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Global Portfolio Investments: the Use of Structure and Dynamics Data in Predicting the Instability

PAVLO DZIUBA¹

Abstract: This paper presents the analysis of international portfolio investments during the last 14 years in terms of their ability to bear the forecasting power. Being the most dynamic form of international capital flows, international portfolio flows can rapidly respond to instability and crisis events in the global economy as well as to quickly recover after the instability periods. This ability can be used in forecasting. The second component of international portfolio investments' forecasting power is their structure. The suggested methodology of forecasting is based on a rather evident fact that during the crisis periods the share of investments in equities decreases but before this one can evidently observe the decrease in their growth rates that can be a sign of approaching crisis. The practical use of such methodology still requires identification of a certain method of its use and the availability of specific monthly or quarterly statistical data. A special possible way to introduce such methodology on the basis of a so called risk profile is also presented.

Keywords: International Portfolio Investing • Global Portfolio Assets • International Portfolio Investments in Stocks • International Portfolio Investments in Debt Instruments • International Portfolio Assets Structure • Risk Profile

Introduction

Nowadays international portfolio investment is one of the most dynamic fields in international economics. Moreover, it is the most mobile form of international capital flows being highly liquid and negotiable. The importance of international portfolio flows in international finance in particular and in the global economy in general defines the necessity, urgency and relevancy of this topic exploration, scientific interpretation and research. Another significant point is that international portfolio investments unlike foreign direct investments (FDI) are directly linked to organized financial markets on the one hand, and promote these markets' development on the other. These organized secondary markets favour international portfolio flows to be quickly movable between the markets and thus countries in terms of the global economy and to be highly informative in terms of their pricing and market efficiency support. Portfolio investment flows and their structure can transfer rich information about themselves and financial markets and can bear some predictive features.

Literature review

The study of international diversification of investment portfolios and the resulting international portfolio flows goes back to 1974 on the eve of the introduction of the system of floating exchange rates internationally. The use of different currencies and thus potential profits and losses resulting from exchange rate risks gave birth to actually new direction of research in the field of international finance. This direction was devoted to the exploration of international diversification of investment portfolios from the point of view of an investor thus being a purely microeconomic field. The first paper that proved the benefits of international diversification compared with the purely domestic portfolio investing was published in the

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mentioned year by Bruno Solnik. Using the well-known Markowitz portfolio diversification theory Solnik (1974) showed that internationally diversified portfolio was almost twice (1,7 times) more efficient than the most efficient domestically composed portfolio (Belgian market) and 2,3 times more efficient than domestically composed on US market portfolio.

The mentioned study gave birth to a great deal of research in this field. But all in all these papers can be classified into two groups: the research of international portfolio investments from the point of view of a portfolio and from the point of view of the flows themselves. Since our study is carried out rather in term of flows than in terms of investment portfolio diversification we will only review some relative research of the second group.

For example, Froot and Ramadorai (2001) analyzed the predictive power of international portfolio flows for local equity markets. They found out two potential explanations of such predicting power. The first one is the so called price pressure that arises due to the specific mode of the market and different sentiments. In these terms prices are strongly auto-correlated. The second one is the information pressure that implies certain fundamental factors. They generally confirm the existing idea that cross-border institutional portfolio flows can predict the local equity market future returns. To do this the authors examined a so called close-end fund discount that is a difference between the fund's NAV and its price on NYSE. The study proved that there was a trend following behaviour of flows when they were analyzed in terms of absolute returns, but when relative returns were considered such behaviour was not proved. By relative returns the authors mean the effect of price pressure only.

Froot and Donohue (2002) carried out the similar research for emerging market equity flows. They showed that portfolio flows of institutional investors were highly persistent across countries and individual funds. This is also true for 15 emerging economies with daily auto-correlations being equal to 40 %. In terms of the suggested methodology they decomposed the total portfolio flows persistency into 4 components: own-country, own-fund persistence; own-country, cross-fund persistence; cross-country, own fund persistence; and cross-country, cross-fund persistence. Out of these 40 % only 7-8 % of persistency accounts for own-fund, own-country persistence. It means that domestic flows are relatively less important in terms of general persistency.

Liljebloom and Löflund (2005) studied a single-market example, particularly portfolio inflows to Finnish market where restrictions were removed only in 1993. The study showed that the core barriers to portfolio flows to the Finnish market were the tax-induced problems and potential informational barriers. That's why foreign portfolio investors are significantly tilted to low dividend yield stocks. And they also tend to invest in large cap liquid stocks. The support of significant relationship between capital flows and returns is also provided.

De Santis (2010) empirically studied the conditions of international CAPM and showed that they were confirmed only partially. Verification was carried out on the basis of 23 developed markets and 7 developing markets that in 2001 accounted for 84 % of global equity investments and 71 % of global debt securities investing. The developed regression models proved that investment recipient countries' shares in the global portfolio positively influenced the portfolio flows to these countries. He also calculated special international portfolio elasticity ratios that showed dependence on world market capitalization. They are respectively 0.4 and 0.2 for equities and debt securities. It means that the global equity market is more integrated than the global debt securities market. Sarno, Tsiakas and Ullolah (2014) brought forward the idea that two groups of factors drove global portfolio flows. Common factors are push factors and country specific factors are pull factors. Using the data on flows from the USA to 55 other countries they showed that 80 % of portfolio flows were due to push factors.

Methodology and Results

In the present study we aim to analyze some aspects of international portfolio flows predictive power, particularly connected with their large volumes, high dynamics, mobility, ability to renew after instability and structural changes. The mentioned features, on the other hand, distinguish international portfolio investments from other forms of international capital flows and define their role in a global economy.

Nowadays huge volumes and high dynamics of international portfolio flows development call forth

the global portfolio assets to reach the level of \$ 46.5 trln which is twice as big as the global exports of goods and services and 1.8 times more than the respective level of foreign direct investments (FDI). Moreover this figure is about 60 % of the global GDP (table 1).

Table 1 Some Global Ratios of Real and Financial Sectors, trln. \$

YEAR	Global Portfolio Assets	Global Stock of Outward FDI	Global Exports of Goods and Services	Global GDP
2001	12.719	6.582	7.430	33.087
2002	14.148	6.866	7.838	34.335
2003	19.218	8.731	9.216	38.560
2004	23.485	10.325	11.196	43.412
2005	26.046	10.579	12.588	46.965
2006	33.161	12.756	14.848	50.880
2007	39.307	16.277	17.321	57.328
2008	31.058	15.988	19.794	62.858
2009	37.562	19.326	15.196	59.539
2010	40.635	21.130	18.956	65.217
2011	39.339	21.442	22.386	72.140
2012	43.587	23.304	22.593	73.514
2013	46.606	25.464	23.160	75.593
2014 ¹	46.530			

Notes:

1. The data for 2014 is as of end June 2014.

2. Composed by the author on the basis of the World Bank GDP data, the IMF Coordinated Portfolio Investment Survey global portfolio assets data, UNCTAD World Investment Report (2013) and UNCTAD World Investment Report (2014) global goods and services exports and FDI data.

Rearranging the table 1 data in relative terms (respective ratio growth rates) the high dynamics of global portfolio flows development can be clearly seen (table 2).

Table 2 Some Global Ratios of Real and Financial Sectors, growth rates in %

YEAR	Global Portfolio Assets	Global Stock of Outward FDI	Global Exports of Goods and Services	Global GDP
2002	11.2	4.3	5.5	3.8
2003	35.8	27.2	17.6	12.3
2004	22.2	18.3	21.5	12.6
2005	10.9	2.5	12.4	8.2
2006	27.3	20.6	18.0	8.3
2007	18.5	27.6	16.7	12.7
2008	-21.0	-1.8	14.3	9.6
2009	20.9	20.9	-23.2	-5.3
2010	8.2	9.3	24.7	9.5
2011	-3.2	1.5	18.1	10.6
2012	10.8	8.7	0.9	1.9
2013	6.9	9.3	2.5	2.8
2014 ¹	-0.2			
Total ²	266.4	286.9	211.7	128.5

Notes:

1. The data for 2014 is as of end June 2014.

2. The 'Total' figure is calculated as the last observable ratio of 2013 growth rate against 2001.

3. For visual convenience the years 2008 and 2009 of the global financial and economic crisis are filled in grey.

4. Calculated by the author on the basis of table 1 data.

Table 2 data clearly demonstrate that during the last decade the field of international portfolio investing was developing rather rapidly. During the pre-crisis period the global portfolio asset growth rates exceeded all other ratio growth rates in 2002, 2003, 2004 and 2006 that is 4 of 6 observable years. During the post-crisis period similar situation could be also observed in 2012. Considering the whole period in question, the total volume of outward global portfolio investments grew by 266.4 % that substantially exceeds the respective ratios for global GDP and exports of goods and services.

The year 2011 needs some additional explanations. It was some sort of correction for global economy that was brought about by the following important events. First, there was the EU debt crisis that covered Greece, Ireland and Portugal with some other countries like Italy and Spain being in question. Second, US sovereign credit rating was reduced by S&P for the first time since the Second World War. Third, the earthquake in Japan brought about the total losses of more than 200 bln. dollars. Fourth, there was the extreme increase in fuel prices. And fifth, the US economy demonstrated low growth rates. The upward trend of the global economy development seemed to have been outlined after 2009 but the mentioned events altered it and some negative dynamics could then be observed. Though at the beginning of the year, some experts considered all these to be the second wave of the previous 2008-2009 global crisis.

International portfolio investments are able to respond to instability rather quickly as well as to recover rapidly in the post-volatility periods. They are the most mobile form of international capital flows. Such mobility is mostly explained by their high liquidity and marketability. By marketability we mean the ability of a security to be freely traded on the open secondary market thus being generally considered as a fairly priced. This feature underlies the IMF (2009) methodology of international portfolio investment identification while composing the balance of payments or calculating a country international investment position. Following this methodology, international investments can be considered as portfolio when they are made in such assets that have an active secondary market. It means that these assets are freely turned over on the secondary market that forms the system of their market pricing bringing about their liquidity increase.

Analyzing the data in table 2, one should pay attention that in a crisis 2008 the global volume of international portfolio assets decreased by 21 %, while the real sector dynamics had to some extent a lagging effect since the figures of global goods and services exports as well as the global GDP continued to increase – by 14.3 % and 9.6 % respectively. The FDI volumes also decreased but with much lower rates – by 1.8 % only. These figures clearly demonstrate that portfolio investments responded to the crisis very quickly². In 2009 the crisis was still going on (its peak was in February) while the portfolio investments reached rather high growth rates at the level of 20.9 % as of the year end. The real sector lagging brought about its decrease only in 2009.

International portfolio investments have substantial forecasting and indicative properties in terms of foreseeing the high volatility and instability on international financial markets³. These forecasting properties can be explained by portfolio assets' structure and its change. By the functional criterion the main structural elements of portfolio investments include investments in equity securities and investments in debt securities. From the point of view of financial theory debt securities are risk-free⁴. Even if a certain way of matching of different risk estimation systems could be found debt securities would obviously appear much less risky than stocks. Equities are considered to be risky securities since their future cash flows on maturity are unknown. That's why to our mind the principal idea of these components of international portfolio flows interrelation can be explained by the general risk profile that has been shaped in a global financial system on any given date or / and by the total conditional risk tolerance level of all international investors. The analytical data regarding the global portfolio assets structure is presented in table 3.

² For the completeness of our scientific analysis we should mention, that the crisis on world financial markets was provoked by the US mortgage crisis and started in November 2007 when the highest (for that time) level of the world equity market capitalization was reached at the level of \$63.4 trln.. In February 2009 this figure reached its minimum level of 28.8 trln.dollars.

³ In a more wide sense – even in a real sector.

⁴ The default risk is obviously ignored here. Nevertheless, for the evaluation of default risks the specific system of rating estimates is used. This system has been elaborated and is nowadays utilized by international rating agencies such as Fitch, Moody's, Standard & Poor's and others.

Table 3 Global Portfolio Assets Structure Dynamics, weights in %

YEAR	Equities	Debt Securities	YEAR	Equities	Debt Securities
2001	40.9	59.1	2008	31.8	68.2
2002	34.0	66.0	2009	36.6	63.4
2003	36.5	63.5	2010	38.4	61.6
2004	37.4	62.6	2011	36.6	63.4
2005	40.8	59.2	2012	38.9	61.1
2006	43.1	56.9	2013	42.7	57.3
2007	43.8	56.2	2014	44.7	55.3

Notes:

1. The data for 2014 is as of end June 2014.

2. Calculated by the author on the basis of the IMF Coordinated Portfolio Investment Survey.

Risk profile is in our opinion a special category required to carry out scientific and theoretical analysis of portfolio investments and in terms of the underlying process it is the system of relations that appears and develops in the process of securities demand formation by buyers (mostly – investors) and their supply formation by sellers (mostly – issuers and intermediaries, sometimes – other investors). These relations bring about the certain defined at any taken time moment (static) relation between risk and return of not only separate securities traded, but also of investment portfolios and financial markets as a whole, as well as risk-free rate (rates in case of different countries) level and the total investors' risk tolerance level.

In the present study the risk profile should be regarded at the level of the global economy. In the most general understanding it defines the primary structure of global portfolio assets – the relation between equities and debt. The upstream dynamics of global economy and international financial market development during the pre-crisis period caused the establishing of a highly favourable risk profile that, in turn, brought about the permanent increase in global portfolio investments volumes and, what is even more important, the substantial increase in equities share. This share steadily grew for 5 years – from 2002 till 2007 reaching its highest level of 43.8 % (table 3)⁵. This, on the other hand, means that investors were ready to bear risks and positively estimated the market conditions, had favourable expectations.

During the crisis period the structure of international portfolio assets also responded to instability rather rapidly. The share of equities quickly decreased to 31.8 % in 2008 but soon demonstrated growth up to 36.6 % in 2009. But the most important issue is that on the crisis eve the equities share growth rates began to decrease. It proves the indicative and forecasting feature of international portfolio investments (figure 1).

Before the crisis year 2008 when the equity share in global portfolio assets decreased by 27.4 %; this ratio growth rates evidently diminished – from 9.1 % in 2005 to 5.6 % and 1.6 % in 2006 and 2007 respectively (fig.1). To our mind this was the evidence of the upcoming crisis. In terms of forecasting such slowdown can be an indicator of crisis. But in order to use this methodology in practice we need another time series at least monthly or quarterly data.

Conclusions

International portfolio investing is a highly dynamic field of international financial system. It's the most mobile form of international capital flows. The huge volumes of global portfolio assets during the last decade exceeded most other respective ratios of financial sector and real sector. International portfolio investments have two important features that can be used under a newly proposed methodology of financial market instability forecasting. First, the ability of portfolio flows to rapidly respond to instability and crisis events in the global economy, as well as their ability to quickly recover after the instability periods. Such responses, as well as recovery signs, can be used to forecast instability or decreases in volatility. Second,

⁵ We do not consider investments in debt securities since they are the complete reverse of investments in stocks. Most conclusions for stocks can be reversely applied to debt securities investing.

the structure of portfolio investments can be used in forecasting. During the crisis periods the share of investments in equities decreases but before this one can evidently observe the decrease in their growth rates that can be a sign of approaching crisis. Such structural analysis implies substantial indicative and forecasting power of international portfolio flows.

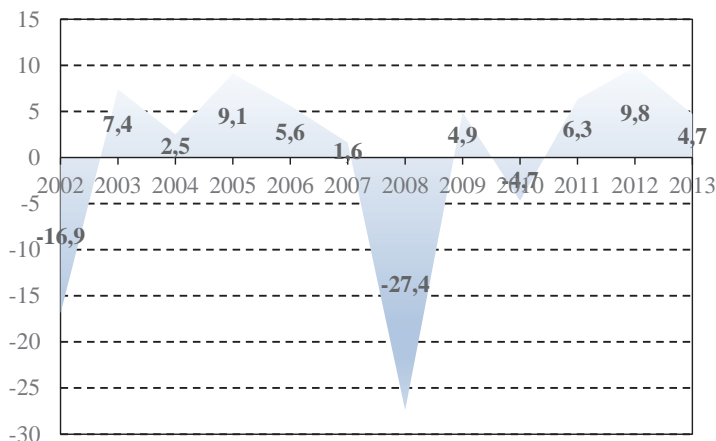


Figure 1 Share of Global Portfolio Assets in Equities Growth Rates, in %
 Note: calculated and composed by the author on the basis of table 3 data.

The suggested methodology still needs much to be improved. The basic methods are still not defined as that requires the availability of the specific statistical data. To our mind yearly assets and liabilities data is not the most relative. Monthly or at least quarterly statistics would be much more appropriate for this purpose. One more issue to be solved is the quantitative definition of a special ratio or probably some other quantitative estimates based on portfolio assets (flows) that witness the upcoming instability. One possible way to make such estimates can be grounded on a suggested methodological issue of risk profile. The calculation of a special ratio reflecting risk profile should be carried out not only on the basis of risk and return, but must also include the risk-free rate level and the total investors' risk tolerance level. In terms of international investing the risk profile should be regarded at the level of the global economy.

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Mechanisms for Attracting Private Investment in Industry: Ukrainian Context

NATALIA DEMCHUK⁶

Abstract: This paper analyzes the regional investment guarantee system, which is to establish the following elements: guarantee mechanisms; agents that implement a guarantee mechanism; the nature and source of resources, forms of guarantees. Each vertical connection of the system reflects private functioning mechanism of efficiently separated (depending on the nature of resources) guarantee agents; and each horizontal connection shows private mechanism of interaction of agents on the use of available resources at their disposal. Elements of regional investment guarantee system can be realized through the establishment of non-governmental and regional mixed insurance agencies to protect from regional investment risks, the state agency with investment risk insurance, and regional warranty mortgage fund. The system is intended to include all available at the regional level mechanisms to guarantee investment, attracting the most complete range of agents possessing a wide variety of resources with different sources of formation; equal opportunities to participate in ensuring investment for both domestic – public and private, and foreign guarantee agents; equal rights to access to different resources and agents to ensure domestic investors, as well as equal access to domestic and foreign investors to ensure resources created with public funds and public property and assets of the regional level; possibility of differentiation of guarantees provided to investors.

Keywords: Regional investment guarantee system • Investment funds • Investment guarantee

Introduction

Active and serious participation of the population in investing activities is an essential feature of a market economy in developed countries. The role of different social groups in investment decisions in this country has changed. For the Soviet population did not practically have any savings motive (in economic terms). What is called savings was, in fact, "the increase in cash balances." The interest rate was not the motive to contribute to the savings bank, thus the money was accumulated to increase future consumption.

The major reason for such behavior was, perhaps, the suppression of private economic initiative through propaganda, leading to atrophy of people's psychological inclination to save. Probably, the Soviet version of the "welfare state", whose goal was to provide confidence in the future, played the significant role. This "confidence" naturally accustomed people to focus on the present not the future. General poverty of population was also important. Usually less wealthy people tend to consume a larger portion of their income than the wealthy. On the other hand, most of the investment decisions in the society (i.e., decisions about the direction of resources to the production of capital goods) were made by relatively small elite, whose temporary benefits were relatively low.

The problem of mechanisms to attract private investment in the industry has been the focus of Ukrainian and foreign scientists and economists. John. Maynard Keynes, J. Fischer, L.T. Hayerashyh, L.J. Hitman, M.D. Junks, V. Sharp, J.R. Hiks, M. Porter have done the fundamental economic and theoretical analysis of private investment in a market. In the context of market relations, this problem was developed by many Ukrainian scholars, like V.P. Alexandrov, A. Alymov, A. Amosha, L.M. Bezchasny, I.A. Blanc, O.D. Vasylyk, A.V. Gavryliuk, M.S. Herasymchuk, A.I. Dacy, M.P. Denisenko, O.A. Dzhusov, S.I.

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Results

The revolution that took place in the late 1980 and early 1990's led to two important consequences. First, the role of temporary benefits for people, who did not belong to the highest ruling elite in investment decisions, has increased dramatically as a result of privatization. It increased in decisions concerning support or "consuming" of previously accumulated capital.

One can compare the role of directors in the old quasi state system and the role of the same directors who retained their positions in the new quasi joint stock companies. In the old system the desire to maximize current consumption at the expense of accumulation was rather rigidly limited by special mechanisms. In the new system this desire remained, however, old restrictions disappeared, but old enterprises did not become real objects of private property.

Naturally, the traditional orientation of the majority of population on the present at the expense of the future "effective" social time preference rate could not but increase.

Second, the current ruling elite is, to some extent, dependent on the democratic election process. In the old oligarchic system positions rulers were apparently more stable: they were quasi-owners of the ruling powers. The new ruling system increasingly began to turn into temporary "guardians" of the assets which did not belong to anyone. This led changing their motivation for increasing current consumption (theirs and their voters') to the detriment of the accumulation of national capital. In addition, there was a change of social elite: people who previously belonged to the lower social strata have begun to play an important role in making the decisions of the authorities.

Changing the dominant ideology. The dominant ideology in the Soviet Union made a special emphasis on the importance of savings over consumption (doctrine of pre-emptive means of production compared to the production of consumer goods). This ideological motive played a significant role when making investment decisions by ruling elite.

In contrast to that in late 1990s Ukraine changed the ruling ideology to maximizing current consumption. It can be considered as a reaction to the forced under-consumption that occurred in the Soviet period. In addition, the behaviour of the population of Ukraine is largely focused on consumption standards developed in Western countries, despite the fact that the size of the accumulated capital in this country is incomparably lower than in developed countries.

Ukrainian households have 28% of national savings. Reducing them is largely due to high inflation in the past and distrust in the national currency.

A considerable part of household savings is in foreign currency. These resources are in fact withdrawn from economic circulation and the banking system, they are not transformed into financial investment and capital formation. The increase in the propensity to save in foreign currency increases the investment crisis and promotes the dollarization of the economy.

The demand of the population is formed as a credit with negative (for creditors) interest rate that the population of Ukraine gives to another state, i.e. in the form of savings in the existing foreign currency that are not in banks, but on the hands of the people.

People's savings are aggregate demand and financial source of investment. However, the savings must be balanced with opportunities to cover current and future demand, which is achieved by current production and the availability of financial products in the stock market. Reforms of the early 1990s in Ukraine were aimed to achieve equilibrium in the money market, but provoked hyperinflation and devalued people's savings. Hyperinflation affected investment resources not only because it eliminated the savings, but also led to the decline in output and real incomes and reduced the ability and caused public reluctance to save. Another consequence of hyperinflation was the depreciation of current assets of enterprises combined with falling production leading to an overall decrease of financial resources.

Household income plays a dual role in stimulating economic development, as a potential investment resource and as a factor of aggregate demand. Particularly relevant question is how to increase income during the fall of production. Lowering the bank rate leads to the equalization of the rate of return in the

financial and real sectors. At a refinancing rate of 24% the process of overflow of financial resources into the real economy begins and thus income grows. The process we could see in 1998 before the August crisis.

The instability of the financial system gave another adverse effect: It is 'dollarization' of savings in the form of available currency. In practice this means that Ukraine's population prefers to invest in US currency to the investor's expected negative rate (including annual 2-3% rate of inflation in the United States). But these "bonds" are the liquid loans at any time and in any place. Savings by people are considered a major source of investment worldwide. In recent years numerous and diverse attempts to attract savings of Ukrainian citizens to invest in the real economy have been made. However, some experts believe that it is enough to introduce a good interest rate in a bank that will invest people's savings into production and economic growth will start. In practice the process is much more complicated. Let's consider the savings accumulated at Oschadny bank, they are spent mostly on financing government deficits, smaller part goes into the banking system for short-term investment, thus, they are not used as savings.

On the contrary, the experience of leading countries, including the United States, has a high investment value of savings. In the US, it has about 70% of all financial assets. Their share is almost 5 times as big as the government share and the share of commercial banks.

Personal savings in the postwar period played a crucial role in the investment process. International experience shows that there is a very clear correlation between the share of savings income and economic growth. The most impressive growth rates in the 1960-1980's were reached by the countries with the highest percentage of savings in personal income: Japan – 20%, Germany, France, and Italy – 11-12%. Of course, such a high level of savings is typical only for developed countries with high living standards.

In this situation in Ukraine, there is no real possibility of direct savings as productive investment in sufficient amounts to restore sustainable economic growth. However, there are several important objectives in terms of macroeconomic circumstances that can positively influence the situation. This is not only direct public investment, but measures to improve welfare and attract resources for economic growth, as it will increase responsibility of enterprises for efficient production, their activity and competition to attract investment.

Measures aimed at supporting the standard of living should be accompanied by measures supporting banks and other financial institutions that deal with savings. This support from the state could be achieved by providing tax incentives and state guarantees to financial institutions that work with individual investors. Another equally effective measure is formed by forming a real system of private insurance premiums.

However, today in Ukraine, the focus on savings as a source of investment for economic development is problematic enough. It should be recognized that there are some opportunities, but beyond that there are certain obstacles. These and other factors are determined by complex: the balance of income and expenditures, which determine the possibility of savings, availability of favourable areas for public investment, investment protection, etc. Nowadays the first among a number of factors that impede investing incomes is the low income of the population. Low income means modest savings and correspondingly small investment. Secondly, there are the high costs along with low incomes. In the future expenditure on payment of essential services will increase (rent, utilities, electricity, transportation, etc.) individuals' income taxes are increasing and will increase; Thirdly, public investment fund options are limited. The stock market in Ukraine is not developed. And the general public is not ready to be participants in this market. It requires reliable intermediaries lacking in this country. Fourth, unfortunately, popular participation and investment banking are connected with a high degree of risk and investment losses.

Measures of state influence on the motivation of private investors need to develop within the investment policy and based on clear interaction between the Center and the regions of Ukraine, on equal property and financial responsibility for the decisions and commitments. With stable and flexible enough legislation these measures should not only regulate the process of private investment, but also promote favourable conditions that lead to sustainable producers in need of investment. So it is unacceptable to consider and solve problems of stimulating private investment apart from stimulating business activity, especially production, regardless of ownership. Currently, the investment structure has mixed ownership share that is simultaneously performed by both private and public investment.

The features of Ukrainian economy (high proportion of capital intensive and other industries unattractive for private investors, problems in industrial-productive complex and many others) do not allow us to predict rapid succession of macroeconomic proportions. This will inevitably require universal means

by which we can successfully regulate both public and private investment.

To revitalize private investment it is necessary, above all, to introduce a set of measures of general nature, aimed, for example, to more effectively stimulate competition in the manufacturing sector by limiting monopoly, creating favourable conditions for development of alternative forms.

Urgent regulatory measures in pricing are necessary, too. In a market economy, creation of financial-industrial groups has undoubtedly a positive impact on the process of macroeconomic stabilization and capacity building for economic growth and to increase the stability of banking system. For macroeconomic dynamics important increase in the degree of concentration of financial resources is achieved in this case, in the production. At the same time, the manufacturing sector is potentially the most stable base for investment in various forms of capital financial institutions.

Contractual savings institutions (CSI) They mobilize the bulk of their funds through agreed regular contributions of participants (individuals) carried out over a long period to achieve any long-term goal (providing retirement, life insurance, buying a home) CSI can invest much more long-term investment than any other financial institutions. Among CSI, public and private insurance companies and pension funds received most distribution in developed countries. In developed countries they are the main investors in stocks and bonds of corporations and among the largest buyers of government securities. Thus, the total investment managed by insurance companies in Europe, USA and Japan reaches trillions of dollars. Insurance system provides a quarter of long-term investment. At the same time, development of these institutions helps to solve critical problems in the public system of social insurance and pensions.

Other CSIs are much less important. These are different kinds of savings institutions designed to save depositors sufficient amounts for housing, expensive durable goods, for tuition, etc. In fact, the investment potential of the insurance companies is lower than quantitative assessments of their own and borrowed funds, which is due to the peculiarities of the structure of insurance services in Ukraine.

First, term life insurance does not play a significant role in the present operations of insurance companies. Meanwhile, the reserve funds of life insurance due to the long duration of the contract and, therefore, having best opportunities of attracted financial resources for long-term investment, is the main and most important source of investment for insurance companies in foreign countries.

Second, since the early 90's, short-term life insurance (so-called salary insurance), which is accompanied by a decrease in the tax base of enterprises has become widespread. At its core, it is not an insurance transaction involved in the circulation of financial resources, in principle, it cannot be used for long-term investments due to the small time gap between the contribution and insurance claims.

The most common form of contractual savings institutions in all countries are pension funds. Pension payments are the most widespread and most long-term savings, they cover almost the entire working population, and the average time of savings is approximately 15 years. For Ukraine to develop a system of private pension funds (NPF) is especially important. First, with the low standard of living and the crisis of the state pension system, retirement savings are the only attractive type in terms of real utility and at the same time sufficiently accessible to broad groups. Second, in an environment where not only the size of the state pension, but wages in many areas are below the subsistence minimum, solving the pension problem by reducing pensions and increasing pension contributions from wages as provided in the present, is simply impossible.

Private pension funds are the most realistic form of attracting savings in the capital market. Their development is essential not only to mobilize long-term investment of resources, but also to alleviate social problems of the disabled or retired and to reduce the burden on the State budget. Therefore, development of an effective mechanism of regulation and control of these institutions is a very important task.

From an organizational point of view, the economy is now the most suited for the so-called fully funded pension funds. In this scheme benefits are paid as a single amount when you reach a certain age and strictly within the accumulated contributions of the recipient (or his employer) plus interest. This scheme is the easiest to understand; and based on these principles pension funds are simpler in management and monitoring, at the same time they provide the best mobilization of long-term investment capital.

To attract funds of the widest possible range of people, even with low-income, to non-government pension funds, it is useful to introduce additional mechanisms to encourage relatively high interest rates, related financial services (counselling, credit, investment management), as well as giving the right to make investment decisions to individuals engaged in contributions, etc.

There are also special investment institutions for bringing savings to capital markets in developed countries. They have different names (investment and mutual funds), but, in fact, are used to transform savings into investment through securities transactions. The activities of investment funds as an institution that works with the people are strictly regulated in all countries in order to maximize investment risk reduction. At the same time, they are not bound by many banking restrictions (the ratio of equity and debt capital, reserves and volumes, etc.) As a result the average income of their shareholders is generally higher than the interest rate on bank deposits, which allows them to compete with the banking sector in attracting savings.

As private equity funds (PIF) appeared to be unsustainable it was decided to reorganize them in some form by the end of this year. This is considered to be the most promising way to convert private equity funds into mutual funds. Dividends in this form of the fund are paid, and possible income (or loss) of the depositor is determined by the difference between the purchase price of the unit and its market value at the time of resale, on which the fund is obliged to buy a share at the request of the investor. However, the prospects of this new investment institution do not seem optimistic.

First, the total investment potential of the population will remain low in the near future, due to the low overall level of average income, predominance of temporary income in its structure and distrust of population to non-government financial institutions in general and to investment funds in particular. Secondly, as already mentioned, attractiveness of investment institutions for the population in developed countries is determined by a higher level of their profitability. Obviously, in Ukraine mutual funds will not have this advantage. In addition, according to experts, although investors of mutual funds *de jure* do not pay property tax, *de facto* they are subject to this type of tax, as the controlling company must pay this tax on the assets of the fund. Moreover, the income of the investors may be also reduced due to the lack of a mechanism determining the redemption price of the unit, which actually is appointed by the fund.

Only a few commercial banks, which gained extensive experience in securities, have financial opportunities for redemption of voucher investment funds' shares.

Thus, we can conclude that in the near future the funds will not only be able to compete with the banking system in attracting funds of the population, but on the contrary, the only way to conserve and develop them is to "grow" organizationally in the system as subsidiaries. These are the perspectives of different organizational forms of financial sector resource mobilization to revive the investment process. As for stimulating investment directions, it should be borne in mind that after overcoming political instability and macroeconomic stabilization investment placing factors will move to the level of specific regions. Therefore, the leading role in the development of attracting investment programmes should belong to local authorities.

Investment is depressed in Ukraine not due to lack of investment resources in the economy and the reluctance of owners to direct these funds in tangible investment, but mainly because of the lack of political stability in Ukraine (to which investment and stock market react particularly strong) and because of incomplete institutional reforms. The main reason why private capital is not invested in the domestic economy and is flowing abroad is as follows. The state is known to motivate foreign and domestic owners of capital in various ways.

First, numerous benefits of tax exemption, up to national taxes, for quite long periods are provided for foreign capital owners (potential investors), while domestic resources' owners (potential investors) do not have this advantage.

Second, private foreign investors using all these benefits, offer their own investment projects that do not meet the interests of the state and their effect is reduced to zero, while domestic investors *ceteris paribus* would put their money into investment projects that would actually bring benefits to them and the state. Third, most private capital in Ukraine is criminal in nature and the owners are looking for the easiest way to removing them from the shady business, and if domestic capital owners had incentives similar to foreign investors' ones, the Ukrainian private capital would not leak abroad at such a large scale, and the economy would be invested in Ukraine.

This view may seem in some sense "anti-state", but the state government and some of its politicians themselves admit that the existing legislation is far from perfect and it promotes the outflow of funds in shady business. Why does not the Government use their own mistakes in their favour and create a motivational mechanism for the owners of the capital? The only prerequisite for the establishment of such

a mechanism is to revise and correct weaknesses in the current legislation. Only on the basis of strong and well-considered legislation the necessary mechanism of motivation can be created and shadow capital will benefit the regional economy and the state as a whole.

Fourth, all countries with developed market economies tend to mobilize all their own investment funds primarily and foreign investment funds are involved secondarily. What should Ukrainian Government do to mobilize domestic private capital? In our view, this task should be resolved gradually. The first step is to revise public investment priorities which should primarily correspond to national interests. The second step is to amend existing legislation and especially its provisions governing economic activities and relationship between the state and private equity. In other words, those gaps and errors through which capital flows in shady business should be completely eliminated in the legislation. The third step is to limit foreign investment in the form of loans that are not favourable to the state. This type of investment does not work for the Ukrainian economy but it gives advantage directly to investors. These types include investment projects on construction of foreign radioactive waste dumps in Ukraine (such investment agreements were signed between foreign countries and the former Soviet Union, but after the collapse of the Union in Ukraine and some former Soviet republics there are still such dumps, though dormant). The fourth step is to develop favourable Ukrainian investment projects and offer them to foreign investors.

These measures may correct investment situation in Ukraine to some extent and have a positive impact on the economy as a whole. When building a regional mechanism of state regulation of investment processes in industrial plants it is necessary to elaborate its three main aspects: first, measures of direct action (financial, administrative, etc.); secondly, information support; thirdly, investment guarantees.

Currently, the last two aspects play the major role. Formation of regional information centers and their coordination with the Ukrainian, allows to evaluate investment projects, to make choices among alternative directions of investing, as well as to general economic and, if necessary, demographic and environmental monitoring in the region.

But without development and implementation of effective strategic investment policy based on the selection of priority areas of investment the efficiency is significantly reduced; as evidenced by state finance, production capacity, production dynamics of major products, and social development in the country. The major aim of this work in Ukraine is creating the investment climate by improving the regulatory framework, developing regional investment programmes and selecting investment projects, expanding forms of foreign investment (investment agreements, joint production, export credits), system of guarantees, benefits and insurance investment of mortgage operations, leasing; improving information and guidance to support investment projects and programmes, forming database of investment projects, marketing research; cooperation with international financial institutions and leasing companies; involvement of media (including the Internet), publication of the investment rating of the state and enterprises operating on its territory.

The main goal of the state investment policy is to create favourable investment climate, which would promote the growth of investment activity, i.e. large-scale involvement of private domestic investors in the investment process and attracting foreign investment into fixed assets. One of the main directions of the national investment policy should be to create a national system of private investment guarantee as an effective means of protection against regional investment risks. It should provide a differentiated approach (based on regional differences in the level of investment risk), protection of private investment, and additional incentives for the implementation of the priorities of investment in the regions. To achieve improvement in this area now it is important to develop a systemic approach to solving the problem with subsequent regulatory support in all directions. The investment guarantee system should provide:

- all investment guarantee mechanisms available at the regional level, attracting the most complete range of agents having qualitatively different financial resources;
- equal opportunities to participate in ensuring investment guarantee for both domestic (public and private) and foreign agents;
- equal rights of access to different resources and insurance agents (both internal and external) for domestic investors, as well as equal access for domestic and foreign investors to insurance resources created with public funds and public property and assets at the regional level;
- regulatory and methodological regulation of domestic and foreign investors' access to insurance

resources created with public funds and property, while maximizing information-methodological and organizational support for investors' access to insurance resources generated by other internal and external sources;

- possibility of differentiation of guarantees provided to investors, depending on the level of non-profit regional risks and commercial risks of organizational innovation and for projects related to the stimulated areas of investment.

The structure of a regional investment guarantee system is shown in Figure 1. It is built on the principle of allocation of these core elements: guarantee mechanism; agents that implement the guarantee mechanism; nature and sources of the used resources, and forms of the guarantee supply.

Each vertical relationship reflects a separate mechanism of efficient functioning of individual guarantee agents depending on the nature of their resources, and each horizontal reflects a separate mechanism of interaction of agents based on the use of resources at their disposal.

The use of these mechanisms involves the determination of the status of each of the agents, their regulations (education regulations, use and completeness of the available resources at their disposal, combining their resources with other agents), procedures addressed by the receipt of guarantees (requirements for the composition and content to the submitted documents).

Conclusions

The combination of all these elements form the information and legal framework of the national system of investment guarantee of non-commercial risks that currently remains incomplete. Therefore, the diagram can be seen as a convenient reference for organizing sequential filling this field with regulations, guidelines and information materials, search and use of productive analogies, compliance of realized methodological approach unity.

Most regions of Ukraine with low investment attractiveness do not possess sufficient liquid assets to form a real mortgage fund investment for protection of regional risks. Thus, in our opinion, the most promising investment guarantee mechanism is mixed, that is, one that involves the simultaneous participation of public authorities at national and regional level as guarantee agents. For these regions certain quotas should be created or selected within the National Fund of State Guarantees which they will allow them to competitively fund their local warranty-mortgage fund from state resources

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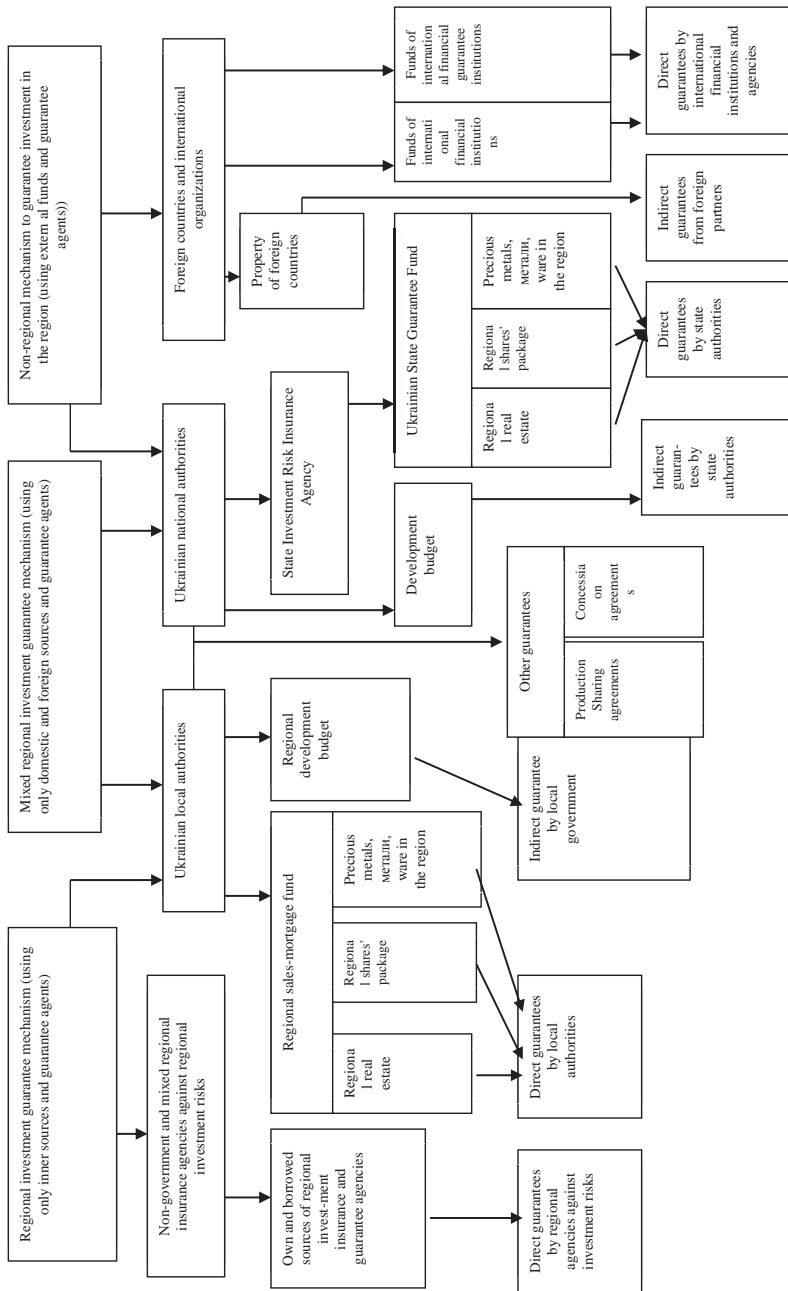


Figure 1. Private investment guarantee at the regional level

Formalization of Sustainability Assessment

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Abstract: The current status of sustainability paradigm formalization is analyzed, a generalized mathematical model of its description is proposed, which reflects main sustainability components and the degree of their influence and interrelation. Necessity of all structural levels coverage by the model is underlined. Based on joint implementation projects provided by Kyoto Protocol demonstrate its efficiency of institutional mechanisms of anthropogenic impact decrease in relation to the environmental component of sustainable development. Based on activities performed in this direction generalized information related to the most problematic elements which are revealed during development and implementation of different projects oriented to decrease negative impact of climate change is given.

Keywords: Sustainable development • Environment • Mathematical model • Social component • Economy component • Climate change • Kyoto protocol • Greenhouse gases • Model structural levels • Determination • Verification

Introduction

Current evolutionary stage is marked with increasing challenges of sustainable global development which are more and more linked with environment degradation and exhaustion of natural resources. It is evident that these processes create negative impact on socio-economic development not only for separate countries or regions but for the global community.

Appearance of sustainability concept itself in generalized form was declared in the report “Our Common Future” by UN Commission on Environment and Development in 1987 and was originated by understanding the necessity to insure balanced development of the society with consideration of ecological, economic and social components (UNED, 1987). Only such balanced approach which considers these main global components of societal development can lead to main objective of sustainability concept realization which is oriented on ensuring nowadays needs without excessive harm to those of future generations.

Last decades have highlighted the biggest modern environmental challenges which are linked with negative processes in climate change. As stated at the 4th Conference of European Ministers of Environment in 1998 the climate change is becoming the “biggest ecological challenge for sustainable development, population health and world future prosperity” (UN/ECE, 1998). This conclusion was strongly supported by global risk assessment annually reported by World Economic Forum and where climate change risk is constantly positioned among top of them (WEC, 2010).

The concern of international community of climate change negative processes is gradually growing. That has been reflected in chain of global congresses, forums, conferences, seminars and other public events devoted to this subject. Probably most prominent among them was UN Conference on Environment and Development held in Rio de Janeiro in 1992 which was followed by similar conferences called Rio +5, Rio + 10, Rio + 20 (UNCED, 1992, 1997, 2002, 2012).

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Decisions taken by these large scale international events were oriented, on the one hand, to format sustainability general concept, to determine main directions of action, its principles and institutional structures but on the other hand based on proposed regulated mechanisms and voluntary taken obligations to specify regional and national guidelines of climate change mitigation measures.

Measures provided mainly within UN Framework Convention on Climate Change (UNFCCC, 1992) as well as regulatory and voluntary greenhouse gases mitigation schemes (Fedorov/Averchenkov, 2011) have led to some positive results in decreasing negative anthropogenic impact on climate change processes.

Along with some positive trends in climate degradation of last decades their insufficiency for sustainable development principle realization has become evident. Summarizing the results the Resolution of UN General Assembly “Rio + 20” stated that evident progress gained during 20 years after initial Rio conference didn’t assure sustainable development principles fulfillment, especially in its ecological component (UN, 2012). Similar conclusion has been made by European Ecological Agency in summarizing report “Environment for Europe – 2010” (Adams, 2006).

It was also stressed that complexity of all influential factors in basic three dimensions with their interrelation was underestimated that clearly indicates the necessity of developing more sophisticated and holistic models of sustainability development to facilitate combating efforts of climate change mitigation.

General objective is to analyze sustainable development concept basic elements and its overall model, to propose mathematical approach of this model description and to review current status of sustainability concept implementation in realities of Ukrainian economy.

Basic Results of the Research

Sustainability concept basics. In its essence sustainability concept appearance lies in an attempt to find a compromise between needs in further global economic growth and social development and limitation of the necessary natural resources. Basic conceptual elements of global model of sustainable development were grounded in the activity of the UN Commission on Environment and Development headed by Gro Harlem Brundland which was founded in 1983. This conceptual approach was summarized in commission report “Our Common Future” published in 1987.

During last decades the overall model of sustainable development has been gradually enhanced and modernized. But a key issue in a model is invariably linked with the balance of three main components: environmental, social and economic.

But these main components should not be considered separately. Their interaction and interference are essential and should be properly considered in the general sustainability model. Such peculiarity is quite evident since social community is a product of general nature. In its turn economy appeared and is developing inside the social community and actually is one of its material spheres regulated by established mechanisms and rules of goods’ and services’ exchange.

As a practical confirmation of close interrelation between basic components of sustainability generalized results of assessment of climate change on global economy could be used. Such results were presented in the report of UK Commission headed by Nicolas Stern published in 2007 (Stern, 2006). The results received by the Commission demonstrate that depending on climate change scenario type till the end of this century global GDP may suffer at the level 3-5 % with further escalation of this tendency. In any case the close link between climate degradation processes and global economy are strongly confirmed.

The graphical interpretation of the general sustainability model demonstrated in fig.1 by three intersecting circles underlines the interrelation of main model’s elements. In such presentation the principle of sustainable development will be reached only in the area of intersection of all three circles corresponding to ecological, social and economic parts.

The role of any component in such presentation could be described by the size of respective circles when the level of interrelation between different pairs of components could be shown by degree of circles’ intersection.

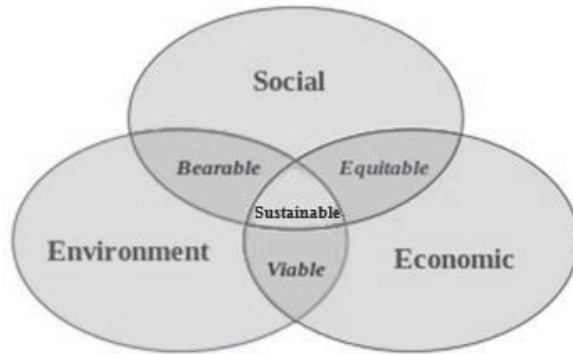


Fig.1. Sustainability model by intersecting circles

Not less important is also temporal dynamics of sustainability components which is quite natural keeping in mind numerous influencing factors' fluctuation. This process could be reflected by respective changes in sizes of circles and their positions. Finally these processes will lead to temporal changes in the size and configuration of intersection zone which corresponds to the level of sustainable development.

One of the major problems in the sustainability model is linked with quantitative evaluation of the sustainability level. Each of main sustainability components should be described by totality of meaningful criteria which sufficiently characterize a certain sphere. Such choice of these criteria is not an easy task because those criteria are developing and changing with our knowledge growth. For example, for economic area GDP per capita, overall level of taxation in a country, volume of credit and debit obligations and their relative figures, etc. are most commonly used as an integrated characteristics.

General situation is more complicated in two other main areas of sustainability. Hence, they include a wide spectrum of very different features which are far less formalized. For social components such parameters as average life expectancy, average time of education, overall level of secondary and high education, gender situation, general level of poverty, level of personal security are among most often used.

From its turn environmental component of sustainability is mostly described by the following aspects as level of utilization of fossil fuels, greenhouse gases emission per capita, level of exhaustion of natural capital, frequency of disasters and epidemics, etc.

The overall situation is becoming more complicated because the parameters inside each component are also interrelated. This creates additional difficulties when formulating quantitative model of sustainable development.

Based on the general concept of sustainable development its main components could be expressed as a functions of respective parameters:

- for ecological component - $Ecol(x_i, t), i = 1, \dots, i;$
- for social component - $Soc(y_j, t), j = 1, \dots, j;$
- for economic component - $Econ(z_k, t), z = 1, \dots, z,$

where x_i, y_j, z_k are parameters characterizing each main component of sustainable development. These parameters in each case should be accompanied by variable t which reflects dependence of each function (1) on time.

Using the functions (1) level of sustainable development in general form could be described by the function (Sus):

$$Sus = Sus[Ecol(x_i, t), Soc(y_j, t), Econ(z_k, t)]. \quad (2)$$

Generalized equation (2) can be used only for description of the current sustainability level at a given period of time t . Criteria of sustainability insurance could be expressed as not decreasing of function Sus . Hence, we can write down as follows:

$$d(\text{Sus})/dt \geq 0. \tag{3}$$

Formula (3) is a basic one since it reflects the main principle of the concept linked with not decreasing current level of sustainability.

One of the main difficulties in quantitative description of sustainability concept on the basis of function (2) lies in essentially different nature of parameters x_i, y_j, z_k , which refer to separate components of that model. Because of that these parameters should be presented in a normalized or relative form in equation (2).

In practice such normalization of parameters is conducted through the system of indexing (Boulanger, 2008). Such approach remarkably simplifies the quantitative approach to assessment of complex equations which contain parameters of different nature. One of the most well-known indices which is quite close to the sustainability concept is UN Human Development Index (UNDP, 2014).

Generally the value of individual factors in such approaches is determined by introduction of weight coefficients, which are estimated on the basis of available data, expert opinion and consensus (Boulanger, 2008). The same approach could be used in further equation (3) detailing.

Most convenient and therefore most widely used form of equation (2) in such cases is algebraic. Based on that equation (3) is unrolling into the following one:

$$d(\text{Sus})/dt = \{d[\text{Ecol}(x_i, t)]/dt + d[\text{Soc}(y_j, t)]/dt + d[\text{Econ}(z_k, t)]/dt\} \geq 0, \tag{4}$$

where derivatives $d[\text{Ecol}(x_i, t)]/dt, d[\text{Soc}(y_j, t)]/dt, d[\text{Econ}(z_k, t)]/dt$ characterize time evolution of sustainability component level.

The main sense of equation (4) is the fact that temporal evolution of overall sustainability level is the algebraic sum of separate component evolutions. Thus, equation (4) strongly simplifies assessment of dynamics of integral sustainability criteria given by formula (2). It should be also mentioned that when functions (1) are also given by algebraic equations formula (4) unrolls further with including derivatives of main sustainability components' separate parameters.

As it was already mentioned the value of main components and their individual parameters in the model can be expressed by weight coefficients. The same approach could be used to consider interrelation between different components and parameters. This probably is most important for the environmental component which occupies a very important portion of the general sustainability level. We should also keep in mind that resources of global ecosystem are limited and the anthropogenic impact is leading to its degradation. Hence, for the environmental component in equation (4) it may lead to appearance of derivative $d[\text{Ecol}(x_i, t)]/dt$ with the minus sign:

$$d[\text{Ecol}(x_i, t)]/dt \leq 0. \tag{5}$$

The given example underlines the importance of grounded approach for weighting coefficient adoption for individual parameters and components of sustainability model in equations (2) and (3).

Based on that equation (4) could be written in a generalized form as follows:

$$d(\text{Sus})/dt = \{W_{ec}d[\text{Ecol}(x_i, t)]/dt + W_{s}d[\text{Soc}(y_j, t)]/dt + W_{en}d[\text{Econ}(z_k, t)]/dt\} \geq 0, \tag{6}$$

where W_{ec}, W_s, W_{en} are generalized weighting coefficients for respective basic components of sustainability model, whereas model itself is given by equation (6).

Quite important is the fact that equation (6) could be equally used for assessment of sustainability level of different strata of the society. It comes from the fact that sustainability concept itself is applicable for any stratum including those specified most commonly: global, regional, national, local and corporate. Considering particulars and specific characteristics of these levels, including relative weight coefficients, the proposed model can be applied for any of these levels of societal hierarchy.

Existence of several layers should be considered in the process of global sustainable development model formation. This is one of the essential points which determine efficiency of sustainability principles' implementation. Probably this is most important for the environmental component of sustainability model

because all global changes in the ecosystem of anthropogenic nature are created and at the same time are exhibited at corporate and local levels passing through all others in accumulating manner.

A good example is anthropogenic impact on climate change which is the main factor of global warming we are facing. This impact is created mainly by aggregated discharge of greenhouse gases from individual enterprises. Existence of several levels in sustainability model could be demonstrated by fig.2.

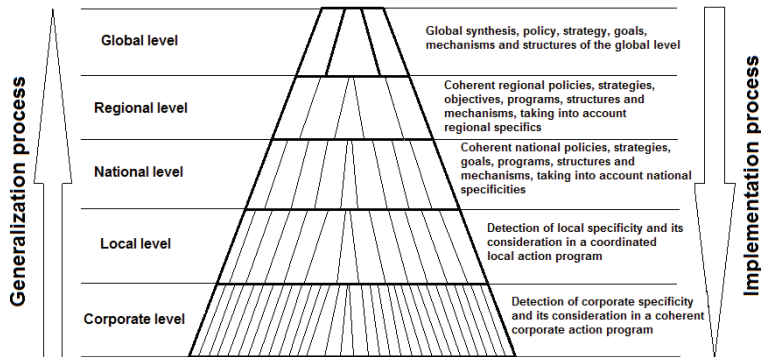


Fig.2. Multi-layer scheme of sustainability global model

With reference to sustainability modelling from the organizational point of view the main function of the upper level is to synthesize all information related to main components of the model and to form general strategy, policy, main purposes, mechanisms and structures for the concept realization on this basis. This main mission is performed now by the United Nations and its specialized Commissions.

Regional and national levels should determine and consider peculiarities and specificities of relative levels when formulating their policies, strategies, objectives, programmes, mechanisms, and institutional structures. European Union and most developed western countries demonstrate most evident examples of such level activity.

Similar to that their specificities should be considered at local and corporate levels when formatting programmes of actions for sustainable development concept realization. The main principle of sustainability concept realization efficiency lies in consistency of actions at all levels of hierarchy demonstrated in fig.2. Such consistency and coordination should be realized not only horizontally within any level of concept implementation. It is important to spread it vertically through all societal levels available.

It is vital for the sustainability concept itself to implement this principle because global policy and strategy formulation should be based on accumulating and synthesizing information received at all lower levels of hierarchy shown in fig.2. On the other hand, the formulated global policy and strategy should be implemented by running through all lower levels down to practical measures at domestic and corporate levels with particular emphasis to their specificities.

UN Framework Convention on Climate Change (UNFCCC) can be demonstrated as a typical example of successful implementation of such principle (UNFCCC, 1992). This consensus-based document adopted internationally is the first environment-oriented treaty of such level which involves the majority of countries. By beginning of 2014, 196 countries had ratified this convention.

In its content the Convention is a political document by signing which countries demonstrate their intention to put resistance actions to climate change negative processes. But this global document does not include any obligations taken by countries to limit their greenhouse gas emission as well as it does not specify any mechanism of action realization. This was determined by Kyoto Protocol to the Convention which includes qualitative obligations of developed countries to decrease greenhouse gases emission (UNFCCC, 1995).

One of the main peculiarities of this Convention on climate change together with Kyoto Protocol is involvement of all main sustainability concept layers shown in fig.2. Being developed and adopted at the global level these documents embrace not only regional and national levels but also cover domestic and corporate levels. The last one is assured by flexible mechanisms of Kyoto Protocol which are based on

environment protection projects oriented to cut down greenhouse gas emission. Such projects have to be implemented at local level directly at enterprises and organizations.

Being located in geographical center of Europe, Ukraine cannot be attributed to the countries with impressive progress in sustainable development concept implementation. According to the UN Human Development Index mentioned above it occupies the 83rd place among 185 countries included in the assessment in 2013 (UNDP, 2014). The conceptual document edited by Paton in 2012 is stating the initial stage of the process of sustainability concept implementation in this country.

Most efficient for Ukraine became participation in flexible mechanisms of greenhouse gas emission decrease proposed by Kyoto Protocol. By the number of Joint Implementation projects provided by one of such mechanisms the country occupies a top position among states which are allowed to implement such projects with about 40 % share (fig.3). Russia has also implemented quite a big number of such projects. Other East-European countries with economy in transition follow these two leaders with remarkable lag.

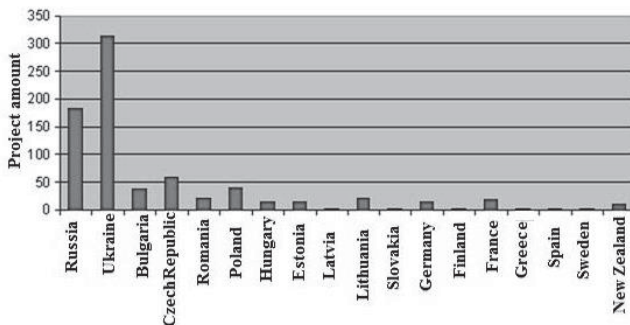


Fig.3. Number of Joint Implementation projects registered in different countries as of 01.01.2013 (UNEP RISO Centre data)

Overall significant number of registered projects leads to the possibility to analyse the experience gained during their development and implementation. It is quite convenient to perform such analysis on the basis of technical expertise of the projects' results which are provided during determination of projects followed by their verification.

Non-conformities which appear during such technical expertise are normally fixed by requests for clarification (CRs), requests for correction actions (CARs) or requests for future actions (FARs). Meaning of each term comes from their designations. Requests for clarification are oriented to supply additional information only, whereas requests for corrective actions require some additional actions to be provided. In their turn requests for future actions envisage supply of confirming information at further project stages.

Based on determination and verification activities fulfilled within 55 projects performed mainly in Ukraine with few in Russia and Moldova the results of described nonconformities are summarized in the table. This technical examination was performed in the scope of activities of international technical societies TUV Rheinland and Bureau Veritas which are accredited to deliver such services by governing bodies of UNFCCC.

Table

Number of different requests issued during determination and validation of Kyoto Protocol projects

Requests	Amount of CL	Amount of CAR	Amount of FAR
Determination			
Average on the project	13.50	33.30	1.10
Range	1-28	0-40	1.0-3.0
Verification			
Average on the project	4.60	16.20	0.10
Range	1-11	8-28	0-2.0

The overall number of all types of requests per project is in average 47.9 for determination stage and 20.9 or 2 times low for verification. Most probably this is positive experience gained by project developers at an initial project determination stage which is followed by project verification. Generally, the number of requests per project that corresponds to the number of non-conformities to the established requirements is quite high.

When comparing the number of different types of requests we can state the dominance of requests for corrective actions both for determination and validation project stages. The number of requests for clarification is 3-4 times low while the number of requests for future actions is much lower than this.

Hence the initial stage of their expertise is the most important for projects which, it is advisable to conduct a more detailed analysis of nonconformities detected at this stage. As demonstrated by fig.4 the main part of nonconformities is concentrated on 3 key project elements: general project description, base line establishment including justification of additional principle fulfillment and monitoring plan development. Other project elements do not cause any serious difficulties for project developers at the determination stage.

At the same time during the verification stage main problems appear in such elements as compliance with monitoring plan, availability of quality management system in place and project implementation completeness (fig.4).

The collected results indicate the most problematic elements in project development and implementation. These elements require the biggest attention during relative stages of Kyoto Protocol projects. Generally, experience gathered in development and implementation of Joint Implementation projects confirm viability of provided by United Nations Framework Convention on Climate Change flexible mechanisms of Kyoto Protocol and their efficiency in decrease of anthropogenic emission of greenhouse gases. (fig.4).

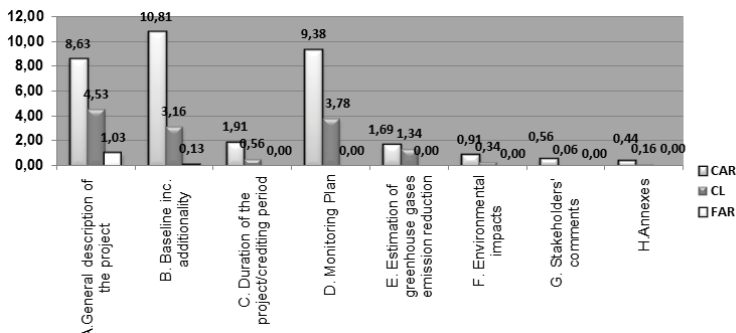


Fig.4. Requests distribution by project elements during determination stage

Essential impulse for further activation of efforts devoted to sustainability concept implementation was given by recent signing an Agreement on Association between Ukraine and the European Union. This large-scale document, which is of programme character, includes main obligations taken by the country on the European way. These obligations are mostly concentrated on main sustainability components which unite environment, social sphere and economy in an integrated form.

Conclusions

From the moment of appearance the further development of sustainability concept was concentrated on detailing its main components. Propose in the paper the general mathematical approach of sustainability concept gives an opportunity to present this model on a formalized form with consideration of main components, their interrelation and importance. The necessity to closely consider different levels of sustainability concept implementation with particular emphasis to consistency between all levels as well as inside of them is also demonstrated.

Sustainability concept implementation in Ukraine is at initial stage. The most impressive progress

was achieved in Kyoto Protocol flexible mechanisms implementation. Based on Joint Implementation projects' determination and verification activities most problematic elements of their development and realization were revealed and statistically assessed.

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Economic Diplomacy Mechanism: World Experience and Ukraine

CONSTANTINE FLISSAK⁹

Abstract: In a globalized world the line between foreign and domestic policy is fading, and a number of internal problems of the country can be successfully resolved at the level of international cooperation. In the context of globalization not only improvement of traditional instruments and means of international cooperation is necessary. But it is necessary to search for new forms, practices, and institutions of the international partnership that would adequately meet the changes and development of foreign trade and economic relations and would form a mechanism for the effective solution of constantly arising problems. The system of such tools and means is named as economic diplomacy, the role and importance of which in recent years has increased significantly. Successful examples of the use of economic diplomacy can be found in the activity of China, Russia, some of EU countries. Interesting is the experience of Ukraine, which during the years of its independence has sequentially changed several models of economic diplomacy. The experience of many countries in the world shows that only in the presence of effective and relevant economic diplomacy a state can count on high macroeconomic outcomes and gain high position in the geo-economic processes and in the system of international division of labour. In such circumstances, it is important to develop within the bodies of state administration specialized separate entity, which would be entrusted with the functions characteristic of the practical side of economic diplomacy.

Keywords: Economic diplomacy • Globalization • Economic and financial crisis • Foreign trade activities • Foreign trade

Introduction

The growth of production efficiency, the use of new technologies, and deeper specialization of individual countries have led not only to the globalization of the world economy, but also to the search for new and improvement of existing tools and mechanisms providing the interests of both individual producers and countries in general. The twenty-first century has brought a new level to economic diplomacy, for a long time included to instruments of protection and promotion of national economic interests at the international and global level, but recently started to be considered as a separate direction of modern scientific knowledge.

Additional scientific and applied interest to its studies is due to the growth of the contradictions that arise among countries and intergovernmental integration organizations, and which, by their influence retard the development of both political and economic relations between the subjects of international relations. Moreover, some of such contradictions are quite possible to be resolved by appropriate and timely application of tools and mechanisms of economic diplomacy.

Taking into account the problems faced by Ukraine in 2014-2015, and necessity much effort to solve them, including in the area of economic diplomacy, considerable scientific interest is the study of progressive international practices and its comparison with the Ukrainian realities to explore opportunities to improve and implement solutions positively proven in other states.

In addition, the successful and effective implementation of programmes of socio-economic development of Ukraine is possible, given to the real potential of its participation in the integration processes

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in the world economy and gradual approximation to the progressive social and economic standards. Required are providing maximal usage of export potential, formation of investment attractiveness for foreign capital, effective international cooperation for minimizing the impact of the both external and internal crisis, skillful and professional advocacy of the state interests in international relations. Of particular relevance here is gaining increasing the quality level of economic diplomacy, which should take into account the new challenges of globalization and to minimize their negative impact on the socio-economic processes in the country.

Literature review

A study of specialized issues and problems of economic diplomacy is taking attention to both domestic and foreign scientists whose field of interest is the use of diplomatic means in protecting the interests of their country in promoting goods and services at foreign markets, attracting foreign capital, settling international dispute and avoiding problem situations.

Reasons for considering economic diplomacy as a separate research direction were laid by Guy Carron de la Carrière, (France). Two main approaches were formed in further studies. Representatives of the first (mainly of the Anglo-Saxon school, like N. Bain, S. Woolcock) argue that this problem should be considered purely from the point of view of political support and development of economic decisions. The alternative view, according to which economic diplomacy is an activity aimed at supporting and promoting national economic interests abroad, is now widespread in many countries of the world. Representatives of this point of view are professors V.A.Vergun, O.M.Sharov, Z.P.Lutzysyn (Ukraine), T.V.Zonova, A.E.Likhachev, D.A.Degtyarev, A.A.Mardashev (Russian Federation), P.Baranaj, N.Filini (Slovakia), E.Molendovski, V.Polan (Poland), I.Mavlanov (Uzbekistan), P.Jonák, I.Němec, M.Častek, R.Špizar (the Czech Republic).

At the same time, through the emergence of new challenges of globalization, a number of questions of modern economic diplomacy require further analysis and development of measures of appropriate response to changing global realities.

The aim of this article is to examine the new challenges facing economic diplomacy under the influence of globalization and the global financial and economic crisis, to analyze the experiences of some countries, which, using various tools of economic diplomacy, were able to counteract the negative trends and to ensure proper maintenance of foreign economic relations, to draw attention to the peculiarities of manifestation of the specified influence in Ukraine and problems that require changes in the system of national economic diplomacy.

Basic Results of the Research

In recent years the world economy has undergone powerful impact of the financial and economic crisis caused by a serious gap in mortgage lending, excessive allocation of consumer loans, saturation of the consumer market, and relocation of production to countries with cheap labour. All these factors caused by the deindustrialization of the U.S. and Europe were followed by rising unemployment and speculative transactions on the real estate market. The second stage of the financial crisis became especially sharp in the second half of 2011 and in early 2012 within the EU and mainly within the Eurozone. It was characterized by such processes as: excessive growth of budget deficits in some countries, excessive growth of the public debt, insolvencies, wasting the funds of international financial organizations on social benefits and long-term social tensions in several countries. As a consequence, the ideology of economic liberalism (*laissez-faire* in the solution of problems of national companies to ensure free competition), that prevails in the EU, is threatened by revision, and many EU countries can face considerable loss of economic sovereignty.

The global economic crisis has led to major transformations in the sphere of international economic and political relations, significant changes in the strategies of development of the modern international economic system in the medium and long term, and the dynamics of globalization forces has received new vectors. On the one hand in recent years its characteristic manifestations are further increase of competition and attempt of the major players in the global economy to reallocate spheres of influence and markets. First of all it concerns the markets of finished products to markets of raw materials, especially energy resources

and materials. At the same time to hold the old and conquer new markets or individual segments not only trade and economic instruments (acquisitions and mergers of large commercial and industrial structures), but also political activities and, in some cases, even military means are increasingly used. On the other hand, international cooperation obtains further development, which turns competitors into partners and, to a certain extent, helps to resolve the conflict of interests on the international markets. Contributing to it is the creation of new international organizations of global or regional level, such as the Shanghai cooperation organization.

Because of these events Ukraine is facing a number of difficult questions about the future strategy in forming new areas of foreign policy; minimizing internal risks for foreign partners and external risks for Ukrainian exporters and members of the international cooperative formations. There are remaining actuality issues of implementation of the integration aspirations of Ukraine and steady protecting of its economic interests.

In this situation, it is fair to say that in a globalized world the line between foreign and domestic policy is fading, and a number of internal problems of the country can be successfully resolved at the level of international cooperation.

In the context of globalization it is necessary not only to improve traditional instruments and means of international cooperation. But it is necessary to find new forms, practices, and institutions of the international partnership that would adequately meet the changes of foreign trade and economic relations and would form a mechanism for the effective solution of the problems that constantly arise. The system of such tools and means is named as economic diplomacy, the role and importance of which has increased significantly in recent years.

Modern challenges and economic components of globalization have led to the economization of foreign policy, resulting in the need for increased activity of foreign missions in the area of promotion outside the country's economic interests of the national business. For example Donna Lee was ascribed to the duties of the American ambassador to do everything possible to resolve those legal provisions of the host country, which prevent the promotion of American business to the markets of this country (Lee, 1999). The UK is adapting its foreign policy to the new economic realities of the globalizing world. Its priority was formed by Lord Palmerstone: "it is the business of government to open and secure the road for the merchant" (Hague, 2011). And British Prime Minister D. Cameron said: "I don't just want you to be political ambassadors for Britain. I want you to be economic ambassadors too" (Cameron, 2012).

Globalization has put a number of new challenges before economic diplomacy due to the complexity of the functioning of the world market, and addressing numerous internal problems of individual countries has become a common interest of players in this market. The intervention of international institutions is beginning to essentially influence decisions on the national economic level and their transformation (e.g. stabilization actions against individual countries of the Eurozone or the dependence of the pension system or the level of tariffs for housing and communal services and gas tariffs for the population in Ukraine from decisions of the IMF or the World Bank).

One of the main challenges posed by the globalized world is the gradual loss of the state monopoly on power function caused by emergence and rapid development of other influential institutions, those of transnational companies and non-governmental organizations. If not legally, but de-facto there is erosion of the internal sovereignty of individual states (Humenyuk, 2008). For national economic systems included in the supranational integration formation external solutions become defining for the further functioning of their financial and economic mechanisms. One of the bright examples is the decision of the European Commission and other EU institutions on financial questions in Cyprus in 2013.

In such circumstances, the priority of economic diplomacy becomes the maximum adoption of measures for the effective functioning of the national economy with taking into consideration the requirements of the world market. The new challenges of globalization facing economic diplomacy should include the dissemination of genetically modified foods, which may threaten the health and lives of consumers (standardization and certification of products for compliance, quality and origin). The demand of the time is urgent need to advance economic diplomacy as a joint activity of the state, business and non-governmental organizations on the implementation of national economic interests on the world market at a qualitatively new level. The main strategic objectives of economic diplomacy in the competitive globalized world economy in the context of improving the efficiency of foreign economic activity are the following (Verhun, 2010):

- ensuring the most favourable conditions for the participation of the national economy in the international division of labour, its integration into the global system of world economic relations;
- political support for domestic businesses operating abroad and ensuring access to existing and potential markets;
- providing full-scale trade, investment, financial and credit relations with other countries, active cooperation with international organizations;
- coordination of foreign economic activity of the government, overcoming the fragmentation of foreign economic activity due to the significant growth of its subjects, active involvement of the foreign economic activity of state and private structures.

Thus, it is necessary to distinguish between political and economic objectives of economic diplomacy. To political goals, the achievement of which is assigned to economic diplomacy, we attribute:

- 1) minimization of losses and maximization of benefits using the advantages of integration in a globalized economy;
- 2) active participation in the creating an effective and fair international trade and economic regime for the world community;
- 3) establishment and maintenance of permanent contacts between the partner countries;
- 4) informing and explaining the official position of its government in the host country;
- 5) preparing and conducting negotiations of and on behalf of its state for the purpose of harmonization of interests of the parties and reaching mutually advantageous agreements;
- 6) efforts to minimize the risks and threats that may affect the nature of two- and three- sided interstate relations.

Among economic goals of economic diplomacy are the follows:

- 1) effective positioning of the state in the system of international economic relations;
- 2) strengthening the position of local entrepreneurs in perspective industries of the world economy;
- 3) diversification and deepening of the country's participation in the international division of labour;
- 4) harmonious use of the mechanisms of bilateral and multilateral cooperation, with the aim of promoting goods, services and capital on world markets;
- 5) protection and promotion of interests of subjects of entrepreneurial activity of their state, as well as promoting stable development of strategic sectors of the economy.

World practice shows that the diplomatic service is trying to respond adequately to the challenges of globalization. For Ukrainian diplomacy the actions of economic diplomats from our main foreign trade partners – the European Union, Russia, China, and Turkey – can be an example here. There is a considerable interest on the application of tools of economic diplomacy in three groups of countries: the first – those which have managed to find the most effective answers to modern globalization challenges in conditions of global financial and economic crisis, the second – those that have main share of foreign trade turnover of Ukraine, and the third – those which invested the largest amount of direct investment in the Ukrainian economy.

In this context, we cannot ignore China, which, despite the global crisis, demonstrated economic growth: the growth rates of production in the country during 2005-2008 were 11.9%, in 2009 – 9.2%, in 2010 – 10.4%, in 2011 – 9.3%, in 2012 – 7.7%, in 2013 – 7.6% (World Economic Situation and Prospects, 2012 and UNCTAD Handbook of Statistics, 2014). The dynamics of exports and foreign trade of People's Republic of China (PRC) in general are also affected. In 2010 the volume of Chinese exports increased 71 times compared to the level of 1983, the foreign trade turnover – almost 87 times, and China's share in world exports over the period 1980-2013 increased from 0.9% to 14.6% (UNCTAD Handbook of Statistics, 2014).

In addition to efficient domestic economic policy, economic diplomacy played a significant role in stable dynamic development of the PRC economy (Mardashev, 2009). First, there is need to specify that in the PRC under this term (*Jīngjì wàijīāo* (economic diplomacy)) is often referred not only to the use of classical diplomacy to promote economic development of the country, but also the use of foreign trade, financial and investment policy to achieve diplomatic goals of the country. It should be noted that the new globalization challenges give reasons to prioritize the economic diplomacy of China, among which are:

- ensuring production needs in natural resources of the economy of the country;
- the need of import cover of energy resource deficit;
- promotion of acquisition of high technology;

- effective participation of China in global trade regime;
- settlement of the problem of "protection of trade" and protectionism in trade, and also in relation to intended use of technical barriers to competition issues;
- adaptation of the Chinese standards to the new world standards of quality and safety of food and non-food products;
- adoption of measures to attract foreign investment in the Chinese economy and promotion of Chinese investment outside the country;
- assistance in obtaining and granting economic and technical assistance to China (as a prerequisite to further promote foreign economic interests and export expansion of China in the world);
- optimization of China's participation in the international division of labour and ensuring effective use of national labour force (due to an active policy to attract foreign investment in the country and Chinese investment abroad);
- finding and implementing opportunities for the use of Chinese currency in external payments.

Today, China is building its active policy on the use of mechanisms of economic diplomacy, guided by the principle, which is typical of Oriental philosophy: "relations with neighbours are a priority, the ones with developing countries are important, the ones with leading countries have key character, the approach is multilateral" (Samartsev, 2014). From this point of view the further research interest is active modification of instruments and mechanisms of developing relations between China and its partners based on the specifics of the latter. Thus, having the ability and the ambition level of a superpower, China does not impose typical models of behaviour on its partners and avoids the use of tools of economic partnership as a means of coercion, demonstrating the implementation of the principle of Confucian ethics - "the harmony of diverse and dissimilar".

Such balanced position allows China to facilitate access to world markets, technologies, necessary resources, and also reduces possible opposition on the part of potential competitors, possibly almost all economies of the world nowadays. Another result of the balanced and sustained economic diplomacy for China is the work on overcoming internal problems (Xinjiang and Tibet) and changing attitudes to China from hostile partnerships (primarily the ASEAN countries (Malaysia, Thailand, Philippines, Singapore, Brunei, Indonesia), which established diplomatic relations with China relatively recently.

Fast dynamics of globalization and integration of economies into the world economy require improving the mechanisms of international economic cooperation and searching for new forms and methods to ensure effective economic partnership. On this occasion the Polish experts note a steady increase in the demand for efficient operation of economic diplomacy, which in its present form was formed as a part of economization of the diplomatic service of Poland in 2006. At the same time economic units, which consist of two segments: the economic department and the department of trade facilitation and investment, were established in the embassies of Poland. These units are formed through the use of positive (we need to accentuate - this is Polish experts' point of view) experience of Ukraine, Russia and Belarus (Rośnie popyt na dyplomację ekonomiczną, 2009).

These departments received three main tasks from the Ministry of Foreign Affairs and the Ministry of Economy of Poland:

- 1) to support and assist to the Polish economy;
- 2) to support and promote the export potential and lobbying of Polish economic interests in the economic and political environment of partners;
- 3) to promote economic interests of Poland at international forums and in international institutions.

To implement these tasks it was necessary to specify the functional responsibilities and define the sectors of responsibility. In particular, the economic department of an Embassy competently performs:

- assessment of the current macroeconomic situation of the partner country;
- analysis of the dynamics and structure of material production, supply and demand;
- informing about the level of inflation and the price situation on the market;
- monitoring foreign trade turnover;
- monitoring the situation on the labour market;
- monitoring structure, dynamics and trends of foreign investment flows;
- assessment of the situation in the regions, in the field and in the largest cities and industrial centers;
- analysis of exchange rate policy and the situation in the banking and financial sector.

Information and advisory work of the division for the promotion of trade and investment in the embassy are focused primarily on product manufacturers, exporters, importers and investors. It covers the following subjects:

- information also about the tax system and about legal conditions for doing business in the market of the partner, including specifics for limited liability companies, joint stock companies, individuals;
- reporting on conditions of activity in the sphere of foreign trade, technical specifications, sanitary, veterinary and other requirements;
- monitoring and reporting about customs tariffs;
- providing information about the goods, export or import of which are restricted by quotas or require a license;
- providing recommendations on the selection of a partner for cooperation;
- the adoption of measures to comply with the requirements of transparency in the questions of the regulation of payments by importers of goods, implementation of preventive action to avoid the consideration of cases in courts concerning the Polish subjects of foreign economic activity abroad, prevention the practice of extortion and bribery in executive bodies and other institutions involved in the host countries;
- providing information about fairs, exhibitions, conferences and business seminars;
- informing about the availability of support from the diplomatic mission.

The effectiveness of organization of economic diplomacy of Poland can be stated on the basis of objective indicators, which include the volume of foreign trade of the country and its place in the system of international division of labour. So, if in 1990 Poland (according to UNCTAD) belonged to 0.4% of world exports and 0.3% of world imports; in 2013 the state almost doubled the value of these indicators up to 1.1% of export and 1.1% import (UNCTAD, 2014). In absolute terms, the growth looks even brighter - 12.5 times the growth of export and 11.6 - of import. Of course, this result in quite intense competition and dynamic development of almost all major market participants is the result of a whole complex of actions, which include rational and circumspect economic reforms, consistent integration policy, modernization of the national economy, etc. And, as the more in-depth study of this question shows, each of these actions required effective cooperation with foreign partners, which would not have been possible without the active use of the tools and mechanisms of economic diplomacy.

The main focuses of the economic departments of embassies are concentrated mainly on promoting the interests of Poland to markets of the European Union. From side of the latter is expected relevant sales activity. is possible The high level of specialization and professionalism of specialists made problem solving by the economic diplomacy of Poland possible. As noted by Polish experts on economic diplomacy, "universal model of a diplomat is not only suitable, but harmful; now we need such recruitment, which would ensure effective implementation of the tasks. Necessary are not people with the mindset of the nineteenth century, but the professionals to like economists, financiers, lawyers" (Rośnie popyt na dyplomację ekonomiczną, 2009). With this approach in mind, sufficiently powerful economic units were formed in the diplomatic missions of Poland. For example, among 42 diplomats in the Embassy of Poland in Germany 14 specialists (33% from all diplomatic personnel of the Embassy) are employed in the economic department. In the Embassy of Poland in Ukraine among 28 diplomats 8 are engaged in economic problems (28%). In the embassies of the United States groups on questions and tasks of economics, finance, public finance, energy, industry, agriculture, employment work on the permanent basis. Particularly at the U.S. Embassy in Ukraine among 90 diplomats 22 officers (the fourth part of the diplomatic staff of the Embassy) are engaged in these problems (Diplomatic Corps, 2008).

Personnel potential of the Ukrainian economic diplomacy is much weaker both quantitatively and organizationally. For example, in the Embassy of Ukraine in Poland among the 30 diplomats only 4 are working on economic issues and in the Embassy and General Consulates of Ukraine in Germany among 33 diplomats only 4 are representative persons on economic issues (3 – in Berlin and 1 – in Hamburg). For comparison, in the economic division of the Embassy of Russian Federation in Germany 70 specialists are employed.

The question of the optimal structure of the departments of the economic diplomacy is not new in Ukraine. This problem was discussed by both Ukrainian (A.Flissak, 2005; O.Sharov, 2007) and foreign authors (A.Torkunov, 2004; E. Molendowski, W. Polan, 2007; N.Bayne, S. Woolcock, 2007). Its relevance

has increased significantly under the influence of the new challenges of globalization and financial crisis. However, different countries reacted differently to the need to implement change in the organization of economic diplomacy. Some of them, such as Poland, took the positive experience of Ukraine into account. They have expanded and increased economic component in the structure of their embassies. Others, we can name Ukraine as an example, decided to save money and because of the long dispute between the Ministry of Economic Development and Trade (the main coordinator and promoter of economic interests of the country abroad) and the Ministry of Foreign Affairs, sacrificed the Ukrainian economic diplomacy to the political structure.

Moreover, the trade and economic missions in the embassies of Ukraine abroad were liquidated on April 8, 2010 on the initiative of the Ministry of Foreign Affairs (The Decree of the President of Ukraine № 522/2010). Despite the instructions of the President of Ukraine, instead of them so far full-fledged economic departments with specialists with needed qualification have not been created. The Ministry of Foreign Affairs of Ukraine, as the practice reconfirmed in recent years, cannot fully provide this strategic area of work, neither functionally (promotion of economic interests of subjects of foreign economic activity, especially at the micro level is not even foreseen by the Regulations about the MFA of Ukraine) nor professionally or organizationally (The Decree of the President of Ukraine № 381/2011).

As a consequence, problematic issues in inter-state relations with its partners in various fields of the export business and investment cooperation through the lack of necessary information, analysis, staff, financial resources, slowness, and low qualifications sometimes emerge in Ukraine. For example, we can judge the quality of information support of Ukrainian business and the spread of the Ukrainian offers on market of neighbouring Russia by the following episode: as of the end of 2013 the last update of the Internet site of the Ukrainian Embassy in the Russian Federation in part of information about exhibitions in Ukraine was made in 2006.

In 2015, the situation with informational support has not changed: on the websites of the embassies of Ukraine in other states the content is about economic contacts between two countries that are limited by information-analytical references on the development of trade and investment contacts over the past 5-10 years. While there is no any information about planned activities in Ukraine, it is impossible to find data about prospective partners from among the representatives of domestic business. Under such conditions it is wrong to associate the efficiency of foreign economic activity of the state and the presence of the diplomatic staff abroad or its quantity. Thus, the quality of the economic diplomacy becomes the main problem.

As the language of the economy is numbers, let's look at latest results of Ukrainian foreign economic activity. In January, 2015 Ukraine lost 31.2% of its export and 33.4% of its import compared to January, 2014. And it would be wrong to place all the reasons of such decrease on political or military problems only. Numerous economic mistakes were made too. We consider that they are in the economic diplomacy in particular (Foreign trade of Ukraine in goods, 2015).

In addition to active participation in solving the above problems caused by globalization and the global financial-economic crisis, the Ukrainian economic diplomacy should also influence the decision of the strategic issues of cooperation with the countries of the Customs Union and the formation of a free trade zone both in the CIS and EU.

To save export, to conquer new positions in foreign markets and to expand export as a factor of GDP growth, in the context of the crisis in the world and in the EU, in particular, the search for new partners and development of mechanisms for the effective regulation and control of foreign economic relations from macro to micro level become especially actual.

Conclusions

In the twenty-first century the practice of organization of world economy and international economic relations suggests that economic diplomacy become their integral element. And it is necessary to emphasize the fact that economic rather than political goals and objectives play the main roles in this activity.

The experience of many countries in the world (such as countries of the European Union, People's Republic of China, the Russian Federation) shows that only in the presence of effective and relevant economic diplomacy the state can count on high macroeconomic outcomes and gain high positions in the

geo-economic processes and in the system of international division of labour. In such circumstances, it is important to develop a specialized separate unit within the bodies of state administration, which would be entrusted with the functions characteristic of the practical side of economic diplomacy.

As the analysis of existing practices shows the lack of state orders for the model of foreign economic activity and weak state initiative to actualize effective models for Ukrainian economic diplomacy and create a modern legislative framework for its successful implementation.

Considering the fact that globalization is the main driving force behind the development of economic diplomacy and it significantly affects international competition, Ukraine should implement the important steps to promote and protect its national interests on the world market in modern conditions. In this context, the model of economic diplomacy should contain mechanisms to settle both organizational and personnel issues, to ensure proper promotion and lobbying of foreign economic activity abroad.

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Local Financial Resource System Management: Case of Ukraine

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Abstract: This article provides a scientific foundation of the fact that Ukraine is on the way to building democratic foundations of the society due to present economic conditions. In this regard, the necessity for public financial resources management system is relevant. It would ensure a high level of social stability. Financial capacity of administrative-territorial entities serves as the main criterion in determining the ability of the national economy to grow at the expense of its own financial assurance. It is determined that each region should have adequate financial support for the successful administrative-territorial entity functioning and effective fiscal policy conducting pursued by local self-governing bodies. The study has revealed the tendency to deprive local self-governing bodies' of rights to plan their fiscal policy independently; the study has also found out the tendency to ineffective management process of financial resource formation and use in the respective administrative – territorial entity.

The essence of financial management performed by local self-governing bodies is deepened. It is proved that Ukrainian local self-governing bodies have their own peculiar integral financial management system, which aims at efficient formation and intended use of financial resources for the social and economic development of administrative – territorial entity according to the theoretical and methodological foundations established by Central Administration. Nowadays, embedded elements being constituents of this system reflect its unity, without providing a sufficient share of its own financial resources necessary for execution of powers by local self-governing bodies. The mechanism of the financial resources management performed by local self-governing bodies is offered.

Keywords: Budget • Management system • Local self-governing bodies • Financial resources • Financial independence

Introduction

The essence of financial management performed by local self-governing bodies is deepened. It is proved that Ukraine has its own peculiar integral financial management system performed by local self-governing bodies, which aims at efficient formation and intended use of financial resources for the social and economic development of administrative - territorial entity according to the theoretical and methodological foundations established by Central Administration. The mechanism of the financial resources management performed by local self-governing bodies is offered. It includes forms, methods and instruments of financial resource formation according to their complex interactions. Thus management efficiency at all levels of social and economic development of the administrative - territorial entity is possible to be gained. One of the major functions of the state is to ensure effective management of those financial resources that it possesses. Financial capacity of administrative – territorial entities serves as the main criterion in determining the ability of a national economy to grow at the expense of its own financial assurance. Formation of sufficient financial basis, ensuring close cooperation between local self-governing bodies' management is achieved due to economic stability policy implementation where maximum attention of legislative and executive power is given to the financial resources management.

The aim of the study is to determine key constituents and issues in the financial resource management

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at the local level and to suggest ways of its improvement.

The theoretical foundation of the study and practice of financial resource management are profoundly investigated in the works of Ukrainian scientists such as V.L. Andruschenko, T.G. Bondaruk, V.I. Kravchenko, I.O. Lunin, V.O. Shevchuk and others.

Key findings

Local budgets are not just balance calculations of income and expense mobilized and spent in the appropriate territory, but they are also an important financial category, both based on a system of financial relationships between local and State budgets, and within the set of local budgets. Local budgets remain the major channel to bring population outcomes of social production aimed at public consumption. Thus owing to local budgets social consumption funds are allocated in territorial terms, i.e. between different administrative-territorial entities and social groups. In addition, development of manufacturing sector industries is funded from local budgets. However, a great deal of issues associated with formation and execution of local budgets requiring their immediate resolution exists in the budget system link.

General Procedure for financial resource management formation and use between the various budget levels is determined by the Budget Code of Ukraine. According to this document state institutions of financial control for the purpose of strengthening functions of monitoring the effectiveness of financial resource use performed by local self-governing bodies are created.

Local self-governing bodies are responsible for financial resource management at the level of administrative - territorial entities. Local budgets are approved by relevant councils, and their implementation is ensured by local state administrations, executive bodies of local councils as well as Chairpersons of the city, town or village Council. Local financial authorities are coordinators of all activities associated with the development and execution of local budgets.

There are several management models that operate at the local level through a combination of state and local self-governing bodies. Anglo - American, Continental, Iberian and Soviet models (types) are considered to be built in accordance with historical customs and traditions. Nevertheless a combined model is underlined among mentioned models of local self-governing bodies. It combines features of Roman-Germanic and Anglo-Saxon models. To our mind due to listed models Ukraine follows the continental one, its second type.

Today, each entity is guided by certain principles and methods, which are the main science components in financial management. Based on these components general rules of financial resources formation and use both by the state and each entity at the local level are defined. However, the situation has changed with the social relations development and the establishment of new life realities. A misuse of budget funds and evasion of tax payments have occurred and business has been performed without proper legal support. All these elements of our life have contributed and continue to contribute to the development of the shadow economy, which, in its turn, has led to social inequality.

Foremost contradictions arise because there is never quite enough correspondence between managerial authorities and subordinates, as it is established and broken simultaneously. This problematic situation is exacerbated ever and it is solved by certain rearrangements or less global changes. Herewith various deviations from usual compliance support can be seen:

- Management system in its development falls behind the one which it runs, so this management system functioning is characterized by domination of spontaneous beginning and its development is constrained by outdated organizational forms, i.e. management system becomes conservative and stagnant;
- Management system develops too quickly, despite the progress and managed status of the natural course of processes, so unnatural forms of management appear .

It is also worth noting that the system can not exist without control as management ensures the preservation and development of the basic properties of the system according to the defined purpose. The ultimate goal of the management system is not the existence «for itself» but it should provide parameters of proper society wealth and development, meet its needs, interests and aspirations. This is a unique and special significance of relations between management and society as the environment claims to be a management system habitat, i.e. it is that primary item, directly affecting the decision making process and ensure its financial resources management decisions or blocks them if the society is not ready to accept them.

The economic essence of financial resources management is determined by economic nature of public goods provided by the authorities to organize production and to meet social needs in the sphere of their effective use and management.

We believe that the system of financial management should be understood as a set of interrelated authorities' activities, operating at different levels of economic and financial sphere for effective formation and targeted use of financial resources by entities for the development of all financial system links. Such system can be seen in wide (centralized management) and narrow (decentralized management) sense.

The essence of centralization process considers centralized role of the state's financial resources management. So then the necessity to improve and to develop new ideas due to establishment and implementation of the local efficient management system in our country has risen.

Decentralized model promotes government convergence to the people ... it provides politics variety, full reflection of the local community needs and preferences. As for centralization it ensures national interests better. The essence of decentralized management is that local authorities have been vested with those powers, which formerly belonged to the competence of the government. The Worldwide Declaration of Local Self-government states: «Decentralized decision-making reduces centre congestion, improves and accelerates governmental decisions, it provides institutions with new vitality and increases the likelihood of established services to be maintained and developed under favourable conditions».

Local finance management system is essential in ensuring the financial local self-governing bodies. According to V. Kravchenko, the main element of this system is the responsibility of local authorities in the area of finance. The functions and tasks of local financial authorities are to perform financial control and audit of cash in local budgets.

We think that the financial management system at the local level, formed today, can be represented as a set of local authorities that interact with each other using delegated powers to ensure effective development and use of financial resources in order to achieve social and economic development of administrative - territorial entity.

Currently, the local finance development is playing an important role for economic recovery of the country. Comprehensive economic development concerning not only administrative - territorial entity but Ukraine as a whole is provided by effective and improved financial resources management construction at the local level. It can be achieved only when the power division process between the authorities, their responsibilities on financial resources usage and control of the relevant authorities' functions will act as a common mechanism of management.

Nowadays, the existing legal framework of Ukraine stipulates that local financial authorities must work closely with the financial authorities of the central government, ensure the full development of administrative - territorial entity, generate and use financial resources effectively that proves such a management system exists. However, as practice convinces, the relationship between central and local authorities, contains features of centralized management system, which leads to many problems, both at micro and macro levels in particular:

A significant number of authorities operate at the local level which report to executive authority of the central level. Their establishment often lacks a strategy and leads to a chaotic situation in the management;

- There is no direct rising link between district state administrations and the Cabinet of Ministers of Ukraine, as it is carried out within regional administrations;
- It promotes centralization of power and limits the people will – it is the appointment and dismissal of local state administration heads performed by the President of Ukraine on the proposal of Cabinet of Ministers of Ukraine;
- Powers and independence of district administrations due to decision-making on the of financial resources management are limited, as there is overlapping with the regional administration functions, which in its turn takes a leading role at the local level;
- The distribution of powers and responsibilities between local self-governing bodies and local executive powers is ineffective, which reveals in overlapping of functions and determining it not being correspondent;
- Low level of public participation in decision-making and control over their performance, resulting in disparity of state services to the population needs;
- Insufficient financial resource providing of local authorities (Fig. 1).



Figure 1. Structure of local budget incomes in Ukraine

As shown in Fig. 1 intergovernmental transfers are growing faster than revenues of local budgets. It should also be noted that state taxes constitute the basis of local budget revenues, not local taxes and fees. The mentioned above issue gives an opportunity to confirm the fact that today the financial management system at local level is imperfect and it does not provide local authorities with financial independence and autonomy.

The problem of monetary resource shortage, that the state is facing, is the result of their redistribution instead of conventional resource management, ensuring expenditures within the assignments envisaged by the real budget.

In addition, as well as budgetary establishments do not provide expense performance based on accepted obligations within the limits of budgetary assignments the most effective programmes will not be even fully implemented. All the state resources should work as efficiently as it is possible to the state due to the compliance with the principle of the minimum required amount of balances held by the Treasury.

Some researchers believe that this situation balancing is possible only due to implementation of the budgeting principle «bottom up». According to it «a higher budget should be based on fixed, defined in absolute terms contributions of territories».

According to I.A. Lunina this approach is flawed because it not only prevents the medium- and long-term fiscal policy performance, but it also raises serious doubt about the transaction costs amount of annual negotiations due to contributions of territories. We consider the mentioned statement quite important. The researcher V.O. Shevchuk, in his turn, suggests the introduction of a new budgeting ideology «as norms of control». In frames of this ideology budgeting deputies of Verkhovna Rada of Ukraine and local councils have to submit «Sustainable Development Budget», thus beginning a budgetary process from a bottom level.

We believe that in order to improve the financial management system at the local level it is necessary to explore it at the local self-governing bodies' level. This allows determining the source, which causes problems at different management levels. Today, the management system of local self-governing bodies is focused primarily on the local budget, acting as the main object and instrument of local regulation and management. We consider that the local budget management system aims to achieve the following objectives, such as the effective forming and ensuring use of financial resources in the local budget:

- 1) growth of financial receipt amount to local budget ;
- 2) the revenue part of local budget increase;
- 3) avoidance of financial resources deficit;
- 4) meeting people's needs of a certain administrative entity;
- 5) achieving socio-economic development of the administrative-territorial entity.

However, achieving all these goals simultaneously is impossible, as, for one thing, each goal requires great efforts of local financial self-governing bodies, for the other thing, only their sequential

implementation affords eventually to reach them in general.

The purpose priority can be selected by local self-governing bodies depending on the social and political situation in the country. One should remember that good progress towards selected targets largely depends on the financial resources management system efficiency of local self-governing bodies. We suggest that efficiency is achieved only due to close interaction of all financial resources management components of local self-governing bodies.

They will ensure not only system management consistency but also its good performance. In our opinion the financial resources management system should be understood as a set of interlinked elements and methods being applied by managerial entities for their interaction and ensuring efficiency and integrity of financial resources management process.

It is proved that Ukraine has its own peculiar integral financial management system performed by local self-governing bodies, which aims at efficient formation and intended use of financial resources for social and economic development providing administrative - territorial entity thus applying theoretical and methodological foundations established by Central Administration. Consequently, as it has been experienced embedded elements being constituents of this financial management system performed by local self-governing bodies reflect management elements unity, without providing a sufficient result.

We offer the following structure of financial resources management system performed by local self-governing bodies, formed today (Fig. 2).

The represented structure of financial management system clearly reflects the result that governments seek to achieve and the extent of its achievement. However, it should be noted that the system has its advantages and disadvantages (Fig. 3).

As seen from Figure 3 such case proves again the fact that the financial management system of local self-governing bodies is focused mainly on the local budget and it does not contribute to the development of administrative-territorial entity.

We suggest the main drawback that violates the basis of a systematic approach when constructing efficient management mechanism of financial resources formation and use at the local level is the lack of incentives to local self-governing bodies. This affects the overall development of the territory and hinders build-up of local self-governing bodies own financial resources. This major drawback must be considered in the process of reforming local self-governing bodies in Ukraine, which is scheduled by 2020.

Taking into consideration all above-mentioned, financial resources management mechanism of local self-governing bodies is offered. It includes forms, methods and instruments of financial resources formation and use. Their integrated use can lead to management efficiency at all levels of social and economic development of local self-governing bodies (fig. 4).

We think that such a mechanism could become a financial basis for social and economic development of an administrative-territorial entity. As the financial management system being further explored at the local level one should remember that it depends not only on local self-governing bodies, but it also depends on higher public authorities affecting it through intergovernmental relations' mechanism.

Conclusion

Financial resources management at local administrative – territorial entity level is performed by local self-governing bodies. The main task of the managing bodies is to ensure consistency in the functioning of separate units of financial relations. The management system of local self-governing bodies is focused on the local budget, which acts as a subject of local governance. The management system at a local level consists of local executive authorities and local self-governing bodies that perform their duties and responsibilities of managing bodies in accordance with the current legislation of Ukraine.

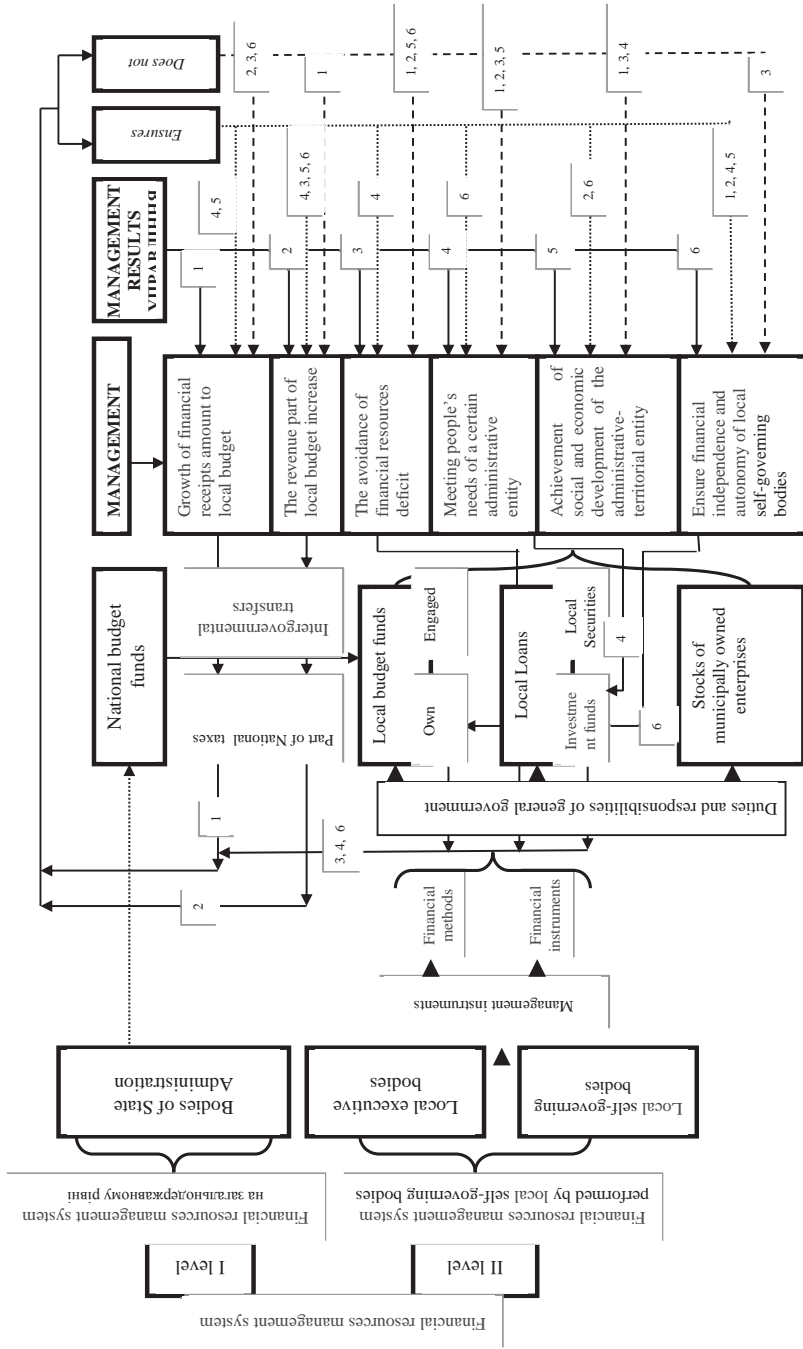


Figure 2. The structure of financial resources management system performed by local self-governing bodies

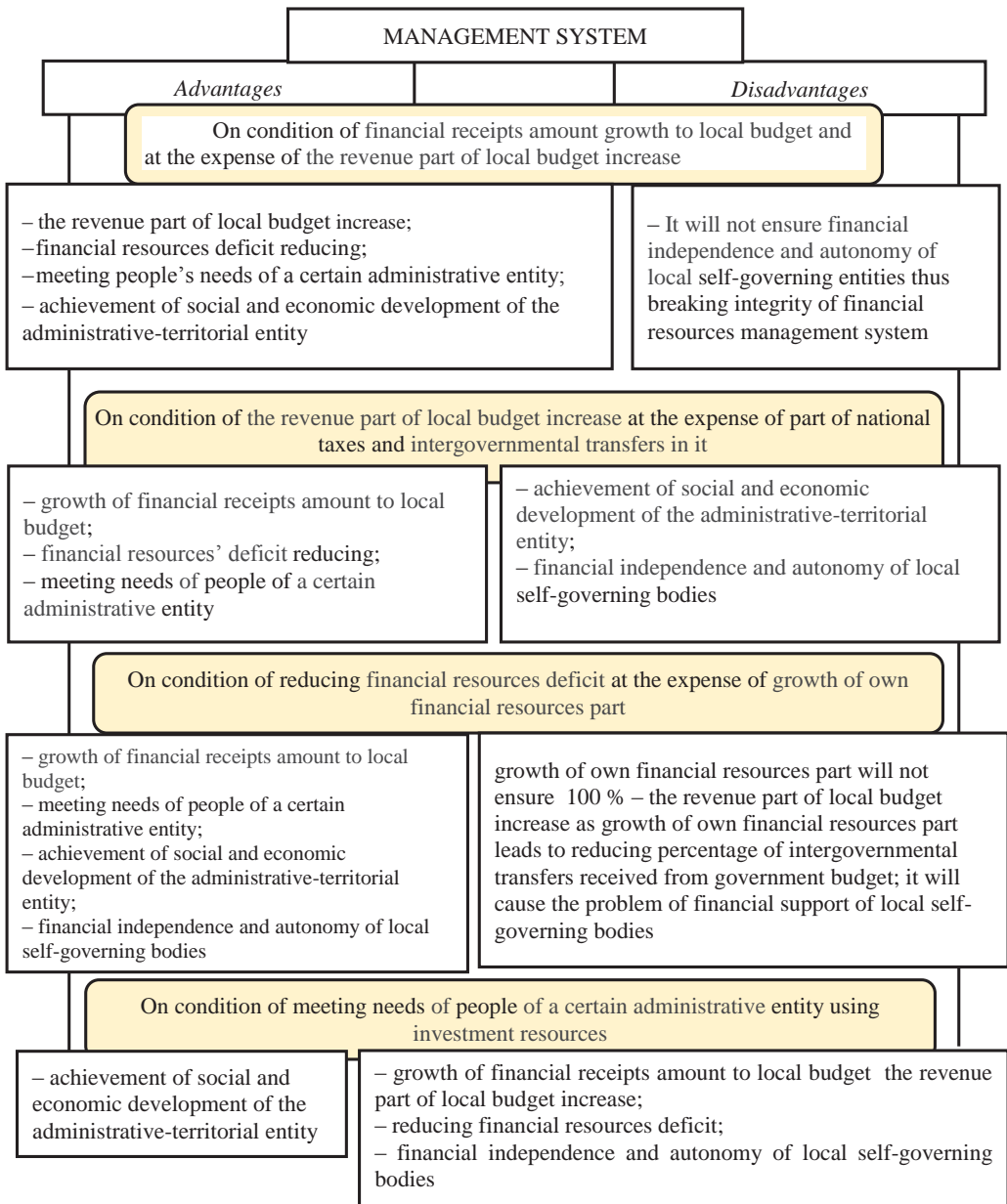


Figure 3 Advantages and disadvantages of financial management system at the local level as of January, 1, 2015

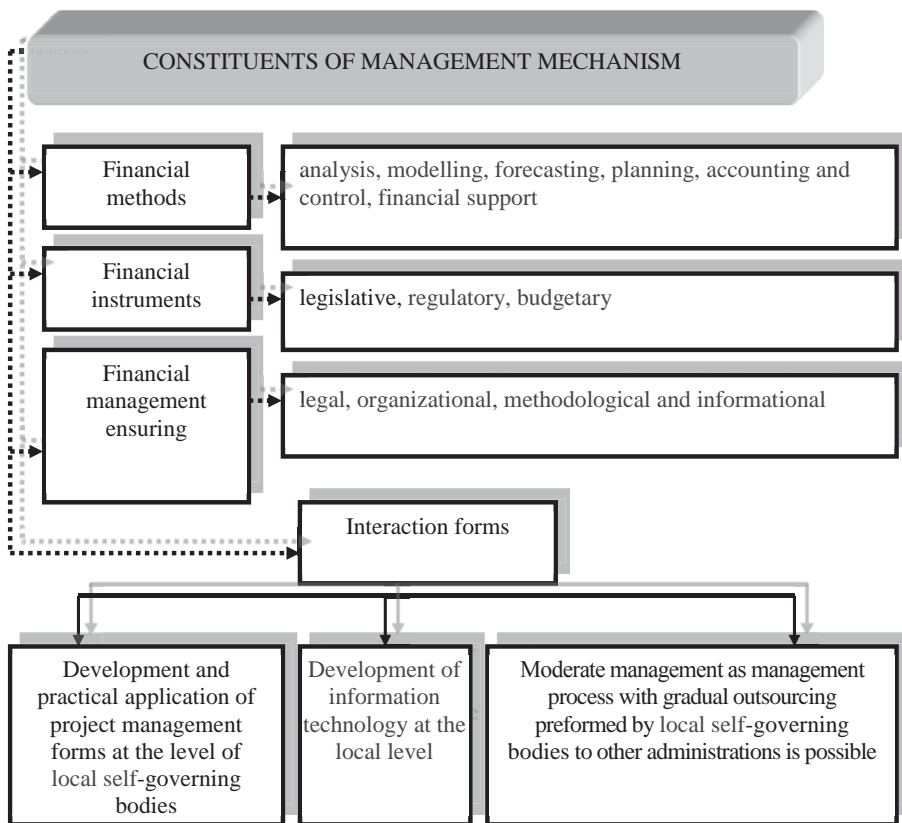


Figure 4. Financial resources formation and use mechanism of local self-governing bodies

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The Optimal Banking Structure: the Case of Ukraine

VASYL NAMONIUK¹¹

Abstract: We use rank order analysis to evaluate the optimal number of banks in Ukraine. Traditionally, the industrial organization theories are used to determine the equilibrium number of banks. In our case, to approximate the empirical distribution of bank ranks we use the law of diminishing returns. It has no tail in the area of small numbers if compared to exponential laws. The evaluation results show that the banking system of Ukraine does not have optimal structure. The biggest bank in assets and capital is smaller than it should be. There are many small banks, whose assets and capital are beneath the optimal level. Besides, the coefficient of stability is considerably lower than the optimal level. The optimal number of banks, according to calculations, should be in the range of 50-150 (at present – 163). The current situation in the banking sector of Ukraine requires the increase of the biggest banks' asset value and consolidation amongst the smallest banks.

Keywords: Optimal structure of banking sector • Number of banks • System approach • Ranking analysis • Ukraine

Introduction

Banks play an important role in any economy. In practice, the economic development depends exactly on the soundness and efficiency of banks, which intermediate the main part of financial flows. Last decades have witnessed dramatic changes in banking sector worldwide. Regional and international crises caused the main part of financial institution reduction and sharpened the issue of bank supervision efficiency.

The latest financial crisis had the most considerable influence on the bank sector globally. For example, in the EU 511 financial organizations disappeared from the banking map only during 2013. In general, in Eurozone the number of financial organizations went down at 6 %, to 7059, during the post crisis period. In 2012 Luxemburg lost 124 banks. France and Italy got 105 and 55 banks mopped up respectively. Within last years 30 % of banks were liquidated in Slovakia. From 1999, when the Eurozone was created, the number of financial organizations has grown short at 28%, i.e. at 2797 banks. However, ECB marks that the reason of financial sector reduction is not only bankruptcy, but also mergers and acquisitions (ECB, 2015).

Ukraine succeeded to keep the financial sector within the period of international financial crisis. However, the recession of 2014 extremely strongly affected the banking sector. Within a year, the total number of credit institutions has decreased at 44. It is the consequence of low depositors' credibility to the banking system, as well as fraudulent activities of banks' owners and top-management. In general, the banking system has lost 200 billion UAH, approximately 13% of GDP in 2014. The deposit guarantee fund must compensate about 50 billion UAH, which is over 10% of state budget revenues. At the beginning of 2015 18,5 billion UAH have already been paid out.

Bank bankruptcies have influenced the economy dynamics as well as population welfare. They have sharpened the issue of effective and stable functioning of the banking system, because this negative trend is not only the result of the economic crisis, but of the lack of theoretic and empirical studies on structural characteristics of the banking system of Ukraine as well. The sound financial and monetary policy is impossible without strong academic basis.

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One of the main sides of the issue is the number of banks in an economy which effects the efficiency of economy financing, quality of bank products and services and their availability, scales of credit emission, concentration ratio, etc. Thus, the bank number analysis and their equilibrium number determination become very important at the banking system study in any country.

Thus, the aim of this paper is to examine the banking structure of Ukraine and to evaluate the equilibrium number of banks.

The paper is structured as follows. Section 2 presents the results of studies on banking sector structure. Section 3 briefly describes the approach to optimal banking number evaluation and presents some properties of the used model. In Section 4, we describe the data and use the model to evaluate the optimal number of banks for Ukrainian banking system. Section 5 gives the conclusion.

Literature review

A considerable amount of literature has been published on banking structure analysis. Mostly these studies (Freixas X., Rochet J.C. (1997), Hauswald R., Marquez R. (2000), Gomis-Porqueras et al. (2007)) show that a market with optimal structure is the one with the limited number of banks. The small number of banks allows to successfully support their financial stability. Besides, they have more possibilities for diversification and low assets allocation costs. For large banks, it is easier to gain scale economies treating information on borrowers.

In general, these studies use the microeconomics approaches to examine bank markets. Thus, the concepts of optimal number of banks are connected only with the description of bank competition models. For example, Freixas X. and Rochet J.C. (1997) partly dedicate their paper to the competition analysis of bank service market. The authors show a few models of bank market organization. These are a model of perfect and monopolistic competition, and oligopoly model. By using these models, the authors do not set the task of the equilibrium amount of bank determining, but try to show the terms, which bring the bank service market to equilibrium.

The disadvantage of the stated approach is the presentation of a bank as an abstract object, characterized with input-output parameters and function, linking them. One of such models in Freixas X., Rochet J.C. (1997) is the Salop monopolistic competition. Under the optimal number of banks within the model one understands the number, which minimizes the total cost function, consisting of costs on bank building and «transport» charges (i.e. some generalized costs, carried by a depositor accessing services of a bank). The model demonstrates that a free competition results in the excessive number of banks. In practice, commercial banks differ greatly both in size and roles. Thus, bank sector is a potential object for the external supervising and the question on the forms of such supervising becomes actual.

The institutional methods of economic process analysis were also used to determine the optimal number of banks. Hauswald R. and Marquez R. (2000) analyze the mutual borrower-bank relations and bank competition. Concerning the equilibrium number of banks, the authors noticed that under free market entry their number is the function, which unites the choice of information receiving technology, and costs of gaining and categorizing information on borrowers. Consequently, the number of banks decreases, when the costs on information collection become higher, because of the substantial influence of costs on the profitability of each separate bank. The heterogeneity of borrowers causes the greater number of banks at the market. It is explained by the preferable usage of the withstood technology of information monitoring by banks. Consequently, for the analysis of the new borrowers' category with the new technology, probably, another market player appears, increasing the total number of banks.

Similar opinion is presented in Economides N. et al. (1996). It is dedicated to the analysis of mutual relations of large and small banks at markets with imperfect competition. The authors conclude that, when a government does not support banks, the equilibrium number of banks depends positively on the expenses. Every market player bears for additional clients' attraction, and for the maximal efficiency of the attracted assets. Their conclusions considerably resemble the well-known theory of Diamond's delegated monitoring (Diamond D. (1996)). He proved the existence of barriers to the market entrance because of the fact that the operating large banks were better informed on borrowers' risks. Thus, new banks are in a state of complete uncertainty, therefore their costs on collection and systematization of borrowers' information are substantially higher. Eventually such asymmetry results in a more effective market functioning of the large

banks. The small banks are forced to look for support from the government and to find additional resources for monitoring or displace their activity.

The issue of the optimal bank amount is raised also in the research by Gomis-Porqueras Pere and Benoit Julien (2007). In the paper the influence of different market structure on credit allocation as well as on establishment of equilibrium banks number are analyzed. The authors conclude that the equilibrium number of banks is a dynamic category and depends on the situation at the capital market and financial market on the whole. The number of banks can increase, if the total assets of the banking system and returns on investing of the deposits attracted by banks increase. The authors also prove the banks number in competitive economy is always higher, than the one socially optimal, i.e. needed for complete satisfaction of the society necessities.

The first attempt to determine the optimal number of banks in the emerging economy was undertaken by Moiseev S. (2006). He pays attention to the optimal number of banks for Russia, as well as to determinants, précising this number. These factors are the domain of the government, the number of citizens, GDP per capita and inflation. Eventually equilibrium number of banks must be determined taking into account these factors, because they explain 70% of bank amount variations.

Later, Grachev (2011) created the model, which allows evaluating the equilibrium number of banks, using the systemic approach and condition that bank number and structure of banking system depend on the value of the biggest bank.

Up to now, several studies in Ukraine have attempted to examine the banking system of Ukraine and to analyze its structure. However, they all have touched only general sides of the issue. For example, in Matiushyn A. et al. (2011) direct their attention to institutional peculiarities of Ukrainian banking system, but do not propose the way to solve the revealed problems.

Thus, the research is mainly dedicated to the determinants of competition at the banking markets. Their main conclusion is that the imperfect market is more preferable for banks, i.e. profitability. However, all these studies pay attention only to microeconomics of banking, missing the banking system as a whole.

Methodology

To achieve the paper's aim, we use the cenosis approach. The cenosis approach is not yet common for economic sphere, but it is considered to be one of the most effective instruments for large system analysis, including not only their statistical description, but optimization as well (Fufaiev, 2002).

The structure of the cenosis systems has a fundamental mathematical basis and is fully presented in [Kudrin, 2002]. Theoretical basis of cenosis structure dynamics is presented in [Fufaiev, 2002].

The laws of self-organization of such systems, like banking system, inevitably conduce to formation of the systems of the cenosis type (Kudrin, 1993). The competition is the main characteristic for economic cenosis. Its presence is justified by the character of the system parts, which have different properties. However, within the cenosis their quality concerning general aims' achievements is identical, that is possible to attain only via observance of general rules of the system activity on the whole. According to cenosis theory, such type of competition can be examined as a dominant determinant in economic development.

For the cenosis analysis, a bank with certain, a characteristic index for the research (i.e. assets or capital) is accepted as unit-individual of bank association. There is the competition between banks for some resources of external socio-economic environment. These resources, disposed on certain local territory, are limited for bank association.

The best way to describe the structure of economic cenosis is through rank type distribution. It is the decreasing sequence of parameter values, organized in the way, when every subsequent number is less, than previous, and put in accordance with the rank.

At the first stage of our analysis we use Kendall's coefficient of concordance (Kendall's W). It let us reveal the level of the system components' interdependence. In our case, we get the confirmation of cenosis type of Ukrainian banking system.

It is proven in [Fufaiev, 2002], that this coefficient gives an opportunity not only to take the system to cenosis type, but demonstrates the soundness of structure in dynamics as well:

$$W = \frac{12D}{m^2(n^3-n)}, \quad (1)$$

where W is the coefficient of concordance; $D = \sum_{i=1}^n (\sum_{j=1}^P r_{ij} - S_{med})^2$ is the sum of squares of difference of S_{med} and sum of each bank rank for each period; $S_{med} = \frac{\sum_{k=1}^n \sum_{l=1}^P r_{kl}}{n}$ is the middle sum of banks ranks for each period; P is the number of periods; m is the number of time periods; n is the number of banks.

The value of the coefficient over 0.5 indicates the existence of sufficient level of dependence. In our case, quarters are used as experts, and ranked date for each period (quarter) – as expert estimations. The bank with the biggest index gets a rank 1, next bank – rank 2 and so on.

At the next step, we assume that bank sector consists of N of banks, arranged in a decreasing order of their assets A_n ($A_n \leq A_{n-1}$). The elements of the rank distribution of the banking sector depend on the ratio:

$$f_n = A_n/A, \quad (2)$$

where $A = \sum_{i=1}^N A_i$ is the total assets of the banking sector.

Obviously, $\sum_{i=1}^N f_i = 1$. We use Grachev coefficient of banking system concentration (Grachev, 2011):

$$k_c = \sum_{l=1}^{0,2N} f_l, \quad (3)$$

Grachev argues that sustainable systems with no external limitations comply with the law of diminishing returns. Concerning the banking system this law is formulated as follows: 20 % of banks control 80 % of total assets. It is often called “Pareto’s principle” or “Zipf’s law of least efforts”. This law, in line with the mentioned in Section 2 studies, prove that the banking system is stable within oligopoly.

We also use coefficient of banking system stability:

$$k_s = 5x_m, \quad (4)$$

where x_m means assets in size.

As $0 \ll x_m \gg 0.5$, then $0 \ll k_s \gg 2.5$. The system is stable at $k_s \approx 1$.

In the case of decreasing function in design of rank distribution, the following expression is usually used:

$$W = \frac{A}{r^\beta}, \quad (5)$$

where A is the maximal parameter value of individual with a rank 1, i.e. in the first point (approximation coefficient); r - is a number of ranks; β - is a rank coefficient, characterizing the degree of distribution curve steepness.

But exponential laws poorly approximate empirical rank distributions in the area of small values (tail). To solve the problem, we use the model of the law of diminishing returns, described in (Grachev, 2011) for theoretical distribution construction:

$$W(\gamma, x) = \frac{1}{Q} \sqrt[3]{1 - (1 - x\gamma)^3}, \quad x \in [0; 1], \quad (6)$$

where $Q = \sqrt[3]{1 - (1 - \gamma)^3}$ is the normalization factor; $x_n = n/N$, γ is the model parameter, $0 \leq \gamma \leq 1$; N is the number of system elements.

This is justified with the fact that, we could formally take the banking system of Ukraine to one with no external limitation, because antitrust law is indistinct.

Using (6), we can evaluate the maximal optimal number of banks on the basis of biggest bank assets value (f_1) and model parameter ($\gamma = I$):

$$N_{max} \approx \frac{3}{f_1^3}, \quad (7)$$

Likewise, when $\gamma \leq I$, thenumber of banks in the system will be minimum:

$$N_{min} \approx \frac{1}{f_1^3}, \quad (8)$$

Data and Results

We use mathematical package Matlab to calculate Kendall's W coefficients for assets and capital. We take the open data of banks financial statements from National bank of Ukraine official site for 2002-2014. Thus, W for assets is 0.81, and for capital is 0.79. The W is close to 0.8 in two cases. Thus, we have the strong interdependence in the banking system of Ukraine. As the result, the dynamics of one bank is

under strong influence of all system and vice versa. Accordingly, wrong analytic geometry and erroneous prognoses for the banking system of Ukraine are the consequence of ignoring this fact. Such results let us use the census (ranking) approach to banking system modelling with no limitations.

First, according to census approach methodology, we make ranking distribution of banks and its graphic view for assets and capital. So, we form the table with the names of banks, value of assets/capital, parts in total assets/capital and rank. Table 1 presents the top ten banks in assets and capital. We use data for 158 banks in case of assets and 148 banks in case of capital. At the graphic, reflection of dependence rank r is put on abscise axis, value of parameter – on y-axis.

Table 1. Top ten banks in assets and capital, 2014

Bank name	Assets, UAH thousands	Part in total assets	Rank	Bank name	Capital UAH thousands	Part in total capital	Rank
PRYVATBANK	204585003	0.155375	1	OSHCHADBANK	22749157	0.140726	1
OSHCHADBANK	128103752	0.09729	2	PRYVATBANK	22696359	0.140393	2
UKREXIMBANK	125999827	0.095692	3	UKREXIMBANK	13536221	0.083731	3
DELTA BANK	60303279	0.045798	4	UKRSOCBANK	6238628	0.038590	4
PROMINVESTBANK	52656224	0.039991	5	REIFFEISEN BANK AVAL	6148300	0.038031	5
UKRSOCBANK	48258327	0.03665	6	PROMINVEST BANK	6075 543	0.037581	6
REIFFEISEN BANK AVAL	46859432	0.035588	7	VTB BANK	5087654	0.031470	7
SBERBANK OF RUSSIA	46740331	0.035498	8	FIRST UKR. INT. BANK	4777262	0.029550	8
ALFA-BANK	36693914	0.027868	9	DELTA BANK	4749714	0.029380	9
VTB BANK	36502261	0.027722	10	SBERBANK OF RUSSIA	3904103	0.024149	10

Source: The table was developed by the author.

«Pryvatbank» has the biggest assets amongst Ukrainian banks, but it's not sufficient according to theoretical distribution (the line on graph 1).

The coefficient of assets concentration $k_c = 0.86$ and the coefficient of stability $k_s = 0.32$. Such numbers indicate that the structure of Ukrainian banking system is not optimal. According to the model line (fig. 1), the biggest bank is almost two times smaller than it should be. The banks with the ranks 2- 18 have some abnormal assets. The majority of small banks are beneath the model line. It indicates that their number should be decreased via mergers and acquisitions.

The ranking distribution for Ukrainian banks' capital is presented in fig. 2.

As for capital, state-owned «Oshchadbank» has a somewhat higher value than «Privatbank» (point 1 and 2 in fig. 2 respectively), but still their capitals are not optimal. The first rank has smaller than optimal capital, and second and third ones have higher levels than it should be. We see the same situation with distribution of medium and small banks as in assets case. The exception is bank 4 (UKRSOCBANK), having the optimal value of capital. It was bought by UniCredit Group in the pre-crisis period.

In case of capital k_c and k_s are 0.82 and 0.42 respectively. The concentration coefficient is almost at optimal level, but stability index is still considerably low.

Now we use (7), (8) to get the optimal number of banks for Ukraine. So, paying attention to the optimal level of the biggest bank in fig. 1 and 2 according to theoretical distribution, the optimal number of banks in case of assets is 159 (maximum) and 53 (minimum). Similarly, in case of capital the maximum optimal number of banks is 149 and minimum – 50. Thus, the banking system should consist of 50-150 banks to be stable and effective.

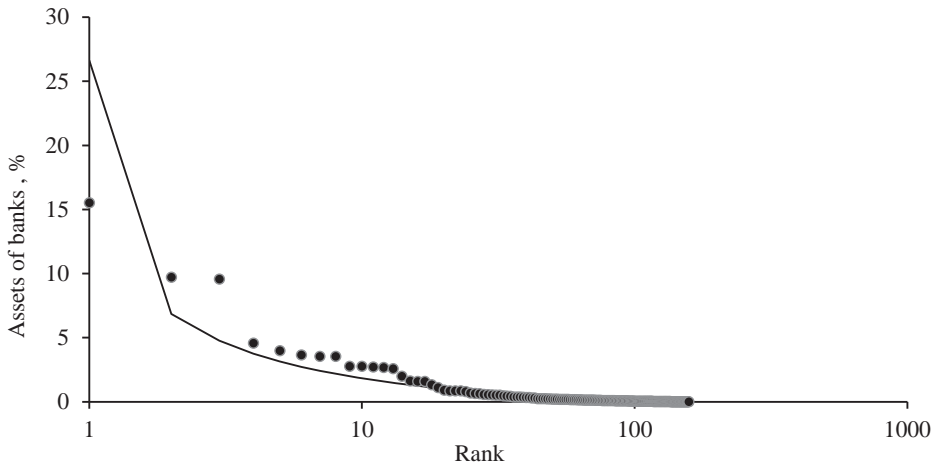


Fig. 1. Ranking distribution of banks assets in Ukraine, 2014

Source: The figure was developed by the author.

Figures 1 and 2 let us make some policy recommendations. First, the biggest bank in ranking should increase the assets and capital value. It can be done through assets acquisition of Deltabank, the third biggest bank in Ukraine, as it became insolvent at the beginning of 2015. Second, the medium banks do not have optimal levels of assets and capital, they are above the necessary level. So, their values should be optimized as well. Third, typical for many economies, the small banks should be combined.

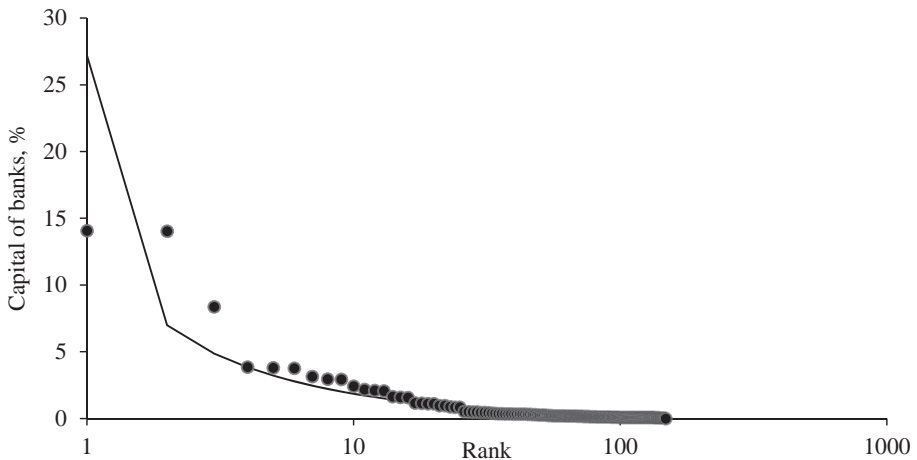


Fig. 2 Ranking distribution of banks capital in Ukraine, 2014

Source The figure was developed by the author.

Conclusions

This paper examines the banking system of Ukraine with the aim to evaluate the optimal number of banks. At the beginning, we take the banking sector to cenosis type with the help of Kendall's coefficient of concordance. The W is close to 0.8 in case of assets and capital. Thus, we have the strong interdependence in the banking system.

Then we use the cenosis approach. We form the empirical distribution series on assets and capital, and build the graphic view of the distribution. To approximate the empirical distribution of bank ranks we use the law of diminishing returns, because it has no tail in the area of small numbers.

The evaluation results show that banking system of Ukraine does not have optimal structure. The biggest bank in assets and capital is smaller than it should be. There are many small banks, whose assets and capital are beneath the optimal level. Besides, the coefficient of stability is considerably lower than optimal level. It requires the increase of assets of the biggest bank and consolidation amongst the small banks.

Forthcoming research efforts ought to direct attention towards the possibilities of banking assets combining, which can move the positions of new banks to the optimal level.

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The Economic System Sustainability Index: Methodology of Determination

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Abstract: This paper is an attempt of quantitative evaluation of economic system sustainability. We also seek to propose a comparatively easy and operative method to determine the real soundness of reforms widely declared by the politicians as the vitally important ground to stabilize all the parts of their fellow citizens' lives. We consciously selected the latest period of 2013-2014 to test different groups of countries that suffered the global financial crisis of 2008 differently to highlight those discrepancies in both internal and foreign economic policies that might be considered to be the most influential triggers of recovery. We are fully confident of the fact that one of the most appropriate ways to assess accurately the living standards and quality of anti-crisis measures taken by government to restore economic equilibrium is a survey of personal opinions of entrepreneurs, households and investors – approach that is monthly, quarterly or annually used by both local and international regulatory bodies. But we still believe that this methodology, apart from its costliness, is rather subjective and hardly compared among states with originally different living standards. The composite sustainability index developed in this paper unifies the components under consideration and lets the researcher to build a scale of results that, in a bare outline, can be easily compared and mathematically determined. The final index rate is a nominal indicator of anti-crisis effectiveness of the local government and, in a sense, may be used to find the relation between different economic policies, some of which may be more or less effective.

Keywords: Sustainability • Composite index • Anti-crisis economic policy • Multi-criteria ranking system • Main components

Introduction

The determination of any type of index is usually significantly complicated by hardly comparable circumstances affecting the system. We follow the scientific approach to distinguish two interconnected aspects of sustainable equilibrium of economic system: dynamic and structural (Sordi, 2003; Vercelli, 1991; Vercelli, 2001). Dynamic equilibrium describes the progress of the system achieving the sustainable equilibrium. Structural equilibrium is connected with the qualitative characteristics of any economic system. Depending on the influence of destabilizing factors the economic system may reach 3 types of equilibrium: sustainable, unstable and indefinite. In case of dynamic sustainable equilibrium, the equilibration is achieved by means of internal factors (Trichet, 2008). In case of indefinite equilibrium these kind factors are not able to affect the system and the restoration of initial state of equilibrium requires additional external interference (anti-crisis economic policy). Developing the sustainability index we focus our attention on the capability of the system to achieve the structural equilibrium, evaluating the parameters under consideration in order to form the scale unified for different states with incomparable strength of destabilizing factors. For this purpose we suggest obtaining unified average values (stage I and II of the proposed methodology) of main macroeconomic parameters (table 1).

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Table 1. Relative values of main composite index parameters

Canada						
	Gross domestic product (expenditure approach)	Private final consumption expenditure	General government final consumption expenditure	Gross fixed capital formation	Exports of goods and services	Imports of goods and services
Q1 2013	2	2	0	1	1	1
Q2 2013	2	3	1	0	2	1
Q3 2013	2	3	0	1	2	1
Q4 2013	3	3	0	-1	4	2
Q1 2014	2	3	0	-1	2	0
Q2 2014	3	3	0	0	6	2
Q3 2014	3	3	0	1	8	3
Q4 2014	3	3	1	2	6	3
Czech Republic						
Q1 2013	-2	-1	1	-6	-5	-4
Q2 2013	-1	0	1	-8	0	-2
Q3 2013	0	1	4	-4	1	2
Q4 2013	1	2	4	0	6	6
Q1 2014	2	1	1	3	12	11
Q2 2014	2	2	4	5	9	11
Q3 2014	2	2	0	6	7	8
Q4 2014	1	2	1	4	7	8
France						
Q1 2013	0	0	2	-1	1	0
Q2 2013	1	0	2	-1	3	2
Q3 2013	0	0	2	-1	2	3
Q4 2013	1	1	2	0	3	4
Q1 2014	1	0	2	0	4	4
Q2 2014	0	1	2	-1	1	3
Q3 2014	0	1	2	-2	2	3
Q4 2014	0	1	2	-3	4	5
Germany						
Q1 2013	-1	1	1	-3	1	1
Q2 2013	0	1	0	0	1	3
Q3 2013	0	1	1	0	1	4
Q4 2013	1	1	0	2	5	5
Q1 2014	2	1	1	8	3	3
Q2 2014	1	1	1	3	3	3
Q3 2014	1	1	1	1	4	3
Q4 2014	1	2	2	1	4	3
Hungary						
Q1 2013	0	-1	3	-4	1	0
Q2 2013	1	0	4	3	4	7
Q3 2013	2	1	3	8	8	7
Q4 2013	3	0	3	14	11	10
Q1 2014	4	1	2	17	8	9
Q2 2014	4	2	2	14	9	11
Q3 2014	3	1	3	11	8	11
Q4 2014	3	2	3	6	9	9
United States						
Q1 2013	2	2	-1	2	2	0
Q2 2013	2	2	-1	2	2	1
Q3 2013	2	2	-2	3	3	1
Q4 2013	3	3	-2	3	5	2
Q1 2014	2	2	0	3	3	3
Q2 2014	3	2	0	4	4	4
Q3 2014	3	3	1	4	4	3
Q4 2014	2	3	1	4	2	6
United Kingdom						
Q1 2013	1	1	-2	0	0	-1

Q2 2013	2	2	0	2	6	2
Q3 2013	2	2	0	5	0	3
Q4 2013	2	2	0	7	0	2
Q1 2014	2	2	0	8	1	5
Q2 2014	3	2	2	9	-3	0
Q3 2014	3	2	2	7	-1	0
Q4 2014	3	2	2	4	4	2
Poland						
Q1 2013	0	0	2	-3	2	0
Q2 2013	1	1	2	-1	4	-1
Q3 2013	2	1	2	2	7	4
Q4 2013	3	2	2	5	6	5
Q1 2014	3	2	2	9	7	7
Q2 2014	3	3	3	9	5	9
Q3 2014	3	3	3	10	5	8
Q4 2014	3	3	3	9	7	10
Ireland						
Q1 2013	0	0	-3	-4	-2	-3
Q2 2013	0	0	-3	4	1	-1
Q3 2013	2	0	1	8	1	1
Q4 2013	-1	0	4	-12	4	5
Q1 2014	5	1	2	7	8	6
Q2 2014	6	1	5	20	13	12
Q3 2014	4	0	-3	13	16	15
Q4 2014	4	2	-2	8	14	20
Russia						
Q1 2013	1	7	1	1	4	7
Q2 2013	1	4	0	-2	4	6
Q3 2013	1	5	0	-3	6	3
Q4 2013	2	4	1	-2	5	-1
Q1 2014	1	4	0	-4	2	-4
Q2 2014	1	1	0	-3	1	-6
Q3 2014	1	1	0	-2	-2	-7
Q4 2014	1	7	1	1	4	7

Source The table was developed by the author on OECD National accounts: GDP expenditure approach.

In table 1 the main macroeconomic indicators tracked by OECD are presented as related values to the corresponding quarter of the previous year in order to find out which state managed to achieve the most formidable progress in one of key parameters. In this research 12 states were initially chosen including Ukraine and Greece, but at the stage of main component determination it turned out that all 6 parameters for these countries are almost equal with average value of [0,14;0,17]. In this case at stage 4 at least 4 components were required to define the vector of weights, that can't be regarded acceptable especially comparing with the rest of states where the main component normally had the ratio significantly higher than the set level. After raging different values the unified scale was obtained and minimum and maximum values were averaged. Then the main component of economic policy is detected and the sought weights are defined. As was noted previously we are very well aware that methods of expert evaluations or personal survey are more eligible in this case, but we hope that results obtained are quite acceptable too.

Methodology

We propose a composite index essentially based on the method of principal component calculation that includes the following steps:

- 1) values unification of indicators under measurement;
- 2) initial unified figures are calculated to obtain average values;
- 3) average values of indicators are used to obtain the matrix of paired correlations;
- 4) the largest value of the correlation matrix is determined;
- 5) the composite index is the sum of the components of correlation matrix and the average values of unified indicators.

The method is effective if the ratio of the maximum value of the correlation matrix to the sum of all its values is greater than 0.5 (the importance of the component is strongly significant). Otherwise the number of principal components under consideration should be increased and the multi-criteria ranking system should be applied. One of the possible ways to substitute the full procedure of index determination is to sum all the main components weighted accordingly to their values (depending on the average value of components).

1) Values unification of indicators under measurement.

The unification procedure presupposes the measurement of the values in order to establish the range of value oscillations within the ranks [0;1].

From the economic point of view, zero (0) corresponds to the worst value and the poorest sustainability index, and one (1), on the contrary, is the greatest level of economic soundness. Respectively, one of three data conversion formulas should be applied: if the best quality of the indicator corresponds to its maximum value:

$$X_{ind} = \frac{X - X_{min}}{X_{max} - X_{min}} \quad (1)$$

If the best quality of the indicator corresponds to its minimum value:

$$X_{ind} = \frac{X_{max} - X}{X_{max} - X_{min}}, \quad (2)$$

where:

X_{ind} is a unified index value

X_{max} is a maximum value

X_{min} is a minimum value

X is an initial value

2) Standardized and average value calculation.

Average value calculation permits to displace each of them on the magnitude of the average.

$$X_{aver} = \frac{1}{n} \sum_{k=1}^n X_{ind} \quad (3)$$

$$X_{ai} = X_{ind} - X_{aver} \quad (4)$$

where:

X_{aver} is an average value of initial data

X_{ai} is a standardized calculated value

It should be specially noted that rounding the final figures may reduce the accuracy of the calculations. This effect can be significantly minimized by using mathematical software packages.

3) The pairwise correlation matrix determination

The pairwise correlation matrix of indicators considered is a matrix, where elements are tested for a correlation of two indicators: i-th and j-th:

$$R_{ij} = \frac{\sum_{k=1}^n X_{ai(k)} - X_{ai(j)}}{\sum_{k=1}^n (X_{ai(i)})^2 * \sum_{k=1}^n (X_{ai(j)})^2} \quad (5)$$

Correlation matrix then takes the form.

$$R_{ij} = \begin{pmatrix} 1 & r_{ij} \\ r_{ji} & 1 \end{pmatrix} \quad (6)$$

The elements of the main diagonal reflect the correlation of index with itself, and, therefore its value is always equal to 1. Symmetric elements of the correlation matrix (r_{ij} and r_{ji}) are equal. Thus, it is necessary to calculate only one correlation coefficient –between the first and second indicators.

4) Determination of the largest value and the corresponding vector of the correlation matrix for the indicators is considered. The values of the matrix are defined as the roots of the following characteristic equation:

$$\det(R - \lambda I) = 0 \quad (7)$$

where

I is the identity matrix

ξ are values of the correlation matrix (R),

The maximum should be selected from the roots obtained, it may be denoted ξ_{\max}

The vector of correlations is built then:

$$w=(w_1 \dots w_n). \quad (8)$$

Here, n is the number of components of the vector, equal to the number of parameters considered, that is determined to calculate the composite index. To set the index up the question of exceptional importance is to determine the vector, since its coordinates are supposed to be weights for the components.

The vector is determined from the following equations:

$$(R - \xi_{\max} * I) \begin{pmatrix} w_1 \\ \dots \\ w_n \end{pmatrix} = \begin{pmatrix} 0 \\ \dots \\ 0 \end{pmatrix} \quad (9)$$

However, it should be noted that such a simple method of the index calculation is not always available. It is required to take into account the significance of each of the major components and select the most important among them. In our opinion, one of the most convenient ways to find the level of the component significance is to calculate its ratio to the rest of the values in the correlation matrix:

$$\frac{\xi_{\max}}{\xi_1 + \dots + \xi_n} \quad (10)$$

If this ratio exceeds the value of 0,5, the parameter is considered sufficient to see the index properly built up, otherwise we propose to add one more component – the greatest among the remaining. In other words, the result is to be compared with the 0.5 ratio till the moment the sum of components turns out to be greater:

$$\frac{\xi_{\max} + \xi_{\text{next-to-max}}}{\xi_1 + \dots + \xi_n} \quad (11)$$

5) The calculation of the composite sustainability index:

By this stage we already have recalculated according to the new scale the adequate index values and weights of parameters under consideration that are to be included in the index. The index itself will be the sum of indicators, taken with appropriate weights:

$$I = \sum_{i=1}^6 X_i * w_i \quad (12)$$

Conclusions

After the completion of calculations the following results were obtained (table 2).

As was stated before, we have also investigated the main macroeconomic indicators for Ukraine and Greece but because of the impossibility to clearly distinguish the main component for these countries we had to exclude them from the research. However, these two states are the perfect instances of the economic systems that are suffering both numerous internal and external shocks. We also focus special attention on these cases because both governments stated the readiness to implement programmes of drastic reforms that might seem to be fully opposed to the economic policy conducted by their predecessors. On the other hand, both states are in a desperate need of external financing, borrowed from international organizations – first of all from the IMF. The impact of provisions provided in the IMF memorandum on the economic sustainability can't be adequately assessed even after its publication in mass media because normally even if these changes are accepted by a local government at once and take effect immediately their real influence on economy and especially the reaction of the economy is quite ambiguous and a time gap is required to make these reforms work. A substantial revision of utilities prices in Ukraine or rejection of the regime of budget savings in Greece might influence GDP, private or government consumption differently: in Ukraine these measures are less efficient because of comparatively big shadow economy and in Greece on the ground of high unemployment and high percentage of private ownership on strategic enterprises.

Table 2. The sustainability index final value

2013				2014			
Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Canada (1,05)	Germany (0,75)	UK (1,12)	UK (0,78)	UK (0,7)	Germany (0,82)	Germany (0,65)	USA (0,8)
Germany (0,8)	USA (0,68)	Germany (0,53)	Germany (0,63)	Germany (0,69)	USA (0,61)	USA (0,48)	Germany (0,55)
USA (0,23)	Poland (0,43)	USA (0,28)	Poland (0,48)	Poland (0,66)	UK (0,59)	UK (0,44)	Poland (0,51)
UK (0,18)	Canada (0,31)	Poland (0,16)	USA (0,44)	USA (0,43)	Canada (0,33)	Canada (0,39)	Canada (0,38)
Poland (0,09)	UK (0,21)	Canada (0,08)	Canada (0,39)	Canada (0,41)	Poland (0,3)	Poland (0,36)	UK (0,23)
Russia (0,04)	France (0,11)	Russia (-0,12)	Russia (-0,02)	France (0,08)	France (0,12)	France (0,18)	France (-0,12)
France (-0,02)	Russia (0,05)	France (-0,2)	France (-0,11)	Russia (0,03)	Russia (-0,55)	Czech Rep. (-0,14)	Czech Rep. (-0,46)
Russia (-0,22)	Hungary (-0,03)	Hungary (-0,85)	Hungary (-0,17)	Czech Rep. (0,01)	Hungary (-0,83)	Russia (-0,58)	Hungary (-0,72)
Hungary (-0,57)	Czech Rep. (-0,51)	Czech Rep. (-1,1)	Czech Rep. (-0,66)	Hungary (-0,23)	Czech Rep. (-1,05)	Hungary (-0,65)	Russia (-1,05)
Ireland (-0,81)	Ireland (-0,97)	Ireland (-1,15)	Ireland (-0,7)	Ireland (-0,35)	Ireland (-1,12)	Ireland (-0,71)	Ireland (-1,07)

Source The table was developed by the author.

Analysis of the data presented in table 2 gives the reason to believe that in this particular case the proposed index displays the real economic situation in countries under consideration quite accurately. According to the calculations the most efficient are the economic policies in the United Kingdom, the USA and Germany. We deliberately chose the UK and Ireland separately to compare the level of these economies' sustainability, especially bearing in mind difficulties experienced by the latter country during the global financial crisis. On other hand, both economists and politicians noticed a considerable intensification of anti-unemployment and inflation programs in the UK in anticipation of the referendum on independence of Scotland in September 2014 during 2013 and the first quarter of 2014.

High positions of Poland in this rating also need to be marked and in our opinion it means that the country which is widely regarded to be one of the least affected by the financial crisis has managed to carry through effective anti-crisis measures and maintain both high level of sustainability and living standards. The gradual descent of Russia in this ranking is obviously the consequence of both sanctions implied, oil prices slump and unprecedented investment outflow.

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Performance Measurement in a Company Joining the Network: a Symbol of Legitimacy?

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Abstract: The qualitative case study of development of performance measurement system in organization after networking is described. The theoretical background of the performance measurement is investigated. The case of an auditing firm in Ukraine is analysed in the context of its influence on network on the performance measurement system. Changes and challenges in performance measurement system after networking are identified. Key developments under contingencies are outlined. The legitimacy is analysed as one of the key concepts for the industry where the company operates. It is argued that joining the network has brought about the introduction of the new performance measurement system implementing more balanced approach. However, it is stated that there is a transition period between these systems, when company pretends that it complies with the regulations of the network.

Keywords: Performance measurement • Performance indicator • Legitimacy • Quality

Introduction

Performance measurement is a subject of interest for both scholars and managers, due to its importance as this is a way organizations can assess whether targeted parameters are sufficient for the organization to be successful (Mills et al, 2000). At the same time, according to Chenhall and Langfield-Smith (2007) performance measures are supporting managers in planning and controlling operations. Traditional accounting based performance measurement systems initially included financial indicators and provided information about financial performance (Chenhall & Langfield-Smith, 2007).

However, since 1970s the epoch of debates has started about lost relevance of traditional management accounting that was called backward looking and needed change (Johnson and Kaplan, 1987). These discussions then led to the development of different performance measurement frameworks that included non-financial measures as integral part of performance measurement and provided managers with tools to change performance measurement systems in alignment with goals of the organization (Otley, 1999, Mills et al, 2000, Sinclair and Zairi, 2000, De Toni & Tonchia, 2001). Moreover, De Toni and Tonchia (2001) suggested that changes in performance measurement system towards broader use of non-financial performance measures were urged by more complicated managerial needs and environment turbulence. Thereby, we can suppose that an organization's performance measurement system changes when an organization joins the network, because the organization's environment also changes.

The network is a particular environment organization has to face when being a member of this socially constructed infrastructure of possibilities (Mønsted, 2003), a form of cooperation where firms are establishing relations in order to address some challenges while being legally independent (Kajüter & Kulmala, 2005) and firms joining the network for several reasons: risk reduction, access to technology, learning, defense against competitors and creating standards (Mønsted, 2003). Environment changes in the network are crucial for existing and new members, because as according to Anderson, Håkansson and Johanson (1994) there are emerging relations between the members of a network and their interaction change their environment as each of them gain some power to influence another. On the other hand, in such challenging situation when the firm environment is getting even more complicated through networking,

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performance measurement system as ex-post formal control mechanism used within management control to assess the outcome changes in order to monitor whether goals are achieved (Dekker, 2004) has to be redesigned to suit the situation.

This research is intended to explore the organization's response to changing environment on the example of the auditing firm located in Ukraine that joined the international network of audit and consulting firms. Ukraine as described by Smallbone D. et al (2010) is a country where market reforms were partially installed and institutional deficiencies exist as market mechanisms are not established and organized. The experience of advanced economies in management control area can be applied only in case when adjustments are made. The auditing and consultancy sector in Ukraine is characterized by high market power of the "Big Four" (Ernst & Young, Deloitte, Pricewaterhouse Coopers, KPMG) that according to the Chamber of Audit of Ukraine had market share of 29% in 2011, but the level of their fees is higher than the competitors have. The national firms are struggling to entice customers from the "Big Four", but there are a few tools to do this, as the ethical principles of the profession limit the use of advertising, organizations seek to get higher share of market in another way. We use case study based on firm A (pseudonym) practice. Initially, this organization was a national audit firm that has made a decision to join Network International (pseudonym). As a member of Network International, this organization has to face the constraints established inside the network and adjust the performance measurement system to this particular environment and implement performance measures accepted by the network.

This paper seeks to explore the development of performance measurement in the organization after networking. In order to tackle the problem two research questions are formulated: *To what extent the system of performance measurement has been changed in the organization as a result of joining the network?* and *What are the challenges in performance measurement after joining the network?* Our research aims at contributing to the literature on performance measurement in unstable environment.

Frame of Reference

Organizations regardless their area of operations and size need to have a system enabling them to know whether they are fulfilling their goals. The development of managerial research is based on demands business and theory is interconnected with practice. Performance measurement is a phenomenon that is hard to define, as noted by Neely et al. (1996, p. 424)

Performance measurement system is "*performance measurement is a process of quantifying the efficiency and effectiveness of action*" according to Lee & Young (2011, p. 85). "*Performance measurement system is a mechanism to allocate responsibilities and decision rights, set performance targets, and reward achievement of targets*".

The models of management employed in different countries in different periods are facing challenges and decisions found to tackle these problems are then translated into some system like it happened with Total Quality Control, just-in-time systems (Schonenberger, 1982), that emerged from problem faced by Japanese companies and then became popular in 1980s when Western states faced the problem of limited resources and Japanese practices started to be more accepted in the world as efficiency was more and more important for the organizations, before the managers came to understand this, the traditional cost accounting models had been employed (Nudurupati et al., 2011). These models showed primarily historical data and it was problematic to employ them to predict the future and to increase organization efficiency, thus the need for a new system has emerged, but the majority of organizations used financial information to assess performance and to make decisions about the future of their organization. As noted by Johnson and Kaplan (1987), financial performance measurement is concerned about short-term indicators that do not account for changes in environment, technology and innovations. Sinclair and Zairi (2000) point out that there are certain factors that act as barriers to use non-financial measures:

"general fear of the unknown; fear of loss of power; fear of loss of job; fear of loss of face, and fear of lack of ability to cope/learn" (p. 148).

Concentration on financial measures reflects the interests of shareholders, leaving other stakeholders (internal and external) out of picture (Brignal & Ballantine, 1996).

Johnson and Kaplan (1987) admit that excellent management control system should be established in a way to ensure competitiveness of enterprise, there is a need for radical changes in the way organizations

measure outcomes and what information is deemed relevant for strategy development. Merchant and Van der Stede (2007) point out that results control as a part of management control systems are important for majority of organizations and require performance measures and evaluations and incentives. Gond et al. (2012) point out that performance measurement is the important part of management control systems employed to align goals with structure and formal controls. As noted by Sinclair and Zairi (2000) majority of researchers admit the need to use non-financial performance measurement, and argue that there is no need to use financial or non-financial measures only, and a balanced approach should be applied and measures have to be chosen to provide managers with relevant information, moreover, they show that practitioners and industry managers had realized the need for “balanced” approach to performance measurement long time ago.

Understanding the need to change performance measurement has led to emergence of numerous “balanced” approaches, where different dimensions of organization were connected to serve efficiency of the system (Chenhall & Langfield-Smith, 2007). Kaplan and Norton (1992) presented “balanced scorecard”, that provided several dimensions of data: financial, customer, internal business, innovation and learning and this approach was developed and applied in industry. As noted by McNair et al. (1990) the change of performance measurement indicators from financial to non-financial can lead to tension and dissensions within companies, when traditional cost system has to be modified and there is no support for such decision in organization. Stata (1989) suggests that when the organization is facing the need to change performance measurement, old financial indicators may not be relevant, but they remain in place.

Performance measurement raises concerns of scholars due to its exceptional role in management control systems, as it is illustrated by Neely (2005) approach to performance measurement in recent literature is centred on issues in its design and implementation.

Gul & Chia (1994) argue that more decentralized structure requires sophisticated management control systems, and they perform better in terms of high environmental uncertainty, and claim that environment should be considered an important factor for design and implementation of control systems. Bititci et al. (1997) argue for quality-oriented measures as a part of performance measurement system to be aligned with company goals and strategy as well as environmental factors and its elements that researchers have given a special attention are integrity of measurements from different levels of control and deployment. Lee & Young (2011) find it important to link performance measurement system and organization structure, they are employing distinction between mechanistic and organic organizations and conclude that there are certain limitations (provided that performance measurement system is assimilated in organization structure that can vary from mechanistic to organic) for implementation of performance measurement system and in every case as the benefits of having a new system can be offset by different factors in organization stemming from its nature.

Important insights into contemporary performance measurement systems are presented by Franco-Santos et al. (2012), they argue that changes in performance measurement systems are triggered by urgency to create value both for company shareholders and other stakeholders. Contemporary performance measurement systems provide both financial and non-financial measures connected to the strategy of particular company. Performance measurement system that involves variety of non-financial measures may entail some problems such as biased evaluation, conflicts in organization and increase in cost.

The perceived unresolved issue in performance measurement systems is that they are not flexible enough to comply with environment. There is a need to create management information system which would process data in the most efficient manner. Moreover, the top-down approach employed by majority of organizations is in fact the reason for resistance to changes on lower organizational levels (Nudurupati et al. 2011). It means that the issue of performance measurement system is still very important, especially in multi-cultural environment.

Fitzgerald et al. (1991) presents a framework for analysis of performance measurement in services and suggests that competitiveness, financial performance, quality of service, flexibility, resource utilization and innovation have to be measured; measures of competitiveness and financial indicators are measurements of result, determined by the rest of measured factors. Quality issues are also raising concerns. Chenhall and Langfield-Smith (2007) argue that performance measurement system has to be designed in a certain way to connect quality and strategic information.

As our research is centred on services, we have to point out that many of the studies in the issue are

concerned with adaptation of such performance measures as productivity, quality and customer satisfaction from manufacturing to services (Sinclair & Zairi 2000). On the other hand there are many sources where distinction between performance measurement in manufacturing and services is not made (Sinclair & Zairi 2000), and the decision about performance measurement system depends on different external and internal organization-specific factors.

Contingency theory is rooted in research of leadership carried out by Fielder (1964) and presents one of behavioural theories. In case of organizations this theory states that changes in certain factors would lead to changes within organizations. There is no universal way to carry out business and changes in situational factors are signals for change in organization and subunits of the particular organization. Development of contingency theory has led to utilization of this approach in organization design and management. Organizations are considered as network of elements functioning in interaction to achieve the purpose (Emmanuel et al., 1990). On the other hand, it is recognized that any organization operates in a certain environment.

Contingency theory is studying management control as some kind of mediating factors between the organization and its environment and it draws attention to major classes of contingent factors (Sissaye & Epstein 2001). As noted by Emmanuel et al. (1990) these factors include environment, organizational structure and technology. There is a loss of organizational effectiveness if internal organizational characteristics do not match with demands of external environment, which is socially constructed and can be seen in the socio-economic, political, cultural context (Otley, 1994, Neimark & Tinker, 1986).

There are various forms of cooperative ventures and strategic alliances that, as highlighted by Langfield-Smith & Smith (2003), can help to adapt to environment and even though they explore management control performance measurement deemed as an important part of management control systems, thus affected by environment the firm is operating in.

The notion of 'mechanistic' and 'organic' management systems is particularly important in case of organizations in terms of changing conditions and requirements. Organic forms are more appropriate in changing conditions, while mechanistic systems are characterized by clearer boundaries in the organization. Burns and Stalker (1961) identified variables influencing the structure as the product market and the manufacturing technology and noted that as each type of management system is rational it is possible to construct it in a way that suits the organization.

Contingency theory states that organizations are influenced by interaction of their goals, people, technology, management, size and environment and managers shape the organization which leads to a certain structure that pre-determines organizational performance (Jackson, 1990).

Performance measurement is contingent, because it is a function of interaction of all elements of the system and environment; it means that holistic approach has to be employed in examination of the organization in a changing environment. That is the reason why the same performance measurement system increases performance in one case and leads to failure in another. This theory suggests that contingencies in external environment explain many changes in management control (Kajüter & Kulmala, 2005). It seems that environment is the most influential variable when changes emerge within the organization. As Otley (1980) analyses how environment can be a way to explain differences, we can see all the complexity of interconnections between environment and management control systems. In Brignal and Ballantine (1996) contingent factors of performance measurement system are defined as life-cycle stages (external environment, business mission, generic strategy) and internal environment. Garengo and Biitci (2007) argue that performance measurement from management control perspective is explored with a contingency approach, recognizing that the contingency variables should be taken into account. These variables are individual for each organization, Chenall (2003) include strategy, objectives, structures, culture and technology and other organization-specific factors.

Institutional theory is a set of approaches to organizational development that maintain that behaviour is driven by broader set of interests than rational individual interests (Kaplan & Ruland, 1991). Organization legitimacy is developed within the framework of institutional theory, along with contingency theory it explains process of changes in organizations, they are the sociological adaptation theories (Sissaye & Epstein, 2001).

Legitimacy is a term that means practices in accordance with law, both in legal system and social laws, norms accepted in a certain society. Deephouse (1997) explores the connection between "legitimate"

behaviour of institutions and the legitimate status conferred by social actors (society and others). Organizational legitimacy is gained through a process of legitimation: approval from main stakeholders (Kaplan & Ruland, 1991). Dowling and Pfeffer (1975) define organizational legitimacy as a status when the value system of the organization is congruous with social system and any disparity between the two is threatening entity's legitimacy. The possibility to make proactive choice in changing environment gives the firm an opportunity to take into account interests of different stakeholders and to create more legitimacy for main stakeholders (Modell, 2001). There seems to be a certain "social contract" between the company and society in which it operates, as stated by Shocker and Sethi (1973) organization as social institution has to deliver some merit goods for society and serve interests of groups that empower the organization to exist. The organization seeks to create certain perception of relevant groups of the society (Aerts & Cormier, 2009). That is why organizations may sometimes pretend to act in some way to gain legitimacy from the group in the society that is influential enough for the organization to involve in legitimization activity (Kaplan & Ruland, 1991). In our study legitimacy issues are explored.

Methodology

The aim of this section is to provide an overview of methods of research and data gathering techniques employed to investigate the research questions. This study is explorative and descriptive. The project work is aimed to provide exploration of reasons prompting the firm to join the network and how performance management system evolves in time after networking. In our analysis we target certain organization and situation in particular environment, we used qualitative analysis, particularly interviews. The secondary data are used to get broader understanding of the research questions.

Research Design

This research is based on a case study method. There is a single case study to investigate a situation in particular settings. The audit and consulting firm A was chosen due to the nature of research questions and the opportunity to get information about recent development. The case study provides us with a picture of perception of actors within the organization and within its real-life context. On the other hand, the results acquired through this method cannot be generalized even when exploring other members of the same network and results are biased by the points of view of interviewees, but we can still add this to existing knowledge (BentFlyvbjerg, 2011).

Data Collection Method

Interviews were chosen to collect the empirical data necessary to get an insight about the situation and processes within the company. It is important to understand what challenges the company had to face both before and after networking and how organization has adapted to the new environment.

We chose the convenience sampling and interviewed two managing partners from different offices, and one auditor to find out about response of employees to changes. These people were chosen because of their accessibility and personal contacts. It gave us an advantage, because we can look deeper into the issue. We used secondary data for our research to get broader understanding of the case. We analysed the surveys, documents and current legislative base for audit and consulting firms in Ukraine. It gave us an opportunity to understand business environment, legal aspects of conducting the audit and consulting as well as distinguish requirements to performance measurement within network.

We take into account the possibility of participant's error, meaning that research settings may influence the results (Saunders et al., 2003) and thus interviews took place in the most suitable time chosen by an interviewee and in the native language (Ukrainian), after the interview, the transcripts were sent to interviewees to give them an opportunity to make comments and received back with their remarks. We also had in mind the threat of participant bias, when an interviewee is being only partly honest or tries to conceal some information and create a positive impression about a certain organization, in our case we needed the interview with Auditor C to get employee's point of view on actions of managers, explore positive and negative sides of performance measurement system and also to design follow-up questions for Managing Partners in such a way that they could reveal some issues in the organization. Our research was limited because we could not reach the headquarters, however since we discuss the organizational level it only means that results can hardly be generalised on the network we explored. Having ethical issues in mind, we changed the name of our organization to firm A and the name of the network to Network International.

Since the research is aimed to provide insights in the performance measurement in the organization joining the network, we relied upon the mix of qualitative and interpretative techniques. Interviews with employees are viewed as a major tool of data gathering. Data is obtained and reinforced from different sources. It means that multiple instruments are applied and data is triangulated. That gives us an opportunity to assume that we obtained relevant data and can reach the goal of research as well as to provide possible development of present research.

Data/Empirical section

The issue of performance measurement is examined on the example of a Ukrainian audit and consulting firm. Auditing is an entrepreneurial activity that includes organizational and methodical provisions of audit and execution of audit and other auditing services according to the Law of Ukraine “On Auditing” (1993). Standards of Audit are adopted by the Chamber of Audit of Ukraine and this authority issues certificates for auditors after examination and register auditing firms. There are instructions about performance measurement issued by the Chamber of Audit of Ukraine. Requirements of these regulations are the same for all audit firms and auditors, but each entity can employ international regulations as long as they do not contradict with national legislation.

The case of company A was chosen to investigate research questions for several reasons. First, the case of economy in transition presents an example of weak institutions and volatile environment where it is critical for a firm to adapt to unexpected changes and high uncertainty. Thus, this enterprise was established as a national company and its management control system was designed with regard to factors mentioned above and it was expected that it will be suitable for pursuing organization goals. But some factors and unresolved issues have led to a decision to join international network and the organization was obliged to comply with standards of the network. Another cause to choose this organization is that it is quite possible to distinguish the changes in management control brought by networking. There is a dramatic change in firm environment and operations, thus management control system has to change accordingly. Finally, influential factor was an opportunity to approach this company and their consent to disclose information necessary for research.

Network International that company A joined is included in top ten world auditing and consulting companies and associations. It includes 590 offices in 105 countries and Network members are shareholders in Network Limited, an Isle of Man company limited by guarantee. Network Limited owns Network International Limited (NI) a Jersey, (Channel Islands) non-resident corporation tax company which is the operating company for the international network. Network International does not provide direct services to clients – these are delivered independently by Network International member firms. The Board of Directors comprises a Chairman, Deputy Chairman, five Regional Chairmen and three additional members – all elected by the Network Council. There is also an Audit Committee responsible for Quality Control within the network. There are several ways to ensure quality: full-scope reviews on-site, limited scope reviews off-site, Annual Quality Control Confirmation (AAQC) survey, IFRS support initiative. We have to note that it is worldwide practice for internationally operating audit and consulting firms to be a network of independent member-companies due to dramatic differences in legislation.

In order to structure the research, we can distinguish between different periods of development of the company: independent operations, transition period as a claimant to join network, operations as a member of network and according to internal regulations.

- issues relevant for transition economy have influenced the audit and consultancy business while market interaction evolves and international links between companies are established;

- auditing is bounded by requirements of laws and restricted by the Chamber of Audit of Ukraine that requires obligatory qualification exam every five years. Firm A as a member of network has internal quality control, Network quality assurance and external quality control in place that clearly more time-consuming and requires more resources:

- there is an issue of decentralized nature of network relations and bureaucratic interaction between “headquarters” of network and Firm A.

Table 1

Performance measurement in light of contingencies

	Independent period	Transition period	Membership period
Environment	- competition as a niche player, - a few clients are large and medium entities - legal constraints about operations of auditors	- competition is higher - a few clients are large and medium entities - legal constraints about operations of auditors	- competitive advantage is membership in network - more big clients - legal constraints about operations of auditors and regulations of network
Organizational structure	Cooperation of several auditors, organic structure (flexible and adaptive)	Limited Liability Company Mechanistic organization	Limited Liability Company Mechanistic organization Presence of “headquarters” above organizational level that coordinate interactions with other members of network and controls their operations
Performance measurement	Financial indicators	Financial indicators, implementation of standards provided by network	“Hybrid” performance measurement system

Firm A still has financial performance indicators as a way to measure performance, as well as non-financial. Our case of firm A is a clear example of how unstable and unpredictable environment influence the development of certain entity. The analysis based upon contingency theory helps us to understand why the decision to join the network was made through contingencies in external environment that our company has foreseen (Kajüter & Kulmala, 2005). These contingencies are more severe competition, unpredictability of changes in legislation and high level of risk to lose important clients. There is also lack of expertise and weak institutional development that have prompted the company to join the network. Seemingly this decision was made due to contingencies in organization’s environment this result was expected due to peculiarities of the research site.

There is no evidence except Managing Partners` beliefs that clients that have been working with Firm A for years would switch to another auditor, but the choice was made because they believed that they are not perceived in a way they would like to be perceived. Thus, it was some kind of legitimization procedure to show all the groups of interests that they can be a safe haven for their stakeholders.

As for performance measurement system we can say that it was centred on financial performance and main decisions were made based on fulfilling the budget in the previous period. Non-financial indicators were not measured, but operations were constrained by legislation. This approach has turned out to be inappropriate in a long-run in terms of competition and lack of clients’ trust to the national companies that are not members of some international network. This gives us a reason to say that legitimacy was an issue of the company on the stage of independent development.

The decision to join the network changed the decision-making process, because before that decision was made by Partners who were also co-owners of the firm A, now they have to give a major part of power to the network. This was an unexpected finding, because control mechanisms within the network were expected to be organic rather than bureaucratic (Burns & Stalker, 1961) and we did not expect to find out that in fact there is such complicated control procedure within the network.

Contrary to common understanding of a network as vague connections between firms, our interviewees described a very strict and hierarchical management structure in the network, where Board of Directors greatly influence the member companies and make them adjust their own strategic goals to the ones formulated by the network. Organic decentralized network turned out to be a hierarchical structure where formal control is prevailing. If we take the institutional theory as our starting point, we can say that this network is a way to access the global market and gain legitimacy in only one step. On the other hand, if it weren’t for these formal controls, interaction between members of the network would not be so simple.

Now they can have joint cross-border audit and its quality is consistent all over the network. We would like to point out, that after we got empirical data, 'network' is seemingly just a name of the organization, the concept of partial organizations (Ahrne & Brunsson, 2010). There is also a growing number of reports to be sent to headquarters and procedures to be fulfilled.

Performance measurement system that included financial performance indicators, budgeting and profit as the most important indicator suited both management and employers of the firm, and introduction of the new system has added more procedures to the established ones. This result proves that suggestions about possible problems expressed by McNair et al. (1990) are true in our case, and financial indicators outplay non-financial indicators when it comes to the decision-making process.

Resistance to change in performance measurement is understandable both from the point of view of management and employees. Management is struggling with continuously rising costs that contradict profit maximization. Quality assurance is a competitive advantage, but it is hard to go from income per a fulltime employee as the main indicator and budgeting as an important tool to make decisions to some ethical and moral principles. On the other hand, employees are confused, since the reward mainly depends on hours they work and number of audits they carry out, when only small portion of incentives they can get rely on quality of their work. There is also a growing number of reports to be sent to headquarters and auditing itself is also regulated by the network and these procedures are time-consuming. Seemingly, there are some other mechanisms to make employees increase qualification that our respondents decided not to reveal, because our evidence shows that all employees are putting efforts to increase quality of services.

Conclusions

According to theoretical assumptions about performance measurement in changing environment, performance measurement system is becoming more complex due to the need to adapt to changes. Cooperation with other companies is a way to adjust to these changes, because it gives an opportunity to implement best practices in their operations. On the other hand, there is no way to predict whether that kind of change will be good for performance of a particular firm. In our case this was one of the research questions, we tried to find what has led the company to the decision to join network.

Our findings enable us to suggest that factors in the environment of an organization such as competition and needs of clients have influenced decision to join the network. This can also be regarded as the most efficient and simplest way to legitimise the organization for a certain group of clients, particularly joint ventures, subsidiaries of multinational corporations and other big clients of audit and consulting firms.

Contingency and institutional theory provides us with framework of analysis of organizational behaviour depending on the environment the company operates in. We use contingency theory to show how changes in environment affect performance measurement if we regard the network as a new environment for this particular organization. There are several challenges in implementation of the new performance measurement system in this environment. The first one is the process of ongoing centralization and formalization of relations within the network whereas we expected more decentralization and trust. There is a structure of network that enables firms to cooperate only as business units, all the reports are gathered by network "headquarters" and there are some strategic choices made by Board of Directors of the network.

As for the first research question "To what extent system of performance measurement has been changed in the organization as a result of joining the network?" our research has shown that joining the network is a reason the company has started to implement non-financial measures. First, the individual performance measures have changed and now the level of qualification, foreign language knowledge and other factors influence the reward. Organization performance measures included financial performance in a certain period, now the quality is deemed the main performance measurement indicator. We can conclude that networking has influenced the performance measurement system and it has become a hybrid system. This is due to legitimacy issues in the organization. The adherence to demands of the network is a vital part of organization policy to establish relations with main groups of stakeholders: society, employees and clients.

Our research answered the second question "What are the challenges in performance measurement after joining the network?" In our case there also seems to be some problems with implementation of the

new system. Since the quality of services become the declared aim of operations of the company, the structure of reward and incentive system had to change accordingly, but in our case it does not seem to be happening. There can be various explanations for this but it has led to another challenge in performance measurement in our case. Does quality really matter for managers more than profit? Partners seem to be very concerned with the quality and image of the firm, but as owners they are also interested in profitability of the company. Moreover, they have expressed concerns about rising costs of maintaining high quality. We can conclude that in our case we see performance measurement system that has not been fully implemented, even though all necessary changes have been made in procedures and all new indicators are measured and reported. The performance measurement system we can observe now is not integral, because financial indicators are used to make decisions inside the organization and quality control is used to remain a member of network and be grasped as one by certain groups of society.

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Taxonomy of International Fragmented Production by Transnational Corporations

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Abstract: The paper discusses the international production system of transnational corporations (hereinafter TNCs), which includes not only their subsidiaries and affiliated companies but also subcontracting parties not related to TNC through the property. International production by TNCs continues to evolve rapidly and grow in scale. The paper analyzes the parameters of international production, FDI, sales of branches and their added value. The taxonomy of global value chains' participants (hereinafter GVCs) in terms of business strategy is considered. Five types of chains' participants have been identified: an integrated company, a retailer, a leading company, a supplier of products and services on turnkey basis, a supplier of components. It has been substantiated that market leaders (flagship companies) are the main elements of the global chains. They effect coordination and management of the product creation process. The paper introduces a classification of GVCs into two types – buyer-driven value chains and producer-driven value chains.

Keywords: Transnational corporations • International production • Global value chains • Foreign direct investment

Introduction

With the purpose to gain complete understanding of the modern trends of international fragmentation of production by TNCs it is very important to review the organizational structure of global value chains. GVCs' institutional structure can be viewed from several perspectives. In terms of stock ownership it includes controlled, subcontract and arm's-length participants. The taxonomy of global value chains' participants in terms of business strategy is of importance. Proposed taxonomy illustrates that all the participants have different interrelated functions and tasks. These functions determine the role of the participants of the value creation process in the fragmented production.

Study purposes to analyze the architecture of international fragmented production by TNCs, to identify different types and kinds of global value chains; to show the difference between functions and tasks of GVCs' participants, their role in the value creation process; to identify the positions of flagship TNCs in management of the supply chains; and to demonstrate their leading role in coordinating and organizing of all fragmented production.

Conceptually the term of value chains was developed back in 1985 by M. Porter (Porter 1985) for explanation of the companies' competitiveness. J. Dunning, P. Buckley, and R. Caves analyzed different types of TNCs, in particular horizontally- and vertically-integrated companies. G. Grossman and E. Rossi-Hansberg elaborated the theory of fragmented production and have shown that it is based on execution of specific tasks and functions. A number of pioneer works (2001-2012) by G. Gereffi, J. Humphrey, and T. Sturgeon (Gereffi et al. 2005) substantiated GVCs' structural features, operational distinction of the value creation process stakeholders. However, not all modern trends of TNCs' fragmented production enlargement have been reflected in the economic literature.

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Basic Results of the Research

The global financial crisis has not stopped the explosive growth of GVCs but only modified their geographical diversity and other structural priorities (Gereffi 2014). For example, new investments ('greenfield investments') in the post-crisis period exceed FDI in the form of mergers and acquisitions. Despite the slowdown in outward foreign direct investment (FDI) in the post-crisis period of 2008-2012, the international production of transnational corporations continues to expand rapidly. It largely determines the dynamics of the world economy and international trade, their structure and other development trends (Gawande et al. 2014). Over the past 9 years the average amount of new FDI comprises at least \$ 1.4 trillion that is 7 times higher than in the nineties. Aforementioned has led to a 12 times' increase of cumulative value of world FDI in two decades. Moreover, if from 1990 to 2005 the cumulative value of FDI increased by \$ 12.7 trillion (i.e. for 15 years), later the same volume growth was achieved just in six years (2006 till 2013) (CNUCED 2013).

The calculations show a significant correlation between the cumulative value of FDI and the country's participation in global value chains. The longer investment projects of TNCs exist in the country, the more significant share of foreign value-added is contained in its exports. In other words, more 'mature' investments assume higher level of production cooperation in work in process, intermediates and raw materials simultaneously with related foreign units and contract holders (Farole et al. 2014).

Another satisfactory evidence of the key role of TNCs in the GVC development is that countries with a high ratio of FDI stock to GDP have, firstly, a higher share of foreign value added in exports; second, higher indicator of participation in GVCs; third, relatively higher share of value added in the global trade compared to its share in the global exports. In the first case it is determined by the fact that the subsidiaries apply the added value of the other foreign affiliates for their exports on a large scale. In the second case, it indicates that TNCs' affiliates not only receive products from other foreign companies, but also themselves supply products to other value chain elements on a large scale (Roh et al. 2014).

The large scale of global value chains is evidenced by the fact that 60% of current world trade (more than \$ 20 trillion in 2012) corresponds to the trade in semi-finished goods, components and intermediate goods and services, which are the result of separate stages or functions of the production process and designed for use in the following (other) stages of the process. According to UNCTAD estimates, the world exports value of almost \$ 5 trillion is the result of double counting statistics of different countries that is directly caused by the inclusion of the value of previously imported semi-finished products into the export products of the participants of TNC international production (CNUCED 2013).

The positions of TNC foreign affiliates in exports and imports of countries and the volume of intracorporate trade are illustrative of the GVCs' scale. Almost two thirds of exports and imports of the United States is directly related to the system of international production both of American and foreign multinationals. In Japan 85% of exports of goods and services are accounted for by its TNCs. In addition, Japanese subsidiaries of foreign multinationals carry out 8% of the country's exports. Thus, 93% of exports of goods and services in Japan are related with the system of fragmented international production and GVCs. China's exports become increasingly associated with the inclusion of foreign companies located here into the global value chains. In 2012, 50% of exports and 48% of imports were accounted for TNCs' affiliates.

International production systems of MNCs consist of the flagship company that defines the whole strategy and organizational policy of the global network, and the local suppliers of the company. D. Erenst and L. Kim divide the flagship TNCs into two types. The first are brand leaders (e.g., IBM, Compaq or Dell) that include third-party suppliers into the system of international production, however, require high performance and quality from them. The TNCs organize GVCs in order to achieve reduction of costs, product differentiation and definition of market entry strategy (Ernst & Kim 2002). The second type of flagship TNCs are contract manufacturers that create their own system of international production and integrated supply chains to service the brand leaders.

The corporation Solectron, headquartered in California, is an example of a flagship TNC of the second type. Solectron is one of the largest contract electronics manufacturers in the world with annual revenues of \$ 7 billion and 30,000 employees at numerous overseas factories. It ranks second position in the top 100 global outsourcing providers in information technology. International production systems of

Solectron include several global value chains, for example, for the production of automotive components, telecommunications equipment and personal computers.

Some of them cooperate with similar food product chains of other TNCs, in other cases the TNC competes with the other companies' GVCs. In 2009, Solectron was acquired by its rival transnational company Flextronics¹⁶.

The taxonomy of GVCs' participants in terms of business strategy appears to be important. According to T. Sturgeon, chains' participants can be classified into the following five types: an integrated company, a retailer, a leading company, a supplier of products and services on turnkey basis, a supplier of components (Sturgeon 2001).

The integrated companies historically have been pioneers in the fragmentation of production and the GVC creation. They attempt to include all the stages within the value chain in their activities, from development of commodity strategy to manufacturing components and finished product. Such largescale, diversified and globally operating participants of GVCs, in fact, have their own system of international production. However, their number has decreased over the last decade due to deepening of vertical production fragmentation and low economic performance of the companies that continue to maintain such integrated structure (UNCTAD 2010).

Other participants of GVCs are retailers carrying out sales of products and marketing functions. They are the chain element that provides the transfer of goods or services from the producer to the end-consumer. They are also referred to as retailers, marketers, resalers, distributors or end-sales agents (Hamilton et al. 2011). The world's largest retailers are TNCs like Amazon.com, Sears, Gap, Banana Republic. Some of such retailers are included in the fragmented production system of TNC producers, while others (such as Tesco, Carrefour, Nike) take the lead over the global value chains.

The leading companies (flagship companies) are the major elements of the global supply chains. This definition reflects their great impact on the organization of GVCs, coordination and management of the entire new product creation process. The flagship companies usually initiate the development and the launch of the product production, determine the geographical diversification of the value chain. They find subcontracting suppliers of semi-finished products and encourage them to invest in the organization of new activities. Typically large-scale high-tech TNCs – developers and producers of final goods and services – become the leading companies (e.g. Dell, Smart/Daimler, as well as, Ford, IBM in the past decade). However, occasionally the leading role in GVCs may belong to the global retailers (e.g., Walmart) or suppliers of components (Intel).

The suppliers of intermediate of products and services on turnkey basis also play an important role in GVCs. They relieve the leading companies from the necessity to produce numerous types of components. While the flagship TNCs supervise and provide instructions, the supplier company on turnkey basis enjoy the operational and financial sovereignty and manage geographic fragmentation of the stages of complex components' or integrated services' production (Saliola & Zanfei 2007). Eventually they develop their own international production subsystems, affiliated with the global architecture of flagship TNCs' international production. The following TNCs appear to be the most common suppliers of complex intermediates and services on turnkey basis: Celestica, Solectron T, Delphi, UPS, Fedex, Arthur Anderson, etc.

Compared to the suppliers of complex intermediates, component suppliers specialize in certain semi-finished products, work-in-process. Sometimes they are also referred to as specialized suppliers or subcontractors of components, because they specialize in the supply of specific intermediates in GVCs. The medium-sized and even small-scale producers happen to be those firms, but sometimes well-known TNCs perform this function (e.g. Intel, Microsoft, BF Goodrich), supplying certain parts or services to the other value chains.

UNIDO analysts distinguish two types of GVCs: buyer-driven global value chains and producer-driven global value chains (Memedovic et al. 2004). Introduction of the taxonomy is determined by the specific nature of new knowledge and technology absorption and the interaction of the subjects of GVCs' institutional structure. In general the fragmentation of production based on standardized technology is carried out by means of customer-oriented chains. The production of high-tech innovative products, characterized by a significant role of patent control, stimulates the emergence of producer-driven value

¹⁶ Solectron Asia Corporation. Affiliated Company: Solectron Corporation. – Available at: <http://www.solectron-asia.com/affi.htm>.

chains.

In the GVCs of the first type the major buying company has core competence in sales of goods under its own brand and therefore organizes, coordinates, and controls the production, being responsible for planning and marketing. Such global chains are specific to the labour-intensive industries (e.g., food processing, textiles, manufacturing of clothing, shoes, toys, furniture, etc.) and often cover countries with cheap labour (Gereffi 1999).

In case a producer becomes a driving force of the international production fragmentation, he controls the key technology of the product manufacturing process. In this type of GVCs, typical for industries with high or medium research intensity (e.g., automotive, electronics, telecommunications), the manufacturer not only coordinates the entire value chain but also helps subcontractors, suppliers or its customers.

Conclusions

International production of transnational corporations largely determines the dynamics of the world economy and international trade, their structure and other development trends. A significant correlation exists between the cumulative value of FDI and the country's participation in global value chains. The longer investment projects of TNCs exist in the country, the more significant share of foreign value-added is contained in its exports. In terms of business strategy the taxonomy of global value chains' participants includes the following five types of chains' participants: an integrated company, a retailer, a leading company, a supplier of products and services on turnkey basis, a supplier of components. With regard to the specific nature of new knowledge and technology absorption, as well as interaction of the subjects of GVCs' institutional structure, there are two types of GVCs – buyer-driven global value chains and those determined by the manufacturer priorities (producer-driven global value chains).

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Ukrainian Banking Services Market Development in the Context of European Integration

IULIJA DANYLOVA¹⁷

Abstract: This paper analyses the current state of the market of banking services in Ukraine in the context of European integration. Stability of the banking system is one of the leading priorities of the financial policy in Ukraine. The solution to this problem involves improving banking standards and rules of banking regulation on the basis of implementation of the European norms and standards. However, given the problems now existing in the banking system of the EU (weaknesses in the system of banking regulation, which were examined by currency and financial crisis, a permanent change in the regulatory field in the EU) Ukrainian authorities should approach the process of adaptation of the national banking legislation to the EU's very carefully. The Ukrainian banking market is attractive for European banks. However, the interests of the domestic banking system and foreign banks do not always coincide. European banks are focused on the priority of ensuring stability by solving problems with liquidity, through financing foreign affiliates and withdrawal from less developed countries.

Keywords: Banking regulation • Banking sector • Basel III • Financial system • Market of banking services

Introduction

The Ukrainian banking sector is being reformed according to the rules and standards of the EU. The main principles of current reforming are: 1) ensuring economic sovereignty of Ukraine in conditions of increasing co-operation between Ukraine and the EU members; 2) harmonization of the interests of Ukraine and its banking sector with the interests of the EU in the process of strengthening integration processes in the economy and the banking sector; 3) transparency of the mechanisms of penetration of foreign capital in the Ukrainian banking sector and its impact on the development of the national economy and the banking system; 4) the continuity of the process of adapting Ukraine's banks to the EU banking sector and ensuring the efficiency impact of the banking system on the pace and scale of domestic commodities.

Literature review

It is impossible to study the current state of the market of banking services in Ukraine in the context of the European integration without searching for the main indicators of the development of the banking sector of the EU. Such data can be found in the articles: Facts and figures (2012) and Facts and figures (2013) published by the European Banking Federation. The main indicators of the development of the Ukrainian market of banking services can be observed in the Annual report of the National Bank of Ukraine (2013), Bulletin of the National Bank of Ukraine (2014). In addition, a number of studies of the Ukrainian economists are dedicated to the questions of the statistical data and the role of foreign capital in the banking system of Ukraine. These are the articles by Heyets V. (2006) and Ostrolyckiy M. (2012).

Results

The consequences of reforming the national banking sector in the context of the European integration should be consistent with the strategic priority of the financial policy of Ukraine – to ensure the

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stability of the banking system. Crisis and counter-cyclical innovations of Basel III give grounds to assert that the implementation of these rules will help Ukraine to promote effective and adequate protection of investors and to improve the investment climate; to enhance the movement of investment capital across the borders of Ukraine; to improve the stability and reliability of the banking system; to reform the regulatory framework for supervision on a consolidated basis for financial groups, which include banks; to increase the quality of corporate governance, systems of risk management and internal control in banks; to ensure the integrity of the financial system, which is a prerequisite for effective cooperation of its subjects.

Current state of development of the market of banking service of Ukraine shall be analyzed in comparison with the same area of the Member States of the EU. In our opinion, the main indicators of its development should be considered in the context of two groups: general and specific (Fig.1.) The first should include the number of banking institutions and the participation of foreign capital in their activities, performance indicators of the banking system development, analysis of assets and liabilities, and the level of capitalization. Specific indicators of development of the market of banking services require research of credit and investment portfolio, the structure and dynamics of basic banking services.

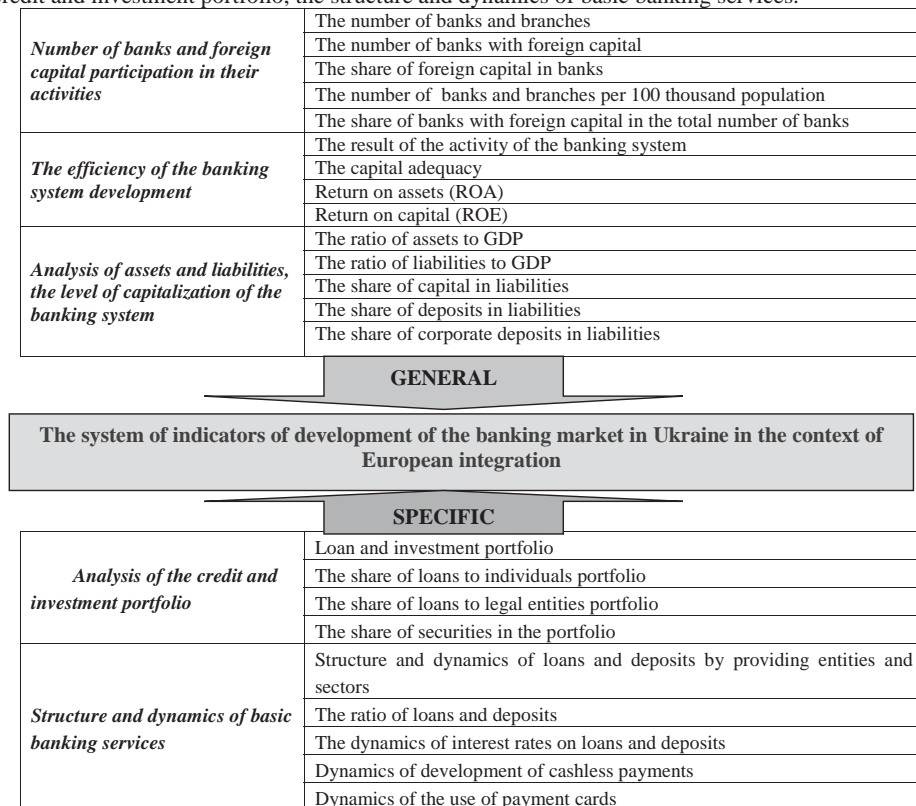


Fig. 1 The system of indicators of development of the banking market of Ukraine in the context of European integration

Source The chart was developed by the author

An important part of the group of general indicators is the number of banking institutions and the participation of foreign capital in their activities (Fig.2).

Such trend reflects a significant share of banks with foreign capital in the total number of banking institutions. The significant presence of foreign capital in the authorized capital of banks should also be noted. The expansion of banks with foreign capital in the Ukrainian banking market contributes to the

further implementation of modern banking technologies; international experience in banking; high level of customer services; quality of services, integrated approach to customer services; implementation of the principles of corporate governance in the banking practice. In addition, the presence of banks with foreign capital accelerates development of Ukrainian banking system as a result of increasing competition among banks. Integration of the domestic market of banking services in the European financial space requires bringing the domestic legislation to the European business rules in general and banking in particular. It will be a further impetus for the revitalization of the foreign banks in the domestic banking market.

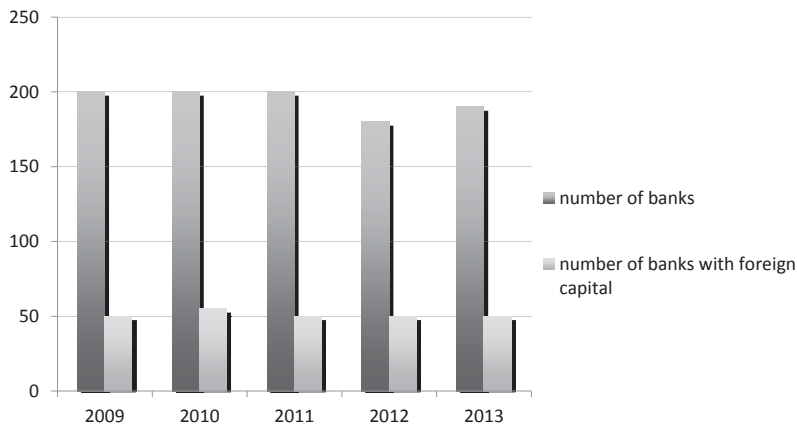


Fig.2 Dynamics of the number of banking institutions with domestic and foreign capital in 2009-2013

Source Key performance indicators of banks of Ukraine. http://www.bank.gov.ua/control/uk/publish/article?art_id

Along with this, it is worth noting that involvement of foreign capital in the banking system may have an ambiguous effect on its functioning. Particularly noteworthy are the following aspects of this problem. First, assuming the strong presence of foreign capital in functioning of the banking system may cause the possibility of crowding out of banks with domestic capital and loss of investor control over the banking system. Several new member States of the EU have faced the similar challenge. In this case, there is a possibility of shifting vectors of financial flows in the country in favour of financing enterprises with foreign capital participation. In the future, it may compromise the financial security of Ukraine or even lead to the loss of financial and economic independence.

Secondly, foreign banks may be less inclined to implement credit activity in Ukraine, for example, when the economic situation in the country is changing dramatically, or to focus their activities on large companies, mainly with foreign capital. This, in turn, can degrade stability of the banking system of Ukraine.

Third, a sharp increase in the share of foreign banks in the banking system of Ukraine, which have a high level of competitiveness, may lead to disruption of the competitive mechanism of the banking market. Consequently, the Ukrainian market of banking services may be monopolized. These risks maybe exacerbated by the low level of competitiveness of Ukrainian banks, the degree of openness of the financial system to foreign investors, the mechanisms of regulation of the inflow of foreign capital, the stability of the economy.

All the above requires, in our opinion, the development of a balanced policy in the expansion of foreign capital in the functioning of the banking system to avoid these risks and to simultaneously take advantage of the development of competition on the capital market, improve service levels, reduce credit and raise interest rates on deposit operations.

The following important general indicator of the development of the banking market of Ukraine is the intensity of development of a network of banking institutions and branches, which is one of the conditions of stability, reliability and performance of banks. In this context it is necessary to define two main problematic aspects. First, the number of points of sales of banking services on 100 thousand of

population. In the EU there are 40-50 such points, whereas in Ukraine the number is not more than 3. We believe it is appropriate to compare the specified index in Ukraine and Germany, which is one of the most powerful members of the EU (Figure 3).

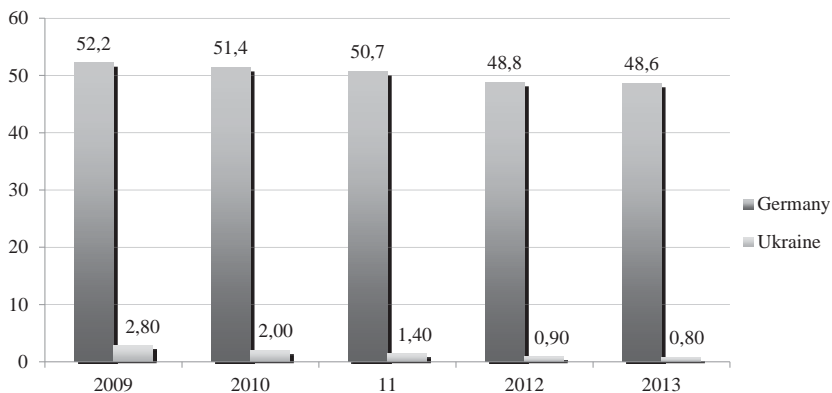


Figure 3 The number of banks and branches per 100 thousand population in 2009-2013 in Germany and Ukraine

Source Statistics on payments and securities trading, clearing and settlement in Germany 2009 to 2013. (2014). Deutsche Bundesbank. <http://www.bundesbank.de>; Key performance indicators of banks of Ukraine, http://www.bank.gov.ua/control/uk/publish/article?art_id

Secondly, the banking institutions throughout the country have uneven placement, which contradicts the main function of banks regarding the quality of the banking services. Banking sales points exist in all regions of Ukraine, but most of them are located in the city of Kyiv and industrialized regions (Figure 4).

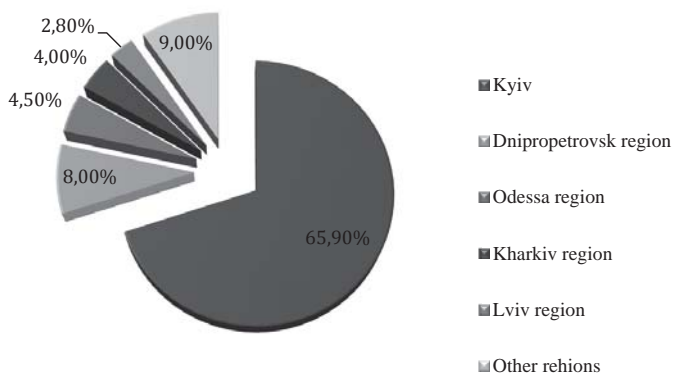


Figure 4 The concentration of banking institutions in the regions of Ukraine in 2013

Source Annual report of the National Bank of Ukraine (2013). <http://www.bank.gov.ua>

This concentration is due primarily to the fact that these regions have a high investment rating. However, this situation has a negative impact on the development of the market of banking services in general, reducing the demand for services and narrowing the possible directions of its segmentation.

The next part of General indicators of development of the banking market of Ukraine is the efficiency of the development of banking. Primarily, it considers the performance of its activities, the return

on assets and capital, the dynamics of capital adequacy ratio. Despite the fact that the normative values of ROA and capital lie in the plane 35 and 15%, respectively, there are several other important aspects. First, during the years 2010-2012 indicators return on equity (ROE) and assets (ROA) had a negative value, which is primarily due to the impact of the global financial crisis.

Secondly, according to this, both indices during the specified period did not correspond to normative values even at the expense of their significant improvement in 2013. However, this situation is characteristic for individual new members States of the EU. It is worth noting that the capital adequacy ratio of the banking system of Ukraine and these countries corresponds to the norm (recommendation of the Basel Committee is 8%).

Despite the functioning of a much smaller quantity of banking institutions in a number of new member states of the EU that are not yet in the Eurozone, the rates of return on capital are at a much higher level. For example, the comparison of these indicators with Croatia, which recently became the 28th member of the EU, for the period 2009-2013, the return of capital of functioning banking institutions (almost 6 times as little in Ukraine) have a positive value (although 2013 had a significant reduction).

The third component of General indicators involves the study of the dynamics of assets, liabilities and capitalization of the banking system. In 2008-2013, disproportionate growth of capital relative to the level of activity of the banking system took place, which is contrary to the principles of sustainable development. First of all it refers to the tendency of the backlog of capital compared to the assets and liabilities. This suggests that the banking system has different growth indicators of the banking activity. Significantly low rate of growth of capital compared to the increase in net assets to customer liabilities evidenced, on the one hand, the growing activities of banking institutions, but on the other hand, it evidenced the existence of certain imbalances in the development of the banking sector.

In this regard, it should be noted that a sufficient level of capitalization is the basis for strengthening the banking system of Ukraine, increasing its reliability and resistance to crises. The level of capitalization, in our opinion, is the main system factor affecting the banks' financial condition and prospects of development of the banking market. For the period 2009-2012 the level of capitalization tended to gradually increase (Figure 5). However, the level of capitalization of Ukrainian banks remains low.

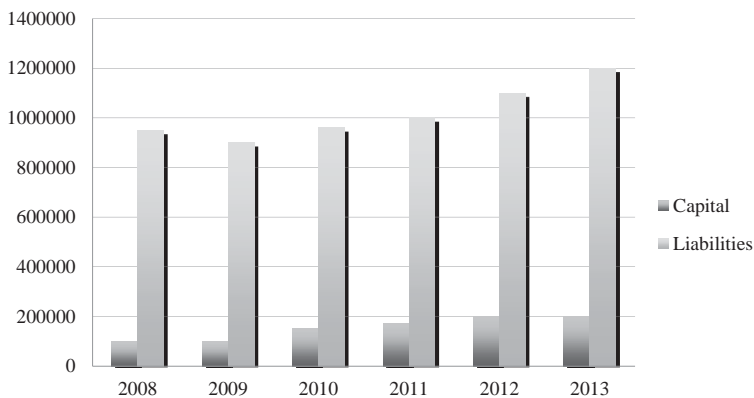


Figure 5 Dynamics of the level of capitalization of the banking system of Ukraine in 2008-2013

Source The financial statements of banks of Ukraine <http://www.bank.gov.ua/control/uk/publish>; Bulletin of the National Bank of Ukraine (2014). <http://www.bank.gov.ua>

Relative to GDP, the share of banking capital in Ukraine is 10-13%, while in the countries of Central and Eastern Europe it is more than 40%. So despite the trend of growing assets in the banking system, which can be considered a sign of positive development in relation to the depth and level of the banking system, their share in GDP remains low in comparison with EU countries'. Considering that this indicator reflects the maturity of the banking sector, its reliability and investment attractiveness, which is a priority in the context of European integration of the banking market, the following should be noted. First, the

specified rate has positive growth in 2013; secondly, the rates of change differ slightly from those in the Eurozone, that are the most developed in the EU.

The next group of indicators is the specific indicators' group, the main components of which are the credit investment portfolio and the structure and dynamics offer banking services.

The dynamics of the share of loans to individuals and legal entities in the credit and investment portfolio shows, above all, the gradual growth of credit-petting portfolio, mainly due to the expansion of lending to legal entities.

From the point of view of the product structure, the market of banking services represents a set of offers for sale. This makes the selection in the structure of certain segments corresponding to individual groups of banking products. In our opinion, the precedence in this regard acquires loan operations, deposit operations and non-cash payments.

The structure of deposits of residents in Ukraine tends to increase beginning from the 2008. In 2008 the deposits to residents were estimated to be around 1,000,000 million hryvnas, and in 2013 this indicator grew to particular 1,600,000 mln hryvnas. It is worth noting that the structure of deposits is somewhat different from those in the EU, where a significant share of deposits accounts to other financial corporations and other sectors of the economy. In Ukraine, the biggest share of deposits accounts to non-financial corporations and households.

In the context of approximation the development of the banking market to the European standards, it is appropriate to analyze the dynamics of loans to individuals and deposits of individuals and their correlation. The mentioned dynamics reflects the trend of decreasing the ratio of loan and deposit resources (loan-to-deposit), which has been outside the normative values (100-120%) since 2010. This requires orientation of the banking institutions on the development of credit operations and improving them. Note that since 2009 there has been a gradual increase of loans but the rate is still insufficient to ensure effective development of the banking service market.

At the present stage of development of the banking market in Ukraine a priority for banks is a risk minimization principle, when responsible borrowers are forced to pay for having no financial capacity or unwilling to fulfill their obligations to banks. To provide industries with available credit resources is possible through effective deposit policy of banks, which depends on the profitability and liquidity of the entire banking system. Note that individuals are the most attractive potential customers of banks. Implementation of the newest competitive loan products and improving the quality of credit and payment services of banks to the population is possible at the expense of long-term resources in the form of time deposits and deposits on demand. This is possible primarily due to the attraction of financial resources from individuals, whose funds make up the majority of the cash on the market.

In the context of approximation of the national legislation of Ukraine to the EU's standards in the field of regulation of the market of banking services it is important to analyze two groups of indicators: general and specific. General indicators of the market of banking services development reflect ultimately the monetary stability of the country and are the basis for its effective development. Specific indicators associated primarily with facilitating and enhancing access to banking services for the population and economic entities are aimed at using funds as efficiently as possible with minimal risk of these operations. Given the lack of lending to and, respectively, non-receipt of interest income, banks require enhancing banking technologies, which will provide an opportunity to stimulate consumer segment of the market to the use of the credit resources. It is broadening the range of services as an economical and credit trends through alternative sales channels is a source of increasing income of the Bank for the receipt of commissions. The result of the use of alternative instruments should be to increase the availability of banking services and identify and meet the individual needs of clients. In general, the development of the domestic banking market in the direction of European integration will contribute to the gradual optimization of the main indicators of its development, strengthening the banking system as a whole and the financial component of international economic relations of Ukraine.

Conclusions

The modern stage of development of the domestic economy is influenced by the integration process. We are talking primarily about the prospects of Ukraine's accession to the European Union, which will be

important for all areas of management. European vector of development of the banking market of Ukraine necessitates an analysis of the current state and development prospects of the industry in the context of the new features of the financial and credit policy of the banking institutions, the benefits of their participation in the European financial space, expansion of the market of services to population. Intensification of integration of the banking system of Ukraine to the European financial market, in particular, through the activation of its external funding, requires the introduction of a complex of legal, organizational and economic measures. These measures include reforming the banking system to increase its ability to withstand financial shocks (stimulating the growth of capitalization of commercial banks, improving banking supervision, promoting transparency in the banking system, access to the Ukrainian market of foreign banks), review of principles of domestic economic policy and legislation to ensure an appropriate level of property right protection, minimizing the use of administrative regulation of the economy, stimulating real investment, and so on).

However, given the hierarchy of goals of economic policy, better regulation of the banking system should be subordinated to the task of ensuring balanced economic development of Ukraine. That is why it is appropriate to analyze the system of indicators of development of the Ukrainian market of banking services in the context of the European integration. The main indicators of development of the banking market of Ukraine in the context of EU standards are the following.

During the research we have identified the main two groups of the indicators: general and specific. After the analysis of these indicators, we have come to the following conclusions. Since the national banking system, including banks with foreign capital, is a subsystem of the economy of Ukraine, the mechanisms of regulation of banking activities should be developed taking into account the need to ensure the stability of the banking system and to protect the interests of banks' customers, and active participation of banks in the implementation of the priorities of economic development of the country. This implies, first of all, the determination of the long-term strategic priorities of economic development of the country at the state level; improving investment and business climate in Ukraine, which will lead to increasing the number of creditworthy borrowers, to expanding the prospects for profits of banks through increased economic activities in the country; development of mechanisms for joint financing of priority economic projects; development of non-banking sector of the financial system, institutions which specialize in the concentration of long-term resources; improving standard accumulation, promoting directions accumulated financial, technological and organizational resources for innovative purposes.

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Trade relations between Ukraine and China

JUN CHEN¹⁸

Abstract: Authors analyze main prerequisites and features of trade relations between Ukraine and China in the global economic environment. The mechanism of the implementation of international trade relations between the two countries is considered and priority prospective areas for further development of trade relations between China and Ukraine in the context of globalization of the world economy are identified.

Keywords: International trade • Mutual trade relations • Global economic environment • Effectiveness of international trade

Introduction

The article aims to determine the current state and prospects of trade and economic relations between Ukraine and China. The stated goal has determined the need to address the following objectives: to outline dynamic trends of Ukraine's trade turnover with China, to calculate the balance of trade in goods, to consider the commodity structure of Ukraine – China trade turnover, to determine the role of trade and economic relations in view of the need to address the problem of overcoming the negative trade balance through increased exports of products with significant added value.

The objectives of the article are the analysis of bilateral relations between China and Ukraine at the present stage – namely description and analysis of the main components of trade relations, the perspectives for future cooperation.

Literature review

Analysis of recent research and publications considerable attention is paid to international economic processes. Notably patterns of changing leadership in the global economic system are in the focus of V.G. Herasymchuk [1], geopolitical projects of global "power centers" in Central Asia are discussed in the works of A.A. Sobolev [12]; dynamics of development of integration processes in the Asia-Pacific region (APR) are covered in research papers by D.V. Iefremenko [4], V.A. Maika, Iu.V. Shved, A.A. Akaiev, A.V. Korotaiev, and S.Iu. Malkov, Ukraine's priorities in the APR are studied by H.E. Lossovskyyi, H.M. Perepelytsia, O.O. Chubrykova and other scholars. At the present stage the development of Ukraine - China trade and economic relations has not been fully highlighted, which determines the relevance of the study.

It is worth noting that the study of foreign trade volumes between Ukraine and China is the focus of a number of papers by domestic economists, such as Iu. Kurnyshova [5] I. Pohorelova [10], N. Fomicheva, A. Filippenko, and Iu. Makohon. This issue has also been investigated by Chinese scholars Wang Peng [9] and Zhou Li [6].

Basic Results of the Research

China is one of Ukraine's main foreign trade partners. In 2010 China ranked 10th by volumes of exports and 3rd in terms of imports to Ukraine after Russia and Germany.

In turn, China regards Ukraine as a reputable state within Europe and the CIS. Ukraine ranks 3rd in bilateral trade with China among the CIS countries.

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China sees Ukraine as a promising economic partner especially in mechanical engineering, military industrial complex, high technology - in particular, space technology, aviation and shipbuilding industry, materials science, radiation safety, etc. For the PRC Ukraine is also a market for products of Chinese enterprises [2].

Over the past few years, bilateral trade between China and Ukraine has seen the dominance of Chinese imports. Commodities account for about 98%, while trade in services is 2% [8].

Table 1

Ukraine – China foreign trade dynamics in 2001-2010 [15]

Years	Export		Import		Balance
	\$ thousands	% to prev. year	\$ thousands	% to prev. year	
2001	542083.06	86.2	195604.45	148.36	346478.61
2002	699947.11	129.12	259657.08	132.75	440290.03
2003	1003176.9	143.32	519026.44	twice as big	484150.46
2004	831407	82.92	733272.57	141.24	98134.43
2005	711241.23	85.77	1810404.15	2.4 as big	-1099162.92
2006	251762.8	116	11538.4	238.9	240224.4
2007	431655.2	79.3	3307056.7	143.1	-2875401.6
2008	547524.8	126.8	5601545.8	169.4	-5054021.0
2009	1434404.7	262	2734257.1	48.8	-1299852.3
2010	1316550.1	91.8	4700393.5	171.9	-3383843.3
2011	2180034.4	165.6	6268333.8	133.4	-4088299.4
2012	1777177.6	81.5	7899639.6	126.0	-6122462.0
2013	2726677.3	153.4	7900753.9	100.0	-5174076.6

From the data presented in the table it can be seen that Ukraine's bilateral trade is characterized by a negative trade balance. This is definitely an adverse effect for Ukrainian economy as Ukraine bears more costs than profits. Having a negative balance in bilateral trade with China poses the task of finding ways to increase Ukrainian exports with their further diversification, as well as practical implementation of existing agreements and preparation of proposals for new projects.

A characteristic feature of trade transactions in 2010 is a gradual recovery in bilateral trade turnover between Ukraine and China, with 22% growth rates in the first six months (as opposed to a decrease by a third in 2009, due to world financial crisis impact). Its volume is approaching that of the pre-crisis period and amounts to 2 billion \$338.7 million.

To date, the leading position in the structure of exports is occupied by supplies of mineral products (mainly ferrous ores), taking up about 60%. Other major components of the Ukrainian exports to China, also showing increase in volumes, are as follows: chemicals (mainly organic chemistry) with share of 14.5%, machinery, equipment and mechanisms (mainly turbo-jet engines), which account for 11.2%.

Table 2

Ukraine – China commodity trade balance dynamics, \$ million

	2001	2002	2003	2004	2005	2006
China	346.5	440.2	483.5	88	-1099.4	-1765.7
	2007	2008	2009	2010	2011	2012
China	-2375.8	-5054	-1299.9	-3383.8	-4088.3	-6122.4

Source: author's calculations according to [15].

An important feature of trade with these countries is a dynamic balance of trade, which indicates that in trade with the main ones imports exceed exports significantly (Table 2).

Let us consider a commodity structure of Ukraine's trade with China in 2012 [10]. Ukraine's exports to China equal \$1,777,177.6 thousand, imports – \$7,899,639.6 thousand. The trade balance is negative and substantial – (-6,122,462.0 thousand dollars). Exports include fats and oils of vegetable or animal origin – 4%; ores, slags and ash – 80.5; organic chemical compounds – 2.5; steel – 1.1; nuclear reactors and machines – 3.5; electrical cars – 1.0%. Imports include a wide range of products, as follows: organic chemical compounds - 1,9%; plastics, polymers - 5.7; caoutchouc, rubber - 1.4; articles of leather - 3.1; clothes and accessories, knitwear - 2.6; clothes and accessories, textile - 4.4; pottery - 1.6; ferrous metals - 2.3; products of ferrous metals - 3.1; aluminum and articles thereof - 1.1; nuclear reactors and machines - 10.9; electrical cars - 25.4; rail locomotives - 1.4; vehicles other than railway - 4.0; optical devices, photographic - 1.5; furniture - 2.7; toys - 3.3%.

That is, exports of engineering products to China constitute a small percentage, for China Ukraine is a raw material appendage. Import is formed primarily from products that the Ukrainian industry is capable of producing. Ukraine faces the task of changing the nature of relations with China by strengthening its high-tech exports, as well as by decreasing imports of goods that can be produced domestically.

A significant part of Ukrainian exports to China belongs to the supply of base metals and their products (mostly ferrous), which occupied the first place in 2012. The share of this article fell sharply from 54.3% to 5.5%. Also, it is necessary to note significant sunflower oil supplies to China starting in March 2012. Their share from less than 0.1% increased to 3.7%, according to 2013 data (Fig. 1).

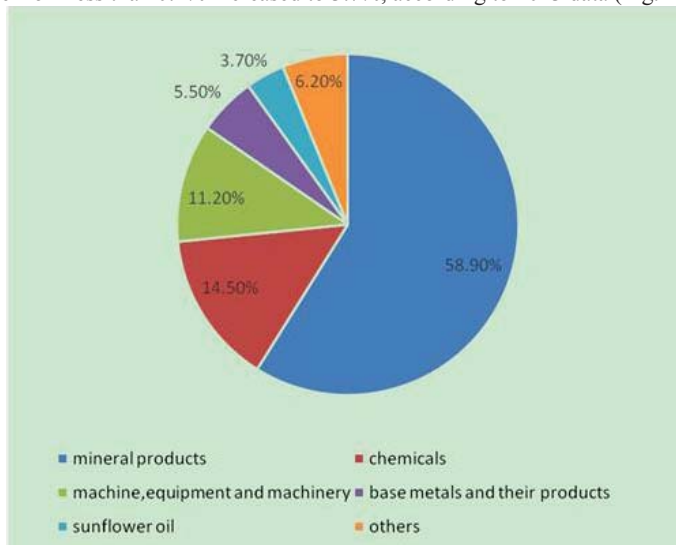


Figure 1 Commodity structure of Ukrainian exports to China in 2013, % [15]

Thus, by nature Ukrainian exports to China are mostly raw materials. The main reasons for this are, firstly, the orientation of the Chinese market for self-sufficiency and stimulation of domestic producers. Consequently, this reduces the number of industries which would enable significant imports due to lack of Chinese counterparts, and, secondly, a weak presence of Ukrainian businesses in China as well as lack of system support at the state level.

Regarding the structure of imports from China, the country remains a stable partner for Ukraine in delivering its products of engineering and instrument-making industries (30% of total supplies), chemicals, consumer goods, including household electrical supplies, plastics, articles of stone and other (Fig. 2).

Thus, analyzing the current state and dynamics of the trade transactions between Ukraine and China it is possible to assert the restoration of economic activity, especially not just about reaching volumes that would meet pre-crisis levels, but also the gradual optimization of product development, first of all Ukrainian exports.

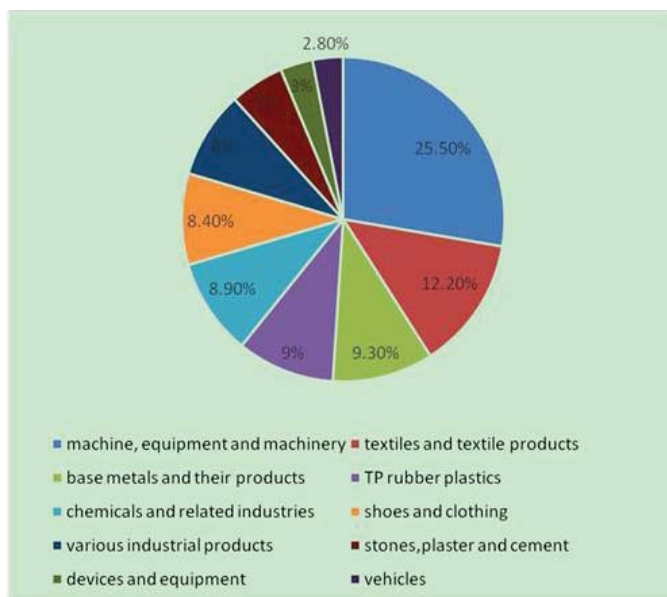


Figure 2. Commodity structure of Ukrainian imports from China 2013, % [15]

Ukraine's trade relations with China were developing at a considerable pace every year (until 2012). Chinese imports are the most diversified in both commodity and price segment. Along with this discrepancy in dynamics of data on the volume of trade relations between the two countries was growing. For the majority of commodity items the Chinese statistics accounts for bigger exports to Ukraine than Ukraine accounts for similar imports from China.

Direct budgetary cost of this difference is quite significant, especially in pre-crisis 2008. According to the author's calculations only analyzed for product groups such losses were estimated in the amount of 5 313 390.14 thousand UAH, 2009 - 3 191 853.7 thousand UAH, 2010 - 3 154 158.40 thousand UAH, 2011 - 4581 325.49 thousand UAH, 2012 - 2685 469.36 thousand UAH. Indirect losses of the national economy are quite difficult to count: the closure of local businesses that may produce similar products, rising unemployment, the loss of the position in world markets, etc.

Therefore, when developing a national strategy for the development of Ukraine in today globalized world, it is necessary to take the "Asian" direction of global changes into account. Thus it is necessary to focus on the current problems in such cooperation. Most problems of economic cooperation between Ukraine and China are linked to the structure of the exports [1].

We would like to dwell separately on the specific steps that Ukraine must take to reach a qualitatively new phase in trade relations with China.

The first step is developing a political dialogue at the top level, creating a positive image of Ukraine in China's business circles.

Ukraine should follow the principle of "one China" and Chinese sovereignty over Taiwan, and exercise support for the principle of non-interference in the internal affairs of the state.

It is also necessary to concentrate on increasing investment from China into the industrial sector in Ukraine. The most promising sectors for Chinese investment are transport and port infrastructure, power industry, development of natural resources, aviation and engineering industries.

It is also important to intensify scientific and technological cooperation and support the growth of bilateral trade in traditional segments (metallurgy, agriculture, chemical and raw materials), and at the same time, increase the proportion of high technology products and products with a high degree of processing in Ukrainian exports [4].

Taking into account possibilities of export-oriented industries of the Ukrainian economy and the needs of the Chinese market, further optimization of the structure of trade turnover between Ukraine and

China is seen in increased supplies of products in such industries: aviation industry, energy, engineering, the military-industrial complex, modern military technology, metallurgy industry, transport to China.

In conditions of globalization, China represents a unique model of economic development. The most important result of the "Chinese model" is high economic growth and advanced breakthrough in industrial production, which is of practical interest for Ukraine.

Ukraine could benefit from the experience of China, as over a decade ago, China was exclusively an agricultural country, and today it has the most attractive economy for investors in the world. Therefore, despite the fact that Ukraine's foreign policy priority area is the European Union, it must be remembered that China is gradually becoming an economic superpower.

China and Ukraine have a real chance for qualitative and quantitative improvement of mutually beneficial large scale cooperation, especially in the aforementioned priority areas. Hence, Ukraine's foreign policy has the urgent need for significant adjustments in the implementation of the "Chinese vector".

Conclusions

Conclusions Ukrainian-Chinese relations in their content and nature go well beyond a mere peaceful coexistence. They are marked with mutual understanding and mutual support and sincere affection. China is fully aware of the current difficulties in Ukraine, so from time to time it offers selfless help. Several times China has provided humanitarian assistance to victims of the Chernobyl disaster, as well as those who suffered during the floods in Zakarpattia (Transcarpathia). Beijing has presented Kyiv lighting equipment for 100 thousand dollars. Note that these generous gifts come from a country that still has enough domestic problems, including the need to address poverty for a considerable number of people.

China is of great interest for Ukraine, as it is a permanent member of the UN Security Council and a nuclear power that is rapidly evolving and emerging at the forefront of the world. According to recent reports, in terms of GDP China comes first or second in the world, pushing even the United States from their position. Working with such a powerful partner can provide Ukraine, not yet a member of any defense alliance, with a significant advantage in the international arena.

China as a great world power is an important partner of Ukraine and can assist Kyiv in increasing its economic and political presence in the Asia-Pacific region. In addition to the mutually beneficial economic and trade exchanges, a likely prospect of shared coordinate countering the existing and potential threats and challenges, such as international terrorism, pollution, epidemics, spread of weapons of mass destruction, illegal immigration, etc., is increasingly attractive.

Overall, there are grounds to state that Ukrainian-Chinese relations are ascending and have good prospects. There is a draft agreement on the principles of relations and strategic cooperation between Ukraine and China in the XXI century. This highly important document is designed for effect over 25 years. The only China's similar big political agreement is with Russia.

Therefore, Ukraine and China are interested in establishing and developing bilateral relations, mutually beneficial for both countries. Therefore, in determining Ukrainian foreign policy objectives cannot move back the possibility of cooperation with China to the background and give preference to solely establishing relations with the countries of NATO or EU integration issues, since it is the successful implementation of Ukrainian-Chinese partnership that could be the key to Ukraine for a successful resolution of internal problems.

Thus, it should be borne in mind that the Ukrainian-Chinese relations can thrive only when Ukraine is well aware that China realizes one of the few of our foreign reserves of rapid increase in export opportunities through product engineering, rocket and space, shipbuilding industry, nuclear and thermal energy, defense industry products. The most promising are those forms of cooperation that allow you to combine sale of Ukraine's high-tech products and technologies with the development of relevant industries in China. With this in mind experts believe that it is possible to plan cooperation as the imperatives of XXI century.

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

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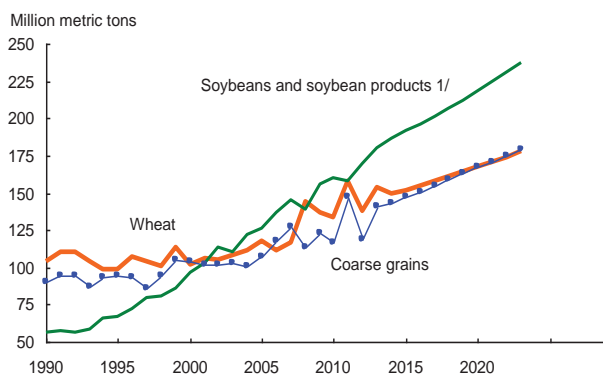
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Global Overview

Global demand for agricultural products will continue to grow over the forecast period of 2014-2023 according to the latest USDA projections (USDA 2014). At the same time, world agricultural production will continue to grow faster than the world population, which will slightly increase the world average per capita consumption. Over the forecast period, global trade in agricultural products will continue to grow rapidly. While most agricultural prices have decreased relative to their recent high level and are believed to continue to decline in the early years of the forecast period, they will still remain above 2007 levels in the next decade. The main determining factors are increase in per capita income and population growth in developing countries with low and middle-income, which stimulates world demand for grains, oilseeds, cotton and livestock products (Holger 2014).

The latest USDA projections foresee that global agricultural production will continue to grow in the next decade due to technological improvement and expansion of the used areas, offsetting the effects of lower prices. However, there is a number of factors, which can slow production growth. Many countries have limited opportunities to expand acreage, and the new extension is done at lands with lower productive capacity. The growth rate of the global average level of productivity slowed during last two decades, and is forecasted to continue slowing in the coming 10 years. The decline in public funding for research and development over the past 25 years has also served as the reason for this decline. Water shortages in some countries prevent the spread of irrigation. Energy consumption for water supply for irrigation from deep wells is projected to continue to rise due to falling groundwater levels. The costs of other inputs, such as fertilizer and chemicals, will also remain high.



World trade in soybeans and products has increased dramatically since the early 1990s and exceeded the global trade in wheat and coarse grains (corn, barley, sorghum, rye, oats, millet, and mixed grains). Continuous significant growth in global demand for vegetable oil and protein products, especially in China and other Asian countries, is expected to provide a volume of trade in soybeans and products bigger than in wheat and coarse grains in the next decade (Fig. 1).

Figure 1 Global trade: Wheat, coarse grains, and soybeans and soybean products

Source: USDA Agricultural Projections to 2023.

1/ Total of soybeans, soybean meal, and soybean oil.

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World meat consumption continues to grow, with consumption of poultry meat growing faster than of pork or beef. World meat consumption is projected to increase by 1,9% per year in the 2014-2023 period, the supply of the largest exporters of meat will rise by 2,2% per year. The forecast growth rates for exports of the key exporters of beef will be 2,8%, pork – 1,6%, and poultry meat products – 2,0% per year,

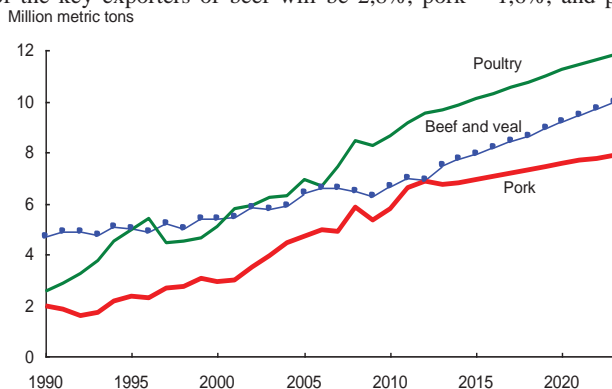


Figure 2 Meat exports*

Source: USDA Agricultural Projections to 2023.

* Major exporters according to the USDA Long-term Projections.

respectively. During this period, exports will increase by means of 2,2 mln tons of beef, 1,0 mln tons of pork, and 2,0 mln tons of poultry. World trade in meat will increase by almost 22% over the forecast period, primarily due to growth of revenue and population in developing countries. However, the total meat imports to Russia will decline, reflecting the policies of domestic meat production stimulation and substitution of imports (Fig. 2).

China in the World Agricultural Sector

Since 2008/09 China has become a constant net importer of pork, corn, rice, wheat, beef, canola meal and oil. According to the forecasts net imports are expected to continue to grow in all positions, except for rice and wheat. In addition, China began to import sorghum only 2 years ago and is going to remain sorghum importer in the next decade. For another group of products, which include cotton, soybeans, canola, barley, soybean and palm oil, China has been a net importer for at least the last ten years. Net imports of these products will continue to grow. In terms of total net imports by China of grain, oilseeds and cotton are forecasted to rise by 61% (58 million tons) by 2023; the raw meat net imports are expected to increase by 73% (6,4 million tons) (Westcott & Trostle 2014).

Food Strategy of China

1. Framework documents

China attaches great importance to the issue of ensuring food self-sufficiency of the country. In March 2014 in the framework of the XII meeting of the National People's Congress of China, China's Minister of Agriculture Han Jian Fu once again confirmed the intention to maintain 'maximum grocery independence'. The Minister outlined grocery strategy in China in the coming years as follows: support for the independence, reliance on domestic forces, provision of domestic production, moderate import support, R&D. On February, 1 2015, the State Council promulgated 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 are 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).

The fact that the Chinese authorities have recognized a number of serious problems in the food sector of the country and take steps to address their own measures that distort trade and market principles is a positive sign for agriculture of China and the world at large. Among these problems, the authors of the Document stress the shortages of agricultural inputs, the over-exploitation of land and severe soil contamination. The implementation of these reforms in the next five to ten years, however, most likely will cause some level of turbulence and uncertainty for agricultural exporters, such as the United States.

The previous Document №1 on agriculture has been directed primarily at increasing agricultural production and farmers' income. The government has steadily increased the support prices for agricultural products in 2008 to achieve the goals. Support and other factors have pushed production costs for the majority of Chinese grain and animal products to be much higher than world market prices. For example, the domestic price of corn (as of March 2015) more than two times as high as the international, resulting in increased demand for imports, even in conditions of sufficient domestic supplies. China now owns more than 40% of world reserves of corn and over 50% of world cotton stocks. Presumably, the Chinese Government will not get rid of the inventory on a larger scale, if this happens suddenly, it will destabilize world prices for agricultural products. Policy to create a competitive advantage for products, such as meat, dairy products, and textiles, has led to great financial and environmental losses (Anderson-Sprecher & Bugang 2015). The following is a summary of the developments of the Document №1 (2015) in the field of food security, land reform, water resources, etc.

2. Arable lands

The population of China is 22% of the world population, while just 10% of the world arable land is located here and most of the Chinese are traditionally employed in farming. At the same time, China has limited land and water resources for agricultural activities in proportion to the population of the country. In recent years, as a result of urbanization, agricultural land has significantly reduced; opposing it the Government of China has set a lower threshold of 120 million hectares. In recent years, yields are achieved thanks to the extensive use of mixed and compacted crops and cultivation of genetically modified crop varieties. These techniques involve the use of significant amounts of fertilizers, pesticides and loading irrigation systems; and the reverse side of this is the depletion of fertile land and water resources.

In 2013, the total area of cultivated lands of China, in which grains are grown, was about 111 million hectares. At the same time in 2014 compared with the previous the area of cultivated lands has expanded by 750 thousand hectares. The quality of agricultural land is deteriorating, about 2/3 of the land is the land of low productivity. Desertification, soil erosion, water scarcity, and many other factors have led to the depletion of 40% of all suitable for agriculture land. Agriculture is facing shortage of fresh water due to the unstable weather conditions. Salinity in the northern parts of the country is a major problem, 20% of lands are polluted by harmful substances to varying degrees.

In 1996 the 'red line' of the country food self-sufficiency rate of 95% was established, but it has been long since passed. The food imports in China skyrocketed in 2012, when the import of corn increased by 197%, wheat – by 195% and rice – by 305%. In 2014, according to the Ministry of Agriculture and the Customs Administration of China, rice imports into the country rose by another 13,6% to \$2,58 million tons. Even the import of Japanese rice, which is about 10 times more expensive than the rest of rice in China, grew by three times last year. At the same time, the authorities usually do not recognize that the growth of food imports is associated with a decrease in the volume of domestic production and the deterioration of the quality of national products²².

Despite these facts, in the past decades, China has made significant progress, thanks to government support and agrarian reform. Since 1978, China has increased meat production by 8 times, milk 16 times, which has led to an increase in income of the population of 10 times, indicating major investment in this sector of the economy. Net real investment in farm capital grows at an average rate of 9% per year. Despite the strong support of the state, all the internal mechanisms conform to WTO obligations. As part of the Green Box China has spent 100 billion dollars to support its agricultural sector. As part of the Amber Box subsidies to specific types of agricultural products amounted to 8,5% of the total value of production.

Land reform: Chinese leaders believe that the fragmentation of agricultural land holdings is a key obstacle to improving the competitiveness of the agricultural sector. The average size of the farm in China is only about 0,6 hectare, as compared with more than 162 hectares in the United States. Agricultural land-use rights in China are very complex and opaque, which hinders consolidation of fragmented land holdings. The ban on the purchase or sale of agricultural land aggravates the difficult situation even more.

The Document №1 (2013) attempted to cope with this problem by registering the treaty of agricultural land ownership (chengbao) over the next five years. It also called on persons who own

²² In February 2014 Chinese *The Time Weekly* informed that the volume of food produced in the country for several years was below the demand and that import of the products is 15% of all food in the country.

agricultural land to rent it to larger operators on a contractual basis. To achieve these objectives in the Documents №1 (2014) and (2015) define an increase in the scale of farms as a prerequisite for enhancing their competitiveness. The Government is currently working on the reform of the relevant laws and regulations designed to promote mechanisms of rent and pledge of rights of use of agricultural land. At the same time, officials are starting the new campaign for the development of standards to secure the permanent status of 'agricultural land' in order to prevent the loss of arable land to non-agricultural development. Further reforms may take place in the next few years, but direct sales of agricultural land are not considered.

Water Pricing Reform: In China, the amount of renewable freshwater resources per capita is only 1/3 of the world average, which is a significant obstacle to the development of the agricultural sector, which now crouches over 60% of water consumption in China. Water for agricultural use is now heavily subsidized, payment is usually charged on the area, rather than consumption. Payment for water for wheat irrigation ranges from \$ 1,90 per hectare per year in the province of Hubei to \$ 12,80 in Anhui. Fixed rates are encouraging overexploitation of water resources and lead to a drop in groundwater levels in some areas.

China used to have three main strategic kinds of food: rice, corn and wheat, since 2015 it has added potatoes. According to experts it may indicate that the stock of strategic food is insufficient in China. In the northern regions, where wheat is mostly grown, problems with water supplies have recently arisen. The reservoirs are either heavily contaminated or depleted by enterprises; and groundwater resources are very limited and have already been drained to such an extent that it is necessary to drill wells to a depth of several hundred meters. Thus, wheat yields began to decline and the government began to gradually replace potatoes that better tolerate water shortages. Therefore, potatoes were included in the list of the major produce, to avoid a possible food crisis.

Document №1 (2015) offers a solution to this problem by introducing incentives based on consumption. Water for agricultural use is expected to become more expensive, and subsidies will be provided to non-agricultural users. Methods of pricing and a mechanism are yet to be developed. According to local media, a pilot program will soon start in 80 counties throughout China with a focus on regions where the water table is now the most depleted. The reform of water pricing is seen as a necessary step to ensure that trade in water between different provinces and regions. The government is investing heavily in projects of water diversion including a massive water diversion project South-North. Document № 1 (2015) also calls for the adoption of water-saving irrigation technologies (Anderson-Sprecher & Bugang 2015).

3. Food Safety

The highest priority of agrarian policy of the Chinese Government is to ensure food security. However, its understanding has changed over time. The Chinese leaders have gradually realized that the policy of equating food security with self-sufficiency is not sustainable in the long term and can be counterproductive²³. Some representatives of authorities have noticed that the limited land and water resources will not allow China to increase feed production sufficiently to meet the growing demand of the urban middle class on products of animal origin.

Document №1 (2013) focused on increasing the production of major agricultural products by increasing the minimum allowed price for wheat and rice, and the introduction of a temporary system of reserves for corn, soybeans, canola, cotton and sugar. Document №1 (2014) marked an important step away from the previous rigid definition of food security, as 95% of self-reliance, instead, called for a 'basic self-sufficiency' in cereals and 'absolute safety' in key crops. Officials explained that while China will try to maintain self-sufficiency in key crops such as wheat and rice, increased imports of grain for feed production will no longer be perceived as a threat to food security.

Document №1 (2015) departed from binding targets, saying only that the level of self-sufficiency for the main varieties of grain must be 'scientifically sound'. The government continues to perceive self-sufficiency in rice and wheat as the need for food security of China and supports the minimum allowed price for these crops. At the same time, it recognizes the need for a more flexible policy to meet the growing demand for feed. It is unlikely to lead to an increase in corn imports in the near future due to significant domestic production and surplus stocks, but long-term trade prospects remain positive.

²³ In developing the food strategy Chinese scientists take into account the continuous growth of the population. Despite the policy of birth control actively carried out in recent decades, every ten years, the population increases by more than 100 million people. According to forecasts, by 2020, the number of residents of China will reach 1,5 billion people and will continue to grow.

While Chinese officials have called for greater use of international markets to meet the growing demand, they still avoid relying on any one country. Documents №1 in recent years are calling ‘to optimize the import sources’ to diversify suppliers, and give priority to establishing systems to monitor imports of key commodities. Customs is reported deliberately prefer clearance of import protocols with alternative suppliers of key products. While the United States remains the largest exporter of agricultural products in China, their market share has decreased slightly in recent years (Anderson-Sprecher & Bugang 2015).

As of today, exploiting 10% of agricultural land of the globe, China produces 35% of the world grain that allows feed the country's population of 1.3 billion people. During the period from 2003 to 2014 grain harvests in the country increased by 0.9%. However, the cost of cultivation of local crops was quite high compared to the purchase of cheap grain from abroad, leading to an increase in imports. Despite this fact, the government plans to hold grain imports in the future, to stimulate domestic agricultural production in the framework of a national strategy to ensure food security.

In April 2014, the Institute of Agricultural Information of the Chinese Academy of Agricultural Sciences published a Review of the Development of China's Agriculture in the 2014-2023 for the first time in the history of the country. According to the basic forecast set out in the strategy document, the cumulative production of three major crops – wheat, rice and corn – in China in 2023 is expected to reach 578 million tons, providing high self-sufficiency of the PRC, as total grain consumption is expected to reach 596 million tons. Given the above, it can be concluded that the limited demand for grain imports for China cause limitations of the Chinese direction for export at the moment. The forecasts for the medium term made by US experts also support this thesis: China does not need to import grain in significant amounts (OECD-FAO Agricultural Outlook 2014-2023).

Wheat

World trade in wheat (including flour) is projected to increase by nearly 28 million tons (19%) between 2014/15 and 2023/24, rising to 177,5 million tons. The growth of import of wheat is concentrated in the developing countries where the demand is increasing due to the growth of population and income. The largest emerging markets include 15 countries of the Economic Community of West African States and other countries in sub-Saharan Africa, Egypt and other countries in North Africa and the Middle East, Indonesia and Pakistan (Westcott & Trostle 2014)

Five largest traditional exporters of wheat (the USA, Australia, the EU, Argentina and Canada), is projected to take over 60% of world trade in 2023/24, compared to nearly 70% in the last decade. This decline in the share is mainly due to increased exports from the CIS countries. The growing trend of export of wheat from Russia, Ukraine and Kazakhstan was interrupted by droughts in 2010 and 2012. It is expected that exports from these countries will recover and grow by more than 50%, rising to 52 million tons in 2023/24 and reach 2/3 of the projected growth in world trade in wheat. The growth of domestic consumption of feed prevents further rapid growth of exports. Although this is not directly reflected in the forecasts, long volatility in production and trade of wheat is likely due to the strong fluctuations of weather and crop yields in the region.

Import takes a negligible share of the annual consumption of wheat in China today, China does not need to import large quantities of wheat, and domestic consumption of wheat is provided mainly by its own agroindustrial complex in China (see Table 1). Since 2005, China has significantly expanded the land to grow wheat, so for several years, even China has been a net exporter of wheat. In 2013, China imported about 13 million tons of grains, despite the overall extent, imports accounted for only 2,4% of the total consumption of grain crops in China. In general, the dynamics of China's wheat imports in recent years was as follows: in 2008 – 0,04 million tons, in 2009 – 0,9 million tons, in 2010 – 1,23 million tons, 2011 – 1,26 million tons in 2012 – 3,68 million tons Consumption of wheat in the country by 2023 should reach 128 million tons while its production will reach 127 million tons, i.e. China will itself provide 99% of its wheat.

China's State Food policy is aimed at maintaining constantly high stocks of grain in storage. Throughout the '90s China relied on accumulation of sufficient stocks of wheat, and even in this period imported wheat. According to official statistics, in 2013 China imported a record 5,12 million tons of wheat. However, more than 70% of imports are from the USA, followed by such countries as France, Canada, and Australia. In its imports China has traditionally given priority to the upper classes of wheat to improve the quality of local flour, such varieties are usually imported from the mentioned countries.

Table 1.1

CHINA –Wheat Trade Long-term Projections, mln tons²⁴

Years	2012/13	2013/14	2014/15*	2015/16*	2016/17*	2017/18*
Import	3,0	8,5	4,8	4,6	4,7	4,7
Export	0,1	0,1	0,1	0,1	0,1	0,1
World trade	138,3	153,7	149,7	151,1	154,6	157,7
Export from Ukraine	7,2	10	9,8	10,1	10,7	11,2
Years	2018/19*	2019/20*	2020/21*	2021/22*	2022/23*	2023/24*
Import	4,8	4,9	5	5,2	5,3	5,5
Export	0,1	0,1	0,1	0,1	0,1	0,1
World trade	160,9	164,2	167,5	170,8	174,2	177,5
Export from Ukraine	11,60	12	12,4	12,8	13,2	13,6

Source: USDA Agricultural Projections to 2023.

Rice

Global rice trade is projected to grow by 1,5% per year from 2014/15 to 2023/24, and will reach 47 million tons, 35% above the average of the past 5 years (see Table 1.2). The main factor causing the expansion of trade is steady growth in demand largely due to increasing population and income in developing countries, and the failure of several key importers to provide a significant increase in production. Since the mid-1990s, the share of world trade in the world consumption has exceeded its 4% average compared with the previous half-century, up to almost 8% today, and the trend is expected to continue. China became the world's largest importer of rice in 2012/13. According to forecasts, China's imports will gradually reduce, but will remain at record high level, as China imports rice at lower prices, mainly from Vietnam. However, by the end of the forecast period, rice imports to Indonesia will surpass Chinese, and Indonesia will become the largest importer of rice (Westcott & Trostle 2014).

Table 1.2

CHINA –Rice Trade Long-term Projections, mln tons

Years	2012/13	2013/14	2014/15*	2015/16*	2016/17*	2017/18*
Import	3,1	3,4	3,3	3,3	3,3	3,2
World import	39,1	39,8	41,2	41,9	42,6	43,3
Import	0,3	0,4	0,3	0,3	0,3	0,4
World export	39,1	39,8	41,2	42,6	43,3	44,0
Years	2018/19*	2019/20*	2020/21*	2021/22*	2022/23*	2023/24*
Import	3,1	3,0	2,9	2,7	2,6	2,4
World import	44,0	44,6	45,2	45,8	46,5	47,1
Import	0,4	0,4	0,4	0,4	0,4	0,4
World export	44,0	44,6	45,2	45,8	46,5	47,1

Source: USDA Agricultural Projections to 2023.

Corn

According to forecasts coarse grain world trade will increase by 36 million tons (25%) from 2014/15 to 2023/24, the proportion of corn is expected to increase (see Table 1.3). Expansion of cattle breeding in livestock fodder deficit countries continues to be the main driver of growth in imports of coarse grains. Key growth markets include China, Mexico, Africa and the Middle East.

Import of corn in China is expected to grow steadily, reaching 22 million tons in 2023/24. The increase in domestic demand for corn is due to structural changes and the growth of the livestock sector, as well as growth in industrial use in China. The increase in China's imports account for nearly half of the forecast growth in world corn trade. Chinese sorghum imports increased sharply in the past two years, and it is projected to grow moderately from the level of 1,5 million tons in 2014/15 (Westcott & Trostle).

²⁴ * – estimated.

Table 1.3

CHINA –Corn Trade Long-term Projections, mln tons

Years	2012/13	2013/14	2014/15*	2015/16*	2016/17*	2017/18*
Import	2,7	7,0	6,0	7,0	8,0	10,0
World import	91,5	110,4	112,2	115,9	119,9	122,7
Export	0,1	0,1	0,1	0,1	0,1	0,1
US export	18,6	35,6	43,2	45,7	48,3	49,5
Years	2018/19*	2019/20*	2020/21*	2021/22*	2022/23*	2023/24*
Import	12,0	14,0	16,0	18,0	20,0	22,0
World import	126,4	130,1	134,0	137,7	141,3	145,0
Export	0,1	0,1	0,1	0,1	0,1	0,1
US export	50,8	52,1	53,3	54,6	55,9	57,2

Source: USDA Agricultural Projections to 2023.

Meat

World's pork imports are expected to continue to grow and increase by 1,05 million tons (19%) from 2014 to 2023 (see Table 1.4). Pork imports by China and Mexico will surpass import to Russia. Since 2009, pork import in China has increased dramatically and is expected to continue to grow steadily. Import of pork in China is forecast to increase by about 50% to 1,2 million tons by 2023 and reach 2/5 of world import growth (Westcott & Trostle 2014; Hansen & Gale 2014).

Table 1.4

CHINA –Pork Trade Long-term Projections, mln tons

Years	2012/13	2013/14	2014/15*	2015/16*	2016/17*	2017/18*
Import	730,0	750,0	785,0	822,0	858,0	899,0
Key importers	5382,0	5217,0	5349,0	5444,0	5564,0	5703,0
Export	235,0	250,0	265,0	286,0	303,0	313,0
Key exporters	685,0	6701,0	6817,0	6906,0	7032,0	7175,0
Years	2018/19*	2019/20*	2020/21*	2021/22*	2022/23*	2023/24*
Import	954,0	1,0	1,1	1,1	1,1	1,2
Key importers	5831,0	5952,0	6062,0	6168,0	6270,0	6379,0
Export	325,0	337,0	349,0	360,0	370,0	383,0
Key exporters	7312,0	7444,0	7549,0	7657,0	7760,0	7869,0

Source: USDA Agricultural Projections to 2023.

It is expected that from 2014 to 2023 beef imports by key importing countries will increase by almost 2,3 million tons (34%) and will reach 9,1 million tons (see Table 1.5). The export of cheaper beef from India and Brazil to a number of low- and middle-income countries accounts for almost 2/3 of the projected growth in world beef trade. Imports of beef to China and Hong Kong are calculated to increase by 55% in the next decade and increase of household incomes and beef consumption will outstrip production growth (Westcott & Trostle 2014).

Table 1.5

CHINA –Beef Trade Long-term Projections, mln tons

Years	2012/13	2013/14	2014/15*	2015/16*	2016/17*	2017/18*
Import	99,0	400,0	475,0	495,0	531,0	570,0
Key importers	593,0	6487,0	6814,0	7036,0	7273,0	7516,0
Export	0,0	0,0	0,0	0,0	0,0	0,0
Key exporters	6893,0	7522,0	7749,0	7939,0	8177,0	8419,0
Years	2018/19*	2019/20*	2020/21*	2021/22*	2022/23*	2023/24*
Import	603,0	635,0	674,0	712,0	748,0	784,0
Key importers	776,0	8032,0	8309,0	8,6	8,9	9129,0
Export	0,0	0,0	0,0	0,0	0,0	0,0
Key exporters	8662,0	8924,0	9189,0	9,5	9,7	9988,0

Source: USDA Agricultural Projections to 2023.

Imports of poultry by main importers are expected to increase by 2,2 million tons (30%) during the mentioned period, reaching nearly 10 million tons by 2023 (see Table 1.6). Steady growth in imports is forecast for most of the world, except Russia (effective policy of restricting imports) in the first place and Japan. China's growing consumption is met by expanding domestic production. Increasing the share of the country's poultry exports is slightly higher than import growth (Westcott & Trostle 2014).

Table 1.6

CHINA –Poultry Trade Long-term Projections, mln tons						
Years	2012/13	2013/14	2014/15*	2015/16*	2016/17*	2017/18*
Import	302,0	313,0	335,0	358,0	367,0	377,0
Key importers	7353,0	7393,0	762,0	791,0	8135,0	8393,0
Export	411,0	415,0	415,0	415,0	433,0	459,0
Key exporters	9533,0	9637,0	9813,0	10076,0	10282,0	1052,0
Years	2018/19*	2019/20*	2020/21*	2021/22*	2022/23*	2023/24*
Import	387,0	398,0	409,0	425,0	438,0	453,0
Key importers	8655,0	8909,0	9172,0	9408,0	9653,0	9906,0
Export	483,0	497,0	515,0	528,0	545,0	560,0
Key exporters	10754,0	10986,0	11218,0	11425,0	11629,0	11839,0

Source: USDA Agricultural Projections to 2023.

4. Environment

In matters of modernization of agriculture described in Documents №1, the Chinese Government is focused on industrialization and urbanization, for many years turning a blind eye to the fact, in which ways harvests in the country are provided, which has led to an excessive use of chemicals to accelerate the growth of crops and productivity. Chemicals may improve soil fertility only temporarily, but their long-term use, which is observed in China, has led to serious problems of environmental pollution, resulting in inevitable protracted hard times in agriculture.

According to the Ministry of Agriculture of China more than 40% of arable lands degraded due to the deterioration of the ecological situation in the country in 2014. Published in the same year, a joint report of the Ministry of Environment and the Ministry of Land and Resources of China said that the country was subjected to contamination of at least 20% of arable land (24,5 million hectares), which is 133% more than 8 years ago. According to some estimates 1,3 million tons of pesticides are used in China, which is 2,5 times higher than the average in the world (Ministry of Agriculture of the PRP 2015).

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