years from western counterparts), and secondly, the use of specialized experience of western companies having their own methods of effective management of technologies and materials at local facilities. Actually implementation of the state policy of 'catch-up' development should follow two rules: 1) one can not just repeat the path of foreign countries in the development of logistics infrastructure; 2) 'catch-up' development involves deep structural reforms (the state should perform specific features that actually make it possible to bridge the gap with more developed countries). Today EEEA transport system is not prepared to provide prospective volumes of freight and passengers, due to imbalances of various modes of transport capacity to transport certain types of goods, a considerable depreciation of fixed assets of transport companies, underdeveloped system of transport operators in international traffic and a critical lagging of transport service quality compared with modern international requirements.

Thus Belarus prefers German logistics model because it is based on: 1) state support of logistics infrastructure at all levels (from planning to implementation), federal laws, federated state laws and local government (the state provides a 'starter' capital of 15% of the design work and site preparation); 2) management of logistics centers by supervising bodies that are created by private firms involved in the project (investors and / or investment consortia, development companies, the city / municipality, associations and unions). Currently, the low efficiency of public authorities ('Logistics System Development Programme of Belarus for the period till 2015' (2008) was revised only once in 2011 and then only in terms of changes in land plots allocated for construction of logistics centers), there are no strong industrial groups that would be interested in implementing infrastructure projects with foreign investors and through private-public partnership. Foreign investors do not understand the government's requirement that "51% of logistics centers should belong to the state" as an internationally recognized approach to the construction of logistics centers is "1 million dollar investment per 1 hectare of a logistics center (considering construction only), and a separate item is the cost of creating the infrastructure (roads, hotels, gas stations and so on) and complex logistics competence". If several years ago the EBRD participated in national investment projects with its own participation companies borrowing at 10–20%, today, due to the unfavourable investment climate, the standard has risen to 40–60%. Therefore, only a systematic approach to solving institutional problems of Belarus will allow the country to obtain a synergistic effect and create conditions for the most complete implementation effect of logistics innovation transfer for transit potential and ensure stable economic growth.

The policy of the Republic of Moldova in the field of logistics innovation and transport technology

transfer is determined by four documents: “The Concept of Formation and Development of the National Network of International Transport Corridors” (in operation since 2002), “Land Transport Infrastructure Strategy of Moldova for 2008-2017”. (in operation since 2008), “Strategy Fegarding Freight and Logistics for the Period of 2013-2020” and “Strategy of Transport and Logistics in 2013-2022" (in operation since 2008). In addition to investment in the international automobile corridors TRACECA and TEN-T (with the participation of international and European financial institutions), the transport and logistics system of the country is scheduled to achieve the average level of the EU as a subject index of global competitiveness on the quality of infrastructure and logistics performance index in 2022, namely logistics performance index for customs operations 2.55 in 2022; logistics performance index for competence in logistics 2.50 in 2022. Indeed, within the EU Action Plan regarding the Republic of Moldova innovative changes in the activities of the Customs Service have been made (the introduced electronic declaration, ‘traffic light’ system of risk management in customs inspections and ‘one-contact’ principle have allowed to avoid passing the sanitary-veterinary and phytosanitary controls, interfaces to port operations, services, procedures, and so on between land and sea). The system of prior information exchange (PAIES) has allowed the EU and Moldova to exchange information and coordinate import-export operations, accelerate the passage of border formalities and fight smuggling (information program FRONTIERA). Therefore, the current customs procedures and services are very attractive for investors and potential users: 1) goods exported or imported are exempt from all customs duties (except for customs procedures); 2) since 2008 the country has received from the EU autonomous trade preferences, which allow the EU to import almost all goods produced in the beneficiary country; 3) the use of electronic customs transit information system «IS ASYCUDA World» has promoted integration of Moldova into the customs tariff «IS ASYCUDA World».

Special attention in logistics innovation implementation in Moldova transport infrastructure is given to the field of freight and passenger rail transportation, where in the next five years they plan to use EU advanced innovative technologies to provide access to private sector operators; to restructure by cost centers, to introduce a system of electronic registration meeting international standards of EU and to get rid of non-profit activities. In this regard, in 2012 Moldova railway received a loan of 25 mln. Euros from the EBRD to modernize its fleet of locomotives and 12 mln. Dollars to build a railway terminal for both types of track to improve overall standards of port infrastructure and supply railway track to the container terminal. In 2013 three companies were founded to manage the railway infrastructure, passenger traffic and freight traffic that optimized operations and stimulated development of multimodal logistic centers in Kishinev and in the area of International Free Airport "Merkulesht", whose commissioning is planned in 2020.

In addition, there is another important point – it is transfer and implementation of international security technology in EEEA countries. If the total international cargo carried by all modes of transport, the hazardous share is about 20%, for EEEA countries this figure stands at 35-40%, and it tends to increase as the number of incidents that occur during its transportation (the latter figures are increasing more rapidly). Currently, significant weaknesses in the security of supply chains in EEEA countries is, firstly, lack of standardization and harmonization of safety requirements (ISO 28000 standards); secondly, lack of a coordinated approach by all types of transport, ensuring the safety of transport, protection against accidents and prevention of adverse effects. The effectiveness of the security should include not only methods of state control, but also instruments of identification and monitoring of ‘critical points’ risk assessment of resources in the total supply chain.

As for Ukraine, today the market of transport and logistics services is characterized by considerable unevenness of its parts: 89% falls on cargo transportation services, 8% is storage (without customs clearance and logistics processes automation), 2% is forwarding services and only 1% is supply chain management. The share of transport services in Ukraine's GDP is about 12%, the cost of fixed assets is 14.8% (though, their depreciation is approximately 80%), the number of employees in the industry is 5.6% of the total number of workers employed in the economy. With an extensive network of railways, whose operating length ranks fourth in Europe (excluding Russia) after Germany, France and Poland and holding the second largest freight transport, Ukraine is far behind European countries in terms of technological development of the transport sector especially in the context of the prospects of transit.

Indeed, Ukraine has a rather low level of innovation and high-tech component in its transport sector, only 40% of freight forwarding companies provide one of the main logistical services - intermodal

transportation, and 58% of organizations have been engaged in logistics activities within less than 10 years; the existing system of state management and industrial and technological base in many ways do not meet international (European in particular) quality standards; vehicle leasing system and state regulation of tariffs for transportation are imperfect, investment on terms of concessions and public-private partnerships does not work. Moreover, Ukraine is in the area of military-political conflict that contributes to the Russian policy of reorientation of Ukrainian cargo to Russian and neighbouring logistics centers, as well as initiation of a number of Eurasian transport projects bypassing Ukraine. It is urgent that Ukraine rapidly develop (given the experience of the EU) its own model and strategy of development of transport networks based on foreign investment and domestic financing of major infrastructure projects, particularly transit traffic.

The analysis shows that under European vector of development Ukraine-EU cooperation has two main objectives: first – restructuring and renewal of Ukrainian transport sector on the basis of transfer and introduction of new transport and logistics innovations / technologies, harmonizing with existing EU standards; second – growing efficiency of passenger and cargo traffic by removing administrative, technical and other obstacles. That is, to focus on implementing the Action Plan for the Development of Transport in the Neighborhood Region that was submitted to the EU Commission back in 2011 (the priority projects combining of Transeuropean transport network with infrastructure of Ukraine) and on measures provided for by the Association Agreement between Ukraine and the EU. The low level of technical, technological and economic parameters; irrational and inefficient use of transport resources is particularly acute in the areas of maritime and air transport, which are almost entirely working in the market of international transport and unable to withstand the world market competition. Despite having approved the "Strategy of Development of Transport System of Ukraine by 2020", no specific policy documents have been developed, the activity of specific areas of transport infrastructure is carried out largely by inertia and is not aimed at specific and reasonable goals.

A prerequisite for overcoming this problem is to develop appropriate methodological tools that allow the most complete comprehensive diagnosis of the current level of development of Ukraine's transport infrastructure, identify available resources and propose measures for their feasibility. Despite a large number of partial assessments of development of transport communications in Ukraine the author offers a model developed on scientific principles that allow taking into account key aspects of the main means of transportation.

To develop models assessing the level of development of logistics infrastructure in Ukraine the author has chosen a) two key types of ground transportation – road and rail, b) indicators that allow to evaluate the transit potential of Ukrainian transport system, c) linear distance matrix, pairwise distance and average time spent to overcome distance means of communication between the respective regional centers, allowing to solve the problem of ingredient reconciliation and normalization of numerical values of corresponding partial indicators of logistics infrastructure. To combine partial assessments of the development infrastructure level into a single composite index methodical apparatus of game theory and linear way partial consideration priority objectives were used. In a formula this can be represented as follows:

$$\hat{d}_i = \sum_{j=1}^{n} p_j \cdot \overline{d}_{ij}, \tag{1.1}$$

where p_j is a priority coefficient j-th partial indicator of the logistics network;

n is number of partial indicators of logistics network.

Priority coefficients p_j can be defined in various ways, including expert. However, to ensure greater objectivity a formal procedure for calculating weight coefficients for simple linear relationship regulation is applied, it is necessary to streamline partial indicators as their values decrease. Given the nature of the indicators considered it is suggested to apply the following ranking: 1) average speed indicator; 2) road density indicator; 3) routing efficiency indicator; 4) rail density rating.

Thus, formula (1.1) can be represented this way:

$$\hat{d}_i = \sum_{j=1}^{n} \frac{2 \cdot (n - j + 1)}{n \cdot (n + 1)} \cdot \overline{d}_{ij}, \tag{1.2}$$

where $\overline{d}_{ij}$ is the normalized value j-th partial indicator of the logistic network in i-th region.

As a result of combining partial indicators of logistics network in different regions of Ukraine in the

only comprehensive index formula (1.2) one can form a general rating of logistics networks of regions represented in Table. 1.1.

Table 1.1

Integrated rating of the logistics network of regions of Ukraine

$\hat{d}_i$ higher than average			$\hat{d}_i$ lower than average		
№	Region	$\hat{d}_i$	№	Region	$\hat{d}_i$
1	Lviv	84%	14	AR Crimea	54%
2	Kyiv	79%	15	Dnipropetrovsk	51%
3	Zhytomyr	73%	16	Odesa	50%
4	Rivne	70%	17	Cherkasy	49%
5	Kharkiv	70%	18	Transcarpathia	48%
6	Volyn	66%	19	Zaporizhzhya	43%
7	Ternopil	63%	20	Kirovohrad	42%
8	Poltava	61%	21	Chernivtsi	42%
9	Vinnytsya	59%	22	Luhansk	40%
10	Hmelnytsky	59%	23	Ivanofrankivsk	40%
11	Donetsk	56%	24	Mykolaiv	33%
12	Sumy	55%	25	Kherson	27%
13	Chernihiv	55%			

Source: compiled by the author

To reduce subjectivity in the selection of weighting coefficients for individual analytical indicators the author uses a formalized computer procedure that allows determining their value based on an orderly reduction in the priority list of indicators. Results of testing the model of quantitative evaluation of the development of transport infrastructure in the regions of Ukraine have demonstrated its practical applicability in a real field of information available at the time of evaluation. The highest level of logistics infrastructure in accordance with calculations is diagnosed in Lviv, Kyiv and Zhytomyr regions. The reason for this is the high specific weight, which in accordance with the model assumptions accounts for indirect estimation of quality of transport communications, which pairwise combine all regional centers of Ukraine. Kherson and Mykolaiv oblasts are characterized by the weakest development of transport communications.

Thus, in terms of international experience and current trends in the global logistics market, Ukraine is currently at the stage of formation and consolidation of the industry, essentially conceding to western countries, as the level of development of logistics infrastructure, and the quality and full scale of services of national transport and logistics companies, in the face of fierce competition leads to their exclusion from international transport market.

Conclusion

In general available budget funds of EEEA are insufficient for modernization and development of transport and logistics infrastructure, resulting in a need to identify clear priorities for better use of public-private partnerships, providing development and compliance viable legal and institutional framework for the private sector. The lack of priority support of breakthrough technological innovations and a single governing body on technology transfer in countries of EEEA is also the result of unresolved issues in the evaluation of intellectual property and its reflection in accounting, duration of examination of applications for patents and inventions. Policy of international logistics technology transfer EEEA should be based on: 1) the regulation of imports of new technologies (tariff policy) and purchase of licenses; 2) attracting foreign direct investment into the national economy and the use of international law for joint ventures; 3) mechanisms to encourage outsourcing; 4) international cooperation and technological innovation and clustering. Now the following obstacles are hindering the development of transport and logistics infrastructure and the intensity of trade flows in Ukraine: lack of terminal, transport and logistics and storage

complexes / clusters of medium and high grade (especially for containerized cargo, whose share in the world already reaches 55 %); low speed of commodity flows (low speed, and scheduled downtime up to 40% of the time on the road); low supply of integrated transport and logistics services and efficiency of 11 international and intra- and inter-regional transport corridors; lack of integration of information and software and computer systems; lack of coordination between transport modes and clients in the organization of multimodal and intermodal transport of goods. Therefore, it is important to take advantage of the Single European space expansion to the East, especially including Ukraine, which is an integral part of Eurologistics, which will be linked to the transport and logistics systems in Asia and other continents through a network of international transport corridors and logistics centers.

REFERENCES

Bilozubenko VS Global Paradigm of Innovation: New Guidelines for Ukraine / VS Bilozubenko // Trade and Market in Ukraine. - 2011. - № 32. - P. 11-18.

Bykova O., S. Suslova Logistics Technology Transfer as Innovation Diffusion Method / O. Bykova, S.Suslova // Logistics. – 2011. – № 8. – P. 23-25.

The Working Group Report on Intermodal Transportation and Logistics. Session 55. Geneve, November, 6-7 2012 ECE / TRANS / WP.24 / 131. http://www.unece.org/fileadmin/DAM/trans/doc/2012/wp24/ECE-TRANS-WP24-131r.pdf

Elovoy I.A. Integrated logistic Resource Delivery Systems: (Theory, Methodology, Organization)/ Elovoy I.A., I.A. Lebedev; Edited by V.F. Medvedev. - Minsk: Law and Economics, 2011. - 460p.

Ivanov D.A. Supply Chain Management. – St. Petersburg: Polytechnical University Press, 2009. – 216 p.

Ivanov F.F. Freight Logistics System of the Republic of Belarus: (Formation and Development) / F.F. Ivanov; [Edited by S.A. Pelykh]. - Minsk: Law and Economics, 2011. - 159 p.

Innovation Management of Logistics Systems: collected works/ Ed. prof. N.P. Holubetskaya. - SPb.: Publishing House St. Petersburg Academy of Management and Economy, 2010. - 368 p.

Kazakova N.V., Dulepin Y.A. Innovation Transfer Strategy in Innovation Systems / N.V. Kazakov, Yu. Dulepin // InVestRegion. – 2010. – № 4. – pp 54-59.

Karpova N.P. Logistics as Management Innovation in Marketplace / N.P. Karpova // Economics. – 2011. – № 4(77). – pp 71-75.

Kirmichi V.I. Problems of Development of the Transport System of the Republic of Moldova. http://www.aticmd.md/wp-content/uploads/2013/04/S_2_A_02_Chirmici_10.pdf

Koneshna V.S. Problems and Prospects of Ukrainian Exports of Technology - [electronic resource]. - Access: http://www.confcontact.com/20111222/5 koneshna.htm

Logistics, Innovation, Management in Modern Business Environment/ edited by L.A. Skvortsova. – Saratov, SGTU Press. – 2011. – 283p.

Logistics: Textbook / Ed. B.A. Anikin: – M.: INFRA-M, 2000. – 352 p.

Maley E., Latyshkevich O. Problems of Development of Logistics in the Republic of Belarus / E. Maley, A. Latyshkevich // Logistics: Problems and Solutions. – 2012. – № 4(41). – pp 66-70.

Maryanenko V.P. Marketing Approach to Categorizing Global Innovation Diffusion Channels / V.P. Maryanenko // Problems of Modern Economy. – 2012. – № 2(42) – pp 21-26.

Nerush Y.M. Logistics. – M.: "Prospectus", 2010. – 520 p.

Omelyanenko V.A. Theoretical Aspects of State Regulation of International Technology Transfer / V.A. Omelyanenko // Theoretical and Practical Aspects of the Economy and Intellectual Property. . – 2012. –Issue 1, Volume 3. – pp 237-242.

Savin N. Vector Analysis of Logistics Systems' Transformation / Savin N. // National University of Water and Environment Newsletter. Collected Works. Seine "Economics" - Vol. 4 (56). - 2011. - P. 213-219.

Somova O. Domestic Market of Logistics Services: Transportation and Warehouses / O. Somov // Logistics: Problems and Solutions. – 2012. – № 3. – pp 48-55.

State Statistics Service of Ukraine. Official site. http://www.ukrstat.gov.ua/

Starkova N. A. Trends in Logistics Services in the ModernWorld Market / Starkov N. O. // Scientific Journal KubGAU. http://ww.ej.kubagro.ru/

Topic of 2014: The Role of Transport and Forwarding Companies and Logistics in Intermodal Transport Chains. ECE. Inland Transport Committee. The Working Party on Intermodal Transport and Logistics. 57 session. Geneve, 10-11 November 2014 ECE / TRANS / WP.24 / 2014/3. http://www.unece.org/fileadmin/DAM/trans/doc/2014/wp24/ECE-TRANS-WP24-2014-03r.pdf

Yurik V., Yurik S. International Transfer of New Technologies in Transition Economies Bankaŭski // Vesnik. 2013. №2. S. 16-25. http://nbrb.by/bv/cont.asp?id=9626

The Company in the Global VolatilityConditions: Challenges, Opportunities and Risks and the New Economy. / Monograph / V.A. Verhun, A.I. Stupnytskyi, I.I. Cherlenyak. [etc.]; Edited by Cherlenyak. - Uzhgorod: PE "AUTDOR-Shark", 2015. – 460 p.

Journal of Global Economy Review, Volume 1, № 3, 2015, pp. 44-51.

World Gold Market Price Trends: Prediction Methods

ANASTASIYA MYKOLENKO[9]

Abstract: The global financial crisis has affected the economy all over the world; it has struck major financial markets around the world. However, the gold market seems to be unscathed by financial downturn, that's why gold market is becoming more attractive for investors during economic instability and financial turmoil. Investors call gold a safe haven. It is a safe haven because it saves their assets from financial crises. A lot of people think that during such periods gold is more stable than other assets. That's why we have seen great dynamics in the gold market during the last financial crisis that started in 2008. Some investors suppose that the same can occur if the financial turmoil happens again. This article investigates the direction of gold price over fifteen years (1999–2014 period) and its correlation with VIX index, US inflation, US consumer price index (CPI-U), Dow-Jones industrial index, US dollar index (USDX) and oil price with the help of Bayesian network and decision tree.

Keywords: Bayesian network • Decision tree • Gold • USDX • Consumer price index

Introduction

The object of the study of this article is macroeconomic indicators that impact the price of gold for a significant period of time. The author used Bayesian network and decision tree to investigate the effect of the price of gold performance and its relationship with other data.

In this article we going to use the following notation:

y −price per ounce of gold in US dollars;
x_1 −VIX index;
x_2 −US inflation;
x_3 −US consumer price index (CPI-U);
x_4 −Dow-Jones industrial index;
x_5 −USDX;
x_6 −oil price.

It should be noted that our analysis is focused on the quarterly values in the period from 1999 Q1 to 2014 Q4. Initially we analyze a short period in order to gain better results for the present.

Notes:

1. The data of price per ounce of gold in US dollars has been taken from Kitco website. Kitco is a Canadian company that buys and sells precious metals such as gold.
2. The data for VIX index has been taken from The Chicago Board Options Exchange website.
3. The data for US consumer price index (CPI-U), Dow-Jones industrial index, USDX and oil price has been taken from the website macrotrends.net

The data for US inflation has been taken from the US inflation calculator website.

Literature review

The Bayesian network have been explored by Joe Suzuki (1999) in his article called 'Learning Bayesian Belief Networks Based on the Minimum Description Length Principle: Basic Properties' and

[9] PhD Student, Department of International Business, Institute of international Relations of Taras Shevchenko National University of Kyiv, 36/1 Melnikova str., Kyiv, Ukraine. e-mail: myk.anastasiya@gmail.com

Haipeng Guo and William Hsu (2002) explored the survey of algorithms for real-time Bayesian network inference. Yonghui Cao (2014) studied four types of learning Bayesian networks cases. Citable Link, Tommi Jaakkola, David Sontag, Amir Globerson, Marina Meila (2014) studied Bayesian network structure using LP relaxations.

Lucia Morales and Bernadette Andreosso – O'Callaghan (2011) made a comparative analysis on the effects of the Asian and global financial crises on precious metal markets.

Mills (2003) investigated the statistical behaviour of daily gold price data from 1971 to 2002. He found that the phenomenon of volatility prices scaling with long-run correlations is important. Furthermore, gold returns are characterized by short-run persistence and scaling with a break point of 15 days. Daily returns are highly leptokurtic with multi-period returns only recovering gaussianity after 235 days.

Tully and Lucey (2007) investigated the macroeconomic influences on gold using the asymmetric power GARCH model (APGARCH). They examined cash and future prices of gold and significant economic variables over the 1983–2003 period paying special attention to two periods, around 1987 and in 2001, the years of the equity market crashes. Their results suggest that the APGARCH model provides the most adequate description for the data, with the inclusion of a GARCH term, free power terms and unrestricted leverage effect terms. They also found that the gold cash and future data over a long period confirmed the US dollar is the main macroeconomic variable which influences gold.

A more general analysis looking at commodities behaviour was carried out by Wolfle (2006). He used a dataset of 19 commodities and two stock indices (S&P 500 and Dow Jones) daily data covering the period from December 31, 1999 through May 31, 2006. He applied GARCH procedures to analyze his time series, and in general he found strong evidence of interdependence among commodities. His results showed that the Dow Jones and S&P 500 Indices do not spillover to commodities; however the Dow Jones Index reacts to innovations for coffee and soybeans. Information transmissions between stock and commodity markets are rejected, which means that commodity and stock markets are not interdependent, which supports the use of commodities to diversify risk in stock portfolios. This finding allows us to hypothesize that a similar pattern could be found in relation to precious metals; thus, these markets need to be analyzed carefully in order to provide evidence of independent behaviour of precious metals themselves, bearing in mind that these markets can represent an interesting option for capital allocation.

The role of precious metals in financial markets was analyzed by Draper et al. (2006) who used daily data for gold, platinum and silver from 1976 to 2004. They include the S&P 500 Index as a proxy for stock market returns from the US investors' perspective. They found that all three precious metals have low correlations with stock index returns which suggests that these metals may provide diversification within broad investment portfolios. They found that normally, financial portfolios that contain precious metals perform significantly better than standard equity portfolios. They also found that precious metals exhibit some hedging capability during periods of abnormal market volatility, a characteristic of great relevance during times of financial crises, where investors could use precious metals to minimize their risk exposure.

Finally, a more recent study done by Batten and Lucey (2010) analyzed the volatility structure of gold trading as a future contract on the Chicago Board of Trade using intraday (high frequency) data from January 1999 to December 2005. They used GARCH modelling and the Garman-Klass estimator. They found significant variations across the trading days consistent with microstructure theories, although volatility is only slightly positively correlated with volume when measured by tick-count.

Methodology

Predicting the direction of gold price changes with the help of Bayesian network

Bayesian Network was found by Judea Pearl in 1985. Despite its relative newness, it is widely used to find causation when modelling the processes described by various factors. From the mathematical point of view Bayesian network is a model that presents existing and missing probability of dependencies. It is a model that presents a set of random variables and their conditional dependencies via a directed acyclic graph.

Bayes' theorem (alternatively Bayes' law or Bayes' rule) relates current probability to prior probability. It is important in the mathematical manipulation of conditional probabilities.

This relationship $A \to B$ is causal when the event A is the cause of appearance B, that is, when there

is a mechanism under which the value adopted A, affect the value taken B.

Bayes' theorem is stated mathematically as the following equation:

$$P(A|B) = \frac{P(B|A) \cdot P(A)}{P(B)},$$

where A and B are events;

$P(A)$ and $P(B)$ are the probabilities of A and B without regard to one another;

$P(A|B)$ is a conditional probability, the probability of A given that B is true;

$P(B|A)$is the probability of B given that A is true.

To forecast the direction of gold price using Bayesian networks we propose the following method of system analysis which consists of the following steps:

Step 1. Transforming statistical data of the process indiscrete interval-rated.

One should do the following computational steps.

1. One should calculate a percentage increase in the current value of the index relative to the previous state. For example, the price of gold in 1999 Q1 is 398.4, and in 1999 Q2 is 378.2, then the change in indicator is calculated in percentage as following:

$$\frac{(378{,}2 - 398{,}4)}{398{,}4} \cdot 100\% = -5{,}07\%$$

The price decreases by 5.07%.

2. The percentage that has been obtained should be grouped by experts into the finite number of states.

For this work we have introduced the following expert grouping rules for the indicators.

The rules for y:

- if$y\epsilon(+10; +\infty)$ than“ p10_pinf ”;
- if$y\epsilon(+5; +10]$ than“ p5_p10”;
- if$y\epsilon(0; +5]$ than“ p0_p5”;
- if$y = 0$ than“zero”;
- if$y\epsilon[-5; 0)$ than“ n5_n0”;
- if$y\epsilon[-10; -5)$ than“n10_n5”;
- if$y\epsilon(-\infty; -10)$ than“ninf_n10”.

Similar transformations were made in relation to other process parameters for which Bayesian network is constructed.

Step 2. With the help of Greedy Thick Thinning method in program Genie2.0 we built Bayesian network. We decided to limit the number of ancestors to 7, as the optimization criteria were used to minimize entropy.

Step 3. Study the parameters of the obtained model in the form of Bayesian networks, based on the direct method of information dissemination that was proposed by Judi Pearl.

Built topology of Bayesian network structure in Genie 2.0 has the following structure, shown in figure 3.

Predicting the direction of price of gold changes using decision tree model

A decision tree is a decision support tool that uses a tree-like graph or model of decisions and their possible consequences, including chance event outcomes, resource costs, and utility. It is a way to display an algorithm.

Decision trees are commonly used in operation research, specifically in decision analysis, to help identify a strategy most likely to reach a goal.

Decision trees or answer tree is one of the most popular methods for solving problems of classification and prediction. Sometimes this method is also called decision rules tree, classification and regression trees.

If the dependent (the target variable) takes discrete values, then we solve the problem of classification by using decision tree method.

If the dependent variable takes continuous value, the decision tree sets this variable dependent on the independent variables then we solve the problem of numerical prediction.

First decision tree was offered by Hoveland and Hunt at the end of 1950s. “Experiments in Induction” is the earliest Hunt's work. It was published in 1966. It set out the essence of decision trees.

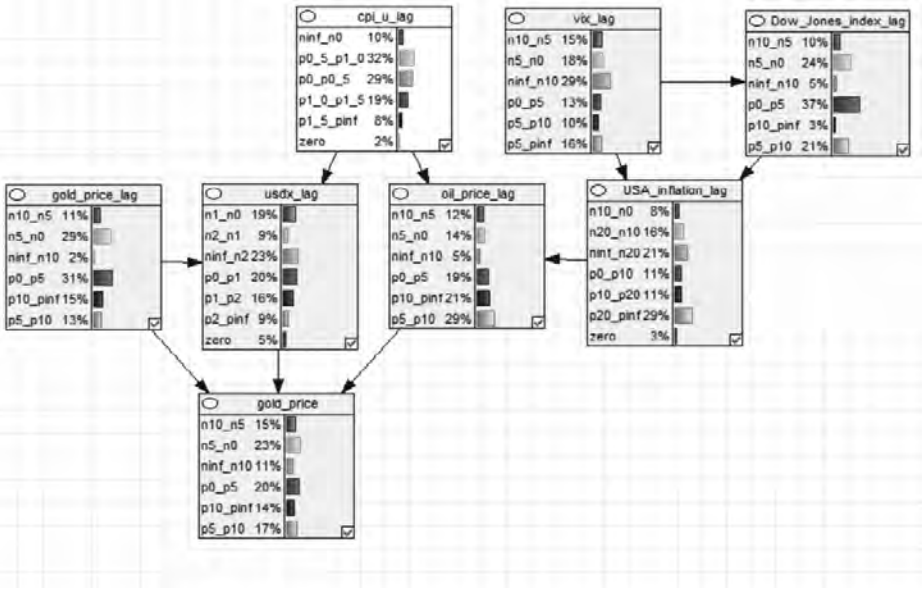

Fig.1. Bayesian Network topology built in program Genie2.0 to predict the price of gold.
Source The chart was developed by the author

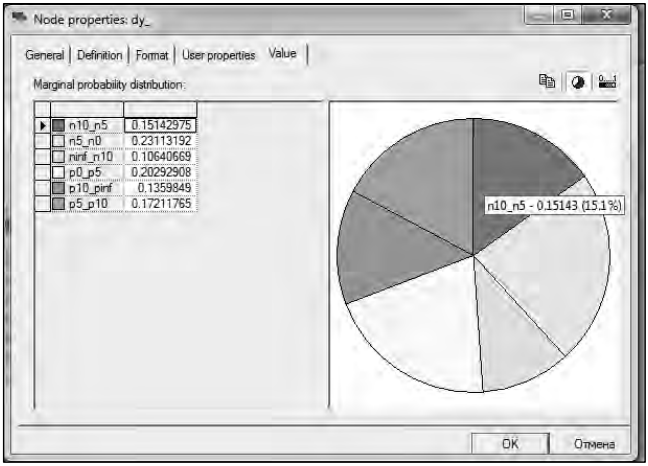

Fig.2. Table of marginal probabilities of the target variable values – the price of gold, built in program Genie 2.0.
Source The chart was developed by the author

Decisions trees have many useful capabilities. They are used in various application areas for business, not just for science. Here are some useful capabilities of decision trees:

1. They provide the most intuitive visual result. Decision trees are quite simple to build, understand and use the result. They provide the ability to introduce many factors explaining the process in a simple form step-by-step. Their useful capability is built on high complexity iteration rules.

2. The ability to work with both quantitative and qualitative (forex ample when the target takes only two values – up or down) data.

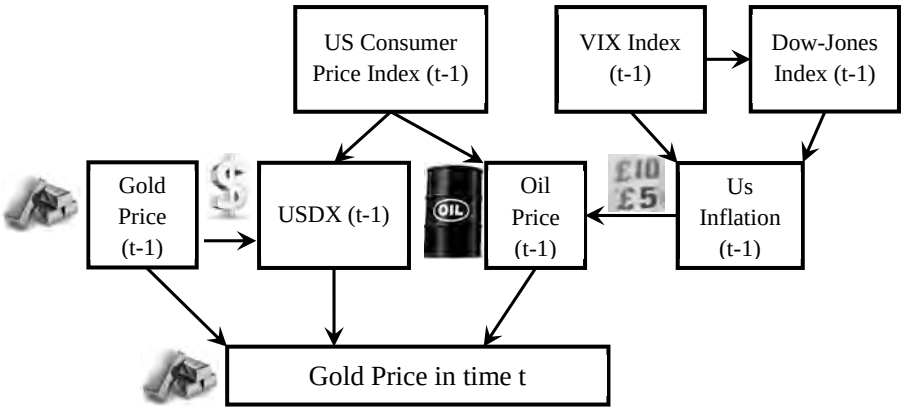

Fig.3. Bayesian Network topology for forecasting price of gold.
Source The chart was developed by the author

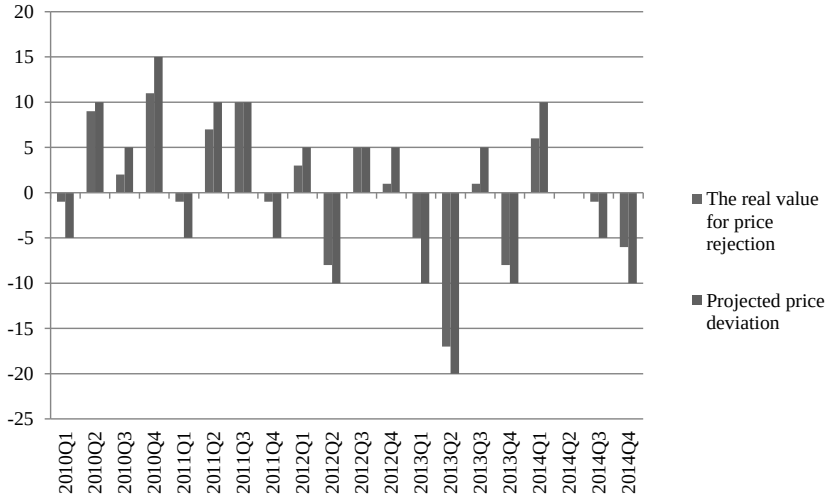

Fig.4. Changes in forecast and real deviations of prices of gold in 20 time intervals.
Source The chart was developed by the author

3. They easily work with data, which have effects of imbalance, nested effects, mutual overlap, intersection variable. With these effects a simple single factor and multifactor statistical approaches are not working.

4. Decision Trees are characterized with high robustness (they work easily with gaps in data). They build very similar structure regardless of the level measurement variables (such as decision tree will give close result for the case when income is measured in tens, hundreds, thousands, and even discrete states of 1 to 5).

In 1956 (Belson) decision trees were used in practice for the first time for the analysis of television coverage. At present the decision tree is widely used both in technical and social disciplines, such as marketing, trade, quality control. The main purpose of this section is to increase understanding of decision trees as a mathematical tool for practical use.

Our decision tree was built using SAS Enterprise Miner. When building a decision tree topology for deciding on the indicator included in the model we used the logarithmic utility function, calculated by the

formula:

$$logworth = -log_{10}(\chi^2)$$

χ^2 – probability value for xi-square values of Student table.

We used areas mentioned deviations of the value in the previous period to build our decision tree. It means that for each variable there are three possible states:

- up is the indicator increased;
- zero the indicator remains at the same level;
- down – the indicator decreased.

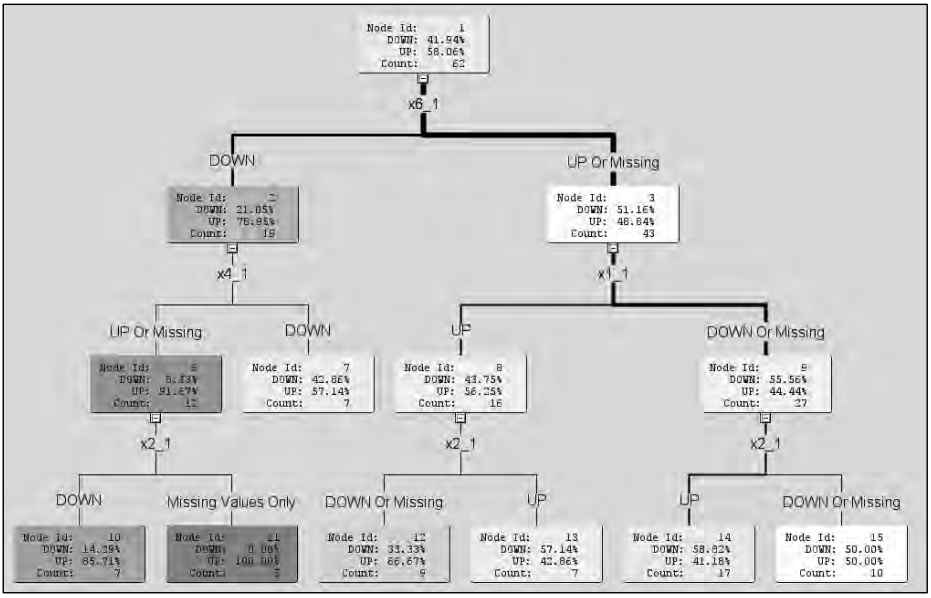

Fig.5. The structure of the decision tree model built in the SAS Enterprise Miner system
The table shows the significance of variables statistics used in the model tree decisions.
Source The chart was developed by the author in the SAS Enterprise Miner system

Table 1. Statistic significance of variables

Variable	The degree of variable importance
x6_1	1
x4_1	0.663
x2_1	0.526
x1_1	0.342
x3_1	0
y_1	0
x5_1	0

Source The chart was developed by the author

Variable degree of importance in relation to the most influential put equal to1, and the degree of importance of all other variables are comparable to the most influential.

We use the following designations in the resulting model:

x1_1 – is$x_1(t-1)$;
x2_1 – is$x_2(t-1)$;
x4_1 – is$x_4(t-1)$;
x6_1 – is$x_6(t-1)$.

As can be seen from the reduced structure for building topology were used only four input variables with lags of the first order.

Basic Results of the Research

Comparing mathematical models to predict the direction of gold price changes in the table we can see statistical characteristics of the mathematical models designed to predict the direction of gold price changes.

Table 2. Classification of errors for the problem of predictive modelling with binary change target

	Predicted Non-Event	**Predicted Event**	**Total Actual Probability**	
Non-Event	A TN True-Negative	B FP False-Positive	(A+B)/ (A+B+C+D)	Specificity= TN/(TN+FP)
Event	C FN False-Negative	D TP True-Positive	(C+D)/ (A+B+C+D)	Sensitivity= TP/(FN+TP)
Total Predicted	A+C	B+D	A+B+C+D	Accuracy= (TN+TP)/ (TN+FP+FN+TP)
	NPV Negative Predicted Value	PPV Positive Predicted Value	Accuracy= (A+D)/ (A+B+C+D)	

Source The chart was developed by the author

With the help of Table 2 we have obtained results for Table 3.

Table 3. Statistical characteristics of the mathematical model to predict the price of gold changes

Method name	TN	FN	FP	TP	True forecast decline rates	True forecast growth rates	Misclassification
Bayesian network	19	7	8	28	73.08%	77.78%	24.19%
Decision tree	19	7	15	21	73.08%	58.33%	35.48%

Source The chart was developed by the author

Conclusions

In general this paper investigates the existence of volatility effects on gold. The main idea of this article is to investigate the direction of gold price over fifteen years (1999 Q1 –2014 Q4 period) and its correlation with VIX index, US inflation, US consumer price index (CPI-U), Dow-Jones industrial index, USDX, oil price with the help of Bayesian network and decision tree.

With the help of the methods, which were analyzed above, an investor can predict where the price will go, as to say, its direction whether it is going to increase or decrease. But what is most interesting, those systems define the main factors that drive gold price. And which are those factors that drive gold price driving factors.

According to Bayesian network gold price is mostly driven by the US dollar Index and oil price. Of course, gold is also driven by its own prior price. We also see that other factors can affect gold through USDX or oil price. As for the decision tree gold is mostly influenced by oil price, VIX index and US inflation.

The difference between Bayesian network and decision tree is that in Bayesian network we can predict how one factor may influence another in percentage. And in the decision tree we can only see the direction of influence, whether it is likely to increase, decrease or be stable.

As can be seen from the obtained results of comparison from Table 3 (Statistical characteristics of

the mathematical model to predict the price of gold changes), the best model to predict the direction of changes of gold price is Bayesian network. Bayesian network has true forecast decline rates at the point of 73.08%, true forecast growth rates – 77.78% that is higher than statistical characteristics of decision tree with true forecast decline rates – 73.08% and true forecast growth rates – 58.33%. And misclassification for Bayesian network is lower – 24.19% than for decision tree – 35.48%.

REFERENCES

Colin D. Lewis (1986) Industrial and Business Forecasting Methods London etc. 213.

Deng H.; Runger G.; Tuv E. (2011) Bias of Importance Measures for Multi-valued attributes and Solutions. Proceedings of the 21st Century? International Conference on Artificial Neural Networks (ICANN).

Earl B. Hunt, Janet Marin, Philip J. Stone (1966) Experiments in Induction New York: Academic Press, 247 p. http://catalogue.nla.gov.au/Record/963699

Joe Suzuki (1999) Learning Bayesian Belief Networks Based on the Minimum Description Length Principle: Basic Properties. IEICE Trans Fundamentals, Vol. E82-A, No.9 September 1999.

Lucía Morales, Bernadette Andreosso-O'Callaghan (2011) Comparative Analysis on the Effects of the Asian and Global Financial Crises on Precious Metal Markets. Research in International Business and Finance 25, 203–227.

Spargoli F., Zagaglia P. (2007) The Comovements between Futures Markets for Crude Oil: Evidence from a structural GARCH model. Res. Papers Econ., 15, http://swopec.hhs.se/sunrpe/abs/sunrpe2007 0015.htm.

Tully E., Lucey B. (2007) A Power GARCH Examination of the Gold Market. Res. Int. Business Finan. 21, 316–325.

Watkins C., McAleer M. (2006) Pricing Non-ferrous Metals Futures on the London Metal Exchange. Appl. Finan. Econ. 16, 853–880. Wolfle, M., 2006. Information Transmission among Commodities: A Volatility Approach to Input Markets., http://form.sgvs2007.ch/user files/%5B103%5D%20Marco Wolfle.pdf.

Xu X., Fung H. (2005) Cross-market Linkages between U.S. and Japanese Precious Metals Futures Trading. Int. Finan. Mark. Inst. Money 15, 107–124.

Journal of Global Economy Review, Volume 1, № 3, 2015, pp. 52-60.

Modern Problems and Practice of Risk Identification and Assessment by Ukrainian Microfinance Organizations

VASILIY VOLGA[10]

Abstract: This article analyzes the risks of microcredit to small and medium enterprises (SMEs) by Ukrainian microfinance institutions (MFIs) which are part of the national financial and banking system, its main elements and units: commercial banks, non-bank financial institutions, credit unions, special funds, etc. Further development of market relations among credit entities and financial institutions in Ukraine requires the use of international experience in evaluating the performance of MFIs through combination of the government regulation and MFI self-regulation mechanism, determination of short- and medium-term objectives in the formation of the resource base, interest rates for microcredit services, considering the features of banks' participation in microcredit and their related risks and institutional barriers of regulatory systems. The article analyzes the organizational and economic mechanism of MFI microcredit through introduction of models predicting the need for microcredits and micro-credit portfolio optimization, which enables efficient impact on the development of small business and reduces the risks associated with microcredit. It has been proved that the benefits arising from the spread of systemic risk identification determine the level of MFI efficiency within the financial and social activities and the ability to carry out correct assessment of their functioning in the national financial market. Detected deficiencies that prevent the introduction of micro-credit mechanism of MFIs in Ukraine have been determined, the prospects of Ukrainian banking market for microcredit have been studied.

Keywords: Small and medium enterprises (SME) • Microfinance organization • Microfinance • Microcredit • Credit risk • Interest rate • Risk management • Microcredit program

Introduction

From 2006 to 2012 an exclusively positive trend has been observed in the global microfinance market: MFI assets have increased almost fivefold in six years (from $31 billion to about $150 billion, covering over 140 million borrowers). The activities of MFIs (or MFI network) are estimated, on the one hand, by means of performance indicators in financial and non-financial activities. There is an evaluation system based on two components of the analysis – namely, the scope and sustainability. The scope is determined by the number of clients using different services and range of products / services. MFI self-sufficiency indicates that the organization has sufficient turnover to cover operating and financial costs. On the other hand, as it traditionally covers two aspects – social and financial – using social performance indicators ('outreach') of microfinance institutions and their financial self-sufficiency. Thus, modern analysis of MFI efficiency balances between these two aspects – one group of scientists provides financial focus as an important component of MFIs, another supports social dominance. Definitely, it is difficult to answer the question on priorities of financial and social components because they are a symbiosis that determines the features of formation and development of the microfinance market. Research of financial MFI viability made by N. Hermes and R. Lensink in 2011 showed that only 1-2% of the available MFIs (approximately 150 of the most prominent MFIs) operated as effective participants of the global microfinance market, about 8 % were close to the point of operation without donor assistance, 20% have all the necessary conditions for transition to the stage of self-financing, while a significant proportion of MFI are small young ventures, which are far enough from the financial self-sufficiency.

[10] Financial expert, 'Financial company № 1', 32 Pushkinska str., Kyiv, Ukraine. e-mail: volgavasiliy@gmail.com

Modern microfinance technologies focus on financial justification of provision a full range of financial services to small and micro business. The existing methods of assessing risk and efficiency of MFIs are based on the analysis of their operation environment, and determining the coefficient of efficiency of their activity helps to identify the impact of different types of risks to the practice of loan division by types. MFI balancing between financial self-sufficiency and social mission is now forecasting model to identify risks and optimize the microcredit portfolio, which enables to efficiently influence small business development and reduce the risks associated with microcredit.

Literature Review

In the domestic economic science the works by Z.S. Varnaliya, N.E. Yegorova, G.E. Ershova, P.I. Zhukov, M.G. Lapusta, M.A. Platonova, G.I. Khotyns'ka and others are devoted to the problems of MFI microcredit. However, despite the large number of scientific publications the approaches and methods of risk identification in calculating the efficiency of the Ukrainian MFIs and features of interaction of commercial banks and MFIs within the national model of microfinance have not been sufficiently explored yet. Approaches to comparative evaluation of practices of introducing MFI risk management models in the implementation of microcredit in Ukraine need further improving.

Basic Results of the Research

Microcredit is characterized by: a) the term of credit extension, which should not exceed 3 years; b) the amount provided by this loan, which must correspond to the income of the entrepreneur (or individual); c) the inappropriate nature of the credit that in functions resembles consumer credit, which does not require confirmation of its actual use. The high degree of uncertainty and risk for consumers of financial services is primarily in the formation of an extremely high interest rate defined as usury in the scientific literature (the main task of microcredit in the West is to prevent the so-called 'vicious' practice and promote development of credit reproductive functions). In addition, differentiation of risk groups – the law of price formation in the market of credit services – contributes to the fact that although the burden of paying interest is laid on a particular borrower, the interest rate is determined by risks of an average borrower entrepreneur (i.e. a 'good' borrower pays for a 'bad' one, but he cannot appeal to the lender that the interest rate is unreasonably high). At the same time this microcredit is an incentive for further formation of the business environment as it does not overload the borrower. These days in countries with developed market economies, including the EU, there are over 17 million small businesses, which employ more than 100 million people, and small businesses' aggregate turnover in the EU is more than 11 billion Euro (and half of these companies are 'Oneman businesses', employing only the owner and his family). Quantitative estimates of the number of enterprises and workers employed in them indicate a significant predominance of SMEs in the economies of industrialized countries: for example, the SME share in the economy is 99.8% in the EU and the number of employees is 67%; such enterprises employ up to 10 people and provide 1/3 of all new jobs, contributing 1/4 of all the local budgets.

These days the strategy development algorithm for a unified system of microfinance for small enterprises in the EU is based on three components: improving the legal environment of microfinance, expanding geographical coverage of microfinance services to people, and developing different types of microfinance institutions (both commercial and non-commercial MFIs with clearly defined concepts and areas of 'microfinance', 'microloans', 'microfinance activities', etc.). Furthermore, based on uniform legislation the effective control and supervision are executed for MFIs, which are grouped according to the economic and legal characteristics of their activities. Where building an effective model of state control and supervision is carried out in combination with self-regulation and promotion of all forms of MFIs. The typical features of microcredit business field in the EU member states are: a) focus on specific customer groups (economically active population; micro enterprises starting or planning to expand, small businesses that do not have access to other funding sources) and selected segments of the market; b) use of such unconventional type of security as cross guarantee, that is, establishment of credit groups, whose members mutually guarantee repayment of credits; c) phased delivery of loans - from small to large amounts; d) the process is carried out by means of specialized microcredit institutions – cooperative banks obliged to teach

their clients entrepreneurship skills. For example, the three-level system of cooperative banks in Poland (Central Credit Union Bank, 9 regional and 1,200 local cooperative banks) provides 90% of loans for agricultural production, processing, trade, and related activities.

Modern microfinance in Ukraine is s built-in component of credit system, and this determines the necessity of significant change and improvement to meet the requirements of all financial market participants. Institutional microfinance market development in Ukraine is driven by: a) increasing capitalization requirements for credit institutions; b) globalization of financial environment bringing new challenges in the context of competitive interaction between banking and microfinance; c) active integration in the market of foreign financial intermediaries in connection with Ukraine's accession to the WTO and the signing of the Association with the EU. However, in Ukraine, unlike in Western countries, business is developing very slowly because of low credit availability and its high cost. The main institutional prerequisite for the development of microcredit in Ukraine is that along with the high demand for credit products as well as extremely low concentration of access to microloans at regional level, diversification of product tools remains low. Along with the growing demand for microfinance products in the 'price-offer' segment MFIs are still inferior to commercial banks. Microfinance sector in Ukraine is in the process of formation and development, and it is still characterized with the high cost of microloans, lack of appropriate assessment practice and risk levelling, weak resource base, and, finally, very limited loan terms. For example, MFIs in industrialized EU countries have a greater financial stability, unlike domestic microfinance organizations, and can more adequately calculate their risks (the leading risk management system can solve fundamentally important tasks – to move from control of the expected losses to control of unexpected losses); have adapted risk assessment technology elaborated considering the years of practice in the countries that recently joined the EU and the states with market transformation; and, finally, foreign MFIs can use the principles of the Basel convergence on the basis of full conformity of their activities with global market discipline.

Risks and uncertainties associated with them stay constantly in the banking and microfinance business and the categories of 'uncertainty' and 'risk' play a significant role in functioning of the national microfinance system that is not adapted to Western standards of risk management. The term 'banking risks' includes the probability of financial losses and bankruptcies in banking – a 'zero risk' is a relative term, so it is necessary to plan risks, analyzing the projected amount of monetary loss and probable risk percentage. Objectively bank risks are associated with internal and external factors that are independent of the commercial bank activities. Regarding microfinance, the inherent high risks (credit, currency, operational, liquidity, etc.) are related to organizational and legal forms of regulation and the level of control, and they do not always fully contribute to the maintenance of stability in this area.

Risks are transformed and modified with the transformation and updating of credit services, and factors that allow MFIs to quantitatively and qualitatively expand their business, simultaneously complicate managing the aggregate credit risk and affect its rating (the task of maintaining internal credit rating is estimated from unexpected losses from all types of risks to which MFIs are exposed). An important component is searching the system of reliable indicators that can not only quantify existing MFI risks, but forewarn about the likelihood of a particular unfavourable for MFIs event (risk prevention, risk limitation, risk reduction, risk sharing, risk-taking, resource reservation, or risk insurance).

MFI rating scoring in a commercial bank determines the possibility of lending a microfinance organization with a reasonable level of risk and required profitability. The rating is based on the principle of MFI's getting the biggest number of points for different criteria. As a result, according to the total points MFIs may fall into one of three sectors: a) medium-range points, which means the potential for high risk loans; b) the range of maximum points, which means the potential for moderate credit risk; c) the minimum range of points, which means impossible lending. MFI rating should be performed in groups – non-profit (credit cooperatives, foundations) and commercial (private MFIs engaged in commercial activity). The impact of the legal form on the organization's rating in quantitative terms is defined by the marketing policy of commercial banks in choosing the most appropriate segment for lending. Consequently, the inclusion of additional scores in MFI rating (depending on its legal form) by the commercial bank is primarily related to the definition of the bank's niche in the MFI lending market and its policies regarding microfinance organizations. The maximum score in the ranking is given to MFIs with more sales offices, developed network of affiliations and bigger product range.

For MFIs having equity is also a determining factor in the scoring system. Lack of equity capital reduces the total rating assessment in determining the lending capabilities of the cooperatives by commercial banks. MFI rating is determined according to: a) compliance with the norm of capital adequacy, the structure of equity (the ratio between the share capital and retained earnings); b) the reserve adequacy to offset losses and taken credit risks. On the one hand, the larger portfolio of outstanding loans is, the higher loan can individual MFIs get, on the other hand, with the increase in loan size increases the potential risk of default of the MFI loan portfolio to commercial banks. This problem is solved in two ways rating. The highest scoring is given to MFIs: a) with the largest loan portfolio; b) organization that claims for the bank loan, whose size is much smaller than the established standard of bank ratio of the available credit to MFI loan portfolio. Another MFI rating index is the number of customers with active loans. In this case, quite naturally, the commercial bank sets a higher rating to MFIs with bigger number of clients with active loans. In any case, the greater the number of clients with active loans is, the higher MFI loans portfolio diversification and the lower the risk of bank lending in such organizations will be.

For commercial banks a very important indicator is MFIs' reversibility of funds, because most of the banks are interested in providing credit to MFIs at the highest interest rates (this is compensation of risks and desire to make profit in the new bank segment), which can be achieved by MFIs both due to higher interest on loans and due to high turnover of bank funds used for microfinance. Thus, those organizations whose average loan term does not exceed six months should get the highest ranking of commercial banks. The final evaluation of MFI rating is affected by the fact of reserve provision on loans and other risky assets in MFI, the presence and membership of the body responsible for deciding on the issuance of loans; availability of regulation on management of different types of risks and, accordingly, assigning maximum points in MFI organization rating that creates reserves in full. Finally indicator that determines rating is the ratio of arrears for loans with delay terms of 30 days and the amount of MFI loans portfolio.

In modern international practice an objective rating system of MFIs and banks is a structured group of formal and informal factors based on various index numbers and analysis of business factors, and because the MFI business is actually banking, the bank risks are inherent to them and the most important of which is credit risk. The main objective of MFI risk management is to identify, assess, monitor and then minimize existing risks and this understanding of risk management is now widely used in the Ukrainian and foreign subsidiary banks to form the risk management system. We will consider how this system operates in banks, and then give a short conclusion about the possibility of its application in MFIs.

The powers in the field of identification, assessment and monitoring of risks are usually assigned to different departments of a bank: committees, department (structure) of risk management, internal control or auditing (small credit institutions have rigid centralization of risk management – the responsibility for any risks lies entirely on one or more structural units of the bank). The use of centralized and decentralized evaluation systems, identifying and monitoring risks is perfectly described in various official documents of Ukrainian banks, but, in our view, the centralized system of evaluation and monitoring risks prevailing in Ukraine is more the 'relic of the past' than the effective model of risk management.

In MFI practice for risk detection and identification is much narrower (given the small number of staff and their lower qualification), and the task of risk management in MFIs is mainly focused on identification of credit risk, as it is most meaningful to them (when making lending decisions to a certain borrower). However, operational risk and liquidity risk are inherent to MFIs because their 'survival' MFIs in the market depends on the ability of controlling them.

Obviously, before deciding on lending the MFI should make a preliminary analysis of the financial condition of the borrower and examine his creditworthiness. The choice of indicators to assess the borrower's ability to fulfil his obligations is always vital, but creditworthiness is a narrower concept than ability to pay (credit can be only one of different types of debt the company has). In assessing the creditworthiness of the borrower it is important to: a) analyze the financial condition of the borrower; b) determine credit losses as a result of an ineffective activities by the borrower; c) encourage the borrower to improve the efficiency of his activities; d) predict the trend in dynamics of customer's creditworthiness for comparison with other borrowers.

Initial data for calculation of the integrated rating of the borrower can be the accounting, tax, statistical reports and other information in an amount sufficient to form a professional opinion on the assessment of credit risk, under which loans are classified into one of five categories of quality. However,

the financial statements provided by the MFIs are often limited to balance sheet (form №1) and income statement (form №2) in Ukraine. Small businesses that have switched to the simplified system of taxation are not always ready to give even these forms of accounting.

In modern Ukrainian financial sector differentiation of credit scoring is caused by: varying degrees of confidence in quantitative and qualitative methods to assess the creditworthiness; historically adopted individual features of each bank lending culture and credit scoring; and using a narrow set of tools to minimize credit risk. As a result, assessment of creditworthiness of the borrower takes different forms – some MFIs use simple calculation of financial ratios, others determine credit ratings and credit risk levels.

Indeed, most internationally recognized methods differ from one another (by sets of indicators, different approaches to the same characteristics, priority each of them), but they have stood the test of time and are widespread in the world practice. But the main problem of Ukrainian MFIs is that the analysis of the financial performance of individuals and entities is insufficient to determine the creditworthiness as a whole (not to mention the integral credit rating index, which is necessary due to the need of information in analyzing creditworthiness).

The process of calculating a credit rating in the western MFI is based on: 1) the aggregate index (describes the class of creditworthiness of the borrower), which determines the probability of default, PD of the borrower; 2) construction of matrices of credit rating change (transition matrix), by which the probability of change in the creditworthiness class is estimated, and 3) rating migration table (rating migration), based on information of previous periods of defaults on loans with various credit ratings. As for determining the credit rating of the borrower by Ukrainian MFIs, it is based as a rule, only on the analysis of the current financial situation of the company without forecast for the future. It is known that increasing loan terms increases the level of credit risk and, consequently, there is a need for additional requirements for assessing the creditworthiness of the borrower, long-term lending changes traditional, historical concept of credit, namely there is a shift from assessing the current creditworthiness to planned, forecast, calculated one in the near future.

In current domestic practice of MFIs phasing of credit scoring is used insufficiently, it has a clear hierarchy of stages: analysis of macroeconomic situation in the country; sectoral analysis; market position of the borrower; financial analysis; assessment of management; assigning a credit rating for small businesses and individual borrowers. Given the limited external information, Ukrainian MFIs, while using credit scoring techniques, should pay special attention to qualitative indicators, including:

• the borrower's reputation in the market (credit history, loyalty) and among the subjects of the market for sale and consumption of products / services of the borrower (competitors, suppliers, customers);

• characteristics of the business or professional activity, the definition of specificity, describing the competitiveness of the borrower, according to the current state and trends of the market;

• management quality, business and reporting transparency; qualification compliance to business needs, etc.;

• the market value and liquidity of possibilities in terms of coverage of credit losses IFI, that the level of coverage of loans;

• loan feasibility, return on investment and repayment capabilities both through financial solvency, and because of coverage or providing other sources of funding.

Analysis of scientific papers on the practical implementation of risk management in foreign banks and MFIs can identify and systematize the following basic principles of its operation:

a) assessment of MFO internal environment should include philosophy and willingness of its managers to risky situations, as well as assessment and risk management;

b) formalizing the strategic goals (MFO mission that reveals the risks that may affect the achievement of the objectives);

c) MFI external risks should be thoroughly analysed (including risk audit and their detailed identification in key business processes and their qualitative assessment, including analysis and taking into account the views of customers,

d) creation of individual risk maps for MFIs;

e) choice of risk event management (MFO overall risk assessment to determine its acceptable level in general and for separate risks in particular).

Ukrainian MFIs currently do not need to develop procedures for finding reliable system of indicators,

methodology and technology of risk management (risk prevention, limiting risk, risk reduction, risk sharing, risk taking, resource reservation, insurance risks) – all these exist in the modern world. For them it is important to: 1) improve the organizational structure and regulatory risk management system, organize independent monitoring and auditing (as it is multidimensional iterative process where virtually any item can influence and affect the other element); 2) create complex automated systems and databases (archives of risk monitoring, catalogues of risk factors, banks of models, methods and algorithms for analysis of risk management, archives of risk protocols, databases of predictive information and so on).

Thus, the main task of risk management in MFIs is supporting internal and external credit rating to avoid possible default, insolvency, and unexpected losses (transition from control of the expected losses to control of unexpected losses). Furthermore, it should be noted that the activities of foreign banks and MFIs is more "transparent" for the regulator than the activities of Ukrainian banks and microfinance organizations, as they have bigger "reserve" of financial stability, can more adequately calculate their risks and have adapted technology of risk management (tried and tested for years, with the experience of practice in developing countries), can use principles of Basel convergence in their own activities with regard to their compliance with market discipline.

Generally speaking, Ukrainian MFIs today should understand the concept of 'market discipline' ('behaviour model' required by the third component of Basel III), ie a situation where the main participants of the financial market (banks, MFIs, security holders, shareholders, rating agencies, depositories) understand and adequately assess all risks (threats to financial stability of the financial institution itself, as well as of other market participants) and instantly respond to changes of factors that affect them. Thus, report transparency becomes important in abidance by market discipline, achieving and maintaining financial stability. Thus, if the Basel Principles for Effective Banking Supervision today are applied to all financial market participants, the Ukrainian legislative practice so far has only regulated credit institutions (banks), thus violating the interpretation of this document. That is, the MFIs as participants of financial market and full financial intermediaries should also be focused on compliance with these recommendations because otherwise their activities may create real danger for other financial market participants.

Today Ukrainian MFIs use specific schemes of taxation, risky financial instruments and transactions that significantly affect the system of motivation of all economic entities, complicating the process of capital accumulation and pushing to 'hide' problem loans. Since stable functioning of the financial-credit system provides a combination of supervision of regulatory bodies, high professional management of credit institutions and market discipline, credit risk assessment plays a key role in surveillance procedures and development of 'prudential thinking' of financial market participants. So today Ukrainian regulator's activity (namely the National Bank of Ukraine) should be centralized in order to maintain the overall financial stability of the financial market in terms of its gradual transition to Basel Core Principles (Basel II and Basel III). This requires an efficient system of risk management for MFIs provided that: 1) the regulator is centralized; 2) the most clear "road map" of internal and external risks exists; 3) the exchange of information is effectively and efficiently used for the elimination of risks; 4) the MFI equity meet acceptable risks.

If foreign MFIs (according to international standards) use the IRB-approach (internal ratings-based), which involves the use of methods of internal risk assessment, the domestic banks and MFIs are more focused on the use of standardized approach to risk assessment, due to less complex forms of lending operations and loan underwriting, and simpler structure of internal control, with the use of only external sources for assessing risk and determining borrowers' credit quality to maintain capital at a level necessary for supervisors. However, the use of IRB- approach by Ukrainian MFIs in will be significantly hampered in the nearest future due to lack of information necessary for its implementation (such as databases on borrowers with at least five-year credit history). In addition, unlike domestic, foreign MFIs have experience in verification by long adjusted risk scoring systems, due to which they can predict the risk occurrence in the next 3 to 5 years.

Unlike domestic evaluation criteria of MFIs, Basel II really is a symbiosis of advanced methods of risk (credit, market and operational) assessment, government regulation and supervision and market discipline. But practical application of internal models of risk assessment in Ukraine by individual banks cannot be a sign of Basel II implementation in the Ukrainian financial system, but only the individual fragmental facts of the use of quality tools of risk management of the banking market participants. As for

the prospects of implementing convergence Basel III, domestic credit organizations are not prepared for its implementation (especially multi-level requirements for bank capitalization considering the appropriate level of risk).

Nowadays, in order to build competitive advantages for Ukrainian MFIs, in our view, it is important to interact (cooperate) with other members of the credit market by, first, consolidation of banking and non-banking financial business through participation of MFIs in equity capital of insurance, investment, leasing institutions, credit cooperatives and etc., association with them in strategic alliances or financial conglomerates. This will result in the increase of diversification of the loan portfolio by customer target groups and types of credit products, the increase in income from operations, saving on scale and technological innovation. Second, refinancing loan products of other participants of the credit market and assessment of the conformity of these products to the needs of borrowers in the continuity of the circulation of capital. By refinancing commercial credit, embedded in the working capital management process of small businesses, in various forms (registration and promissory notes, factoring, forfaiting, loans secured by rights claims, bills, double warehouse certificates and so on.), MFIs, by supporting continuity of borrowers' capital turnover, can reduce their credit risks.

Protection of MFI interests in the event of insolvency of the debtor's obligation is traditionally done by insurance companies (the transfer of risks to insurers improves MFI asset quality) and collectors. However, national insurance companies are not economically ready to actively engage in credit risk insurance, as their combined capital of more than 6 times less than bank capital. One should also note organizational unpreparedness of most of them as their methods of credit risk assessment are lagging behind methodologies of banks that cooperate with them mainly on small loans (usually there are so-called affiliation insurance and banking organizations). Adaptation of insurers' programs for specific credit products of banks and MFIs seems promising as it will reduce risks and costs, and insurance companies will be able to determine the correct amount of insurance premiums.

Collection agencies are the only source of debt collection to Ukrainian MFIs, which typically do not have their own security service, because court procedures and pre-trial settlement cannot reduce the costs of MFIs, but actually increase the cost of microcredit several times. Collectors offer MFIs, firstly, to purchase their loans at a discount (on average 20-90% of the debt) based on the contract of assignment of the claim (the consent of the borrower is not required and the collector takes the lender's place); secondly, to collect debt under the contract of commission or another agency agreement, receiving compensation for it (20-50% of the returned debt).

The existing legal regulation of MFIs' cooperation with collectors has revealed a number of significant problems: firstly, it is imperfect Ukrainian legislation, which does not identify a collector's status (i.e. any person can become a collector with significant rights and without clear obligations) , there is no effective penalization on debtors for unpaid debt; secondly, the psychological image of a collector as a 'racketeer' has been formed; thirdly, collectors lack funds to purchase loans from MFIs; fourth, there is no statistical information on market supply and demand for the services of collectors, including the types of services, which would enable MFIs to assess their effectiveness and to choose the best methods of long-term interaction with them without harm to business reputation of MFIs and their clients (as a result, at present, MFIs often appeal to collectors to recover loans with the lowest probability of return). In general, according to the experience of foreign collection agencies, collectors help keep customers for MFIs by applying individual approach, taking into account the customer's credit history in the market since the first days of delay.

Conclusions

Given that today in Ukraine there are relatively high risks in microfinance market, it is necessary first of all to develop a detailed step by step program to promote development and government support of SME micro-credit, based on the experience of the EU countries, which may include the following blocks.

First, to accelerate introduction of international financial reporting standards in the practice of microfinance institutions, that will allow them to adapt to the peculiarities of microfinance institutions' functioning (e.g. formalize reporting and methodological framework for the calculation of mandatory standards for MFIs, introduce unified parameters characterizing their financial stability and social

efficiency, that motivate the development of micro-credit). This also applies to regulated prudential standards and financial stability indicators (capital adequacy ratios, liquidity, maximum risk per borrower or group of related borrowers, maximum size of large credit risks) for MFIs. Lack of the latter largely distorts the real possibility of micro-credit risk assessment.

Second, to develop a National Microcredit Sector Rating System including the positive elements of foreign practice – targets for restructuring loans and micro-credit aimed at supporting borrowers who find themselves in a difficult financial situation; pre-settlement mechanism of complex financial situations with their adaptation to the international practice of microfinance; preventing illegal schemes of debt refinancing.

Third, to adjust the standards of micro-credit market development in Ukraine for: promoting effective MFI credit risk management; determining the prerogatives of the supervisory process in microfinance activities; developing infrastructure to support microcredit; limiting the risks of fraud and fraudulent actions of unscrupulous MFI market participants. In order to increase confidence in the credit cooperatives' savings a Credit Insurance Agency for investors' savings and credit cooperatives should be created in the form in which it exists for the banking system – Agency on Deposit Insurance.

Fourth, in developing the banking agent microcredit network we may use the model of Brazil, where a huge number of bank / credit agents provide full-featured financial services to entrepreneurs throughout the country. Particular attention should be paid to standardizing criteria in the microcredit pool funds for further securitization (loan amount, interest rate, term and security).

Fifth, to simplify the procedure of MFI funding itself (possibly eliminating the need to provide collateral or guarantees from third parties) that greatly motivates MFIs to interact among themselves as guarantors and sureties on existing credit obligations; using this interaction pattern will significantly expand the credit portfolio of MFIs and, thus, reduce the possibility of 'lending' to one or a group of related borrowers (i.e. reduce prices of microloans considering interference of reducing credit risk factors).

Sixth, to unify and organize information in a single array that will allow MFIs to receive consolidated information about potential customers and investors, independent evaluation of economic state of MFIs, their reputation for certain classes or categories to determine the levels of risk when entering into a loan or credit agreement.

REFERENCES

Базельський Комитет по банковскому надзору. 2010 р. Microfinance activities and the Core Principles for Effective Banking Supervision. Базель: Банк международных расчетов. – [Електронний ресурс] – Режим доступу: http:// www.bis.org/ publ / bcbs 175. pdf

Галочкина О. А., Старостин В. М. Микрофинансовые институты с точки зрения коммерческого и социального предпринимательства // Ученые записки Санкт-Петербургского университета управления и экономики. – 2013. – № 4 (44). – С. 16-23.

Каурова Н. Банки и микрофинансовые организации: кто первым придет на помощь малому бизнесу // Банковское кредитование. – 2012. – №4(44). – С. 31-36.

Килгоур Д. От неформальной экономики к малому предпринимательству: роль микрокредита – [Електронний ресурс] – Режим доступу: http://corruption.rsuh.ru/magazine/2/n2-10.shtml

Ограничения процентных ставок и микрофинансирование: история нашего времени – [Електронний ресурс] – Режим доступу: http://www.cgap.org/sites/default/files/CGAP-Occasional-Paper-Interest-Rate-Ceilings-and-Microfinance-The-Story-So-Far-Sep-2004-Russian.pdf

Bank Ownership Structure, SME Lending and Local Credit Markets. – Bank of Finland Research Discussion Papers 22, 2014 – 52 pp.

Becchetti L., Castelli A., Hasan, I. Investment Cash-flow Sensitivities, Credit Rationing and Financing Constraints in Small and Medium-sized Firms // Small Business Economics. – 2010. – № 35(4). – p. 467–497.

Brei, M., Schclarek A. Public Bank Lending in Times of Crisis // Journal of Financial Stability. – 2013. – № 9. – p.p. 820-830.

Cull R., Demiguc-Kunt A., Morduch J. Financial Performance and Outreach: A Global Analysis of Leading Microbanks // Economic Journal. – 2007. – № 117(517). – p. 107–133.

Duflos E., Glisovic–Mézières J. National Microfinance Strategies. CGAP Brief. Washington, DC: CGAP. – http://www.cgap.org/gm/document-1.9.4349/BR_National_Microfinance_Strategies.pdf

Fairchild R. An Entrepreneur's Choice of Venture Capitalist or Angel Financing: A Behavioral Game – Theoretic Approach // Journal of Business Venturing. – 2011. – № 26(3). – p. 359-374. – http://dx.doi.org/10.1016/j.jbusvent.2009.09.003.

Gutiérrez-Nieto B., Serrano-Cinca C., & Mar-Molinero C. Social Efficiency in Microfinance Institutions // Journal of the Operational Research Society. – 2009. – № 60(19). – p. 41-52.

Hermes N., Lensink R. The Empirics of Microfinance: What do We Know? // The Economic Journal. – 2007. – № 117(517). –

F1-10.
Hermes N., Lensink R. and Meesters A. Outreach and Efficiency of Microfinance Institutions // World Development. – 2011. – № 39(6). – p.p. 938-948.
Mersland R., Strom O. R. Microfinance Mission Drift? // World Development. – 2010. – № 38(1). – p. 28-36.
Mersland R., Strom O. R. Microfinance: Cost, Lending Rates and Profitability // Handbook of Key Global Financial Markets, Institutions, and Infrastructure. L.: SCD Published. – 2013. – 536 pp.
Rhyne E., Lieberman I. W., Busch B., Dolan S. Aligning Interests: Addressing Management and Stakeholder Incentives during Microfinance Institution Transformations. Washington, DC: Calmeadow and the Center for Financial Inclusion. – http://resources.centerforfinancialinclusion.org/publications/Aligning_I_240.asp.

Journal of Global Economy Review, Volume 1, № 3, 2015, pp. 61-68.

Prospects and Consequences of Convergence of Ukraine with: CU/EEU or EU

VLADA GONCHAR[11]

Abstract: The article is dedicated to the analysis of the current state and trends of the economy of Ukraine consisting of CU /EEU or EU in future. The authors pay attention to the research of total trade of Ukraine with countries of EEU within the Union and outside of it and effectiveness of trade between Ukraine and the EU today. The question of Ukraine's accession to the MS / EEU is one of the most debated in the Ukrainian society. The article presents empirical findings of the trade effects related to cooperation with regional economic groups in the last 14 years and discusses the trade effects and institutions quality role in external trade of the country. The analysis will cover total exports and imports of Ukraine with trading partners for 2001-2014 year.

Keywords: Integration • Customs union • Economic union • Dynamic and static effects • Regression model

Introduction

In everyday usage the word "integration" denotes bringing together of parts into a whole. In the economic literature the term "economic integration" does not have such a clear-cut meaning. Some authors include social integration in the concept, others subsume different forms of international cooperation under this heading, and the argument has also been advanced that the mere existence of trade relations between independent national economies is a sign of integration.

We propose to define economic integration as a process and as a state of affairs. Regarded as a process, it encompasses measures designed to abolish discrimination between economic units belonging to different national states; viewed as a state of affairs, it can be represented by the absence of various forms of discrimination between national economies [2, pp. 1-5].

In interpreting our definition, distinction should be made between integration and cooperation. The difference is qualitative as well as quantitative. Whereas cooperation includes actions aimed at lessening discrimination, the process of economic integration comprises measures that entail suppression of some forms of discrimination. For example, international agreements on trade policies belong to the area of international cooperation, while the removal of trade barriers is an act of economic integration. Distinguishing between cooperation and integration, we put the main characteristics of the latter - the abolition of discrimination within an area – into clearer focus and give the concept a definite meaning without unnecessarily diluting it by the inclusion of diverse actions in the field of international cooperation.

Economic integration, as defined here, can take several forms that represent varying degrees of integration. These are a free-trade area, a customs union, a common market, an economic union, and complete economic integration. In a free-trade area, tariffs (and quantitative restrictions) between the participating countries are abolished, but each country retains its own tariffs against nonmembers. Establishing a customs union involves, besides the suppression of discrimination in the field of commodity movement within the union, the equalization of tariffs in trade with nonmember countries. A higher form of economic integration is attained in a common market, where not only trade restrictions but also restrictions on factor movement are abolished. An economic union, as distinct from a common market, combines the suppression of restrictions on commodity and factor movements with some degree of

[11] PhD student, Odessa National I.I. Mechnikov University, 2 Dvoryanskaya str., Odessa, Ukraine. e-mail: vlada-gonchar@mail.ru

harmonization of national economic policies, in order to remove discrimination due to disparities in these policies. Finally, total economic integration presupposes the unification of monetary, fiscal, social, and countercyclical policies and requires the setting-up of a supra-national authority whose decisions are binding for the member states.

Adopting the definition given above, the theory of economic integration will be concerned with the economic effects of integration. Social integration can also be mentioned as a further precondition of total economic integration. Nevertheless, social integration has not been included in our definition, since – although it increases the effectiveness of economic integration – it is not necessary for the lower forms of integration. The removal of trade barriers in a free-trade area, for example, is an act of economic integration even in the absence of developments in the social field.

In its various forms and with problems arising from divergences in national monetary, fiscal, and other policies the theory of economic integration can be regarded as a part of international economics. But it also enlarges the field of international trade theory by exploring the impact of a fusion of national markets on growth and examining the need for coordination of economic policies in a union.

Finally, the theory of economic integration should incorporate elements of location theory, too. The integration of adjacent countries amounts to the removal of artificial barriers that obstruct continuous economic activity through national frontiers, and the ensuing relocation of production and regional agglomerative and deglomerative tendencies cannot be adequately discussed without making use of the tools of locational analysis [2, pp. 6-8].

Literature Review

The theory of economic integration was developed by Tinbergen (1954), Meade (1953 and 1955), and Balassa (1961) among others. In Tinbergen's analysis of economic integration the classic distinction was made between positive and negative integration, where positive integration refers to creation of policies and institutions which enable international economic activity, while negative integration refers to dismantling of barriers which inhibit such activities. Notwithstanding the pejorative nature of the labelling used by Tinbergen, such a distinction is now somewhat dated, as Laffan, O'Donneil and Smith (2000) recognize, as both types of integration are likely implied, to some degree, by any new economic integration initiative. In fact it is now far more common for both economists and political scientists to be more concerned with whether economic integration implies (more) centralization to regional or supranational institutions, or whether reciprocity, coordination or harmonization will suffice. Also, to Jake up-the A pejorative nature of the ‘negative’ and ‘positive’ labels which Tinbergen attached to his taxonomy of economic integration, many supporters of integration in the Americas, for example, would only favour negative integration and would discourage positive integration, giving the labels a rather odd resonance, when applied to the world in which we now Jive. Of course Tinbergen was writing in the 1950s, when the power of nation states was unquestioned, and when it was accepted that national economies needed a certain degree of protection from outside forces.

Over the last fifty years there have also been two waves of economic integration, as Robson (1998) points out. The first wave of economic integration started with the open questioning of the effects of Article 24 of the GATT, which was originally put in place to protect British trade with its colonies and commonwealth, and the optimism instilled before and after the foundation of the European Economic Community. The classic analysis of Viner (1950) was really the starting point for the analysis of a free trade area or customs union, and his usage of terms such as trade creation and diversion do reflect the real concern that economists of the day had with maintaining trade-preference arrangements across huge distances. Also, the theoretical debate in journals such as the Journal of International Economics (Viner (1965)), encouraged a lively program of research in the area. The track of progress on initial steps to further integrate Europe, and the decline of Britain as an economic power really curtailed any extension of the research program. The second wave of economic integration, as most economists and political scientists are aware, occurred after 1980, and particularly over the last decade. Paul Krugman's seminal piece on monopolistic competition and international trade found in Krugman (1979) and then linked with economies of scale and placed in a regional context in Krugman (1991) probably are the genesis for the explosion of interest in this area in the international trade literature. The move towards a single market in Europe and

the Maastricht Treaty then also gave an impetus to both political scientists and economists to begin research agendas that addressed problems in more advanced economic integration agreements [10, pp. 7-30].

Economic integration does not usually implicitly refer to regional integration any more, as since Tinbergen's analysis significant steps have been taken in a multilateral setting to promote international integration first through the General Agreement on Trade and Tariffs (GATT) and now through the World Trade Organization (WTO). Indeed the tension between the two approaches has recently sparked significant debate in economics, not least through the attacks mounted on regional economic integration by economic heavyweights like Jagdish Bhagwati (Bhagwati, Greenaway, Panagariya (1998) for an excellent exposition of the theoretical underpinnings of this viewpoint). For the rest of this paper, the term economic integration refers to regional economic integration [8, pp. 1321-1357].

Other taxonomies loosely based on Balassa sequencing have also been proposed, such as the one included in Emerson (1991). Emerson looks at hierarchies of trade and monetary regime choices with particular reference to Eastern Europe. He classifies the openness of trade, currency convertibility and exchange rate arrangements according to the degree of liberation that has taken place in trade, capital account convertibility and exchange rate arrangements. Despite this alternative classification, the one usually used is directly based on the original Balassa stages, so that is the one we focus on here [3]. Table 1 presents an extended version of Balassa process, with examples at each stage of economic integration – these examples reflect countries that have been in such a situation, or are currently in such a situation:

Table 1

Extended Balassa Stages of Economic Integration

Level of integration	Description	Characteristics	Examples
0	Regional autarky	- bilateral trade agreements	Japan (before ASEAN)
A	FTA	- tariffs and quotas removed internally - national tariffs retained against outside	NAFTA
B	Customs union	- tariffs and quotas removed internally - common external tariff	Mercosur
C	Common market	- free movement of factors of production, goods and services	EU (before EMU)
D	Economic union	- harmonization or coordination of some national policies - transfer of some policies to supranational level	Competition policy in the EU
E	Monetary union	- single currency - single central bank	ECB in the EU
F	Fiscal union	- harmonization of taxes - fiscal sovereignty	EU to some degree
G	Political union	- effective and democratic body at supranational level	Does not exist out of a regional integration project

Note: E and F are actually interchangeable, as for example various authors place these two levels of integration in different orders (Molle (1997) and contrast with the order of chapters in Robson [18]

Several things are noteworthy about the table. First, there is an implicit assumption in the literature and in the way that most people read the table that the levels of economic integration imply a sequential process.

Of course, this is not the case. The first two levels of integration, A and B, relate only to trade in goods and services, and either can be used as a basis for further integration to a common market. So, for example, NAFTA is not a customs union, but there is no theoretical reason why the regional trade agreement cannot skip the customs union stage and become a common market or a monetary union, or economic union for that matter. But note that a common market (C) does imply either A or B, but a monetary union does not necessarily imply any other stages of integration. Indeed, dollarisation in countries like Ecuador represents a form of monetary union, but that does not imply or give a country the right to eliminate tariffs and quotas with the USA. Furthermore, even in the context of a regional trade agreement such as NAFTA, monetary union does not imply a common market, economic union or a customs union.

Dynamic and Static Analysis of Integration

Static analysis by Balassa [17], Cooper, and Massell [5] introduced the concept of dynamic effects of economic integration. This analysis added a new dimension to this area of study. The dynamic theory of economic integration proved that trade creation and trade diversion in static analysis are simply not enough to fully capture and analyze welfare gains from economic integration.

According to Allen [1], the principle dynamic effects of integration were listed by Balassa as economies of large-scale, technological change and the impact of integration on market structure and competition, productivity growth, risk and uncertainty, and investment activity. According to Brada and Mendez [4] integration is assumed to raise investment and reduce risks. Schiff and Winters summarized the definition of the dynamic effects of economic integration schemes as anything that affects the country's rate of economic growth over the medium term [19].

A number of recent studies have referred to the static effects and developments of the theory of economic integration so far (Viner and developments) as ‘old regionalism’, while ‘new regionalism’ is represented by dynamic effects such as increased competition, investment flows, economies of scale, technology transfer, and improved productivity [20]. Goldstein [11] argues that integration agreements are now about much more than merely reducing tariffs and quotas.

Lawrence [14] pointed out that the driving forces of the current integration developments have a radical difference from those driving previous waves of regionalism. Issues of private sector participation, competition, foreign direct investment (FDI), and the increased importance of services, all contributed to changing the scenes from those that prevailed during the Viner and following near period.

Old and new regionalism refer to static and dynamic theories of economic integration. According to the studies because of the recent changes in the world economy, the dynamic effects of economic integration have recently emerged. But other analysts suppose that static economic integration theories of Viner could be useless in the case of developing countries.

The Eurasian Economic Union

The Eurasian Economic Union (hereinafter – EEU) is an international organization for regional economic integration. It has international legal personality and is established by the Treaty on the Eurasian Economic Union.

The EEU provides for free movement of goods, services, capital and labour, pursues coordinated, harmonized and single policy in the sectors determined by the Treaty and international agreements within the Union.

The Member-States of the Eurasian Economic Union are the Republic of Armenia, the Republic of Belarus, the Republic of Kazakhstan and the Russian Federation.

The Union is being created to comprehensively upgrade, raise the competitiveness of and cooperation between the national economies, and to promote stable development in order to raise the living standards of the nations of the Member-States.

The total volume of foreign trade - the Eurasian Economic Union with third countries for the first quarter of 2015 amounted to 146.5 billion dollars, including exports - 99.4 billion dollars, and import - 47.1 billion dollars. In comparison with the first quarter of 2014 the volume of foreign trade turnover has decreased by 31.4% or 67 billion dollars, including exports - by 29.6% (by 41.9 billion dollars) and imports - by 34.8% (by 25.1 billion dollars). Foreign trade surplus amounted to 52.3 billion dollars against 69.1 billion dollars in the first quarter of 2014.

In the commodity structure of export by members of EEU to third countries is dominated by mineral products (68.1% of total exports of EEU members to third countries), metals and metal products (9.7%), chemical products (6.8%). Over 80% of these products are sold on the external market of the Russian Federation.

The biggest share in imports takes machines, equipment and vehicles (43.2% of total imports), chemical products (17.5%), foodstuff and agricultural raw materials (13.9%). About 80% of the purchases of those goods outside EEU are carried by the Russian Federation.

Practical Contribution of Research

The current Ukraine's economic integration choice between European Union and Russia represents an interesting empirical example in the vast international integration field of economics. Ukraine has had in general quite a liberal external policy toward the world after its accession to WTO in 2008. The country has maintained free trade agreements with most of the former Soviet republics since 1990-s. At the same time Ukraine has been granted preferential trade regime from some developed countries – the European Union, USA, Canada, and Japan under UN Generalized System of Preferences framework. At the moment, the foreign policy of Ukraine includes two alternative directions of regional economic integration – free trade zone with the European Union and membership in the Eurasian Economic Union of Armenia, Belarus, Kazakhstan and Russian.

A significant blow to Ukrainian exports is caused by Russia. In 2014, Ukraine lost 29.4% of exports in this direction, which is 5.2 billion dollars. Note that the trend of decline in exports to Russia has been observed since 2012, when it fell by 11% compared to 2011. In 2013, the trend intensified. Falling exports from Ukraine totaled 14.6%. Thus Russia "included" their geo-economic opportunities. In 2013 Ukraine reduced also its export to Kazakhstan and Belarus. In 2014, this trend was even more intensified. Following the 2014 export countries of EEU decreased by 31.7%. Very significant drawdown is accounted for Kazakhstan. This is including blocking of Ukrainian transit goods through Russian territory. The loss for 2014, compared to the same period of the previous year, and the reduction of trade with Kazakhstan are 982 million dollars. The figure for Belarus is 278 million dollars with more significant volumes of trade.

Following 2014, the increase of Ukrainian exports to the EU has amounted to only 2.6%. This small increase is provided by a narrow commodity group, which is hardly a high-tech: fats and oils (+ 58.4%), wood and wood products (+ 21.8%), while the share of mechanical engineering products accounted for the increase only 5.5% and electronic – 10.6%. Against this background structure of Ukrainian exports fall by individual European countries (compared with 2013 year) looks very interesting. Thus, the decline was recorded in trade relations with France (21%), Estonia (16%), Slovakia (10.3%), Denmark (19.9%), Greece (11.4%), Ireland (42.2 %), Austria (3.9%), and the Czech Republic (4.9%). However, the main partners of Ukraine demonstrated positive dynamics. This applies in particular to Poland (+ 11.5%), Germany (+ 6%), Italy (+ 14.3%), Spain (+ 41.1%), and the Netherlands (+ 17.9%).

Exports in 2015 to the EU will increase with a decrease in imports from them. Ukraine has reduced the export data state. So we will see the return of the lost positions. The reduction of imports, in turn, will occur by reducing purchasing power, which is inevitable after the "shock" of reforms which have been announced today. However, with good intentions, the EU does not allow the possibility of completely fill the loss of exports to countries of EEU in the near future.

Finger-Kreinin index [9] is calculated to assess the degree of similarity or competitiveness of exports from two groups to Ukraine and Ukraine's exports to two regional groups - EU and Customs Union. According to J. Viner argument the larger the similarity of trade between two countries is the bigger benefits from deeper integration between them are, and vice versa. If the value of the index is close to 1, exports of two groups to destination country are similar, if close to 0 – they are mostly dissimilar. In table 2 one can find the value of Finger-Kreinin index for Ukraine in 2001 and 2014.

Table 2

Value of Finger-Kreinin index for Ukraine in 2001 and 2014

	2001	**2014**
Exports of EU and Customs Union to Ukraine	0.37	0.36
Exports of Ukraine to EU and Customs Union	0.65	0.66

The exports of Ukraine to the European Union and Customs Union are similar since the index is close to 1. It means that Ukraine will benefit from either free trade with the European Union or the Eurasian Economic Union of Russia, Belarus, Kazakhstan and Armenia. The exports of EU and Customs Union to Ukraine are dissimilar leading to the conclusion that deeper integration with one of the groups will potentially create large trade diversion effects. Ukraine traditionally has a large share of imports of consumption goods, particularly, oil and gas, pharmaceuticals, machinery and equipment. In the case of

Customs Union with Russia, Belarus, and Kazakhstan Ukraine is running the risk of significant trade diversion effects with the European Union and Asia. Imports from EU countries account for 28% of total imports, imports from Asia – 18%, thus accession to the EEU is likely to reduce the volume of trade with other regions, reducing the country's welfare. This diversion effect could be significant taking into account that 45% of all imports from EU and 30% of all imports from Asia constitute machines and equipment necessary for technological advance of economy. Countries of EEU supply little machinery to Ukraine, thus a barrier created by the EEU will have significant trade diversion effects in the most technologically advanced imports.

The Regression Model

Lejour (2004) [15] and De Groot (2003) [6] proposed the typical gravity equation to estimate the impact of institutions on trade. To analyze the impact of institutions on foreign trade the gravity model of Ukraine's foreign trade with the inclusion of additional variables controlling for trading partner institutions level and differences in the institutional development of Ukraine and trading partner is built:

$$\ln(Tij) = \alpha 0 + \beta 1\ln(Yi) + \beta 2\ln(Yj) + \beta 3\ln(Dij) + \beta 4EU + \beta 5CIS + \beta 6Tariff + \beta 7Year + \varepsilon ij, \quad (1)$$

where i and j denote the exporting and importing country. The dependent variable Tij is aggregate merchandise exports from i to j. The independent variables are gross domestic product (У), the distance between i and j (Dij), dummies reflecting whether a trading partner of Ukraine belongs to EU (EU), to CIS (CIS). The level of tariff protection of importing country, measured as Doing Business Report cost of import operation (Tariff). The Year variable denotes the number of specific year out of observed 2001-2014 with a larger value assigned to a later year. The last term is the stochastic error term. Statistical base (2001-2014) for regression model is constructed from data of State Statistical Committee of Ukraine (exports and imports of Ukraine), UN Comtrade statistics (exports and imports of Ukraine), WTO online tariff analysis, International Monetary Fund (GDP), online calculator of geographic distances. The exports and imports of Ukraine represent panel data. The model is estimated in 1 format. The export and import flows are broken down by 49 trading partners and contain observations for all year from 2001 through 2014. Total export and import flows are considered. The data are in logarithms. The STATA statistical package is used.

Results of Regression Model

The results of evaluation of regression model in the 1st format are presented in Table 3.

Table 3

Results of Regression Model of Exports and Imports of Ukraine in 2001-2014[12]

Independent variables	Exports	Imports
GDP of Ukraine	0.36***	0.92***
GDP of trading partner	0.81***	0.54***
Distance between trading partners	-0.93***	-0.43
Trading partner belongs to EU	-0.28*	0.14
Trading partner belongs to CIS	0.98***	0.14
R^2	0.56	0.63

Sources [7], [13], [16], [21], [22], [23]

[12] *** is the coefficient significant at 1% level, ** – 5% level, * – 10% level.

Thus, Ukraine's exports and imports generally follow the logic of the gravity model in the data set. Two independent variables capture the trade effects of Ukraine's cooperation with EU and CIS, the most important regional groups. Coefficients at EU and CIS dummy variables are significant in 3 out of 4 cases. There is a positive effect of Ukrainian exports to CIS group when total exports are considered: on average Ukraine exports to CIS in larger volumes than can be explained by the size of the market. The EU dummy variables have negative coefficients suggesting Ukraine trades less with EU countries than can be explained the factors of the gravity model. The reason might be the lower level of trade barriers in trade between Ukraine and CIS. CIS is mostly a free trade zone, while trade of Ukraine and EU is only partially liberalized. Additionally, the product standards and technical norms are not harmonized between EU and Ukraine, while standards are the same for Ukraine and CIS countries due to common history of belonging to the same economic entity. Thus, in case of standard harmonization there is greater potential for exports to EU since the current level of trade is lower than the size of the Ukrainian and EU markets proxied by GDP.

Conclusions

The article focuses on the current external economic policy choice of Ukraine related to regional economic integration – Association Agreement with European Union and Eurasian Economic Union of Russia, Belarus, Kazakhstan and Armenia.

The choice in favour of European integration rests on the notion that the EU is the main regional market in the modern world economy, it exerts a serious impact on its overall dynamics and structural changes, it carries great investment potential, it is one of the world's leading innovation centres, and controls to a large extent decision-making on regulation the world economy. The creation of a deep and comprehensive free trade area (DCFTA) will lead to an expansion of consumer choice on the Ukrainian market, reduction or limitation of the growth in prices of goods and services, growth of incentives for innovative development, as well as facilitation of conditions for Ukrainian citizens' employment in the EU. Meanwhile, the conditions in which the economy functions will become more complicated, due to the need to close non-competitive companies and replace them with the new ones; a temporary reduction of budget proceeds from collecting customs duties and income tax; and growth of budget expenditures on restructuring the economy. But European integration paves the way for creation of competitive and investment-attractive energy markets that operate in a developed legal framework and pursue, first of all, the satisfaction of consumer demands.

Finger-Kreinin index shows, that the exports of Ukraine to European Union and Customs Union are similar since the index is close to 1. It means that Ukraine will benefit from either free trade with the European Union or the Eurasian Economic Union of Russia, Belarus, Kazakhstan and Armenia.

The regression model shows, that there is positive effect of Ukrainian exports to CIS group when total exports are considered: Ukraine on average exports in larger volumes to CIS than can be explained by the size of the market. The EU dummy variables have negative coefficients suggesting Ukraine trades less with EU countries than can be explained by the factors of the gravity model. The lower level of trade barriers in trade between Ukraine and CIS might be the reason. CIS is mostly a free trade zone, while trade of Ukraine and EU is only partially liberalized.

REFERENCES

1. Allen, R. L. (1963). Review of The Theory of Economic Integration, by Bela Balassa. Economic Development and Cultural Change, 11 (4).
2. Balassa Bela, 'Towards a Theory of Economic Integration', Kyklos, No. 1 (1961).
3. Balassa, R. (1961), The Theory of Economic Integration, Irwin, Homewood, USA.
4. Brada, J. C., Mendez, J. A. (1988). An Estimate of the Dynamic Effects of Economic Integration. The Review of Economics and Statistics, 70 (1).
5. Cooper, C. A., Massell, B. F. (1965). A New Look at Customs Union Theory. The Economic Journal, 75 (300).
6. De Groot, H.L.F., Linders, G.-J., Rietveld, P., and Subramanian U., 2003.The Institutional Determinants of Bilateral Trade Patterns. Kyklos 57, 103-123.
7. Doing Business Indicators. World Bank: www.doingbusiness.org
8. Eichengreen, B. (1993), European Monetary Unification, Journal of Economic Literature, Vol. 31, p.p. l321-1357.
9. Finger, J. M. and M. E. Kreinin (1979), A Measure of 'Export Similarity' and Its Possible Uses, Economic Journal, 89, 905-912.

10. Flam, H. (1992), Product Markets and 1992: Full Integration, Large Gains?, Journal of Economic Perspectives, Vol. 6 No. 4.
11. Goldstein, A. (2002). The New Regionalism in Sub-Saharan Africa: More than Meets the Eye? OECD Development Center Policy Brief no. 20. France: Organization for Economic Co-operation and Development.
12. Hosny, Amr Sadek (2013). Theories of Economic Integration: A Survey of the Economic and Political Literature. International Journal of Economy, Management and Social Sciences, 2(5).
13. IMF World Economic Outlook Database www.imf.org
14. Lawrence, R. (1996). Preferential Trading Arrangements: The Traditional and the New. Working Paper Series (The Egyptian Center for Economic Studies), no. 6.
15. Lejour, A. M., De Mooij, R.A., 2004. Turkish delight does Turkey's Accession to the EU Bring Economic Benefits? Cesifo working paper 1183.
16. Mapcrow Distance Calculator http://www.mapcrow.info
17. Meade, J. E. (1955). The Theory of Customs Unions. Amsterdam: North Holland.
18. Molle, W. (1997), The Economics of European Integration, Ch 2 (Basic Concepts and Structures), Ashgate.
19. Schiff, M., Winters, A. (1998). Dynamics and Politics in Regional Integration Arrangements: An Introduction. The World Bank Economic Review, 12 (2).
20. Sheer, A. (1981). A Survey of the Political Economy of Customs Unions. Law and Contemporary Problems, 44 (3).
21. Ukraine s State Statistical Committee: www.ukrstate.gov
22. UN Comtrade Statistics http://comtrade.un.org
23. WTO Online Tariff Analysis http://www.wto.org

Journal of Global Economy Review, Volume 1, № 3, 2015, pp. 69-80.

Review of China's Agricultural Policy: New Developments in Food Security (2015)

OLEKSANDR ROGACH[13]
OLEKSANDR PIDCHOSA[14]
IULIIA SHKRABALIUK[15]

Food Strategy of China

On February 1, 2015 the State Council issued the 'Document № 1' on agricultural policy, titled 'Some Opinions on Strengthening the Intensity of Reform and Innovation, as well as Accelerating the Modernization of Agriculture', calling for a coordinated response to rising costs of production and non-competitive prices on the world market. Senior leaders have become alarmed by the widening gap between domestic and international prices. The plan sets out a new strategy for agriculture in China; particularly it provides a mechanism for subsidies and land reform, in addition to wider use of innovative agricultural technologies such as biotechnology. Although deprived of specifics, Document № 1 (2015) stresses the need to improve competitiveness, efficiency and sustainability of the agricultural sector in China and reflects the increasing public awareness (Anderson-Sprecher & Bugang 2015).

1 Price Maintenance

China's domestic agricultural support has in recent years focused on maintaining high internal prices through government purchases in order to increase farmer income and encourage production. China's National Development and Reform Commission began raising support prices for key agricultural crops in 2008 when global agricultural prices were high, and continued to do so every year until 2014 despite falling international prices. This has created a widening gap between international and domestic prices and left the government with excess stocks in many commodities that it cannot sell without incurring large losses. These policies have also attracted imports even during times of record domestic production. The Document № 1 (2014) announced a trial subsidy reform in key production regions for cotton and soybeans. This change reflected the realization by Chinese policy makers that their 'temporary reserve' stockpiling policy has distorted domestic markets. The Document № 1 (2015) called for continuing current subsidies and price-support programs while evaluating the effectiveness of the trial program for cotton and soybeans. It also called for improvements to the temporary reserve system, which is currently used for corn, rapeseed, and sugar. In addition, it proposes expanding use of Green Box agricultural subsidies and adjusting Amber Box measures to benefit farmers more directly[16] (see Table 1).

Chinese policy makers and academics have begun characterize the situation in the domestic market as 'two ceilings and a floor' what the Document № 1 (2015) describes as a 'double squeeze' on the income of farmers. The floor is the rising cost of agricultural production in China. With costs rising, officials fear farmers will switch to non-grain crops or lay their land fallow if prices do not rise fast enough to maintain high returns. The first ceiling is the price at which imported grain becomes competitive even when subject to the 65% out of quota tariff. With Chinese prices already exceeding global prices, officials worry that

[13] Dr. of Econ. Sciences, Prof., International Finance Department Chairman, Institute of International Relations of Taras Shevchenko National University of Kyiv, 36/1 Melnikova str., Kyiv, Ukraine. e-mail: alexander.rogach@gmail.com
[14] PhD (in Economics), Assistant Professor, International Finance Department, Institute of International Relations of Taras Shevchenko National University of Kyiv, 36/1 Melnikova str., Kyiv, Ukraine. e-mail: o.pidchosa@gmail.com
[15] PhD (in Economics), Research Fellow, International Finance Department, Institute of International Relations of Taras Shevchenko National University of Kyiv, 36/1 Melnikova str., Kyiv, Ukraine. e-mail: shkrabaliuk.iuliia@gmail.com
[16] Information on Green, Blue and Amber Box Subsidies is available on the World Trade Organization website: https://www.wto.org/english/tratop_e/agric_e/agboxes_e.htm

raising domestic prices even higher will result in a flood of imports. Large amounts of sugar and cotton were imported at out of quota rates in recent years. Officials left all support prices unchanged in 2014, likely due to this concern. The second ceiling is the WTO limit on Amber Box subsides that restricts them to 8.5% of value of production. Several high-ranking officials have recently stated that China has already reached this limit. This constraint limits policymakers' ability to raise price supports higher or to give farmers direct subsidy payments that are coupled to production (Anderson-Sprecher & Bugang 2015).

Table 1

Key Areas of State Support Policy according to China's Document № 1 (2015)

Subsidies	Continue direct subsidies to grain farmers, subsidies for improved strains of seed and livestock, agricultural machinery and equipment purchase subsidies, and general input subsidies
	Provide preferential machinery and equipment purchase subsidies for 'new-type' farm operators and include irrigation equipment in subsidies
	Give aid for the dissemination of major agricultural production technologies
	Evaluate the experience from target price pilot programs for cotton in Xinjiang and soybeans in the northeast and Inner Mongolia
	Develop agricultural price insurance pilot programs
Intergovernmental transfer payments	Implement the financial award system for major grain and oilseed producing counties, seed-producing counties, and hog, beef and sheep producing counties
	Expand the scope of financial awards for modern agriculture demonstration districts
	Establish an intergovernmental compensation system for grain-producing areas, compensation for cropland protection, and an ecological compensation system
Market intervention and monitoring	Continue minimum price procurement for rice and wheat
	Improve the temporary reserve purchase policy for agricultural commodities
	'Rationally determine' the size of grain, cotton, sugar, and meat reserves
	Improve the national grain reserve market intervention mechanism, and strengthening oversight of grain reserves
	Implement a new plan for increasing local grain reserves
	Establish a system for commercial grain trading enterprises to hold reserves on the government's behalf, and improve the sugar mill government reserve-holding system
	Use modern information technology to improve surveys of crop area and production, and improve monitoring of production costs and prices

Source: Anderson-Sprecher & Bugang (2015).

Many officials in China have suggested that the temporary reserve system will be gradually phased out and replaced with a target price system like that being applied to soybeans and cotton on a trial basis. The experience from these trials will be evaluated to determine whether the target price system should be implemented more widely. China is also expanding agricultural insurance, intergovernmental transfer payments to support agricultural counties, and experimenting with a type of price-loss insurance for hogs and vegetables. It will also likely explore decoupled payments or other Green Box measures to support farm income given its limited space to increase Amber Box payments (Anderson-Sprecher & Bugang 2015).

2 International Trade Facilitation

China's Document № 1 (2015) focus mainly on domestic policies and rural affairs, but the last two have included sections on international trade and investment. This reflects a new food security strategy that calls for utilizing domestic and international markets to ensure stability and reliability of the country's food supply, a strategy stated in 2014 and 2015 Documents № 1. The increased attention to trade also reflects an increased concern about competitive pressure embodied in the 'double squeeze' rhetoric (see Table 2). The 2014 and 2015 Documents № 1 both call for developing plans for regulating the flow of imports, and the Document № 1 (2015) emphasizes tight management of the tariff rate quota systems. The Documents call for exerting greater control over the border through strict inspections and crackdowns on smuggling of agricultural products. Dual objectives for the border controls include maintaining quality of imports, as well as protecting domestic producers to maintain 'industry security'. A number of officials have described a surge in rice smuggling as a threat to national food security. News media report that allowances for border residents to import limited volumes of rice and other commodities have been abused, and the Document № 1 (2015) calls for reform of this policy. The 2014 and 2015 Documents № 1 also call for supporting a greater role for Chinese companies in international agricultural trade through outbound investment. China's

so-called ‘going out’ or ‘go global’ strategy had received brief endorsements in 2007 and 2010 Documents. The most recent Document № 1 (2015) were more specific, calling for nurturing large international companies and exploring policies to support outbound investors. COFCO’s purchases in 2014 of Nidera as well as Noble Group’s agricultural unit are seen as part of this strategy. The Document № 1 (2015) also emphasized international cooperation, which appears to encompass both Government-to-Government cooperation and outbound investment by companies (Anderson-Sprecher & Bugang 2015).

Table 2

International Trade Policy in Documents № 1 (2014) & (2015): Comparison Chart

Document № 1 (2014)	Document № 1 (2015)
More actively utilize international markets and resources to adjust and supplement domestic supplies of agricultural products	Increase the capacity to make coordinated dual use of domestic and international markets and resources
Strengthen import plans and guidance for agricultural products, improve the mix of import sources, and establish stable, reliable trading relations	Keep a good grip on import, export, and tariff rate quota management of grains, cotton, sugar and other major agricultural commodities. Strictly enforce the sliding scale tariff policy for cotton
Closely coordinate departments to strengthen border inspections and quarantine	
Maintain import quality and domestic industry security	Actively support exports of competitive agricultural products
Strictly crack down on smuggling of agricultural products	Strictly crack down on smuggling of agricultural products; improve the policy for trade by residents of border regions.
Accelerate implementation of the agricultural “go global” strategy	
Nurture large internationally competitive grain, oils and cotton companies	Speed up nurture of internationally competitive agricultural companies and conglomerates
Encourage financial organizations to actively innovate services, financial products and methods for agricultural international trade and ‘going out’	
Explore establishment of an international agricultural trade fund and an overseas agricultural development fund	Establish a foreign cooperation conference system, formulate plans for international cooperation, and strengthen cooperation in trade, processing, storage and transport
Strengthen international cooperation in agricultural science and technology	Support investment in foreign agricultural cooperation by improving finance and tax, banking, insurance, trade, inspection and quarantine policies

Source: Anderson-Sprecher & Bugang (2015).

3 Grain and Feed

USDA forecast MY2015/16[17] wheat production is revised down 2 mln. tons to 128 mln. tons due to slightly lower than expected acreage growth. Total wheat consumption in MY 2015/16 is forecast at 116.5 mln. tons on declining feed use in recent years as wheat became more expensive than corn (see Table 3.1). Corn production in MY2015/16 is forecast at 230 mln. tons, up 2 mln. tons on higher acreage as corn continues to eat into cotton acreage. Forecast MY2015/16 corn consumption is revised up 1 mln. tons to 221 mln. tons as strong growth in industrial usage offset a decline in feed. Corn ending stocks in MY2015/16 are forecast at 93 mln. tons as high support prices push up production and suppress demand. (see Table 3.2). Forecast MY2015/16 rough rice production is revised slightly lower to 206.4 mln. tons due to less optimistic yield projections. Estimated MY 2014/15 rice imports are revised down 400 ths. tons to 4 mln. tons due to the delayed release of rice tariff rate quotas (TRQ) in 2015 (see Table 3.3). MY2015/16 sorghum imports are still forecast at a record 9 mln. tons based on strong demand for cheaper alternative feed ingredients (see Table 3.4) (Anderson-Sprecher, Wei & Liwen 2015).

[17] Marketing Year is a period of one year (or sometimes less), designated for reporting and (or) analysis of production, marketing and disposition of a commodity. Disposition of an agricultural crop might include such uses as food, animal feed, industry, seed, and export, as well as changes in stocks.

Table 3.1

CHINA – Wheat

Production	A recent MY 2015/16 seeding survey covering 110 ths. producers found wheat seeding acreage was 0.7 % higher than MY 2014/15. The acreage growth came in part at the expense of cotton, as subsidy reforms have made cotton less profitable in comparison to wheat and corn. Estimated MY 2014/15 production is unchanged at 126 mln. tons. According to industry reports, wheat quality improved in MY2014/15 over the prior year.
Imports	Forecast MY2015/16 wheat imports are unchanged at 1.2 mln. tons. This represents a 300 ths. ton drop from the previous year as forecast record production is expected to depress imports. Estimated MY2014/15 wheat imports are lowered 100 ths. tons to 1.4 mln. tons based on trade statistics and tight government restrictions on import quotas. China imported 1.086 mln. tons of wheat in MY2014/15 through April 2015, and industry sources expect another 200 ths. tons of imports over May and June.
Consumption	MY2015/16 wheat feed and residual is revised down 5 mln. tons to 15 mln. tons, MY2014/15 feed and residual is revised down 6 mln. tons to 17 mln. tons, and MY 2013/14 feed and residual is revised down five mln. tons to 16 mln. tons. Government and industry sources report that wheat feed use fell substantially in MY 2013/14 after wheat prices rose above the price of corn. The China National Grain and Oils Information Center (CNGOIC) estimates that wheat feed and residual declined 36% in MY 2013/14 compared to MY2013/12.
Stocks	MY2015/16 wheat stocks are forecast at 85.5 mln. tons on lower estimated feed and residual. While the Chinese government continues to treat stock levels as a state secret, wheat stocks are believed to have grown rapidly following record production in recent years.

Source: USDA FAS/GAIN Report: Grain and Feed Update – June 2015 (China).

Rapidly growing corn stocks helped push corn prices downward from early MY2012/13. Meanwhile, wheat prices soared 30% to a peak of RMB 2,572 in November 2013 over worries about potential wheat production losses from frost and floods in early MY2013/14 along with increases in international wheat prices. Wheat prices fell after wheat imports peaked in October 2013, but they quickly recovered. Beginning in MY2013/14, wheat prices have generally remained above the price of corn. This trend is likely to continue as the government is discussing cutting corn prices to help dispose of excess corn reserves. According to industry reports, feed companies reduced purchases of feed grade wheat when wheat prices became uncompetitive compared to corn. The trend of lower wheat feed use was also reinforced by a surge in imported alternative feed ingredients, such as sorghum, barley and distiller's dried grains with solubles (DDGS). As a result, wheat for the most part is no longer competitive as a feed ingredient. According to recent industry reports, feed mills have abundant corn offering between 2400-2450 yuan per ton in the North Yellow River Basin while the price of wheat offerings range between 2550-2600 yuan per ton. MY2015/16 food, seed and industrial (FSI) wheat consumption is forecast unchanged at 101.5 mln. tons (Anderson-Sprecher, Wei & Liwen 2015).

Table 3.2

CHINA – Corn

Production	Corn acreage is raised to 37.85 mln. hectares as large numbers of cotton and soy farmers have switched to planting corn. Corn has a government guaranteed average floor price of RMB 2,250 a ton, and is now favored by many farmers as a more reliable income source. Unusually low temperatures in the North-East in early May have delayed planting in some areas and slightly lowered emergence rates. However, after quick reseeding, most production regions recovered to normal emergence rates by the middle of May.
Imports	Forecast MY2015/16 corn imports are unchanged at 3 mln. tons, as are MY 2014/15 imports. This amount is roughly equal to the TRQ allocated to the private sector for corn. The government, faced with record corn stocks, is expected to continue to tightly restrict corn imports and is unlikely to approve any large purchases using public sector quotas. The government has put pressure on private importers by demanding that they first buy corn from state reserves before receiving import quotas. However, high domestic prices and demand for good quality corn is likely to provide a floor for imports at or slightly below 3 mln. tons.
Consumption	Provincial governments in the North East have tried to dispose of excess and deteriorating corn stocks by subsidizing industrial usage, paying corn processers $24-32 a ton. This new temporary policy is valid until the end of 2015. Industrial use is raised substantially for MY2014/15 and MY2015/16 as a result of these subsidies and government pressure to find ways to dispose of deteriorated corn stocks. As a result, estimated FSI consumption for MY 2014/15 and MY2015/16 is raised to 65 mln. tons and 66 mln. tons respectively.
Stocks	The rapid increase in corn stocks has strained grain storage capacity, and large amounts of grain are being kept in inadequate or antiquated storage facilities. On June 15, 2015 the government announced a plan to build fifty mln. tons of new grain storage facilities and to repair 60% of 'old and dangerous' grain storage facilities by the end of this year.

Source: USDA FAS/GAIN Report: Grain and Feed Update – June 2015 (China).

The popularity of corn has resulted in higher rent prices for farm acreage in major corn producing areas such as Heilongjiang, where rents are reported to be up 20% over last year. Overall land and labor costs increased 4-6% this year according to an industry survey, while seed costs increased 5-7%. Fertilizer costs are stable. Forecast MY2015/16 and MY2014/15 feed and residual is revised downward to 155 mln. tons and 150 mln. tons, respectively, due to increased usage of alternative feed ingredients such as sorghum, DDGS and barley. High domestic corn prices, tight restrictions on corn imports, and the poor quality of some domestic corn stocks has discouraged corn feed use. CNGOIC estimates that corn feed use fell by almost 6% in MY2014/15 compared to the year before (Anderson-Sprecher, Wei & Liwen 2015).

Table 3.3

CHINA – Rice

Production	Yields are expected to be negatively impacted by El Nino, with the potential for both droughts and flooding in rice growing regions. According to recent industry reports, there is concern that excess precipitation is hampering early rice development in southern growing regions. Cold weather in early May delayed seeding progress in northern growing regions. However, high support prices are expected to sustain continued strong production and acreage is expected to rise slightly.
Imports	Forecast MY 2015/16 imports are unchanged at 4.7 mln. tons, as high domestic prices continue to incentivize imports. Domestic rice prices still exceed those in most neighboring Southeast Asian countries, creating a demand for imports. Smuggling is also a challenge in southern China. The government reported that Chinese customs seized over 200 ths. tons of smuggled milled rice in 2014.[18]
Consumption	Forecast MY2015/16 consumption is revised down two mln. tons to 149 mln. tons. High prices, inconsistent quality of state rice reserves, and changing consumption patterns have all contributed to sluggish consumption growth. CNGOIC forecasts that industrial and feed demand will decline 9 and 4% respectively in MY2015/16, and that food demand will decline by 2%. MY 2014/15 consumption revised down 1.4 mln. tons to 147 mln. tons for many of the same reasons. High prices and mixed quality resulted in lower feed use in MY2014/15, and CNGOIC estimates that rice feed use dropped 10% that year. The poor quality of state reserves has also meant that the government has had trouble finding buyers for stockpiled rice.
Stocks	Forecast MY 2015/16 and MY 2014/15 ending stocks are revised up 1.5 mln. tons and one mln. tons respectively on lower consumption. Industry and government reports also suggest that stocks are expanding. State grain silos are trying to sell aging rice on the market to reduce stocks. However, poor quality and high prices have driven away buyers. In late April 2015, 7.87 mln. tons of rice from state reserves was put on auction. However, only less than 2% of the rice auctioned was actually sold.

Source: USDA FAS/GAIN Report: Grain and Feed Update – June 2015 (China).

Table 3.4

CHINA – Sorghum

Production	MY 2015/16 sorghum production is forecast unchanged at 2.6 mln. tons. Sorghum production receives little policy intervention compared to corn, wheat and rice, making it less attractive to farmers. Sorghum production is concentrated in the North-East and Inner Mongolia. The government provides transportation subsidies to corn to move it to areas of high demand in the south, but these subsidies are not provided for sorghum, making domestic sorghum even less competitive.
Imports	MY 2014/15 sorghum imports are estimated at 8.5 mln. tons. Sorghum is not subject to TRQ restrictions and does not face biotechnology related trade barriers, making it possible to trade relatively freely. Under the China Australia Free Trade Agreement announced on June 17, 2015, the tariff on Australian sorghum will immediately drop to 1% from the current 3% rate. The tariff drop for Australia sorghum is expected to have only a minor impact on U.S sorghum exports to China as U.S sorghum is still cost competitive.
Consumption	Forecast MY 2015/16 consumption is unchanged at 11.4 mln. tons, up 200 ths. tons from MY2014/15 on higher feed demand. Food and industrial consumption is expected to remain flat due to weaker demand for traditional sorghum based spirits (bai jiu). Biofuel producers currently favor importing cassava over sorghum as a feedstock, limiting growth in industrial consumption.

Source: USDA FAS/GAIN Report: Grain and Feed Update – June 2015 (China).

In January 2015, the government announced that China was boosting its potato production and consumption to transform the crop into the country's fourth major 'grain: after rice, wheat and corn'. Minister of Agriculture is planning to expand potato acreage to 10 mln. hectares by 2020 from the current 5.3 mln. hectares without using land currently utilized for rice, wheat and corn production. However, many obstacles remain to achieve these ambitious goals. For example, the potato is not yet consumed widely as

[18] Thailand has overtaken Vietnam to retake its position as the top exporter of rice to China according to trade statistics. Premier Li Keqiang signed agreements to import rice from Burma and Thailand when he visited the countries in November and December 2014. Thailand has also adjusted its policies to encourage rice exports following its change in government.

a food. The government has provided some financial resources for research and development to identify new food uses for the potato to make it more widely utilized in the local diet. Also, industry has expressed concern that the lack of the processing potato varieties has been one of the major bottlenecks for China's potato processing sector. China is the largest potato producer in the world despite its relatively low potato yields. According to Ministry of Agriculture, China's average potato yield in MY2014/15 was 17MT/ha, about 1/3 of the U.S. yield. Reasons for the low yields are the use of low-quality seed potatoes and incidence of disease (see Table 3.5) (Frederick & Lei 2015).

Table 3.5

CHINA – Potatoes

<table>
<tr><td rowspan="4">Production</td><td colspan="3">China's fresh potato production for MY2015/16 will reach 98 mln. metric tons, a 3% increase from the 95 mln. metric tons in MY2014/15 due to an expansion of the potato crop area. China's potato crop area is estimated at 5.8 mln. hectares in MY2015/16, about 3% increase from the previous year. Industry sources indicated that potato acreage did not expand as much as expected due to the relatively low potato prices in MY2014/15.</td></tr>
<tr><td colspan="3">Processing potatoes account for 10-15% of total production, and include such products as starch, frozen French fries (FFF), chips, and dehydrated potatoes. The production rate for processing potatoes has remained the same for the last several years because of the lack of processing potato varieties and a shortage of modern potato storage facilities.</td></tr>
<tr><td colspan="2">China's MY2015/16 potato starch production is forecast at 550 ths. MT, a 22% increase from 450 ths. MT in MY2014/15, based on the aforementioned government efforts to increase potato starch consumption. Industry sources indicate approximately 7-8 tons of fresh potatoes can produce 1 ton of starch. China's potato starch production capacity exceeds one mln. metric tons but inadequate storage facilities, and outdated technology, keep production between 350-500 ths. metric tons. China's starch manufactures are also highly fragmented with production split between thousands of producers and only a few firms have production that exceeds over 8 ths. MT.</td><td>China's MY2015/16 FFF production is forecast at 210 ths. MT, a 17% increase from the estimated 180 ths. MT in MY2014/15 because new production capacity is expected to run in the new marketing season.</td></tr>
<tr><td colspan="3"></td></tr>
<tr><td rowspan="2">Imports</td><td colspan="3">China does not allow market access for fresh potato imports due to sanitary and phytosanitary concerns.</td></tr>
<tr><td>China's MY2015/16 potato starch imports are expected at 36 ths. MT, a 5% decrease from 37,947 MT in MY2014/15 due to the domestic production increase.</td><td colspan="2">China's MY2015/16 FFF imports are forecast at 130 ths. MT, similar to the 129,034 MT in MY2014/15. Industry believes FFF consumption in China would continue to remain the same with the continued urbanization; however, the increasing market demand will be mostly filled by increasing domestic production while imports would maintain current levels. Although China's MY2014/15 FFF imports from the United States declined to 85,596 MT from the 97,877 MT in MY2013/14, the United States continues to dominate China's imported FFF market, accounting for 66% of total imports in MY2014/15. Other suppliers include Canada, accounting for 19% of total imports.</td></tr>
</table>

Source: USDA FAS/GAIN Report: Potatoes and Potato Products Annual – China (2015).

4 Biotechnology

The Document № 1 (2015) identifies innovation and advanced production methods, such as biotechnology, as essential to boosting China's agricultural competitiveness. While previous No. 1 Documents have mentioned the importance of biotechnology research, the Document № 1 (2015) for the first time called on the government to raise public awareness and to 'popularize biotechnology'. The government has identified low public acceptance as an obstacle to expanding commercialization of biotech crops and is now developing plans to actively address this issue. In September 2014, the government released remarks by President Xi Jinping saying that biotechnology has 'right prospects' and calling for China to 'take the commanding heights in biotechnology'. He also said that foreign companies should not be allowed to 'dominate the agricultural biotechnology product market'[19]. Despite the government's recognition of the importance of biotechnology for Chinese agriculture, the Document does not telegraph any change in its restrictive policies on development or approval of 'foreign' biotech products (Anderson-Sprecher & Bugang 2015).

Biotechnology is defined as a strategic emerging industry in China, and the government invests heavily in biotechnology research. While total amount of Chinese government expenditures on biotechnology is unknown, it is believed to far exceed public sector investment in biotechnology in any other country, including the United States. China's well-funded but originating biotechnology industry faces a number of challenges. The government's decision not to commercialize major biotechnology crop

[19] This is the first time remarks by President Xi on biotechnology have been made public.

varieties (other than cotton) limits incentives for local seed companies to invest in biotechnology. It also encourages public labs to focus on basic research rather than developing commercially viable seeds. Inconsistent protection of intellectual property and the fragmented nature of China's seed industry further undermine private sector investment in biotechnology. The Chinese government's decision to limit participation of foreign seed technology companies through restrictions and bans on foreign investment, as well as a lack of approvals for many biotechnology crops, is also slowing the development of the biotechnology sector in China[20]. Some Chinese government officials have expressed concern that international seed companies would dominate the seed market in China if they were allowed to commercialize their biotechnology seeds. The example of cotton, where international companies were allowed to commercialize seeds, suggests these fears may be misplaced. While seeds from international companies initially held large share of the market, locally developed varieties quickly arose and now dominate the market for biotech cotton seeds in China (Anderson-Sprecher & Jie 2015).

Government officials express concerns over public acceptance as an important factor behind the slow pace of biotechnology commercialization in China. According to Ministry of Agriculture (MOA) officials, public opinion is one factor among others that is considered when deciding whether or not to approve a genetically engineered (GE) crop for import or cultivation, along with safety, environmental, and economic considerations. A lack of public acceptance was directly cited by MOA in July 2014 as the sole reason for delaying an import approval application for a soybean variety. The government has begun to conduct public outreach to address misperceptions in order to allow China's domestic biotechnology industry to develop. Soon after President Xi's speech was published, MOA launched a campaign to train and educate local agricultural officials about biotechnology.

China is the sixth largest producer of agricultural biotechnology crops in the world by area at 4 mln. hectares, according to the 2013 report by the International Service for the Acquisition of Agrobiotech Applications (ISAAA). Although China has commercialized 6 genetically modified plants since 1997 (cotton, tomato, sweet pepper, petunia, poplar, and papaya), few are in production today due to difficulties in bringing the products to commercialization. The vast majority of the safety certificates for cultivation are for domestically developed varieties of insect-resistant (Bt) cotton. The government has not approved any foreign developed biotech food or feed crops for cultivation. There are no public statistics on GE seed production in China. Bt cotton is the most widely planted genetically enhanced product grown in China. While precise statistics are not available, it's estimated that around half of all cotton planted in China is produced with Bt cotton varieties. Other genetically modified crops in China include a virus-resistant papaya (approximately 6,7 ths. hectares) and an insect resistant variety of popular trees (approximately 450 hectares). Despite large amounts of public research, China has not yet commercialized any genetically modified grains or oilseeds. There have been reports of farmers in China planting unapproved insect resistant varieties of corn and rice to cope with rising pest pressures, but it is unclear how widespread this trend is (Anderson-Sprecher & Jie 2015).

China has heavily invested in biotech research and seed development, primarily through publicly funded research institutes and universities. In July 2008, the State Council approved a $3.5 billion special research program to develop new biotech varieties (funding comes from central and local governments as well as investment by companies) over 12 years. According to the Long and Midterm National Development Plan for Science and Technology (2006-2020), the program will focus on crop (rice, wheat, corn, and cotton) and animal (swine, cattle, and sheep) research. The target is to develop varieties with new traits, such as insect, disease, and stress resistance. Private sector R&D in agricultural biotechnology is limited and highly regulated. Foreign investment in research and production of biotech plants, livestock, and aquatic products is prohibited. Foreign investment is allowed in hybrid seed production, but restricted to minority shares in joint ventures with Chinese companies. China is a large importer of biotech soybeans, cotton, corn, and soybeans for feed and processing. It has also recently become a large importer of DDGS, a corn by-product from ethanol production commonly used in animal feed. China does not import biotech seeds for cultivation. It accounts for roughly 2/3 of global soybean imports and close to half of global DDGS imports, much of which is produced from biotech varieties. China is also a large exporter of cotton products, many of them made with Bt cotton (Anderson-Sprecher & Jie 2015).

[20] In 2011 foreign investment in biotechnology was moved from the 'restricted' to the 'banned' category, meaning that foreign companies could no longer conduct agricultural biotechnology research in China.

5 Poultry and Products

Li & Frederick (2015a) forecasts broiler meat imports at 200 ths. tons in 2016, a decrease of 7% compared to USDA's 2015 official figure; China's 2016 broiler meat production at 13.1 mln. tons, mirroring USDA's 2015 official figure; China's broiler meat consumption at 12.8 mln. tons largely unchanged from USDA's 2015 official estimate. A slight shift in consumption from pork to poultry meat underpins the production forecast. Poultry meat and pork are substitute meat options for Chinese consumers and pork prices are predicted to remain high in 2016 because of decreased sow stocks.

In January 2015, China banned imports of all poultry and poultry products from the United States due to high pathogenic avian influenza (HPAI) outbreaks in the United States. Imports from Brazil and other South American countries have benefited from the absence of U.S. suppliers. The ban impacts China's white broiler meat production since it relies on the United States for grandparent breeding stock for its domestic production. China has long favored breeding stock from the United States as it tries to improve its own production efficiency. A continued ban could result in lower 2017 production levels. While some decline in white-feathered broiler meat is anticipated in 2016, an uptick in yellow broiler meat production will offset declines white broiler production to maintain overall production levels. Importers have looked to other sources for breeding stock, in particular, to Europe. However, the potential resumption of U.S. imports is a challenge to increasing breeding stock production in those countries (Li & Frederick 2015a).

The overall economic picture for China, slower economic growth, and constraints on banquet spending per government policy remain in place. Additionally domestic bird flu cases, food safety scandals, and media reports of smuggled meat sold to consumers conspire to restrain consumption. Record high pork prices are encouraging consumers to move away from pork but both yellow and white broiler meat producers still need to overcome other challenges to satisfy consumers. Li & Frederick (2015a) forecasts China's 2016 broiler meat exports at 430 ths. tons, no change from USDA's 2015 official estimates. Exports to Japan, China's main export destination, are expected to continue to decline as persisting food safety concerns have caused Japanese buyers to seek other sources for poultry, such as Thailand. Japan and Hong Kong are the main export destinations for China's poultry products. China mainly exports preserved broiler meat products. Although exports are expected to remain flat in the near term, China's skilled workers and some state-of-the art facilities give it a competitive advantage in regional markets such as Japan and Hong Kong.

6 Livestock and Products

Li & Frederick (2015b) forecasts beef consumption at 7.4 mln. tons, slightly above 2015 levels. The Chinese market remains closed to U.S. beef but imports from other suppliers are forecast to reach 600 ths. tons (see Tables 4.1 & 4.2). China's 2016 pork consumption is expected at 57 mln. tons, a slight decrease from USDA's 2015 official forecast. However, imports in 2016 are forecast at 830 ths. tons, an increase of 4% over USDA's official estimate. Imports are expected to play a larger role in meeting domestic demand. Domestic producers remain hampered by high production costs and also must cope with more stringent environmental regulations introduced at the beginning of 2015 (see Table 4.3).

Table 4.1

CHINA – Cattle

Production	2016 calf crop is forecast at slightly above 49 mln. Unlike the pork and poultry industries in China, which have seen small-scale operators replaced by larger scaled farms, cattle breeding remains dominated by small backyard operations. Despite high beef prices, high breeding costs are a constraint on herd expansion. A free trade agreement expanding access for live cattle from Australia will put additional competitive pressure on the Chinese beef breeding sector.
Imports	2015 live cattle imports have been adjusted to 100 ths. head based tight global supplies, particularly from China's main suppliers, Australia, New Zealand and Uruguay. Imports are forecast to recover to 200 ths. head in 2016. The rise is aided by the inclusion of Chile as a new supply source for China in 2015. Overall, growing demand for high quality beef, the need to improve herd productivity, and the fact that live cattle imports are cheaper than breeding domestically, will drive imports in 2016[21].

Source: USDA FAS/GAIN Report: Livestock and Products Annual – China (2015).

[21] On November17th 2014, China and Australia announced a free trade agreement (FTA), which includes a provision for an annual quota for live cattle imports of 1 mln. head. Despite doubts expressed by some analysts that Australia will be able to meet the quota in the near future.

Table 4.2

CHINA – Beef

Production	2016 beef production is forecast at 6.785 mln. tons. Stable beef prices are attracting more investment in production and some backyard farmers are expanding. However, slaughter increases are still constrained by tight supply of beef animals. Culling of dairy cattle will help support overall slaughter numbers in 2016.
Consumption	2016 consumption is forecast at 7.4 mln. tons, higher than USDA's 2015 official forecast. Beef consumption will remain firm in 2016, supported by increasing incomes, continued urbanization and increasing consumer preference over pork. However, high relative prices are expected to keep beef consumption roughly 15% that of pork in the Chinese diet.
Imports	2016 beef imports are forecast at 600 ths. tons, 20% higher than USDA's 2015 official estimate. Despite increasing prices for its beef, Australia will remain the supplier, a position bolstered by the free trade agreement. Imports from South American countries are forecast to increase, in part because China has lifted its 2012 BSE-related ban on Brazilian beef. Since 2003, China has banned U.S. beef, beef products, and live cattle, ostensibly due to BSE concerns. However, the OIE (World Organization for Animal Health) has recognized the United States as having 'negligible' BSE risk.[22]

Source: USDA FAS/GAIN Report: Livestock and Products Annual – China (2015).

China's 2016 swine herd is expected at 421.7 mln. head, a slight decrease from 2015 USDA's official estimate due to decreasing numbers of sows. Small farm operators continue to leave and stricter environmental laws are factor in reducing swine numbers. China's local governments are using tough new environmental rules to shut down or relocate pig farms, especially those located near densely populated areas. Hog producers were hit hard by low pork prices. The hog to corn price ratio has remained below the profitability breakeven indicator of 6:1 for 18 months up to June 2015. The extended period of losses has drained farmers' cash reserves, forcing them to cull more 38 mln. sows. However, industry sources believe the swine herd will recover by the end of 2016 driven by high sow, piglet and hog prices. Although the breeding herd is shrinking, its quality is improving due to imported genetics, industry consolidation and new investment. The central government is also encouraging the development of large scale swine farms. These farms usually have better technology and management skills, resulting in higher sow production ratio (Li & Frederick 2015b).

Table 4.3

CHINA – Pork

Production	2016 pork production is forecast at 56.2 mln. tons, a small decrease from USDA's 2015 official forecast. Higher body weight helped offset a decline in slaughter numbers. Better genetics, combined with expected lower feed prices and higher pork prices, will promote slaughter at heavier weights to maximize profitability. As a result, the estimated slaughtering weight is increased from 100kg to 120kg. Pork prices started to rise upward from March 2015, encouraging farmers to increase sow herds. Reduced supply rather than demand spurred the price increases. Despite recent losses in the industry, Industry sources are cautiously optimistic that productions increases and prices will allow for the return to profitability.
Consumption	2016 consumption is expected at 57 mln. tons, a slight decrease from USDA's official forecast. China's economic slowdown, coupled with the fight against corruption reducing the number of official banquets, has weakened pork demand, particularly at high end hotels and restaurants. Pork prices are anticipated to remain high in 2016 and sustained high prices will drive consumers towards poultry and fish consumption. However, a population that is still growing and becoming more urbanized will support overall pork consumption. Pork is still the main protein sources for many Chinese consumers and consumption will continue to increase as the population continues to grow albeit a slower pace. Urban consumers are also paying more attention to feed safety, resulting in growing popularity of branded pork.
Imports	Imports are forecast at 830 ths. tons, a 4% increase from 2015 USDA official forecast. Imports from European countries will continue to grow as more countries become eligible to export. In 2015, China added Romania and Austria to the list of countries eligible to export. U.S. exports are hampered due to China's zero tolerance for ractopamine, a feed additive that promotes lean muscle growth in swine. Declining U.S. imports have allowed European Union countries to capture more than 70% import market (as of July, 2017). The price gap between domestically produced pork and imports can be as much as 50% reflecting the high cost of production as result of limited land and increasing labor costs. Although a depreciation of the Chinese currency will make imports more expensive, the high cost of local production will remain favorable for imports.
Exports	2016 exports of pork are forecast at 150 ths. tons, 25% lower than USDA 2015 official forecast. Aforementioned high cost of local production make Chinese pork uncompetitive in most export markets. Most of what is exported goes to Hong Kong and Macau with some exports to Russia.

Source: USDA FAS/GAIN Report: Livestock and Products Annual – China (2015).

[22] Bovine Spongiform Encephalopathy.

7 Protein in China

To identify markets and companies that may be attractive on a global scale, McKinsey analyzed changes in population growth, income, demographics and behaviors, productivity, industry structure, and several other factors. Based on this analysis, 24 hot spots were identified that may prove attractive to investors over the next decade with these opportunities assessed on market size, risk, and growth potential. 'Protein in China' is specified among the hot spots, where agribusiness investment is likely to focus (see Fig. 1) (Goedde et al. 2015a).

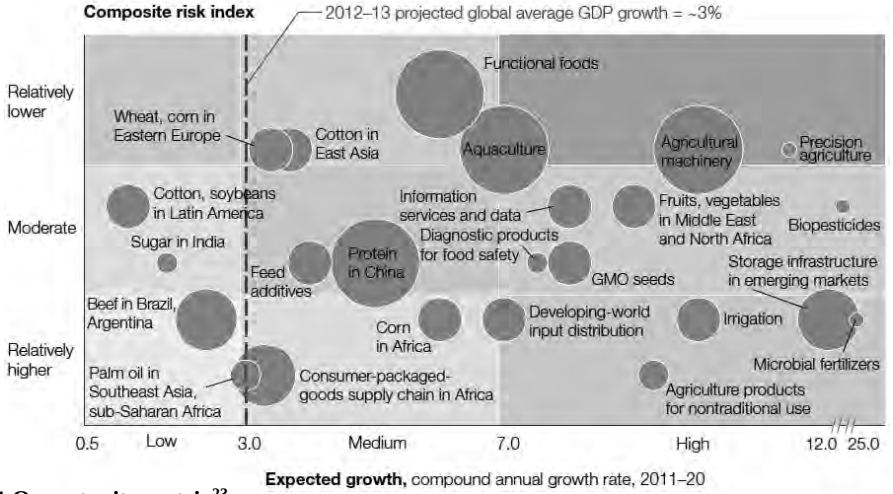

Fig. 1 Opportunity matrix[23]

Note: Market size, $ billion; Size ranges: <2; 2–5; 5–10; 10–50; 50–100; >100.

Source: Ag2020: Growth and investment opportunities in food and agribusiness (McKinsey & Paine+Partners, 2013)

With annual spending of $300 bln., China is the world's largest consumer of meat, 2/3 of which is pork. Protein consumption of all kinds is expected to grow there at 3-4% a year, mostly as a result of increasing demand from a rising middle class. The government has made a strong commitment to modernize the sector, moving from what is largely backyard farming to sophisticated commercial agribusiness. These structural changes and discontinuities make the sector a hot spot worthy of further exploration. However, the space is vast and complicated, with multiple areas to examine and prioritize across products (pork, poultry, dairy, beef, and fish), value chain (inputs, production, and processing), and cross-cutting themes such as infrastructure. After McKinsey assessed major trends, industry structure, and investment opportunities, two areas emerged as attractive possibilities: pork breeding and cold-chain logistics (Goedde et al. 2015b).

China's pig-breeding market is substantial, with about $1 bln. in annual revenue and favorable economics. Breeding is one of the critical means to modernize the protein industry. The technology and intellectual property developed in genetic research allow companies to capture significant margin. Investors must identify international players that are well positioned, with reliable Chinese partners. It is critical to offer a compelling value proposition to the Chinese government that combines contributing to local production and productivity improvements with food-security solutions, including direct supply chains into China. Meanwhile, Chinese companies are not standing still: WH Group (former Shuanghui International Holdings), China's biggest pork producer, completed the $4.7 bln. acquisition of Smithfield Foods, the 87-year-old US meat giant with brands such as Armour and Farmland, in September 2013.

On the back of the increased protein demand and formalization of the Chinese food system, there is a potentially big investment opportunity in developing the cold chain, or refrigerated storage and transportation, in the Chinese food industry, given increasing consumer and government expectations for

[23] Growth segments (horizontal axis) are low, <3%; medium, 3–7%; high, >7%. Risk (vertical axis) is measured as the sum of scores across 4 types of risk assessed: execution, geopolitical, regulatory and market, and technological.

food quality and safety. To reach developed market scale in both cold storage and transportation, the Chinese cold-chain-logistics market would have to grow more than 20% a year for the next 5-10 years. Annual growth rates of more than 15% are required to reach government targets for cold-chain penetration of agricultural products. Analysts forecast the global cold-chain market to grow at 16% annually to 2018. The current industry is fragmented at the local and regional levels, suggesting that more consolidation and vertical integration can be expected. Given the capital intensity of the sector, the opportunity for investors may lie in acquiring an international player that is well positioned in warehouse-logistics management (where the margins are highest) and has the right customer relationships and local partners (Goedde et al. 2015a).

A surge in demand for protein in emerging markets, projected by McKinsey, especially pork in China, will create opportunities for companies to grow in core production and supporting industries such as breeding, animal-health testing, feed, and vaccines. Making feed conversion more efficient so that animals produce more meat while consuming the same amount of feed as they do now could be profitable for companies with unique intellectual property in additives (e.g. probiotics, acidifiers, enzymes, etc.). Rising protein prices in emerging markets, government intervention, and environmental concerns could slow demand. Moreover, not every part of the protein value chain is doing well; livestock producers are struggling because of a poor feed-to-meat/dairy price ratio, and primary processors are suffering from high feedstock costs and low capacity utilization. Also, consumer behavior and preferences can change faster than many companies and investors can respond. Successful investment strategies will address the risks by finding opportunities to capture value (e.g., technology or processing that improves feed performance or reduces feed-production cost) or by mitigating the risks (e.g., vertical integration within the protein value chain) (Goedde et al. 2015b).

REFERENCES

Anderson-Sprecher, A. & Bugang, W. (2015) Chinese Government Tackles High Production Costs and Uncompetitive Prices in New Agriculture Strategy. GAIN Report Number: CH15010. Date: 3/19/2015. Available at: http://gain.fas.usda.gov/Recent%20GAIN%20Publications/Chinese%20Government%20Tackles%20High%20Production%20Costs%20and%20Uncompetitive%20_Beijing_China%20-%20Peoples%20Republic%20of_3-19-2015.pdf

Anderson-Sprecher, A. & Jie, M. (2015) China: Agricultural Biotechnology Annual. GAIN Report Number: 14032. Date: 12/31/2014. Available at: http://gain.fas.usda.gov/Recent%20GAIN%20Publications/Agricultural%20Biotechnology%20Annual_Beijing_China%20-%20Peoples%20Republic%20of_12-31-2014.pdf

Anderson-Sprecher, A., Wei, J. & Liwen, C. (2015) China: Grain and Feed Update – June 2015. GAIN Report Number: CH15020. Date: 6/26/2015. Available at: http://gain.fas.usda.gov/Recent%20GAIN%20Publications/Grain%20and%20Feed%20Update_Beijing_China%20-%20Peoples%20Republic%20of_6-26-2015.pdf

Food and Agriculture Organization of the United Nations Statistics Division. FAO 2015. Available at: http://faostat3.fao.org/

Frederick, Ch. & Lei, Z. (2015) China to Boost Potato Production and Transform Potato into Its Fourth Major Grain. GAIN Report Number: CH CH15036. Date: 9/25/2015. Available at: http://gain.fas.usda.gov/Recent%20GAIN%20Publications/Potatoes%20and%20Potato%20Products%20Annual_Beijing_China%20-%20Peoples%20Republic%20of_9-25-2015. pdf

Li, W. & Frederick, Ch. (2015a) China's Poultry Consumption to Remain Flat in 2016. GAIN Report Number: CH 15027. Date: 8/18/2015. Available at: http://gain.fas.usda.gov/Recent%20GAIN%20Publications/Poultry%20and%20Products%20Annual_Beijing_China%20-%20Peoples%20Republic%20of_8-18-2015.pdf

Li, W. & Frederick, Ch. (2015b) China's Increasing Appetite for Imported Beef. GAIN Report Number: CH 9/23/2015. Date: CH15034. Available at: http://gain.fas.usda.gov/Recent%20GAIN%20Publications/Livestock%20and%20Products%20Annual_Beijing_China%20-%20Peoples%20Republic%20of_9-23-2015.pdf

Goedde L., Horii M., & Sanghvi S. (2015a) Global Agriculture's Many Opportunities, *McKinsey on Investing*, Number 2, Summer 2015, 62-64.

Goedde L., Horii M., & Sanghvi S. (2015b) Pursuing the Global Opportunity in Food and Agribusiness, *Chemicals & Agriculture*, June 2015, 1-9.

OECD/Food and Agriculture Organization of the United Nations (2014), OECD-FAO Agricultural Outlook 2014-2023. OECD/FAO. OECD Publishing, Paris. 11 July 2014. 323 p. Available at: http://dx.doi.org/10.1787/agr_outlook-2014-en

OECD/Food and Agriculture Organization of the United Nations (2015), OECD-FAO Agricultural Outlook 2015-2024. OECD/FAO. OECD Publishing, Paris. 1 July 2015. 145 p. Available at: http://dx.doi.org/10.1787/agr_outlook-2015-en

OECD-FAO Agricultural Outlook 2015-2024. This tool provides an access to a limited version of the database presented in the OECD-FAO Agricultural Outlook 2015-2024. For most of the commodity markets analyzed in the Outlook, detailed supply and use balances are available, as well as domestic and international commodity prices. Database published July 2015. Available at: http://stats.oecd.org/viewhtml.aspx?QueryId=66511&vh=0000&vf=0&l&il=&lang=en

Published GAIN Reports. USDA Foreign Agricultural Service (FAS) – Global Agricultural Information Network (GAIN). Available at: http://gain.fas.usda.gov/Recent%20GAIN%20Publications/Forms/AllItems.aspx?View=%7bCE460CDC-

9581-4832-A97A-840CC53E9D68%7d&FolderCTID=0x012001
Westcott P. & Trostle R. (2014) USDA Agricultural Projections to 2023. Office of the Chief Economist, World Agricultural Outlook Board, U.S. Department of Agriculture. Prepared by the Interagency Agricultural Projections Committee. USDA Agricultural Projections No. OCE-141, 97 pp. Available at: http://www.ers.usda.gov/publications/oce-usda-agricultural-projections/oce141.aspx
Westcott, P. & Hansen, J. (2015) USDA Agricultural Projections to 2024. Office of the Chief Economist, World Agricultural Outlook Board, U.S. Department of Agriculture. Prepared by the Interagency Agricultural Projections Committee. Long-term Projections Report OCE-2015-1, 97 pp. Available at: http://www.ers.usda.gov/publications/oce-usda-agricultural-projections/oce151.aspx
World Agricultural Supply and Demand Estimates Report (WASDE). (2015) Approved by the World Agricultural Outlook Board. WASDE – 545, ISSN: 1554-9089, September 11, 2015. Available at: http://www.usda.gov/oce/commodity/wasde/latest.pdf

Journal of Global Economy Review, Volume 1, № 3, 2015, pp. 81-84.

Non-Corporate Forms of Research and Development of Transnational Companies

KATERYNA NERODA-BEREZKA[24]

Abstract: The article discusses the role of transnational corporations (TNCs) in the internationalization of research activities and their global innovation network development. The article analyzes the external non-corporate forms of organization of research and development (R&D) by transnational companies, including the contracts with research firms, strategic alliances, as well as subcontracting agreements on carrying out research studies.

Keywords: Transnational corporations • Research and development • Global innovation networks • Non-corporate forms of operations

Problem Formulation

In the past two decades, transnational companies have been actively transferring their research activities abroad. This internationalization of R&D takes on new forms and leads to significant evolution of TNC business strategies. The model of innovation activities of transnational corporations is being modified, especially external forms of TNC scientific and research activities are being actively developed, global networks of knowledge creation chains are being formed. A large part of TNC innovation networks is formed by non-corporate forms of operation and formally includes independent research institutions around the world.

Analysis of Research and Publications

Theoretical aspects of innovation activities of transnational companies and the role of knowledge in the development of corporations have become the subject of publications by such leading scholars as J. Dunning, P. Buckley, A. Rugman [1; 2]. For example, John Dunning's eclectic theory considers knowledge to be a key category of benefits of firms' assets and an important factor in their conversion to international corporations [3]. TNC researchers B. Kogut and U. Zander believe that these companies are unique institutions of knowledge creation and transfer across national borders. According to these scientists, national companies are converted into TNCs because of their advantages in creation and use of knowledge and technology [4, p. 417- 426].

N. Foss and T. Pedersen investigated the strategy of technology transfer by transnational companies, they showed the main determinants of this process and the role of forward and backward linkages between the subsidiaries and parent companies in the course of TNC research activities [5 p.p. 340-349]. M. Caisson studied global TNC innovation networks, their institutional arrangement and basic forms of organization. He has concluded that modern multinationals are 'empires based on knowledge'. According to this renowned scholar, the modern theory of internalization must be modified due to extensive development of non-corporate forms of TNC operations, in the organization of cross-border R&D in particular [6, c. 237]. Despite the great attention of researchers to this problem, many issues of TNC foreign R&D activities have not been studied properly yet.

[24] PhD Student, International Finance Department, Institute of International Relations of Taras Shevchenko National University of Kyiv, 36/1 Melnikova str., Kyiv, Ukraine. e-mail: katrin.berezka@mail.ru

The Purpose of the Article is to show the development of non-corporate forms of TNC R&D organizations and their role in shaping global corporate innovation networks; to study the main factors influencing the company's decision to develop the external non-corporate research communication and build partnerships with independent research centers and laboratories; to expand the main forms of such external means of R&D internationalization mechanisms and their role in corporate innovation strategy.

Basic Material Statement

Transnational corporations are among the main subjects of innovation development and research activities. Of 700 world's major institutions classified according to their spending on research and development 98% are multinationals. These 686 TNCs account for nearly half of the world's R&D and 2/3 of the expenditure are carried out in the business sector of the world economy. In 2011 1000 transnational corporations spent 603 billion dollars on R&D. Only 20 largest transnational companies (classified according to R&D volumes) accounted for $153.6 billion on such activities [7].

Development of international production has led to emergence of multinational firms and rapid growth of global corporate innovation networks. These innovation networks are based on complex relations of TNC cooperation with independent firms and internationalization of R&D and innovation [8, p.272]. Development of technological assets, i.e. knowledge, and control of their movement between TNC units is a key task of these global innovation networks.

An important issue is the relationship between internal and external links in the process of building such innovative networks. Internal communication includes only corporate network of innovation entities. External communication links the TNC with regional innovation systems and other corporate innovation clusters. The transition to a new paradigm of TNC innovation is connected with the dynamic growth of external communication and rejection of 'total corporatization' of the process of knowledge creation [9, p.211]. Thus, existence of external relations is a key feature of today's global TNC innovation networks, which distinguishes this process from the previous model of the internationalization of knowledge creation. The more additional partners a TNK involves into its chain of knowledge creation and cooperates with them, the more functionally diverse is their global innovation network.

External relations are based on non-corporate, i.e. contractual relations of TNCs with independent participants of innovation process. These relationships tend to form a system of long-term, stable subcontracting or equal partnership of TNC units with other research institutions in foreign countries.

The increasing dependence on external sources of innovation and knowledge is an important trend in the development of modern scientific research. This is particularly evident in new industries with very rapid change in technology. This increasing role of external forms of relations in knowledge creation is caused by the following factors: increasing R&D costs and complexity of innovation, high risks of large-scale research and development, the need for sophisticated equipment and skilled staff, increased competition in innovation and development of new products and services [10, p.8-12]. In some industries versatility and complexity of research and development are so big that even for large multinational companies it is difficult to maintain a wide range of research for a long time. Developing partnerships with independent institutions and creation of knowledge in cooperation with them in this case are the objective necessity for maintaining the competitiveness of firms.

External mechanism of R&D internationalization also includes several areas of organization of this process:

a) the use of R&D subcontracting with independent companies (offshore outsourcing of research);
b) undertaking agreements of strategic alliances with other TNCs on implementation and coordination of programs of scientific research;
c) agreements on research cooperation with national research centres, institutes and laboratories;
d) the use of various contracts (outsourcing, scientific and technical cooperation, scientific sponsorship, and so on) with universities.

For example, pharmaceutical TNCs previously subcontracted the fundamental research to universities and research centres in industrialized countries. But the 2000s were characterized by including outsourcing and various kinds of contracts and other types of scientific research, even of applied nature. It is estimated that almost a third of their new development of medicines they received on a contractual basis from partner

companies [11, p.p. 210-212].

Very often, TNCs develop long-term cooperation with independent firms in R&D by using non-corporate forms of relations with them. Thus, these subcontractors become an important part of the global innovation network of multinational companies and specialize in individual aspects of knowledge creation.

Strategic alliances are an important mechanism for implementation of external forms of internationalization of TNC research activities. Growth of such alliances between multinational companies has transformed the corporate innovation system into a global network, a kind of 'galaxy', which includes a large number of laboratories, research centres, and R & D departments.

According to G. Dunning and R. Narula these strategic alliances of TNCs indicate the network nature of organization of the knowledge creation mechanism in the internationalization of this process [12, p.130]. A new feature of modern strategic alliances is a non-corporate nature of their relations, that is, contractual forms of cooperation and coordination of research and development. The vast majority of modern alliances to create innovation are based only on non-corporate forms of relations [13, p. 222].

Pharmaceutical TNC *Cell Genesys Technology* has formed a strategic alliance with the Swiss TNC *Novartis*. The US *Human Genome Sciences* for research in the field of genetics has entered into a strategic alliance with *Glaxosmithkline* (US), *Takeda* (Japan), *Schering-plough* (USA), *Sanofi-synthelabo* (France), *Merck* (Germany). Indian companies *TCS, Wipro* and *Infosys* have entered into a strategic alliance with *Ericsson, Nokia* and *IBM* to create innovative products and conduct research on software. Indian pharmaceutical companies *Dr. Reddy Laboratories* and *Ranbaxy* also carry out research and development on the basis of a strategic alliance with renowned *TNK Novo Nordisk, Novartis,* and *Glaxosmithkline* [14, p. 154, 167].

At the same time it is obvious that externalization of R&D has its limits. Firstly, this is linked with the threat of loss of the key benefits of ownership. Dunning paradigm proves the need to keep the main company's innovation and knowledge assets under its full control and restrict their movement around the TNC's corporate affiliate network. And excessive outsourcing can lead to loss of company's secrets and technology or turn the subcontractors into TNC competitors [15, p. 240-241].

Second, the more complex and numerous global network of innovative companies is, the harder it is to manage it effectively. Inclusion of a large number of independent research institutions and companies from different countries into the network can cause linguistic, ethical and purely managerial issues, which also defines the limits of externalization.

Modern TNCs combine the use of both internal and external forms of R&D internationalization. Selection of the mentioned ways of implementing foreign research work by transnational companies, in our view, depends on three groups of related factors, firstly, peculiarities of competitive advantages and international production of TNCs, secondly, technological and competitive conditions of R&D processes, thirdly, with the properties of the technology itself.

Conclusions

Multinational companies are the major subject of innovation at present. They provide the bulk of expenses and investment in research and development in the business sector of the world economy. The internationalization of R&D is taking internal and external forms; the choice of the form is determined by a number of factors that characterize the essence of knowledge (innovation) itself, the competitive position of companies and the role of R&D in the formation of TNC assets' advantages.

The process of creating knowledge by multinational companies is leading to appearance of global network of R&D institutions, which may take the form of polycentric structures or international chains. These networks include both branches and other units under control of transnational corporations and independent companies connected with transnational corporations by non-corporate forms of operation of the latter. Such non-corporate forms of links develop on the basis of subcontracts, i.e. offshore research outsourcing, agreements on strategic alliances in R&D, as well as intensive cooperative ties of TNCs with universities and R&D centers in host countries.

REFERENCES

1. Rugman A. New Theories of the Multinational Enterprise: an Assessment of Internalization Theory / A. Rugman // Bulletin of Economic Research. – 1986. – Vol. 38. – № 2. – P. 101–119.
2. Buckley P., Casson M. Analyzing Foreign Market Entry Strategies: Extending the Internalization Approach / P. Buckley, M. Casson // Journal of International Business Studies. – 1998. – Vol. 29. – № 3. – P. 539–562.
3. Dunning J. The Eclectic Paradigm as an Envelope for Economic and Business Theories of MNE activity / J. Dunning // International Business Review. – 1990. – Vol. 9. – P. 163 – 190.
4. Kogut B., Zander U. Knowledge, Market Failure and the Multinational Enterprise: a Reply / B. Kogut, U. Zander // Journal of International Business Studies. – 1995. – Vol. 26. – № 2. – P. 417–426.
5. Foss N., Pedersen T. Organizing Knowledge Processes in the Multinational Corporation: an Introduction / N. Foss, T. Pedersen // Journal of International Business Studies. – 2004. – Vol. 35. – № 5. – P. 340 – 349.
6. Casson M. Extending Internalization Theory: From the Multinational Enterprise to the Knowledge–Based Empire / M. Casson, K. Dark, M. Azzim Gulamhussen // International Business. – 2009. – № 18. – P. 236–256.
7. Sauter M. The Most Innovative Companies in the World 2012 - 24/7 Wall St. http://247wallst.com/2013/01/10/the-most-innovative-companies-in-the-world-2/#ixzz2I8BeTooH
8. Coe N.M. Global Production Networks: Realizing the Potential / N. M. Coe, P. Dicken, M. Hess // Journal of Economic Geography. – 2008. – Vol. 8. – P. 271 –295.
9. Asheim B. Regional Innovation Systems, Varieties of Capitalisms and Non-local Relations: Challenges from the Globalising Economy / B. Asheim, S. J. Herstad // In R. A. Boschma & R. C. Kloosterman (Eds.), Learning from Clusters: A Critical Asessment for an Economic-Geographical Perspective. Dordrecth: Springer. – 2005 – 345 p.
10. Bronwyn H. The Internationalization of R&D / H. Bronwyn // Maastricht Economic and social Research Institute on Innovation and Technology .UNU-MERIT Working Papers № 2011– 049. – 26 p.
11. Ghauri P. Intellectual Property, Pharmaceutical MNEs and the Developing World / P. Ghauri, P. Rao // Journal of World Business. – 2009. – № 44. – P. 206–215.
12. Dunning J., Narula R. Multinationals and Industrial Competitiveness: A New Agenda / J. Dunning, R. Narula. – Cheltenham and Northampton: Edward Elgar, 2005 – 243 p.
13. Raluca Z. Interfirms Collaboration – the Basis for Interorganizational Innovation / Z. Raluca // Economics and Applied Informatics. – 2010. – Vol. 16. – № 1. – P. 219–224.
14. World Investment Report 2005: Transnational Corporations and the Internationalization of R&D. – Geneva and New York: United Nations, 2005. – 366 p.
15. Casson M. Extending Internalisation Theory: From the Multinational Enterprise to the Knowledge-Based Empire / M. Casson, K. Dark, M. A. Gulamhussen // International Business. – 2009. – № 18. – P.236–256.

1. Assembly decision of TEI of Western Macedonia 18-14 (31) from the 17/09/2014.
2. Assembly decision 6-4/ 24.04.2014 of the Faculty of Economics and Management of TEI of Western Macedonia.
3. Assembly Decision 4/8-04-2014 of Department of Business Administration (Kozani) of TEI of Western Macedonia.

The scope of the Journal covers the following topics:

- Economic Theory
- Macroeconomics
- Microeconomics
- International Economics
- International Finance
- Global and European Economy
- External Economy of European Countries
- European Economic Integration
- Regionalization in European Economic Area
- International Economic Relations
- International Tourism
- International Banking and Services
- International Marketing
- International Business

JGER is an open-access journal.
All submissions should be sent via e-mail to jger@teiwm.gr or to the following mailing address:
Editorial office of the «Journal of Global Economy Review», Department of Business Administration (Kozani), Technological Educational Institute of Western Macedonia, Campus Kastoria, Box 30, 52100 Kastoria, Greece
Tel.: +30 (24670) 87181

ISSN 2241-8873