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About InterRegioNovation

InterRegioNovation is the International Association devoted to the transfer and exchange of knowledge and innovations at all regional levels (country, region, city, community etc.) between knowledge transfer professionals (business, research institutions, policy makers, government agencies, individuals, others) in all countries of the enlarged Europe, CIS countries and from other continents for stimulating and enhancing economic and social growth in the regions.

This is a policy and research association that brings together all knowledge transfer professionals who are interested in delivering efficient, flexible, innovative and cost-effective services across the private and public sectors. We work closely with business, research and educational institutions, government agencies, policy makers, NGOs, media, individuals and other stakeholders to promote the interests of their industries.

Our members understand the changing needs of the transfer and exchange of knowledge and innovations and through continuous professional development, marketing and networking opportunities offered in this association, we keep current with the latest knowledge trends and issues that challenge people in their work and life journey. We also offer expansive opportunities for partner connection through our networks.

Journal "Regional Innovations" is one of the Association's tools for innovators and everybody who is interested in any aspects of innovation development.

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About journal

On behalf of the Editorial Board, it gives us a great pleasure to welcome you to the first issue of 2018 of the Regional Innovations Journal. This is a thematic special issue dedicated to broad aspects of **Investment Policies and other innovative allied research areas**.

This particular volume provides a platform for advances in different research and includes original papers on international investment and competitiveness; foreign direct investment; impact of the global and national crisis on the implementation of investment strategies; financial sector reforms and better allocation of capital; innovations, knowledge transfer and education in investment policies; world's economic opportunities, as well as case studies, critical reviews, surveys, opinions and essays.

This is an independent, peer-reviewed, Internet-based international journal devoted to publishing original research papers of highest quality, sharing ideas and discussing innovation sector within regional dimensions. The journal welcomes to submit research papers by exceptional innovators, leading universities, globally recognized business, government agencies, policy makers and political leaders.

We intend that our readers will be exposed to the most central and significant issues in innovations development. We wish to publish papers that exemplify the highest standards of clarity, and that promise to have significant impact on existing front-line debates or to lead to new ones. The journal explores key priorities of the knowledge and innovations transfer and exchange in terms of critical aspects of human life (economy, law, science, business, health, education, culture etc.). We therefore welcome submissions not only from established areas of research, but also from new and emerging fields and those which are less well represented in existing publications, e.g. engineering studies, biomedical research etc.

We also strive to ensure that being under expert evaluation, each submission will receive developmental and supportive comments to enhance the article. Our refereeing process will involve that each submission will be reviewed by one or more specialists in the relevant field. Articles will be added to the volumes and the journal audience will receive e-mails updates to encourage them to the new articles.

We are delighted with, and immensely grateful to the large numbers of colleagues, both members of the Associations InterRegioNovation and FranceXP (France), representatives from many universities in France, Latvia, UK, Azerbaijan, China, Nigeria, Belarus, Ukraine and other institutions, who have supported the editorial process. And we are very proud of the expertise that they collectively bring, which we believe is unsurpassed by any contemporary innovative journal.

We are immensely grateful to our colleagues for their support and advice through the process of setting the journal up, and for the confidence they have placed in us in supporting this initiative at a time of economic uncertainty.

In the development of the Regional Innovations to date, we would like to enlist the support of a number of organisations who wish to promote this online journal to their experts. To ensure its sustainability, we would also like to invite other organisations, networks, conferences and meetings to associate themselves with the Regional Innovations. We therefore aim for the Regional Innovations to become the leading online forum to globally disseminate outstanding research papers on innovation sector in regional dimensions. Being an online periodical, the Regional Innovations is also a forum for exchange of imaginative ideas readers wish to share. Contributions of articles on innovations sector and your comments about this issue are very welcome.

To this end, if you lead, represent, or are a member of any such organisation, please contact us to offer your support and commit to promoting the Regional Innovations as a publication outlet for research undertaken by your experts.

We do hope you enjoy and benefit from the Regional Innovations! And many thanks for staying with us in 2018!

Jean-François Devemy
Editor-in-Chief

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CHINA'S FINANCIAL SUPPORT TO THE BELT AND ROAD COUNTRIES: CHARACTERISTICS

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Abstract

The Belt and road initiative (BRI) countries is an important but not a main trade and investment partner of China, and which is main market for China's infrastructure and construction sectors. With China puts more emphasis on European market and technology, Sino-CEE countries economic cooperation has large potential. China has provided considerable financial support to the BRI countries through state-owned banks, investment funds and bond markets, and has faced increasingly challenges including excessive financing pressure and risk-taking, low private capital participation, underdeveloped capital market, and imbalanced regional and industrial distribution. Chinese overseas industrial parks could become core investment for regional development in CEE region. Chinese-Belarus industrial park «Great stone» is one of exemplary project of BRI, which is focused on regional development and transferring of technologies.

Key words: *the Belt and road initiative, regional investment, investment funds, infrastructure, Chinese overseas industrial parks.*

1. Financing Gap

The financing gap in infrastructure investment in the Belt and Road region is huge. According to the ADB estimates, the infrastructure investment demand in the Asia-Pacific region except China amounts to around $503bn a year, during the period from 2016 to 2020, but the total fund supply of the BRI's public and private sectors reaches just $19.6bn per year, and hence the difference between supply and demand will reach $ 307 billion per year, 5% of GDP.

Based on PBOC's projections, the financing gap in infrastructure will be more than $600bn per year in the whole Belt and Road region. However, in the Asia-Pacific region, the total size of capital of major international financial institutions (mainly development finance institutions) is $514bn. In other words, even if all of these capital of financial institutions are invested in infrastructure in the BRI region, and which can't meet the demand of infrastructure investment a year. Therefore, the fund is the key to the construction of the Belt and Road Initiatives.

2. China's Finance Support to the Belt and Road Region

Since the belt and road initiative has been proposed, China has extended fund of around $200bn to the Belt and Road region through bank loans and investment funds, and which is the main source of capital of the BRI construction. There existed some problems, such as, heavily depends on bank loans, over reliance on China, high proportion of official funds, unbalanced allocation of capital among regions and industries.

2.1 Bank Loans

2.1.1 Dominated by Policy Banks and State-owned Commercial Banks

China's policy banks and state-owned commercial banks are main credit supporters for large projects in the Belt and Road region. In 2015, China's policy banks and commercial banks had provided credit of around $100bn to the belt and road countries. Among them, the amount of credit that Bank of China, Industrial and Commercial Bank and CDB has supplied was around $20bn. These banks also have set up their own project reserves. As of June 2015, the number of large reserved projects of CDB, and ICBC was around 416, and 200 respectively.

Policy banks have played a leading role in providing credits to BRI projects. To enhance financial strength, PBOC injected $48bn and $45bn of FX reserve into CDB, and China Export-Import Bank respectively in June 2015. As of the end of 2016, CDB has already supported more than 600 BRI projects, with overseas loans exceeding $110bn, covering energy, infrastructure and capacity cooperation.

2.1.2 Concentrated in adjacent or rich-resource countries

China has a high concentration of credit support to adjacent or rich-resource countries.

First, adjacent countries including these are close to China in geography, culture and economy. ASEAN ranks first in term of number and value of project loans and syndicated loans, with a share of more than 50% and 35% respectively, and followed by South Asia, West Asia and Central Asia. There are fewer loans in the CIS and Central and Eastern Europe, with the exception of Russia, where the banks' lending activities are very limited.

Second, resources and energy-rich countries. Due to huge demand on resources and energy, Chinese banks have extended large amount of loans to countries rich in resources and energy. In ASEAN, more than 40% of the project loans and syndicated loans are allocated into resources and energy sectors, such as, Indonesia (rich in oil and gas, and mineral resources), Thailand (clean energy), and Singapore (many energy companies). In other regions, China's credits are concentrated in a few resources and energy-rich countries, such as, Qatar, Kazakhstan and Russia.

2.1.3 Focused on resources, energy and infrastructure industries

Chinese major banks' overseas loans are mainly allocated into resource, energy and infrastructure sectors. As shown in Table 2, the loans to energy and resource industry, such as oil and gas, electricity, mining, and clean energy, account for 49%, and 46% of the total value of project loans, and syndicated loans respectively. Infrastructure loans account for 19%, and 21% of the value of project loans, and syndicated loans provided by Chinese banks respectively. The manufacturing and real estate sectors also have received certain credit support from Chinese banks.

Table 1

Regional distribution of overseas loans of China's major banks

	Project loan		Syndicated loan	
	Quantity (unit)	Value ($bn)	Quantity (unit)	Value ($bn)
ASEAN	132	78.15	83	45.73
South Asia	22	18.11	26	14.42
West Asia	16	27.78	19	30.10
Central Asia	10	39.85	8	22.10
CIS	4	21.19	15	15.49
Central and Eastern Europe	4	4.26	17	4.03
East Asia	1	0.09	2	0.34
Total	189	189.43	170	132.21

***Source*:** Dealogic.
Note: (1) Project loans include large-scale-project loans ($10mn and above) provided by four major state-owned commercial banks and two major policy banks from 1994 to 2016.
(2) The participant banks of syndicated loans include ICBC, CDB and China Export-Import Bank during the period from 1995 to 2016.

Table 2

Industry structure of overseas loans of China's major banks

	Project loan		Syndicated loan	
	Quantity (unit)	value ($bn)	Quantity (unit)	value ($bn)
Oil and gas	15	55.48	38	41.44
Infrastructure	33	40.45	50	24.85
Electricity	44	36.40	18	12.82
Manufacturing	32	22.70	31	25.69
Real estate	26	24.79	12	1.79
Mining	8	3.91	13	6.22
Clean energy	25	4.93	-	-
Other	6	0.72	8	19.41
Total	189	189.43	170	132.21

***Source*:** Dealogic database.
Note: There is no clean energy item in the industry classification of syndicated loans.

2.2 Equity Investment Funds

2.2.1 Silk Road Fund leads the BRI Concept Equity Investment Funds

The Silk Road Fund, established by Chinese government in December 2014, is a developmental investment fund with an aim to promote the BRI. Silk Road Fund has three distinct characteristics: First, its capital comes from China's FX reserve, and it plays a leading role in the investment funds of BRI concept. Second, its main investment direction is major energy project. As shown in Table 3, it principally engages in large-scale energy projects, such as electricity, natural gas, and oil with government backgrounds. Third, business model is open and diverse. It also cooperates with international development agencies, and domestic and foreign financial institutions to sponsor joint investment funds, provide syndicated loans, and carry out asset management and foreign entrusted investment.

Table 3

Silk Road Fund's Investment Projects

	Project	Host Country	Participant	Support Mode
April 2015	Karot Hydropower Project	Pakistan	Three Gorges Group, Pakistan Private Electricity and Infrastructure Committee	Equity Investment, Syndicated loans
June 2015	Pirelli Tire Company	Italy	China Chemical Group	Equity investment
August 2015	Sino-Kazakhstan Industrial Cooperation Fund	Kazakhstan	Kazakhstan Export Investment Agency	Sponsor a fund
September 2015	Yamal liquefied natural gas integration project	Russia	Russia Nova tec company	Quity investment
January 2016	Dairut Natural Gas Power Station	Egypt	Saudi International Electricity and Water Company	Equity Investment
January 2016	Hassyan Clean Coal-fired Power Station	United Arab Emirates	Saudi International Electricity and Water Company	Equity Investments, Syndicated loans
December 2016	PJSC Xibel Holding Company	Russia	Russian Gas Bank, Sinopec	Equity Investment

***Source*:** Silk Road Fund.

2.2.2 Multi-level Investment Fund System Primarily Established

First, the bilateral and multilateral international funds joined by China's policy banks, with a value of ranging from $1bn to $10bn, can provide financial support to the BRI project. For example, China-ASEAN Investment Cooperation Fund has completed 10 first-phase investment projects in ports, communications, minerals, and building materials in ASEAN; China-Eurasian Economic Cooperation Fund, China-Central and Eastern European Investment Cooperation Fund, and China-ASEAN Maritime Cooperation Fund have engaged in investment in the BRI countries.

Second, local governments are actively setting up special investment funds to serve the BRI. Jiangsu, Guangxi, Guangdong, Henan and Shaanxi provinces, commercial banks, and local key enterprises have jointly set up local silk road funds, with value ranging from RMB 10bn to RMB 30bn, not only support local firms business activities in the BRI countries, but also develop local infrastructure and emerging industries. For example, Guangdong Silk Road Fund has reserved more than 30 projects, and initiated projects of Guangdong (Shilong) railway international logistics base and Sino-Russian trade industrial park.

Third, some large state-owned enterprises and private enterprises have also sponsored BRI investment funds. There are around 10 such funds have been set up and operates, such as Shaanxi Gold Group, Yili Resources Group, and CITIC Bank.

2.3 Bond Financing

With an aim to expand financing channels for BRI projects, China has begun to actively promote the development of bond market, but the scale is still quite limited. At present, only one firm from the BRI countries, the Russian aluminum company, has successfully issued debt securities denominated in RMB (Panda debt) in the Shanghai Stock Exchange, with a value of RMB1bn. At the same time, China's financial institutions and enterprises have begun to use offshore bond market to seek fund for BRI projects.

As shown in Table 4, several Chinese financial institutions and enterprises, such as Bank of China, China Construction Bank, and CDB have issued the silk-road bonds in overseas markets. However, the total amount of bond financing is quite low, with a value less than $9bn.

Table 4

Off-shore Bond Financing of China's Financial Institutions and Enterprises

Time	Issuer	Value	Listing Location
2015.7	Bank of China	Totaled $4bn (include RMB, US Dollar, Euro and Singapore Dollar)	Hong Kong, Taipei, Singapore, London, Dubai, NASDAQ
2015.9	CDB	$1bn and 500mn Euro	London
2015.11	China Construction Bank	RMB 1bn	Hong Kong, Kuala Lumpur
2016.9	China Construction Bank	RMB 1bn	Singapore
2016.11	China Export-Import Bank	2bn euro	Singapore
2016.11	Guangzhou Industrial Investment Fund	$200mn	Hong Kong
2016.12	Guangzhou R & F Property Limited	$265mn	Singapore
2017.1	Guangzhou R & F Property Limited	$460mn	Singapore

Source: Dealogic database.

3. Chinese overseas industrial parks

In the mid-1990s, the Chinese Government announced the policy of «Going global» (zou chuqu), which spurred Chinese companies to target new markets, build global brands, and invest abroad. One of the important components of this policy was the establishment of overseas industrial and trade zones. Overseas economic zones were considered to serve several strategic objectives. First, they would help increase demand for Chinese-made machinery and equipment, while making it easier to provide post-sales product service support. Second, by producing overseas and exporting to other countries, Chinese companies would be able to avoid trade frictions and barriers imposed on exports from China. Third, they would assist Chinese efforts to stimulate its own domestic restructuring and move up the value chain at home. Fourth, they were intended to create economies of scale for overseas investment, and in particular, to assist less experienced SMEs to venture overseas «in groups». Finally, they were viewed as a way to transfer one element of China's own success to other developing countries; a strategy that the government believed would be helpful for recipient countries (World Bank 2010).

In 2013, China launched its «One Belt, One Road » (OBOR) initiative, simplified «Belt and road» initiative (BRI). BRI is logical extension of «Going global» (zou chuqu) policy. After almost 2 decades of proclaiming of open policy for overseas investment, China has reached significant success in creating world-class infrastructure objects all over the world.

At the beginning of 2017, total of 77 economic cooperation zones (including overseas Chinese industrial parks) have been under construction in 36 countries; 56 zones are located in 20 countries along the Belt and Road routes, according to China Ministry of Commerce.

Chinese companies have invested $18,55 bn in these industrial parks along the Belt and Road routes, while more than 1,000 Chinese companies have settled in to conduct businesses in such areas as textiles, home appliances, steel, construction materials, chemical industry, automobiles, and machinery. These companies have generated a total of $50,69 bn in industrial output, with $1,07 bn of tax revenue to host countries, and created 177,000 jobs for local people.

The main investors of Chinese overseas industrial zones on the first stage of construction are Chinese state-owned enterprises (SOE) with financial support from state-owned commercial banks (Bank of China, China Exim Bank, China Development Bank (CDB), Industrial and Commercial Bank of China (ICBC). Risk insurance for Chinese overseas industrial parks projects is often arranged through the China Export & Credit Insurance Corporation (Sinosure). Sinosure is the state-owned insurance firm that promotes China's international trade and foreign investment. Sinosure's only function is to provide export credit insurance and underwriting services, and it is not able to provide loans.

Chinese private-owned companies and banks are active as residents of overseas industrial zones, especially in hi-tech (e-commerce, telecommunications, green energy, biotechnologies, etc.). Chinese private-owned hi-tech companies perform an essential and increasing role, and have formed clusters and networking on the route of Belt and Road countries.

3.1 Chinese-Belarus industrial park «Great stone», as model infrastructure investment project in BRI-countries.

Hi-tech parks and industrial parks could become an efficient tool for Belarus integration into the BRI as active regional player. The Belarusian and Chinese legal and regulatory framework, the political will of the leadership of countries, the creation and functioning of the institutions of interaction of technology parks and industrial parks are evidenced about this process.

Hi-tech parks and industrial parks can integrate into the BRI in a bilateral format with China, as well as using the mechanisms of integration associations with the participation of Belarus (CIS, the Union State of Belarus and Russia and the Eurasian Economic Union) and international organizations (Silk road hi-tech park alliance, UNDP)

The idea of creation of the Chinese-Belarusian science and technology park has appeared in 2010. In January, 2012 Belarus and China ratified the intergovernmental agreement on the joint project. The decree of the President of Belarus No. 253 «About the Chinese-Belarusian industrial park» (on June 5, 2012) has defined a special legal regime of this economic territory.
In August, 2012 the joint Chinese-Belarusian company on development of the park is founded. The Chinese partners possess 60% of stocks, Belarusian side – 40% on the moment of signing (in 2017, share of stocks of joint company is changed Belarusian side– 31,6 %, Chinese – 68,4 %)The main investor from Chinese side is SOE CAMC Engineering Co. (CAMCE). It is planned to spend more than $2 bn for development of infrastructure of industrial park. CDB is ready to invest more than $1,5 bn, $500mn – from Belarusian state. On the mid of 2017, more than $ 273 mn had utilized, from which $150mn spend on infrastructure of park; and $ 120 mn – for first stage of logistic sub-park of China Merchant Group.

The creation of the **industrial park «Great stone»** has high importance for the Belarusian economy. The park is the point of growth of the national economy; it acts as a link between China, the Eurasian countries and the EU. This is a key link in the development of China-Belarus cooperation and an exemplary platform for the production and sale of high-tech products. It is called the «Pearl of Belt and Road».

One of the instruments of financing projects of residents of park will be support from mutual China-Belarus Industrial Investment Fund. A memorandum of cooperation on the establishment of the fund was signed by the Belarusian Finance Ministry and the Chinese company Citic Construction Co. In the first stage, the capital of fund reserve will be $ 50mn. Fund reserve will increase as the park matures.

Competitive advantages of the Park: visa-free entry to Belarus for investors and their employees; the park is located directly near the transport corridor Moscow-Berlin; territorial proximity to the capital of Belarus and access to skilled labor resources; free access to the unified market of the Eurasian union.

The main areas of activity of the residents of the **industrial park «Great stone»** are planned in machinery, electronics, pharmaceuticals, fine chemicals, biotechnology and bioengineering, new materials, integrated logistics, e-commerce and R&D.

Preferential treatment includes tax incentives; customs privileges; privileges in the sphere of currency regulation and in relation to the employees of the Park. In particular, the residents of the Park are exempted from paying profits by 100% within 10 years from the date of its occurrence and by 50% in the next 40 years. The real estate tax is not paid until 2062, and the land tax for 50 years.

In the field of currency regulation, it is not required to obtain authorization from the National Bank of the Republic of Belarus to conduct certain foreign exchange operations; restrictions on foreign trade legislation are not applied; absence of compulsory sale of currency.

Income tax is paid at a rate of 9%, while the general rule is a rate of 13%.

The mode of functioning of the Park assumes preferential production conditions: preferential prices for individual energy resources; free prices for own products; absence of quotas for production possibility of attracting foreign labor.

For the beginning of November, 2017 twenty-one resident were registered in the industrial park «Great stone», among those were company which began the construction of its plants and sites:

-LLC «Bel Huavei Technologies» is going to implement investment projects for the creation of flexible networks, including on the basis of open cloud platforms, as well as the formation of a center for research and development of Huawei.

- ZTE Telecommunications Equipment LLC, founded by ZTE, plans to create the production of modern telecommunications equipment for mobile and wireline operators, the production of transport system components, as well as the production of electric transport and combined sources of electricity, and its own production in the 4G area.
- Zumlion Bel-Rus intends to produce construction equipment, truck mixers, truck cranes, municipal equipment. In April 2017, the company began

construction of a plant to create equipment for Belarusian-Chinese special vehicles. Three types of special equipment that will be produced by the company are already identified: two types of cranes and a vacuum cleaner.

- CJSC «China Merchant CHN – BLR Commercial and Logistic Company» is a subsidiary of one of the world's logistics leaders China Merchants Group. The company came to Belarus with the «2-2-3-4» strategy, where 2 are the two countries (Belarus and Lithuania), 2 are the two integrations (the Eurasian Economic Union and the European Union), 3 are the directions (land, sea and air), 4 - is the unification of four elements in a single center - Minsk.

At the initial stage the possible problems of its functioning in the future are already determined. Conditions have not been created for the formation of an innovative environment for the development and implementation of technology 5 and 6 technological structures. There is a problem with the provision of highly qualified personnel, weak connection of the Park with the economy of Belarus.

Improvement of the activities of the Industrial Park «Great stone» should take into account the world trends in the development of industrial parks and the best practices of the activities of Chinese industrial parks.

Among the main world tendencies of industrial parks can be attributed:

- an increase in the number of private management companies (in recent years, the share of private management companies has increased (more than 70% of parks being created are managed by private companies);
- the growth in the number and diversification of services, in particular the growing competition between parks in different countries and globalization, are compelling to constantly increase the number of services provided in parks, their quality and develop new types of services that may be of interest to investors, replacing the traditional concept of focusing on tax and customs preferences;
- the use of parks to test reforms (more and more countries follow the successful example of China and use parks to test new management and regulatory models, extending the regime of parks to the whole territory);
- clear positioning of parks (from the point of view of potential customers, markets, competitive advantages, region, attractiveness for participants).
- So, in mid-May, 2017, the State Committee for Science and Technology of Belarus, the Chinese investment company «China Merchants group» and CJSC «Company for the Development of Industrial Park» signed an agreement of the agreement on the establishment of the Chinese-Belarusian Venture Fund «Great Stone». The size of which will be at least $ 20 million. The founders of the new structure - the Belarusian Innovation Fund, the China-Belarus Industrial Investment Fund, the Industrial Park Development Company - intend to channel these investments into the high-tech sector - high-tech, innovative products, innovations in traditional sectors of the economy.

The transfer of technology should be considered as one of the main tasks of the techno-park, and its solution is implemented through the fulfillment of five requirements - the possibility of direct commercialization of scientific research results; joint research and development; use of advanced foreign technologies; domestic research and development; development of only such technologies that can be commercialized in a short time.

As foreign experience shows, commercialization and production of high-tech products on the basis of techno-parks can be provided by several tools.

Among them are the following:

- definition of strict criteria for selecting companies for inclusion in parks;
- active formation of innovative infrastructure facilities, including business incubators;
- the formation of research alliances with large international corporations, the formation of parks on the basis of universities, as well as the search for new sources of support for innovation − business angels and venture investors;
- introduction into practice and legal support of various methods of commercialization of research results by subjects of innovation infrastructure (technology contracts, technology transfer (patenting) and licensing, and activities within the framework of projects implemented at universities by techno-parks, joint research centers and resident enterprises).

The next very important point is the stage in the creation of the Park, it is impossible at the initial stage to focus on the creation of high-tech products of 5 and 6 technological structures.

As the world practice has shown, stepwise development of parks is most expedient. As possible stages of development, the following can be proposed:

- the first stage (the starting stage): the creation of infrastructure and the definition of conditions for preferential treatment for the activities of residents of the industrial park;

- -the second stage: the accelerated development of the high-tech sector;
- -the third stage: the stabilization of development, the withdrawal of enterprises that did not sustain competition, the formation of competitive advantages mainly through networking and complementarities in the activities of residents;
- -the fourth stage: shifting the emphasis from production directions to sustainable eco-friendly development of the territory, creating an enabling environment for life and development, socio-cultural development, the primary development of services, high technology and innovation, «green growth».

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ASSESSMENT OF DEBT SUSTAINABILITY IN UKRAINE WITHIN THE INTERNATIONAL FINANCIAL ORGANIZATIONS APPROACHES

Abstract

The article offers analysis of approaches of international financial organizations to the assessment of debt sustainability, in particular, based on the experience of the World Bank and the International Monetary Fund. There also provided highlights of the main stages of public debt sustainability analysis that are used in European practices. Based on the IMF methodology, a comprehensive analysis of debt sustainability in Ukraine was conducted and it takes into account the dynamics of the necessary macroeconomic and fiscal parameters using appraisal stress tests over the forecast period until 2022. The major debt-creating factors were estimated, in particular, the primary deficit, the growth of real gross domestic product, interest rates on government loans and residual.

The article presents forecast of the dynamic of debt burden in Ukraine and its structure regarding borrowing terms and currency borrowing until 2022. Three possible scenarios for resizing debt load were presented, such as baseline scenario, historical scenario, and scenario based on linear changes in the primary balance. According to the baseline scenario, one analyzes results of forecasting of the dynamic changes of debt burden and gross financing needs in relation to GDP due to influence of some macroeconomic and fiscal indicators in Ukraine, namely: real GDP, primary budget balance, real interest rate, exchange rate of the national currency to USD. Additional analysis is made in relation to changes in debt burden and gross debt financing needs in the presence of combined macro-fiscal shock and shock of contingent liabilities. Based on the stress tests, the influence of possible financial and economic disturbances was analyzed, as well as their importance in assessing debt sustainability was ranked.

Within the presented scenarios, based on data from 2016, there is an estimate of changes of the nominal gross public debt, gross financing needs, debt structure in Ukraine until 2022. The assessments of the debt sustainability in Ukraine have resulted in the "Heat Map", as well as they give substantiated proposals for improving public debt management in Ukraine.

Keywords: *public debt, debt sustainability, stress testing, gross domestic product, debt-creating factors, debt burden, international financial organizations.*

Introduction

The need to improve debt policy is one of the most urgent tasks in the field of public finances in Ukraine. The debt burden in Ukraine substantially exceeds the figure of 60% of GDP, defined in the Budget Code of Ukraine as the ultimate. Public debt is very «expensive», and debt service costs amounted to 16.3% of total state budget revenues in 2016.

After the global financial and economic crisis of 2007-2008, the overall global trend is to transform debt policy into risk-oriented, the essence of which is early identification of debt risks, development of countermeasures, focusing of financial, organizational, and human resources on tracks of the most dangerous impacts.

In terms of debt sustainability, the assessment of debt risks requires to implement in-depth scientific analysis of the full range of debt-generating factors that can determine the growth of debt burden. In this analysis, it is important to use the international financial organizations' relevant methodological developments, adapted to conditions of a specific country.

Material analysis and research results

The scientific literature used several approaches to the interpretation of the concept of debt sustainability. The most commonly used are [1]:

1. The state of public debt is considered sustainable if the ratio of public debt to GDP is at the same level or declining over time.
2. Debt sustainability is ensured in case of containment in the long-term perspective of the growth rate of public debt in relation to GDP. The volume of this debt can be increased.
3. Debt sustainability – is the ability of the state to fulfill their commitments on the national debt in timely manner and in full, without significant accumulation of further debt, restructuring or debt cancellation, and simultaneously ensuring an acceptable level of economic growth. On the one hand, debt sustainability is ensured by the parameters of public debt (the size of debt, ratio to GDP, the amount of service payments, debt structure (internal, external), temporal characteristics), and on the other hand - state's access to internal and external financial resources required to fulfill debt liabilities [5].

In addition, there are provided quite different approaches to debt sustainability assessment in order to create the scientific basis for the formation of public debt policy using the arrangements that should balance current financing needs with the ability of budget to service accumulated debt both today and in future periods.

Some scientists believe that the assessment of debt sustainability is impacted by two groups of factors: relating to behavior of the borrower and to behavior of the creditors [2]. This division is used because the debt sustainability of a borrowing country depends not only on the solvency of the country, but also on the state of the capital market.

The known approaches to the public debt sustainability assessment are [3]:

- Optimization model, based on a comparison of the marginal cost increase in debt and marginal utility of borrowing that affect increase of public debt.
- Model fiscal space with inherent basic thesis that the need for debt service leads to reduction of financing of other costs of state. The latter causes reduction of investment and demand, as well as creates disincentives for economic growth.
- Model of destimulating effects, which states that the increase in debt leads to increase in taxes and therefore suppresses economic activity.

A generalized approach to the assessment of debt sustainability is developed through a joint methodology of the World Bank and the International Monetary Fund and is based on the present value of surplus budget in the context of comparing real interest rate of economic growth in the medium term.

Methodology of evaluating debt sustainability, developed by international financial institutions (IFIs), contains the following main components [4]:

1. Prospective analysis of the debt burden and the size of debt payments within the baseline and standardized stress-tests;
2. Debt sustainability assessment based on the indicative limit values of the size of public debt and maintenance costs, which depend on the quality and efficiency of economic policy institutions in the country;
3. Proposals for government debt strategy that should ensure reduction of risks of the debt crisis for simultaneous achievement of socioeconomic development goals.

Evaluation of the economic acceptability of public debt is held in three stages [4]:

1. Prediction of the likely dynamics of the volume of outstanding commitments and assessment of their impact on the solvency of the government;
2. Analysis of prospects for the maintenance of state debt sustainability under the impact of external shocks;
3. Formulation of the conclusion of the possibility of debt complications under different scenarios.

Therefore, the first step involves the creation of revenue projections and expenditure budget, including debt service, as well as the dynamics of key macroeconomic variables, such as interest rates, economic growth, exchange rate changes etc. To the extent by which these variables are influenced by the state economic policy, projections of debt dynamics will be determined by variables of such a policy, macroeconomic sphere and financial markets.

The second stage provides evaluation and interpretation of current and future performance of debt burden of the country according to two scenarios – baseline and with possible shocks. The authors aim to study possible effects of current debt policy on the assumption that economic conditions do not change significantly and that there may appear shocks that cause the increase of debt up to critical level. The function of the stress test is to determine the degree of sustainability of the current state of public debt: after exposure to disturbing factor, whether it returns to previous state or moves into a new one, and what are the subsequent parameters of this condition, in particular the debt burden and public debt servicing?

The third stage compares estimates of debt burden with previously established limit values. The general assumption of existence of the debt sustainability is that the rate of debt load should not exceed the limit values neither in the initial conditions, nor in the stress scenarios. The purpose of this phase is to test the effects of the current economic policy measures and the impact of possible shock force situations that can increase the level of debt in the future.

Based on conducted studies, the conclusion on the degree of public debts sustainability is made. A country belongs to one of four groups depending on how the figures relate to current and projected debt with the corresponding limit values in basic conditions and as a result of stress tests [5]:

1. *Low risk:* All debt indicators of the country are below the limits. If only one parameter exceeds the threshold value, it is necessary to analyze its causes - the volatility of the debt or other problems.
2. *Middle risk:* the baseline scenario does not illustrate violations of debt sustainability, but alternative scenarios and stress tests indicate significant increase in debt service ratio or exceeding the limit values of the debt burden and the cost of debt service.
3. *High risk:* according to the baseline scenario, there is a record of exceeding the limit values of debt and servicing, but the country is still able to fulfill its debt liabilities.
4. *Debt problems:* the level of debt and debt servicing costs steadily exceeds the limit values. Confirmation of serious debt problems is provided through planning or carrying out negotiations on debt restructuring, as well as arrears on debt payments.

Thus, according to the procedure for monitoring the risks associated with the management of public debt developed by the Ministry of Finance of Ukraine, the main risks are the following [5]:

1. Fiscal risk – the risk of significant underperformance of revenues of the state (local) budget, which could lead to increase in government (local) debt and / or default on debt service;
2. Currency risk – the risk of change of the national currency against foreign currencies, in which debt obligations are denominated or indexed;
3. Interest rate risk – the risk of rising floating interest rates according to terms of existing debt obligations;
4. Debt management operations – operations aimed at reducing the risks associated with debt management, and / or cost savings of the state (local) budget;
5. Liquidity risk – the risk of temporary lack of state (local) budget for the debt obligations because of possible rapid decrease of liquid assets as a result of unforeseen financial obligations of current and / or operational difficulties in raising funds by borrowing;
6. Refinancing risk – the risk of reduction of capital markets' capacity which makes it impossible to borrow to the extent that is necessary to refinance the debt at a reasonable price, and therefore increases the cost of borrowing;
7. Risks associated with debt management – risk of events (circumstances) that would increase the costs of the state (local) budget related to repayment and debt servicing and reduction of government (local) loans.

Unfortunately, the risk analysis provided by the Ministry of Finance Ukraine, does not range risks by their imminence (low, medium, high), does give a clear understanding of one's priorities and how to manage those risks of public debt for their further minimization. To determine what kind of macroeconomic or fiscal indicator leads to the growth of debt, one should focus on stress testing in accordance with the recommendations of the International Monetary Fund.

Stress testing of the dynamics of public debt in the appropriate script allows combining macroeconomic forecasts with estimate of public debt sensitivity to possible disturbances in the economy and the financial sector.

Stress tests are conducted in five phases [5]:

1. Identification of main vulnerabilities in macroeconomics, finance, public debt;
2. Development of scenario stress testing according to these factors;
3. Calculations using the methods of economic-mathematical modeling of parameters of baseline assumptions scenario for debt indicators;
4. Taking into account possible impact of secondary effects on public debt, value of payment and settlement services;
5. Meaningful interpretation of the results.

Stress tests can be carried out with the assumption of individual (an event that leads to economic imbalances) or multiple shocks that combine effects of several adverse events. The development of a scenario of a single shock is intended to assess the vulnerability of the financial system and the condition of the state debt to the impact of specific macroeconomic variable - the budget deficit, exchange rate, GDP, interest rates; and scenario of multiple shocks - to define a common effect on the debt sustainability of a number of factors that also may be connected among themselves.

International financial institutions have developed standard stress tests that incorporate such effects [6]:

1. Interest on the baseline value plus 0.5 standard deviation;
2. Real GDP growth in the baseline value minus 0.5 standard deviations;
3. The budget balance at a baseline value minus 0.5 standard deviations;
4. A combination of these three options using the standard deviation value of 0.25;
5. A one-time reduction in the nominal exchange rate by 10%;
6. Fold increase in contingent liabilities of the government for 10% of GDP.

Debt sustainability assessment based on stress tests is an important tool for risk analysis, which today is widely used in European practice. However, with recent developments and future shocks, the value of which is calculated on the basis of standard deviations from historical data will not necessarily be played in the future; scope and types of shocks, defined as the basic assumptions of simulations are subjectively determined by their developers and reflect their own vision of key factors influencing the dynamics of debt, and the likely extent of such influence in the case of a negative scenario; historical data based on which calculations may reflect unique events that may not recur in the future. However, the listed shortcomings do not deny the exceptional importance of developed evaluation tools to assess debt sustainability using stress tests spheres of government debt to prevent debt complications.

After the crisis, IMF experts developed advanced comprehensive analysis of debt sustainability assessment, taking into account the dynamics of the necessary macroeconomic and fiscal variables and using estimated stress tests in the coming forecast period [7].

It is believed that Ukraine belongs to countries with an open market economy that, if needed, can resort to borrowing on the international financial markets to cover part of the budget deficit. In this case, public debt sustainability largely depends on the dynamics of nominal and real exchange rates and interest rates abroad. When the government borrows abroad currency risk arises because of the variability – nominal exchange rate (in local currency per unit of foreign currency), and hence debt denominated in foreign currency.

In general, public debt is [7]:

$$\boldsymbol{D_t = D_t^h + e_t D_t^f}$$

Where D_t^h – internal debt, D_t^f – external debt.

Government budget constraint is:

$$\boldsymbol{D_t = (1 + i_t^*) D_{t-1} - (PB_t + \Delta M_t)},$$

where, PB_t – the primary budget balance; i_t^* – effective nominal interest rate is the weighted sum of domestic and foreign interest rates of borrowing i_t^h and i_t^f;

it also depends on the exchange rate:

$$\boldsymbol{i_t^* = \left((1-\alpha) i_t^h + \alpha i_t^f\right) + \alpha \varepsilon_t (1 + i_t^f)},$$

where, $\alpha = (e_t D_t^f)/D_t$ – the debt denominated in local currency; ε_t – the rate of currency depreciation.

It can be shown that the debt burden (the ratio of the size of public debt to GDP) varies according to the following equation:

$$\boldsymbol{d_t = \varphi_t^* d_{t-1} - (pb_t + \mu_t)},$$

where μ_t – seignorage; g_t – real growth rate of production.

$\boldsymbol{\varphi_t^* = (1 + i_t^*)/[(1 + g_t)(1 + \pi_t^*)]}$ is analogue φ_t and π_t^*, the GDP deflator, which depends on inflation in the country π_t^h, foreign inflation π_t^f and exchange rate fluctuations:

$$\boldsymbol{\pi_t^* = \left((1-\beta)\pi_t^h + \beta \pi_t^f\right) + \beta \varepsilon_t (1 + \pi_t^f)},$$

where $P_t Y_t$ – nominal GDP; $\beta = \frac{e_t P_t^f Y_t^f}{P_t Y_t}$ – received initial share of GDP.

In an open economy, the interest rate depends on its internal and external components, inflation, exchange rate fluctuations, volume of external debt, and trade.

Stability analysis of public debt, as noted, includes the basic stress tests, which allow to detect sensitivity of debt dynamics to a number of assumptions. However, while constructing realistic prognoses, there is a number of difficulties with the assessment of changes in the volume of public debt and changes in the value of its services, due mainly to the three risks.

The first risk is a valid consideration of contingent liabilities. Many of them are almost invisible during the period of stable development, but very often manifest themselves during crisis. The amount of contingent liabilities is extremely difficult to evaluate in practice, the amounts are often unknown, it is difficult to predict the specific circumstances in which contingent liabilities become actual, and especially the final result − the actual amount of liabilities. However, it should be emphasized that it is some type of contingent liabilities, especially those that result from the need to recapitalize banks, have led to significant changes in the volume of public debt relative to GDP in several countries, and the latter were rather seriously affected by the crisis processes. Therefore, assessment of the financial risks associated with contingent liabilities and understanding of measures for their leveling are the most important tasks in analyzing sustainability of government debt.

The second risk, which significantly affects debt sustainability, is the significant change in financing conditions in international markets, which usually determines availability of financial resources and their value. This may result in a liquidity crisis. If a country is unable to roll over its obligations by maturity, which occurs in the immediate future, a noticeable increase in interest rates questions the long-term solvency of the borrower.

The third risk is the likely devaluation of the national currency, which increases the cost of external borrowing. According to the practice of some countries during the recent financial crisis, there are frequent capital outflows that could cause adjustments to the exchange rate at levels that significantly exceed any initial assessment of its changes.

According to the IMF, to test the impact of certain risks as part of the baseline forecast one should use [7]:

1. Calibration of shocks' values (standard deviations for the use of existing statistical series or known absolute deviations clarified during the global crisis manifestations);
2. Assessment:
   - Interdependencies (taking into account simultaneous multiple correlation parameters);
   - Duration of shocks (use sequences for serially correlated parameters);
   - Other debt-creating factors, including contingent liabilities.

Evaluation of stability should apply to areas of public debt in the widest possible sense; cover the debt of state enterprises and local governments. For Ukraine, for example, the role is known of such companies like "Naftogaz Ukraine", state banks in destabilizing of the debt sector.

Herewith, it is necessary to analyze various channels of influence on the level of public debt relative to GDP, including primary budget deficit and other endogenous factors related to interest rates, economic growth, and foreign exchange rate fluctuations. It should also examine the effects of transactions, leading to the accumulation of debt, such as government recognition of a certain amount of contingent liabilities or income from privatization, which can be directed to cover part of the debt. Gross financing needs for public sector determined by the size of deficit and all debt with maturing in the next 12 months.
The analysis establishes a stabilization effect of initial balance that is necessary to maintain the ratio of public debt to GDP on stable level, provided that all other macroeconomic indicators, that depend on the size of this debt, remain unchanged from the previous year.

As part of the developed by IMF public debt sustainability analysis, there is an assumption that the ratio of government debt to GDP and other macroeconomic variables, that influence those actions, are determined directly by the actions of the government.

The main is the baseline scenario, although it is conditional in the sense of an assumption that the government fully implements the announced fiscal, monetary, structural policies and that related to the exchange rate.

Historical scenario is widely used as an alternative way to determine the size of public debt under the assumption that all key variables (indicators) remain at historically average levels throughout the forecast period. This scenario is a test for "realism" of basic prognoses: if changes of debt policy and macroeconomic variables, that had been previously defined based on earlier assumptions, deviate significantly from the historical scenario, they should be further justified with reference to significant changes in government policy.

In addition, in scenarios of basic prediction one uses a number of assumptions on key parameters. In particular, constant shocks should be equal to half a standard deviation. The above example is applied to the basic prognoses of each parameter and the resulting level of public debt. Combined shock has a value of one quarter of a standard deviation used for interest rates, growth and primary balance.

The IMF also recommended analyzing the trajectory of changes in the level of public debt in the event of devaluation of the national currency against reserve currencies by 30% and increasing the impact of contingent liabilities shock to 10% of GDP [7]. The shock of such commitments can be presented as a rough estimate of flow augmentation of public debt in the view of difficulties in determining risk of these commitments.

Table 1 lists the input variables needed to calculate the ratio of the size of public debt to GDP under the baseline forecast in the analysis of sustainability of public debt.

Table 1

Input needed for debt sustainability analysis

Fiscal indicators	The debt of the public sector
	The balance of the public sector
	The cost of public sector
	Interest expenses of the public sector
	Revenues from the public sector
	Domestic public debt
	External public debt (expressed in local currency)
	Medium- and long-term payments on public debt
	Short-term debt
	Interest payments on external debt
	Residual
Macroeconomic indicators	Nominal GDP
	Real GDP
	GDP deflator
	Exchange rate (USD at year end)
	Exchange rate (USD per year on average)

Source: FPP Manual Volume chapter eight: What is debt sustainability analysis? [The e-resource]. - Access mode: https://courses.edx.org/asset-v1:IMFx+DSAx+2015_T3info

Residuals – a total amount of public debt at the end of the calendar year (as seen in the analysis of debt sustainability), less payment on public debt at the end of the calendar year depends on the impact and change previously mentioned by debt-creating factors.

Also, changes in the balances of public debt are affected by the following factors:

1. Revenues from privatization of state enterprises – reducing the need for financing (loans) due to increase in revenues to the state budget.
2. Recapitalization of banks. Attached by budgetary resources (during recapitalization) funds are generally related to the authorized capital of state banks. The purpose of such investments - to increase capitalization of state banks, which is the basis for strengthening their financial base. The result is an expansion of active operations to finance important state direction of economic development, and in some cases – social issues, which leads to GDP growth and therefore reduces the size of public debt in medium and long terms.
3. Covering the deficit of "Naftogaz". As of 2014, the deficit of "Naftogaz" amounted to 10.1% of GDP in Ukraine. As of June 2016, the deficit of "Naftogaz" amounted to 0.9% of GDP in Ukraine. In 2017 it is projected that "Naftogaz" will not have any deficit, thus decreasing the debt burden, as stated deficit reduction in the period from 2014 to June 2016 occurred just by issuing debt instruments – domestic government bonds. This forecast is based on the results of the report on the financial performance of "Naftogaz" which indicated that as of September 30, 2016 the company received 6.5 bln. USD gross profit.

For example, in 2014, the government provided "Naftogaz" with bonds worth 100 billion USD. In 2015, the government provided for "Naftogaz" bonds equaling to 29.7 billion USD in exchange for the issuance of new shares. The difference amounts to 70.3 billion. UAH that makes it possible to argue about feasibility of such operations, albeit at the expense of considerable size of government borrowing.

Table 2 shows the projected results calculations for the economy of Ukraine using IMF methodology of setting values of key macroeconomic indicators that influence the size change ratio of public debt to GDP until 2022.

Table 2

Debt forecast, economic and market indicators of Ukraine economy using IMF methodology, % of GDP

Indexes	Fact			Forecast						As of 01.10.2016		
	2008-2014 [1]	*2015*	*2016*	*2017*	*2018*	*2019*	*2020*	*2021*	*2022*			
Gross nominal public debt	39.7	79.4	81.0	88.8	78.4	74.2	67.8	60.1	62.3	*EMBI (bp)* [2]	676.7	
including public guarantees	*8.7*	*12.0*	*11.7*	*10.3*	*10.0*	*9.6*	*9.3*	*8.9*	*8.6*	*5Y CDS (bp)*	663.7	
Gross financing needs	5.3	3.5	14.1	7.4	6.3	5.6	5.5	4.0	4.8			
Real GDP growth,%	14.9	1.2	2.2	2.4	5.4	3.9	3.1	6.6	4.1	**Rating**	**External**	**Internal**
Inflation (GDP deflator),%	13.3	48.7	12.4	11.2	9.1	7.8	6.1	5.7	5.5	*Moody's*	Caa3	Caa3
The growth of nominal GDP,%	14.1	26.3	21.2	1.9	3.1	3.6	4.0	3.9	4.2	*S & Ps*	B-	B-
Effective interest rate,% [3]	8.5	7.9	7.4	4.8	3.6	2.9	2.4	2.2	2.2	*Fitch*	B-	B-

[1] Based on available data.
[2] Index bond market in developing countries (Emerging market bond index).
[3] Defined as the sum of interest payments divided by the sum of gross public debt (excluding guarantees) as of the end of last year.

Source: Calculated and compiled by the authors using the methodology of the IMF.

Key assumptions in forecasting is that the size of the gross public debt relative to GDP after 2017 will gradually decrease. Until 2016, the public debt would be accumulated by Ukraine through loans obtained from international financial institutions and other creditors. The ratio of debt to GDP will also increase, as a positive economic effect on borrowing will be manifested immediately. Since 2019, the debt burden will be weakened.

Similar patterns derived from projections, will be observed in Ukraine also in relation to the public debt to potential GDP, which is based on the unemployment rate or the Okun's Law. The assumptions of nominal GDP trends, in turn, preview its increase with variable growth rates. Thus, during the years 2017–2022 it will be ranging from 1.9% to 4.2%. The increase in real GDP in the same period will equal to 2.4 – 4.1%.

It is also believed that the effective interest rate will decrease as its amount is defined as the total amount of interest payments divided by the total rate of public debt, including state guarantees for the previous year. It is predicted that the effective interest rate in 2022 will equal to 2.2%. A prerequisite for this forecast is lower inflation in Ukraine and the GDP deflator. It is assumed that the latter will be reduced after 2015, counting the inflation rate in 2016. The biggest decline is projected in the 2016 – 2018, and it will later remain approximately on the same level. This figure is stabilizing the economy, which makes it possible to predict more accurately the real change in macroeconomic indicators, and consequently the size of public debt.

Clearly, the prerequisites for the growth of GDP and public debt are: informed government actions related to the use of borrowing, clearly identified priority targets, the development of leading industries. It is believed that with correct use of borrowed funds, Ukraine's GDP will continue to grow, while the same need for borrowing in future periods will decrease due to increase of funds in public sector received due to GDP growth. This means that public debt will decline, and it is assumed that in 2022 the ratio of gross financial needs to GDP will be at 4.8%.

In view of the above stated, we can estimate the dynamics of debt-creating, macroeconomic and fiscal factors that affect the resizing of public debt, and the level of dependence of public debt on these variables. Table 3 provides the forecast of dynamic factors on GDP in relation to the previous year.

Table 3

The forecast of debt-creating factors in Ukraine using IMF methodology, % of GDP

	Fact			Forecast						*Cumulative*	*The level stabilizing primary balance* [5]
	2008-2014	*2015*	*2016*	*2017*	*2018*	*2019*	*2020*	*2021*	*2022*		
The change in the gross public debt	8.4	9.1	1.6	7.8	-13.4	-7.2	-0.4	-7.7	2.2	**-18.7**	
Debt-creating flows	-1.6	-8.7	1.9	-6.4	-3.6	-2.6	-3.8	-3.3	-2.3	**-22.0**	
Primary deficit	-1.1	-11.9	-3.6	-1.8	-1.9	-1.1	-2.2	-1.8	-0.9	**-9.7**	***-1.4***
The primary (non-interest) income and grants	30.3	32.9	32.8	29.6	28.9	28.4	28.3	27.0	26.6	**168.7**	
The primary (non-interest) expenses	29.3	21.0	37.1	32.4	30.2	28.6	28.6	26.8	25.6	**172.3**	
Automatic debt dynamics [1]	-0.2	3.3	-4.2	-4.2	-1.0	-0.7	-1.1	-1.2	-1.1	**-9.3**	
Percent rate / growth differential [2]	-3,9	-14.7	-10.7	-4,2	-1.0	-0.7	-1.1	-1.2	-1.1	**-9.3**	
including real interest rate	0.0	-14.0	21.8	4.6	3.0	2.1	1.2	3.3	1.5	**15.6**	
including Real GDP growth	-3.8	-0.7	-32.5	-8.8	-4.0	-2.8	-2.2	-4.4	-2.6	**-24.9**	
Changes in exchange rates [3]	3.6	17.9	6.4	...	...	...	...	...	...	**...**	
Proceeds from privatization	-0.3	0.0	0.0	-0.3	-0.7	-0.7	-0.5	-0.4	-0.3	**-3.0**	
Balances [4]	10.0	17.8	9.4	5.1	-0.7	-3.1	-2.8	-0.6	-1.3	**-3.4**	

[1]Calculated as [r - π (1 + g) - g + ae (1 + r)]: (1 + g + π + gπ) ratio of debt to the previous period, where r – effective nominal interest rate; π – growth rate of GDP deflator; g – the real GDP growth rate; a – share of debt denominated in foreign currency; e – nominal effective exchange rate.
[2] The impact of the real interest rate is derived from the numerator in footnote "1" as r - π (1 + g) and the growth of the real impact of the change of debt as -g.
[3] Effect of exchange rate derived from the numerator in footnote "1" as ae (1 + r).
[4] Includes changes in existing guarantees, assets and changes in interest income, if any, as applied example – changes in the exchange rate over the forecast period.
[5] It is assumed that key variables (real GDP growth, real interest rate and other debt creating factors.) remain at the level projected last year.

Source: Calculated and compiled by the authors using the methodology of the IMF.

The figure 1 shows the dynamics and its forecast until 2022 for important debt-creating factors like the primary deficit, the real interest rate, real GDP growth, changes in exchange rates, residual.

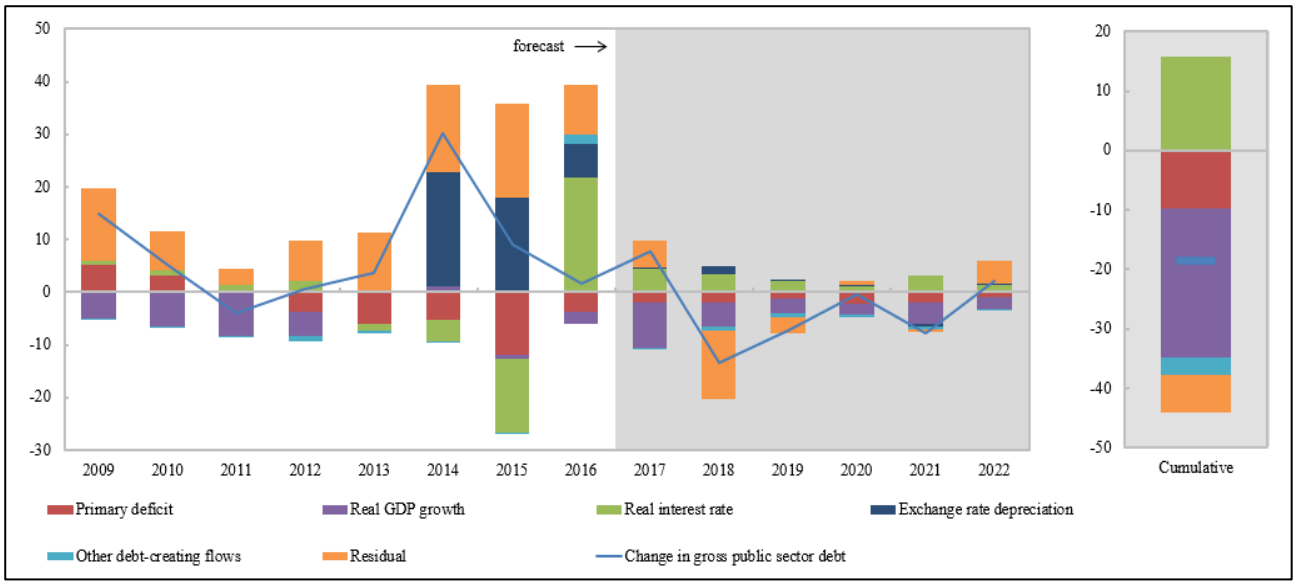


Figure 1. Changes debt-creating factors influence in Ukraine and forecast up to 2022, % of GDP.
Source: Calculated and compiled by the authors using the methodology of the IMF.

As we can see, the main factors of decreased debt burden (the ratio of public and publicly guaranteed debt to GDP) is real GDP growth and primary deficit. Positive impact of the primary deficit factor over the 2017–2022 will remain almost on the same level (from -1.8 to -0.9 % of GDP). Factor for real GDP growth in this period will be slowly losing its influence: from -8.8 to -2.6 % of GDP.

Real interest rate will negatively influence the level of debt burden by increasing it, however gradually reducing its own impact: from 4.6 % of GDP in 2017 to 1.5 % of GDP in 2022.

Analysis of assumptions about the change of national currency against the US dollar suggests that this indicator will slightly raise the level of public debt due to its stabilization in the years to come.

Balances of debt will continue to act as a factor increasing debt burden. However, their influence will weaken gradually, from 5.1% in 2017 to -1.3% in 2022 (see Table 3 and Fig. 1). It is also a positive trend in terms of general changes of public debt.
In total analysis the cumulative amount of debt-creating factors is estimated at -1.4%. Consequently, the level of public debt in relation to GDP is mostly influenced by the real interest rate, the primary deficit, and real GDP growth.

It should be noted that the behavior of real interest rates is quite uncontrollable and unpredictable, unlike the primary deficit and GDP of Ukraine that are subject to influence and control by the government.

Given the results of analysis of the impact of macroeconomic and fiscal factors on the ratio of government debt size to GDP and using the IMF methods, one should consider the dynamics of the components of public debt in terms of maturity, currency borrowing, as well as alternative scenarios of change (Fig. 2). As we can see, as of today, the share of short-term debt in Ukraine is very low, so that structural changes within it will not particularly affect the debt burden. However, it should be emphasized that since 2018 it can significantly increase. Therefore, we must provide measures that undo this trend. The share of medium and long-term debt dominates in the structure of public debt; its dynamic changes in 2022 will help to reduce the debt burden.

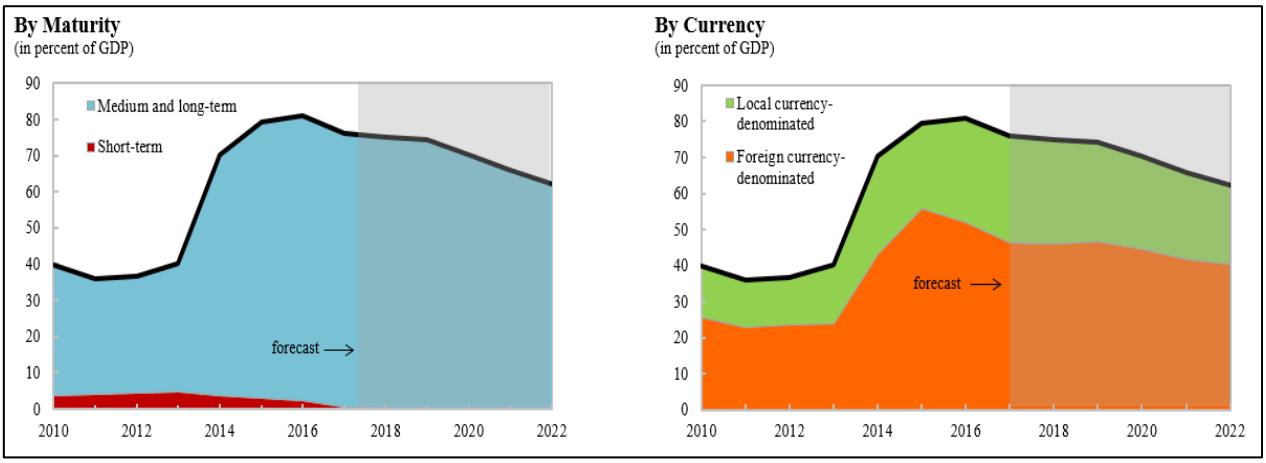
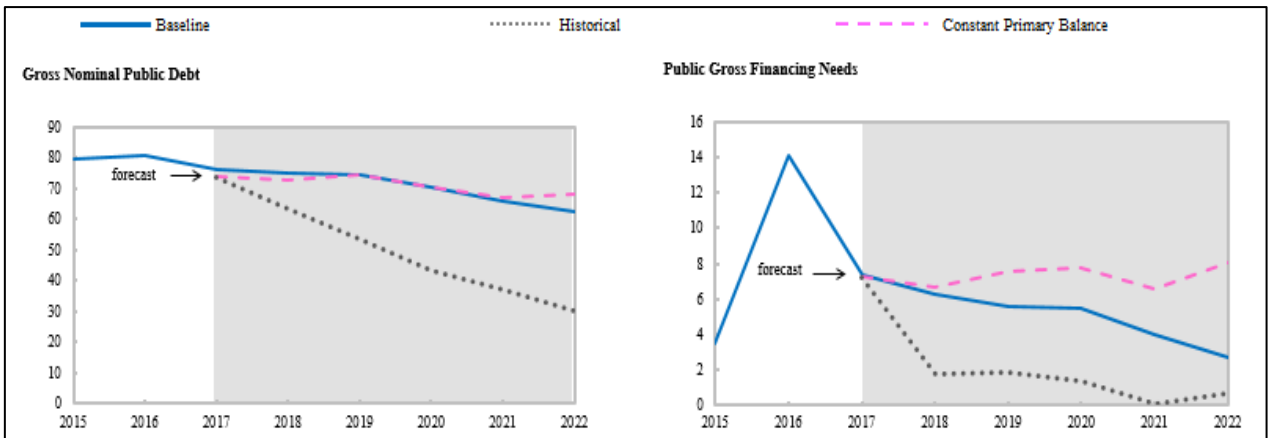


Figure 2. The forecast of the components of the debt burden in Ukraine in terms of timing and currency borrowing, % of GDP.
Source: Calculated and compiled by the authors using the methodology of the IMF.

Changes in debt by regarding currency should note the following. The share of government debt in foreign currency (primarily US dollars) stronger influences the dynamics of the debt burden in Ukraine than the share in the national currency. Reducing public debt in future periods will be connected primarily to the repayment of part of the debt in foreign currency.

Figure 3 shows three possible scenarios for the dynamics of the debt burden in Ukraine: basic, historic and primary balance scenario. As we can see, all three scenarios show a reduction in the debt burden over the years 2016 – 2022. The largest downward trend is expected for the historical scenario, the lowest - linear scenario changes in the primary balance. Regarding funding needs, it should be noted that only historical scenario envisages their reduction since 2017. Under other scenarios, it can be expected no earlier than 2018, and after 2020, the need for it will be gradually increasing. It is associated with the end of the grace period specified by the terms of restructuring of external debt established after the negotiations with creditors in 2015.



Assumptions, %

Baseline	2017	2018	2019	2020	2021	2022
Real GDP growth	1,5	2,0	2,0	3,1	3,5	3,9
Inflation	10,3	8,1	5,8	5,9	5,7	5,5
Primary Balance	1,8	1,9	1,1	2,2	1,8	0,9
Effective interest rate	7,8	7,1	6,8	6,6	6,9	6,4
Constant Primary Balance						
Real GDP growth	0,9	0,7	-0,8	-0,9	-1,4	-0,8
Inflation	10,3	8,1	5,8	5,9	5,7	5,5
Primary Balance	-0,9	-1,7	-1,5	-1,7	-1,8	-1,2
Effective interest rate	7,4	4,8	3,6	2,8	2,1	1,4

Historical	2017	2018	2019	2020	2021	2022
Real GDP growth	1,5	2,1	2,4	2,0	2,3	2,6
Inflation	10,3	8,1	5,8	5,9	5,7	5,5
Primary Balance	2,7	3,8	3,8	3,8	3,8	3,8
Effective interest rate	6,9	6,5	6,8	6,1	5,7	5,9

Figure 3. Alternative scenarios dynamics of nominal gross public debt and gross financing needs.
Source: Calculated and compiled by the authors using the methodology of the IMF.

The main scenario is a baseline scenario that accounts described assumptions about changes in economic indicators and their respective impact on the debt burden, as well as the ratio of gross financing needs to GDP. Historical scenario and primary balance scenario are built upon the conditions of possible deviations from original assumptions. In particular, the historical scenario is based on the hypothesis of quickly improving the economic situation in Ukraine due to exceeding baseline performance rates by growth of real GDP. In turn, the primary balance scenario involves tangible slowdown in economic growth in Ukraine compared with a basic assumption that manifests itself in slowing the growth rate of initial balance of the state budget.

There are formulated assumptions that are used in the analysis of debt sustainability of Ukraine based on the evidence of dynamics of macroeconomic and fiscal indicators over the years 2008-2016. The study examined the calculated according to IMF methods retrospective projections of real GDP primary budget balance and inflation (GDP deflator) with appropriate statistical error. Retrospective testing was conducted to determine realistic assumptions inherent in the baseline scenario, which is required for reliable assessment of debt sustainability. This test provides an estimate of forecast error values in relation to actual subject of assumptions formulated in accordance with the IMF approach to trends in GDP change, inflation and initial balance during the period of 2008–2016.

The figure 4 shows the results of predicting dynamics of gross debt burden and financing needs for debt as a share of GDP with drastic changes of certain macroeconomic and fiscal indicators in Ukraine, namely real GDP primary budget balance, the real interest rate, exchange rate to US dollar. When forecasting, we used the method of comparative analysis of the dynamic changes taking place in the baseline scenario.

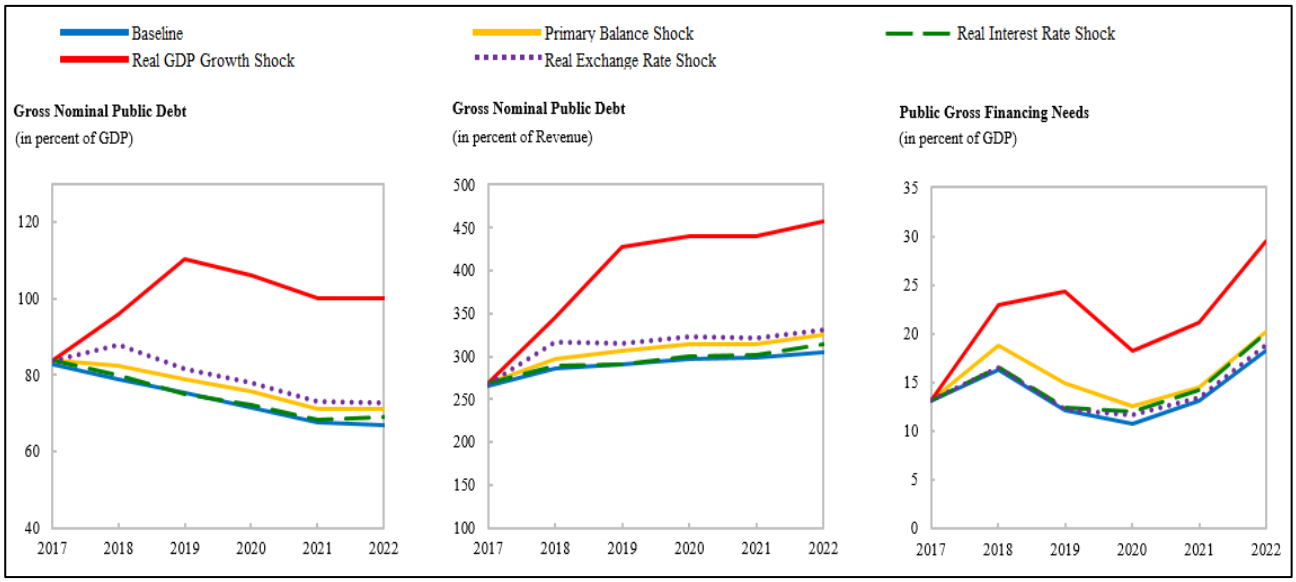


Figure 4. The forecast based on stress test: the impact of changes in macroeconomic and fiscal indicators to the dynamics of gross nominal public debt and public gross financing needs.
Source: Calculated and compiled by the authors using the methodology of the IMF.

Stress tests indicate significant risks that are associated with achieving the desired level of public debt in relation to GDP. Projected value of public debt remains fragile, as it is difficult to assess the level of exchange rate and other macroeconomic and fiscal indicators. In addition, there are additional risks of changes in public debt due to instability of the banking sector.

With the ongoing stress tests of baseline scenario, we have performed additional analysis of changes in gross debt burden and the need for debt financing if the combined macro-fiscal shock and shock of contingent liabilities. The results are shown on Figure 5.

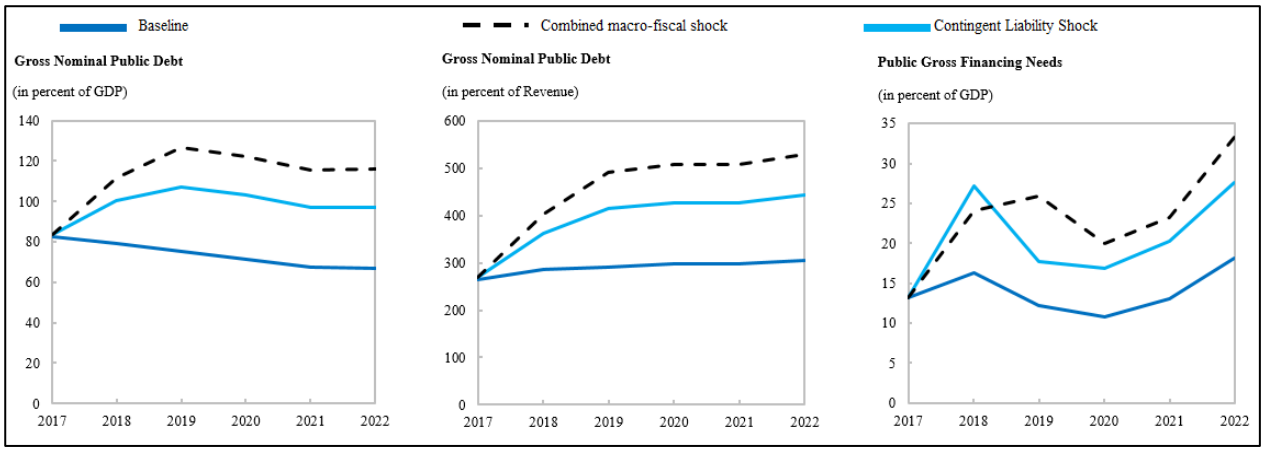


Figure 5. The forecast based on the stress test: the impact of combined macro-fiscal shock and contingent liability shock to the dynamics of gross nominal public debt and public gross financing needs.
Source: Calculated and compiled by the authors using the methodology of the IMF.

Combined macro-fiscal shock contains the average deviations in prediction derived from the calculation of shocks: real GDP growth, primary balance, the real exchange rate and real interest rate. The results show unstable dynamics of previous forecasts and the possible increase in these conditions of public debt of Ukraine to GDP in 2019 to 130%.

Shock of contingent liabilities tests the risk of further deterioration of the banking sector and the associated higher fiscal spending in support of it. Some reduction in occurrence of this shock is associated with the program of the National Bank of Ukraine for restructuring or liquidation of failing banks. Considering the shock of contingent liabilities that can arise through superposition (overlay) of shocks of real GDP growth, primary balance, real interest rate, one obtains assessment of the debt burden in Ukraine in 2019 – 108% of GDP.
IMF proposed grading of debt risks (table 4).

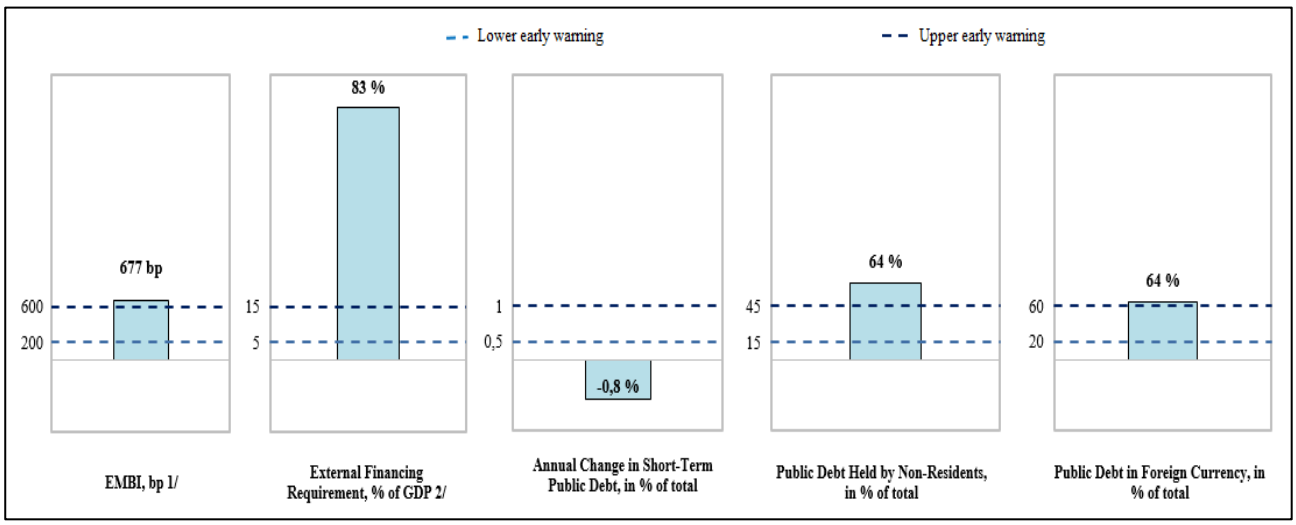
Table 4

Indicators of debt risk according to IMF methodology of debt sustainability

Indicators debt profile	Low risk	Medium risk	High risk
Developing countries			
EMBI Global spreads	200	200-600	600
The need for funding, *% of GDP*	5	5-15	over 15
Public debt in foreign currency,*%*	20	20-60	over 60
Change in short-term government debt, *% total debt*	0.5	0.5-1.0	over 1
Public debt belonging to non-residents, *%*	15	15-45	over 45
Developed countries			
EMBI Global spreads	400	400-600	600
The need for funding, *% of GDP*	17	17-25	over 15
Change in short-term government debt, *% total debt*	0.5	0.5-1.0	over 1.0
Public debt belonging to non-residents, *%*	30	30-45	over 45

Compiled by: IMF staff guidance note for public debt sustainability analysis in market-access countries [Electronic resource]. – Access mode: http://www.imf.org/external/np/pp/eng/2013/050913.pdf [8].

Figure 6 reflects the state of the debt sustainability of Ukraine in 2016 in the context of individual indicators, namely the bond market index of developing countries; the need for external borrowing; changes in the share of short-term debt; the size of the public debt, excluding debt of non-residents; public debt in foreign currency.



[1] The average rate of bond market index of developing countries over the past three months.
[2] The need for external financing is defined as the sum of the current account deficit, changes in medium- and long-term total debt and total short-term external debt at the end of last year.

Figure 6. Public debt vulnerability in Ukraine.
Source: Calculated and compiled by the authors using the methodology of the IMF.

Given these data, results of evaluations during stress testing with the use of IMF methodology show the summarizing in the form of the "Heat Map" that takes into account in an integrated form all the previously mentioned shocks (Fig. 7). Green color means low risk, yellow – medium, red – high. As we can see, in the horizon "level of debt to GDP" and "gross financing needs" have only a high level of risk. In the horizon "debt structure", only measure "change in the share of short-term debt" is a low risk, others – critical (high) level. Thus, the stability of public debt of Ukraine today is unsatisfactory.

Debt level	Real GDP Growth Shock	Primary Balance Shock	Real Interest Rate Shock	Exchange Rate Shock	Contingent Liability shock
Gross financing needs	Real GDP Growth Shock	Primary Balance Shock	Real Interest Rate Shock	Exchange Rate Shock	Contingent Liability Shock
Debt structure	Market Perception	External Financing Requirements	Change in the Share of Short-Term Debt	Public Debt Held by Non-Residents	Foreign Currency Debt

Figure 7. Debt sustainability of Ukraine as a "Heat Map".
Source: Calculated and compiled by the authors using the methodology of the IMF.

Conclusions

In order to improve debt management in Ukraine in the near future, one should make some practical steps.

Firstly, we should implement stricter legislation (such as the adoption of the document on the level of the Government) on the restriction of foreign currency borrowing in the domestic market, as well as maintain the overall level of debt no more than 50%. This is because the currency risk is quite powerful and yet unpredictable. Currently, the share of debt denominated in foreign currency is significantly higher than the critical level of 60% set by the IMF.

Secondly, the law should specify the list and determine the quasi-fiscal operations, and strengthen control of operations of state enterprises to influence the formation of public debt. Largely it concerns the state of the banking sector, which during the crisis transforms the contingencies into the public debt. These operations increase the budget deficit and provoke further growth of public debt.

Thirdly, it is necessary to amend the Procedure of development of medium-term debt management strategy and its implementation monitoring, approved by the Cabinet of Ministers of Ukraine dated 27.10.2010 # 978 in the binding part of the methodology of the IMF stress tests of public debt management in the subject of costs and risks, and the state's ability to support itself with borrowed resources in terms of developing crises.

Fourth, we should strengthen the coordination of state authorities in the field of financial policy, including the Ministry of Finance of Ukraine and the National Bank of Ukraine, coordination of plans, especially regarding target inflation and government deficits.

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CHINESE YUAN AS THE WORLD'S MAJOR INVESTMENT AND RESERVE CURRENCY

Abstract

The main objective of this article is to provide an overview on the Chinese yuan and its role in the global economy. The research names the requirements that the Chinese yuan needed to meet to become a reserve currency and provides data on China's steps towards "internationalization" of the yuan. The article also describes how China is expanding the international usage of its national currency.
The research examines the opportunities of the Chinese yuan to become world's major investment and reserve currency and names the main conditions needed for the yuan to obtain the status of the world currency.

Key words*: the Chinese yuan, reserve currency, the CNY rate, special drawing rights, International Monetary Fund.*

China has every chance of making the yuan a major reserve currency. According to the International Monetary Fund (IMF), in addition to being a rapidly developing economy, China requires a well-developed financial infrastructure and stable currency. However, since export trade is one of the essential conditions for the China's development, it is beneficial for China to keep the rate of the Chinese yuan low, making it an unpopular currency for creating reserves.

In about 20-25 years, the Chinese yuan has a chance to become the world's major currency. Its rapid economic development will continue to lead to China's rise as a prominent figure in global politics. According to World Bank, China had overtaken Germany in 2007 and became the world's third-largest economy. In 2010 China overtook Japan, and it is projected to overtake the USA by 2029. While it is not yet enough to declare its superiority, it can be expected that the Chinese yuan will become the world's most influential currency, replacing the US dollar.

After the global financial crisis of 1998, many countries, especially developing countries, acutely felt the need to form large foreign exchange reserves. At the moment, the world's reserve currencies are the US dollar, euro, yuan, pound sterling, and Japanese yen. World currencies are investment assets used for international settlements and are a way to determine currency parity. Many countries want their currencies to be included in the reserve because they would then be able to cover the deficit balance of payments with their national currency. It would also strengthen the influence of their national corporations in the international market. However, there are requirements necessary for crediting the currency as a reserve currency. The use of a reserve currency implies a minimal risk of losses due to fluctuations in its value, so the stability of the currency is the most important requirement.

At the peak of the global financial crisis, the Chinese government announced its orientation towards the "internationalization" of the yuan. China continued to pursue its slow but consistent reforms of foreign exchange policy and started investing increasingly in the development of domestic demand and major state projects so that the global financial crisis would not have a significant adverse impact on its economic growth.

Although the Chinese government has not been interested in a flexible exchange rate and in opening up its economy for free capital outflow and inflow, it has nevertheless applied a number of measures aimed at expanding the international usage of its national currency. Although the yuan's status does not reflect China's economic opportunities and its leading positions in the global economy, China has repeatedly applied to include its monetary unit on the reserve currency list. In 2011, its application was rejected as the Chinese yuan fell short of meeting the criteria as a global currency.

However, in October 2015 the yuan was announced to become a reserve currency and, on October 1, 2016 it was included in the list of the settlement basket of special drawing rights (SDR's) and received a weight of almost 11%. The weight of the dollar was not significantly affected, but the euro (minus 6.6%) and pound (minus 2.2%) were reduced. The real distribution of gold and foreign exchange reserves is still partial towards the dollar.

To obtain this status as a reserve currency, the yuan needed to meet certain criteria. One of the first criteria is the repayment of debts, which China fully repaid to the IMF in the 1990s. Another requirement is that the country should have a low level of inflation. China has been able to maintain a consistent level of inflation over the past couple decades, but mainly due to the government's control over the nation's currency. The country's share in world GDP is also an important factor, with the country's economy taking a considerable part in world trade. After more than 30 years of reform, China has taken second place in the world after the United States by nominal GDP [1] and first place in terms of GDP by purchasing power parity [2]

Another important factor for the internationalization of a currency is the convertibility of the currency and the stability of the exchange rate. For a long time, the Chinese yuan had been tied to the dollar. However, for first time in 10 years, China raised its national currency rate by 2.1% on July 21st, 2005, increasing the yuan's rate against the dollar from 8.28 to 8.11[3]. It was one of the main steps in the strategy of reorienting China's economy from export production to domestic consumption.

In August 2005, the People's Bank of China started calculating the CNY rate against a basket of currencies consisting of the US dollar, euro, Japanese yen, and Korean won. However, the People's Bank did not announce the percentage composition of the basket. In addition, when calculating the CNY exchange rate, the currencies of Great Britain, Singapore, Russia, Australia, Malaysia and Thailand were taken into account. Nevertheless, People's Bank continued to control the growth of the yuan at a very low rate; in May 2006, the rate of the yuan to the dollar was 7.9982, which was a 1.3% increase compared to 8.106 in August 2005 [3]. The United States was very disappointed with the slow pace of China's financial reforms. The financial crisis in the US in 2007 had an impact on China's economic development, slowing exports. Reacting to this situation, China began reforming its economic model and reorienting itself from exports to domestic demand development programs. At the same time, the Chinese yuan continued to grow and by December 2008 it grew to a rate of 6.822 against the dollar, almost a 16% increase compared to the level in 2005.

In July 2008, due to the global financial crisis, China had to tie the yuan to the dollar again and fix the rate at 6.82. In 2009, China's foreign exchange reserves reached $2.02 trillion, higher than in any other country in the world. Due to China's economic position, many economists did not have an optimistic view of the country's prospects. Nevertheless, the dollar's position remained strong after the crisis. In 2009, more than 86% of all foreign exchange transactions were made in dollars and 39% of issued debt instruments were denominated in dollars. Since all US borrowings were in the national currency, they were protected against default on their obligations. If the dollar lost its status, the US would have to borrow in foreign currencies. China felt that holding such large reserves in US dollars was too risky and had been consistently pursuing a strategy for obtaining the yuan the status as a world currency.

In 2009 and 2010, the US and the EU required China to stop controlling the yuan's exchange rate, arguing that the Chinese monetary unit is undervalued by 20-40%. In November 2010, the Russian ruble became the seventh currency on the Chinese stock market. At the same time, the Russian stock exchange started trading in yuan. China raised the weight of the yuan and slowly reduced the role of the dollar in the global economy. In addition, China began to encourage payments in yuan not only with cross-border transactions but also with all international transactions. At first, China allowed only for enterprises in cities such as Shanghai, Guangzhou, Shenzhen, Dongguan and Zhuhai to trade with Macau and Hong Kong. But in 2010, China allowed for the trade between 16 provinces in China and any country in the world.

In 2012, China gave all Chinese trade enterprises with an export-import license the right to conduct foreign trade transactions in yuan. Since 2009, China has increased the share of payments for exports in Chinese yuan and signed agreements with South Korea (180 billion yuan), Indonesia (100 billion yuan), and Malaysia (80 billion yuan). However, China's exports declined after the yuan's growth in value. This created a state of overproduction, resulting in plenty of local projects not being able to pay off and many investors losing money. After the first two years of the global financial crisis, the Chinese yuan rose by 19% and, in July 2009, reached a rate of 7.6 against the dollar.

The weak point is still the Chinese financial market. Nevertheless, in 2010, China opened the Shanghai Stock Exchange to allow the listing of foreign companies. Today, it is considered one of the most promising stock exchanges in the world. However, because China's economy is not a true market economy, the amount of foreign investment is comparatively low. As China's financial markets are still inferior to the corresponding markets in the US and Western Europe, the Chinese yuan will continue to yield to the dollar and euro.

To include the Chinese yuan in the reserve currency list, it was important for China to show that the yuan's exchange rate was determined by the market. Although the official exchange rate of the yuan against the US dollar was set by the People's Bank of China and not by the market, the IMF allowed the inclusion of the yuan into the reserve currency list in 2016. However, the yuan is still not a freely-convertible currency and this is not likely to change anytime soon. The Chinese government keeps a tight control over its currency as well as limits the movement of capital in and out of the country. Nevertheless, the level of the yuan's exchange rate against the US dollar is consistently rising and is expected to continue increasing. The lack of free convertibility is the most fundamental obstacle for the internationalization of the Chinese yuan.

It is important to develop the opportunity to trade in Chinese yuan and to make it a freely-convertible currency so that companies that make transactions in Chinese yuan can use this money for other operations, not necessarily with China again. China has signed agreements with other countries on converting the yuan into other currencies. Today, it is possible to directly convert it into such currencies as US dollar, Australian dollar, Japanese yen, Malaysian ringgit and Russian ruble.

The yuan still does not occupy the same positions as the dollar and euro, but tries to perform the function of a base currency. According to SWIFT data, more than 100 countries use the yuan in direct settlements with China and Hong Kong [Figure 1]. The United Kingdom has quite a high share among European Union countries that use the yuan in their transactions. In East Asia, where the yuan has already outstripped the dollar by its importance, a block of countries that have tied their currencies to the yuan has been formed. These are South Korea, Indonesia, Malaysia, Philippines, Taiwan, Singapore and Thailand [Figure 2]. On average, 31% of all settlements with China and Hong Kong are held in yuan. This percentage is growing along with an increase in the number of China's trade operations with other Asia Pacific countries.

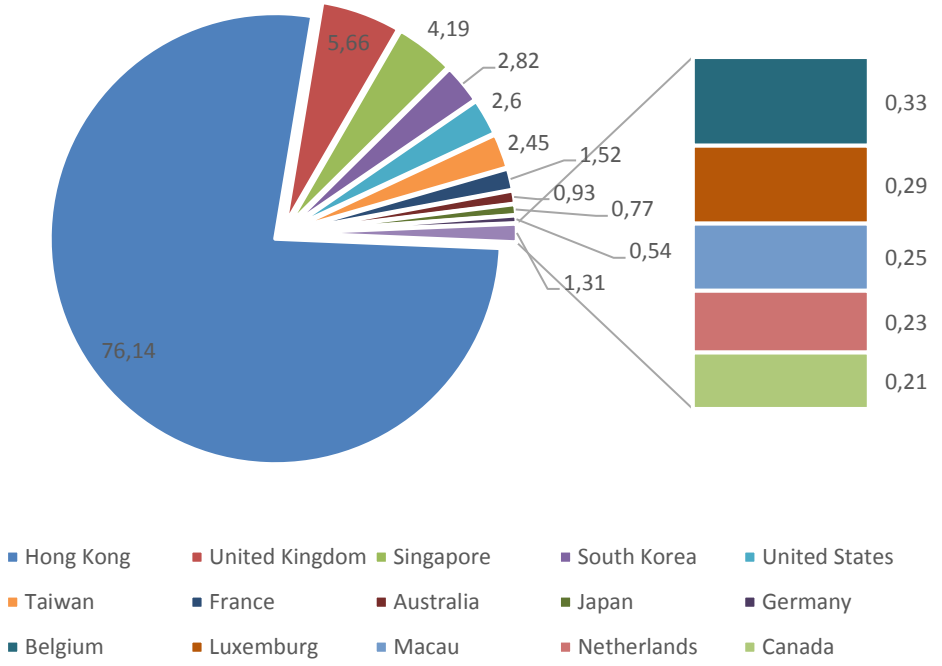

Figure 1. RMB Usage by Countries, %, March 2017
Source: derived from SWIFT Watch.

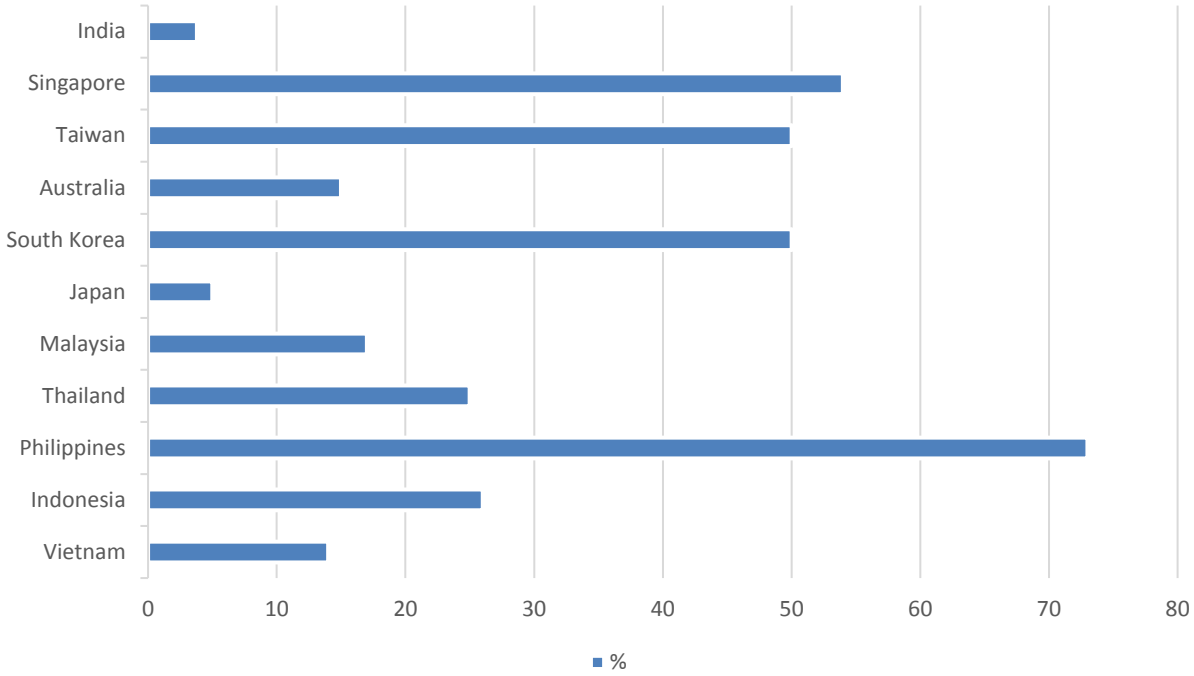

Figure 2. Weight of RMB in Payments in Asia Pacific, April 2015
Source: derived from SWIFT Watch.

The euro is second after dollar in transactions on currency turnover, though most of this is achieved through operations between EU countries. In 2016, the Chinese yuan was 7th in global currency turnover, ahead of the Swiss franc. The most deals with the yuan accounted for foreign trade and export transactions, which is not surprising given that China is second after the United States in terms of GDP.

The first currency swap deal was signed in 2009 with Belarus. In 2011, eight more agreements were signed with other countries. In the same year, the People's Bank of China signed a deal with the Central Bank of Russia on foreign trade settlements in yuan and rubles. Nevertheless, the dollar remained the primary monetary unit for transactions until 2014, when the US and EU countries announced sanctions against Russia. In October 2014, China and Russia signed a currency swap deal of 150 billion yuan for three years with the possibility of renewal. The UK also concluded a currency swap agreement with China in 2013, making it the first EU country to do so. Nowadays, China has agreements on currency swaps with central banks of more than 20 countries accounting for more than 3 trillion yuan [Figure 3].

Conclusions

To achieve the status of the world currency, China still needs to fulfill several conditions. The first is to weaken the limitations of capital. Direct currency exchange is still limited and to purchase foreign currency in China, documentary proof of goods purchased is required. It is also necessary to support international transactions in yuan and simplify the payment procedures for both imports and exports. At the same time, it is important to create conditions for increasing the use of the yuan in all international agreements and, more importantly, to make the yuan a freely-convertible currency. To do this, the Chinese currency exchange rate will need to be set by the market rather than the government.

This will lead to a partial loss of government control over the financial market, but increase the use of the yuan in world currency turnover. Over the past 8 years, several steps have been taken to internationalize the Chinese currency, leading to the free convertibility of the yuan and turning it into a world currency.

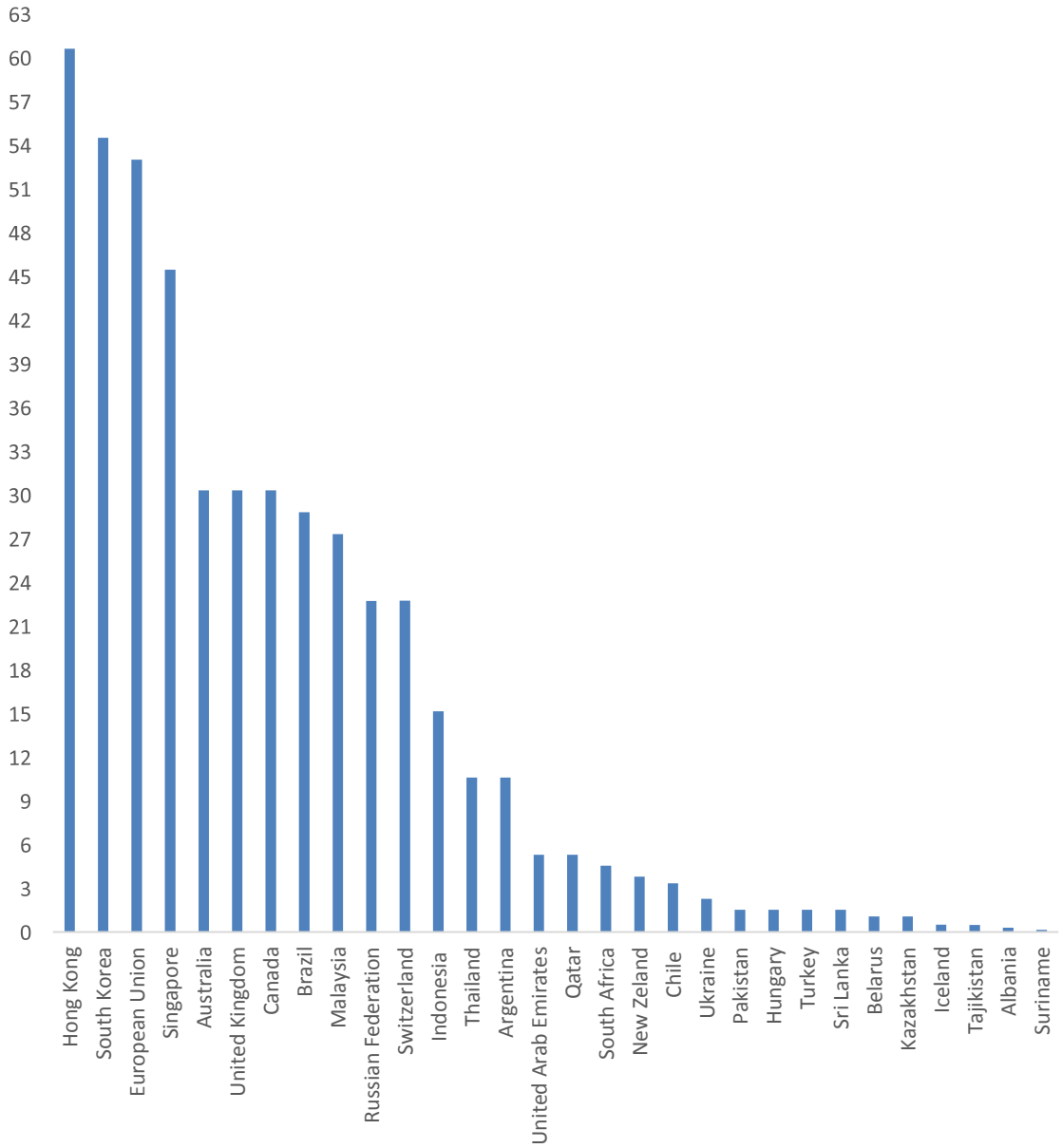

Figure 3. China Currency Swap Deals, Bln US $
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ASSESSMENT OF DEBT SUSTAINABILITY IN UKRAINE WITHIN THE INTERNATIONAL FINANCIAL ORGANIZATIONS APPROACHES

Abstract

The article raises issues of the development of the system of higher education in Ukraine as a factor in building a knowledge economy. The approaches to financing of higher educational institutions and their income structure and the ratio of public and private expenditures on education in Ukraine and countries of the world are considered. The basic forms of attraction of financial resources by institutions of higher education in international practice are determined. The directions of development of the system of higher education in the EU countries are investigated and it is determined that the increase of public financing is inherent in more developed countries with an innovative model of economic development. It is noted that developed countries pay considerable attention not only to the development of higher education systems, but also to a considerably higher share of spending in favor of secondary and post-secondary non-tertiary education (labor qualification) than in Ukraine. The article analyzes the existing model of funding for education in the country and identifies the problems of financing of education in Ukraine. The authors provided recommendations for improving the financial support of higher education institutions in Ukraine.

Key words: *higher education; government expenditures, knowledge economy; budget financing of higher education; higher education lending, human capital.*

The large-scale reforms initiated in Ukraine have led to the need for reconsideration and finding new forms and methods of governance in the field of public finances. The development of approaches to managing not only the revenue part of the budget, but also expenditure, requires the study of modern mechanisms that have reflected in world practice, especially in the countries of the European Union and the OECD. To address difficult socio-economic problems, such as the development of industrial production and economic growth, education provision, financing of science, solving environmental problems, overcoming unemployment, etc., it is necessary to ensure a systematic approach to the implementation of reforms. They should be based on the scientific potential of different fields of knowledge.

Today, one of the most urgent and acute problems for our country is the problem of stimulating economic growth on an innovative basis, which stipulates the provision of public funding and support for the development of education and science. The difficult financial circumstances that are typical for the country today are accompanied by significant budget constraints, and in such circumstances, the formation of conditions for the synergy of results of public administration, educational processes and industrial potential should become the basis for ensuring innovative development of the economy. The task is complicated, but more relevant than ever.

The main purpose of the article is to study the role of public financing of higher education as a factor in the development of knowledge economy and the formation of approaches to the financing model in the new conditions.

The knowledge economy reveals the new role and place of human intelligence in modern society, the influence of information as the main productive force and the subject of production on the development of the economic system. At the present stage of Ukraine's development, the system of higher education becomes of particular importance in building a knowledge economy. Rapid changes in the global environment have resulted in significant structural changes in the global competitions, among which the main ones were knowledge, ability to

innovate, and the quality of human capital. The rigid external and internal conditions that have been formed for Ukraine in modern conditions, cause the search for sources of growth and the transition to new stages of technological development for the country. Leading countries have already built an innovative model of economic development. Experts estimate that new knowledge provides 70-85% of GDP growth. In particular, in twenty developed countries where 95% of the world's scientists work, per capita income increases annually by 200 US dollars. The high-tech sector of modern industry is the basis of the strategic advantages of national economies, where education and science are the basis. According to research from foreign scientists, the pace of economic growth is higher in countries where the proportion of educated people is greater. In addition, an increase in financing of education by 1% leads to a GDP growth of 0.35% [1].

It should be noted that according to the global competitiveness rating 2016-2017, Ukraine ranked 11th place among 140 countries by the number of graduates [2]. Along with this, the quality of higher education remains rather low, as evidenced by the failure to recognize Ukrainian diplomas in the vast majority of developed countries. In addition, the crucial issue that is solved in the leading countries of the world is the interconnection of scientific developments with their application, the development of the relationship of science, higher education, with the economy and social development. Such a link is new to Ukrainian realities, which forms the necessity of coordinating reforms in the educational sphere of Ukraine with the tendencies of financing education and science in the international practice.

In the EU, higher education is mainly financed from the state budget. Public funding reflects a traditional funding model that aims to support the functioning of state higher education and ensure equal access to it. The benefits of this model are active and diversified participation in higher education in high-income countries [3].

The structure of incomes of public higher education institutions in the countries of Europe is divided into the following main areas:

– The allocation of the state budget, which at the European level ranges from 50% to 90% of the total income of universities;
– The cost of tuition paid by students (household expenses), the amount of which depends on the funding policies of higher education, promoted at the national level. According to the study EUA, European countries are divided into two main categories: the first category includes countries where tuition fees account for approximately 5% of total income (for example: countries of Northern Europe, Austria, Belgium, Czech Republic, France, Germany, Estonia), while the second category includes countries in which the tuition fee is approximately 10% of the total income, and in some cases more (e.g. Hungary, Ireland, Italy, the Netherlands, Latvia, Poland, Slovakia, Spain, United Kingdom);
– Other private sources of income: grants for research, services in various spheres, European funding and other extrabudgetary sources. In some EU countries, such sources provide up to 10% of the total funding for higher education.

The activities of public higher education institutions in Europe are funded both by state and private foundations. A significant proportion of public funding in the income of higher education institutions (Figure 1) increases the importance of methods and forms of university funding distribution. According to studies [4] developed at the EU level, there are several main forms of attracting financial resources by universities and different methods of distributing their funding. The main ones are:

- Block grant (one-time subsidy) that covers the cost of training (courses and seminars / workshops), administrative costs and / or research costs, where the university can decide on how to use this funding according to needs. In almost all EU Member States (26 countries), universities receive state funding in the form of a block grant that they can use for their internal activities. Within university autonomy, most countries impose more severe restrictions on the structure of grants for internal needs (staff costs, equipment, infrastructure, research, training). Only in eight countries (Austria, Belgium, Estonia, Norway, Poland, Slovakia, Switzerland and the United Kingdom) universities have no limits on how they spend their allocated resources.

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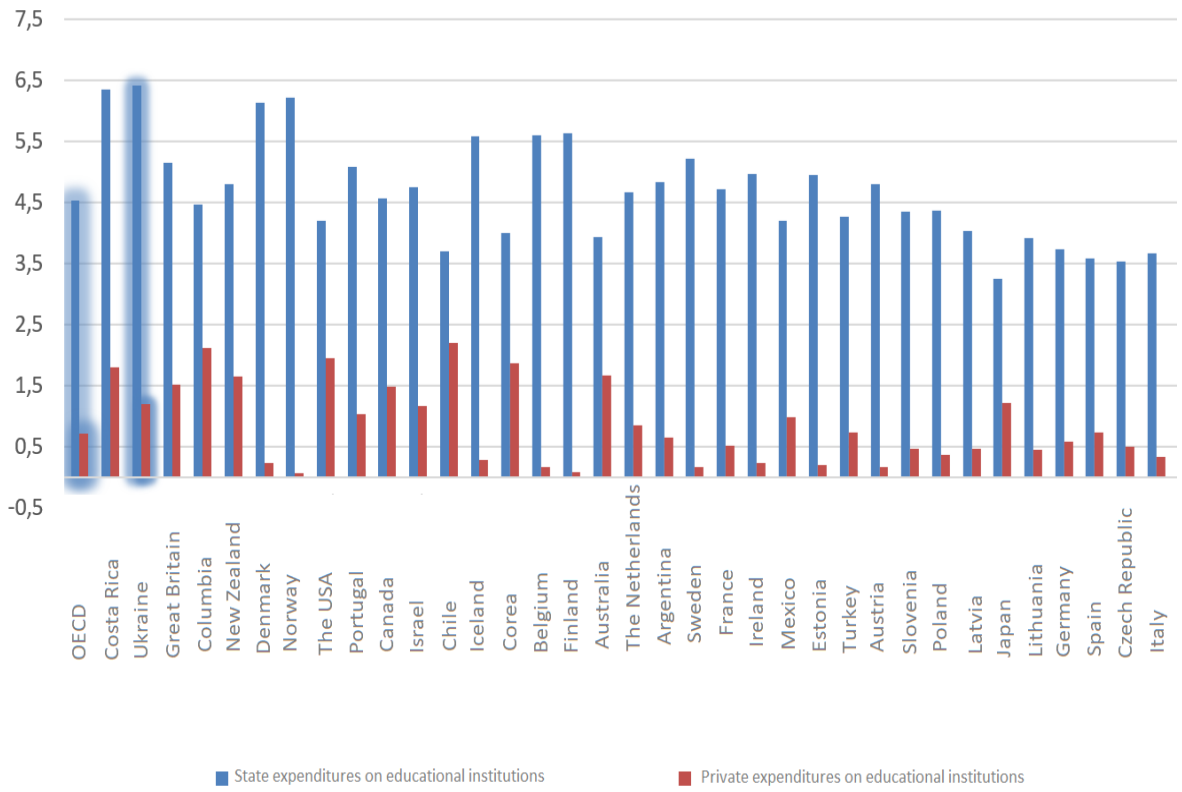
[3] Salmi J. Scenarios for Financial Sustainability of Tertiary Education. Higher Education to 2030 [Електронний ресурс]. – Volume 2 : Globalisation. – OECD, 2009. – P. 285-323. – Режим доступу : http://www.mfdps.si/Files/Knjiznica/higher%20educational%202030%20OECD.pdf
[4] EUA, University autonomy in Europe I - Exploratory study, 2009; ESMU, Funding higher education: a view across Europe, 2010; EUA, Designing strategies for efficient funding of higher education in Europe, 2013



Notes: Government costs presented here do not include unallocated programs. Public sources - include government subsidies for households related to education and direct education costs from international sources. Private sources - with the exception of state subsidies related to education. For Chile - government sources do not include international resources.

Figure 1. Public and private expenditure on education in Ukraine and some countries of the world, % of GDP
Source: OECD. Educationat a glance (www.oecd.org/education/education-at-a-glance-19991487.htm); State Statistics Service of Ukraine: http://www.ukrstat.gov.ua

The amount of the grant can be determined in different ways: through negotiations, by funding formula or on a historical basis. The distribution of block grants by the formula is the main method of allocating public funding to higher education institutions and is used in the vast majority of countries included, for example, in the study of University autonomy in Europe [5]. Block grant funding via negotiation is used in some countries, such as Austria, Germany and Spain. In practice, however, the country will use combined methods to determine the size of the distribution of the grant.

- Budgetary financing with a breakdown of costs by which universities receive their funding. Decisions on their distribution are made by the relevant Ministry or Parliament. Hence universities cannot make decisions about the distribution of such incomes, or they can do so with certain restrictions. This form of financing is widely used in Eastern European countries: Bulgaria, Cyprus, Greece, Lithuania, Latvia, Serbia and Turkey [6].

It should be noted that during recent years, in Eastern European countries there has been a tendency to increase funding based on block grants, rather than on the basis of budgets with a breakdown, which results in an increase in university autonomy in using revenues. An increase in public funding for higher education is observed in Germany, Norway, Sweden, Austria, Belgium (Flanders) and Poland. At the same time, there is a decrease in public funding in Greece and Hungary. There is no doubt that an increase in funding depends on the level of economic development of the country (see Table 1).

[5] University autonomy in Europe. Exploratory study. EUA 2009. [Електронний ресурс]. – Режим доступу: http://www.salvatorevassallo.org/wp-content/uploads/2008/11/file_Dossier_Universita_EUA_Autonomy_Report_Final.pdf

[6] Annual Public Report -2013 «Higher education funding and necessary improvement actions». The report, prepared according to Article 219 (2) of the National Education Law 1/2011, was adopted by the National Higher Education Funding Council, at the meeting on 18 July 2014.

Table 1

Public financing of higher education in EU countries, 2008-2014

EU countries	Increased funding for higher	Reduced funding for higher
Germany, Norway, Sweden	Between 20% – 40%	
Austria, Belgium (Flanders)	Between 10% – 20%	
Poland	Between 5% – 10%	
Iceland, Netherlands, Portugal		Up to 5%
Croatia, Slovenia Between		Between 5% –10%
Spain, Czech Republic, Serbia,		Between 10% – 20%
Ireland, Italy, Lithuania, Great Britain		Between 20% – 40%
Greece, Hungary		Over 40%

Source: Mospan N.V. Trends in the development of funding mechanisms for higher education in the European Union [Electronic resource]. - Access mode: https://www.narodnaosvita.kiev.ua/?page_id=2644

Analysts also note that changes in funding for higher education have had a different impact on universities in all EU countries. Reduced funding for research (research funding) was conducted in Slovenia (more than 10%), Spain, Greece and Ireland. In particular, in the last of these countries, the current reduction in funding for research has had a negative impact on the ability of universities to attract and retain the best researchers and scientists. In addition, Norway increased the funding of higher education in terms of increasing the number of doctoral students who had a positive impact.

In the EU, public expenditure for higher education varies between 3% and 0.8% of GDP. In Ukraine, expenditure for higher education ranged from 6.6% in 2010 to 1.9% in 2016. (Table 2, 3). However, it should be noted that in the EU countries, the share of private sources of education financing is much higher than in Ukraine.

Table 2

State expenditures for higher education (2010-2016 averaged)

Country	Public expenditure on higher education,% of GDP
Denmark	2.4
Estonia	1.3
Italy	0.8
Latvia	0.8
Lithuania	1.3
Germany	1.3
Poland	1.07
Hungary	1
Ukraine	2.3
Finland	2.2
France	1.3
Czech Republic	1

Source: Eurostat [Electronic resource]. - Access mode: http://ec.europa.eu/eurostat/data/database; State Statistics Service [Electronic resource]. - Access mode: http://www.ukrstat.gov.ua/

Until recently, in Ukraine, the model of financing science and education was formed on the basis of historical experience and had a marginal view, since it did not take into account the challenges of the modern world and the approaches to implementing advanced scientific projects. The latest legislative changes somewhat improved the legal framework in the field of educational obedience and scientific activity, but institutional changes will still be continued, taking into account the further transformation of the funding system.

From 2014, the reform in the field of higher education in Ukraine is closely linked with the implementation of the new wording of the law "On Higher Education" [7]. This law, which was developed by a broad academic community, aims to bring the Ukrainian sphere of higher education closer to modern European standards and opens the way to solving a large part of the problems of the national high school.

[7] The law "On Higher Education" [Electronic resource]. - Access mode: http://zakon2.rada.gov.ua/laws/show/1556-18/print1450097250371062

Table 3

Consolidated budget expenditures for education in 2000-2016

	Total expenditures of consolidated budget, Mln UAH	Expenditures %		Expenditures on separate sub-sectors in % to industry expenditures	Total expenditures of consolidated budget, Mln UAH	Expenditures %		Expenditures on separate sub-sectors in % to industry expenditures
		General expenditures	GDP			General expenditures	GDP	
	2000				**2014**			
Total	**48 148,6**	**100,0**	**100,0**	**X**	**52 3004,8**	**100,0**	**100,0**	**X**
Total for education	**7 085,5**	**14,7**	**4,2**	**100,0**	**100 105,6**	**19,1**	**6,4**	**100,0**
For higher education	2 285,5	4,7	1,3	32,3	28 340,5	5,4	1,8	28,3
	2005				**2015**			
Total	**141 989,5**	**100,0**	**100,0**	**X**	**679 871,4**	**100,0**	**100,0**	**X**
Total for education	**26 801,8**	**18,1**	**6,1**	**100,0**	**114 193,5**	**16,8**	**5,8**	**100,0**
For higher education	7 934,1	5,7	1,8	29,6	30 981,8	4,6	1,6	27,1
	2010				**2016**			
Total	**377 842,8**	**100,0**	**100,0**	**X**	**701 801,3**	**100,0**	**100,0**	**X**
Total for education	**79 826,0**	**21,1**	**7,4**	**100,0**	**109155,2**	**15,6**	**6,6**	**100,0**
For higher education	24 998,4	6,6	2,3	31,3	30 595,9	4,4	1,9	28,0

Source: compiled by authors.

According to Article 71 of the Law of Ukraine "On Higher Education" [8] financing of state higher education institutions is carried out at the expense of the state budget on the conditions of the state order for payment of services for the training of specialists, scientific and teaching staff and at the expense of other sources not prohibited by law, observing the principles of targeted and effective use of funds, publicity and transparency in decision-making. The size of budget allocations for the training of specialists with higher education, as well as the preparation of scientific and the teaching staff are set in the State Budget of Ukraine for the year.

Formation and placing of a state order is in accordance with Article 72 of the Law "On Higher Education". Indicators of the state order for the training of specialists with higher education are formed on the levels of higher education and specialties, taking into account the medium-term forecast of the need for specialists in the labor market by the central executive body, which ensures the formation and implementation of state policy in the field of economic development and trade, in accordance with the procedure established by law, with the participation of higher education institutions, the National Agency for the Quality Assurance of Higher Education, employers and their associations. The total volume of public procurement for the preparation of specialists of the degrees of the junior bachelor, bachelor (master of medical, pharmaceutical and veterinary purposes) for the current year is not less than 51 percent of the number of graduates of comprehensive educational institutions, which in the current year received a full general secondary education. The total volume of the state order for the training of specialists of the degree the master's degree in the current year is not less than 50 percent of the number of persons who will receive a bachelor's degree in public administration this year. The total amount of state order for the preparation of specialists of the degree of doctor of philosophy for the current year is not less than 5 percent of the number of

[8] The law "On Higher Education" [Electronic resource]. - Access mode: http://zakon2.rada.gov.ua/laws/show/1556-18/print1450097250371062

persons who will receive a master's degree in a state order this year. The indicators of the state order in terms of specialties and levels of higher education are published by the central executive body, which ensures the formation and implements state policy in the field of economic development and trade, on its official website no later than 30 calendar days before the start of the campaign.

Also, according to the Law of Ukraine "On Higher Education" [9], a higher educational institution with a research status has a pre-emptive right to receive a state order for the training of specialists of the master's degree in the amount of up to 75 per cent of the volume of bachelor's studies that were taught at the expense of the state budget in this the higher educational institution, and the volume of the state order for the training of specialists in the degree of doctor of philosophy - up to 20 percent of the volume of graduate masters who studied at the state budget in this higher educational institution. The placement of state orders is carried out on a competitive basis on the principles of fair competition, openness and transparency, equal rights, objective and unbiased evaluation of the proposals of the contest participants.

However, the aforementioned Law does not lay the foundations for effective, transparent and sufficient financing of the higher education system of Ukraine. Instead, an effective financial mechanism for the system of higher education as an element of public policy in education, consisting of appropriate methods, forms, tools and instruments, should take place. The number of students of higher education institutions studying at the expense of the state budget is less than half of the total number of students of higher educational institutions to date (see Table 4).

Table 4

Number of students of higher educational institutions by sources of education financing

	I - II levels of accreditation			III - IV levels of accreditation			I - IV levels of accreditation		
	2010/11	2014/15	2015/16	2010/11	2014/15	2015/16	2010/11	2014/15	2015/16
Total # of students	**351444**	**251271**	**230110**	**2066667**	**1437955**	**1375160**	**2418111**	**1689226**	**1605270**
including those who study at the expense of									
the state budget	127825	87929	82793	798571	663194	649225	926396	751123	732018
the local budget	76520	69917	64724	14486	12201	14722	91006	82118	79446
bodies of state power, legal entities	250	147	716	8374	10223	9520	8624	10370	10236
individuals	146849	93278	81877	1245236	752337	701693	1392085	845615	783570
Share of students (%) who studied at the expense									
the state budget	36,3	35,0	36,0	38,6	46,1	47,2	38,3	44,5	45,6
the local budget	21,8	27,8	28,1	0,7	0,8	1,1	3,8	4,9	4,9
bodies of state power, legal entities	0,1	0,1	0,3	0,4	0,7	0,7	0,4	0,6	0,6
individuals	41,8	37,1	35,6	60,3	52,4	51,0	57,5	50,0	48,9

Source: State Statistics Service [Electronic resource]. - Access mode: http://www.ukrstat.gov.ua/

[9] The law "On Higher Education" [Electronic resource]. - Access mode: http://zakon2.rada.gov.ua/laws/show/1556-18/print1450097250371062

According to Article 41 of the Law "On Higher Education", the state-targeted support for higher education is provided in the form of: full or partial payment of education at the expense of state and local budgets; concessional long-term loans for education; social scholarship; free textbook support; free access to the Internet, database systems at state and municipal educational institutions; free accommodation in the hostel; other measures approved by the Cabinet of Ministers of Ukraine.

The procedure for state crediting for higher education was approved by the Cabinet of Ministers of Ukraine "On Approval of the Procedure for Granting Favorable State Loans for Higher Education" [[10]].

According to the aforementioned resolution, targeted government grants for higher education in the form of daytime, evening and correspondence forms of study at higher educational institutions, regardless of the form of ownership, can be obtained by young citizens of Ukraine under the age of 28 who have successfully passed entrance examinations (for the present day, EAR) or studying at any course of higher education institution (recipients of a loan). The loan is provided only once for training in the same specialty for obtaining an educational qualification level of junior specialist, bachelor, specialist, master's degree in a higher educational institution, which operates in the territory of Ukraine.

According to the resolution, funds for granting loans are envisaged in the State Budget of Ukraine by the Ministry of Education and Science of Ukraine to pay for studies in higher educational institutions of all forms of ownership, except for communal. The amount of the loan is determined annually by April 1 by the higher educational institution of the state form of ownership based on the cost of training (excluding scholarship) according to the form of study and approved by the central executive authority, under whose jurisdiction the higher educational institution is located.

The total volumes of preferential long-term loans for education since the beginning of the decision are given in Table 5.

Table 5

State Benefit Long-Term Lending for Education (UAH)

Years	**Granting loans**		**Loans repayment**	
	plan	**fact**	**plan**	**fact**
2004	13 500,0	n/a	0	0
2005	13 500,0	n/a	0	0
2006	14 715,0	n/a	0	0
2007	14 715,0	14 715,0	0	0
2008	14 715,0	14 715,0	0	0
2009	14 715,0	14 715,0	0	0
2010	14 715,0	8 869,5	0	0
2011	5 300,0	5 300,0	0	0
2012	5 000,0	5 000,0	0	0
2013	5 000,0	1 773,2	0	0
2014	0	0	0	0
2015	0	0	0	0
2016	0	0	0	0

Source: compiled by authors according to the data of the State Treasury of Ukraine [Electronic resource]. - Access mode: http://www.treasury.gov.ua/main/uk/doccatalog/list?currDir=146477

State preferential lending for higher education started in 2004, that is, the term of payment of interest and the body of the loan has not yet come. The amount of the loan is returned with a payment of 3 percent per annum for 15 years starting from the twelfth month after graduating from the higher educational institution in the State Budget of Ukraine, the budget of the Autonomous Republic of Crimea and other local budgets, with the payment of each year one fifth of the total amount of the loan received and interest for use of it. The recipient of a loan for studying at the expense of the State Budget of Ukraine shall reimburse the loan and interest for using it through the higher educational institution on the accounts of the Ministry of Education and Science, other central executive authorities under the authority of which the higher educational institution is located, with subsequent transfer of funds to the State Budget of Ukraine.

[10] Resolution of the Cabinet of Ministers of Ukraine "On Approval of the Procedure for Provision of Favorable State Benefit Grants for Higher Education" [Electronic Resource]. - Access mode: http://zakon2.rada.gov.ua/laws/show/916-2003-%D0%BF

In general, from the data presented in Table 4, it is difficult to draw conclusions about the efficiency and transparency of the provision of state preferential loans. We can only state that the overall dynamics of government loans was reduced to zero in 2016. And, for example, in 2009 it was more than 9% of the total funding for higher education, which is quite significant.

The resolution states that the budget funds managers ensure the targeted and effective use of the funds provided in the appropriate budget for granting loans. These funds are used taking into account the necessity of fulfilling budgetary obligations of past years, taken into account in Treasury bodies, in case of their compliance with the passport of the corresponding budget program.

The researchers point out that the state privilege credit in Ukraine should ensure the availability of higher education, the creation of favorable economic conditions for obtaining an educational loan, the targeting and differentiation of budget lending, and the personal responsibility of individuals who received a loan. However, it is impossible to analyze the effectiveness of these budget expenditures: which institutions of higher education received from the state budget within the framework of education lending, as well as analyze the personal composition of the recipients of loans. That is, it is advisable to ensure the transparency of state credit for higher education in order to avoid misuse of budget funds.

Regarding lending, we also note that students in England and the EU have access to student-loan (government-backed student loans), which is repaid on a profit basis (income-contingent basis). Such loans are subsidized, since interest rates are directly related to inflation and because the loan is written off after a certain period of time. In the future, 45% of loans received by students will not be reimbursed by the government [[11]].

The state finances a very extensive network of educational institutions. Despite the high level of education expenditures as a share of GDP per student, and educators' wages are low even compared to the countries of Central and Southern Europe. So, it's natural that attempts to cut public spending during the economic crisis significantly affect the educational budget. The Ministry of Education and Science acts as the largest central budget administrator and controls 75.7% of central funding (22.9% of all public sector spending), while the remainder is allocated by the Ministry of Health (7.8%) and other central government agencies (Ministry of Agrarian Policy and Food (7.1%), Ministry of Internal Affairs (2.9%), Ministry of Culture (2.5%)). The remaining financial intermediaries, among the public administration bodies, controlled only 4.0% of the state budget funds aimed at education. But a more significant role in allocating funds to the education system was played by the regional and local governments that directly financed education at the expense of local budgets, which was 2.3 times higher than the state budget funds. In 2014, local government structures distributed 69.8% of all state funds and 59.4% of total education costs. Most developed countries, except for Italy, Ireland and Portugal, gradually increased the share of capital expenditures in education. During 2000-2011, Canada, the Czech Republic, Sweden, Lithuania and Latvia saw the highest growth rates. In Ukraine, however, the share of capital expenditures on education is very low (less than in Portugal). Only 3.5% of funds in public educational institutions is aimed at material and technical re-equipment, repair of premises, purchase of vehicles, machinery, etc. Higher education institutions theoretically can channel capital expenditures from their special funds (in particular, money received as tuition fees from students). Instead, vocational, general education and pre-school educational institutions have practically no such opportunities.

Developed countries allocate a much larger share of spending in favor of secondary and post-secondary non-tertiary education (worker qualifications) than Ukraine. Our share of spending on these levels of education is 14 percentage points lower than in OECD countries. This is largely due to the length of school education, which in developed countries is mostly 12-13 years old. Instead, the share of spending on higher education in Ukraine is 14 pp. higher than the OECD average. Chile and the United States are the closest to Ukrainian, with a significant level of non-state funding for higher education. The data presented does not reflect trends that somewhat distort the Ukrainian cost structure. Firstly, parents' expenses for tutoring, school fees, etc. are not included. Secondly, in the state part of the cost of higher education, a third is a scholarship for students, which in most countries do not include in educational expenditures. In addition, it should be borne in mind that the poorer the country, the greater the emphasis is usually on secondary education [[12]].

It should be noted that in the conditions of the financial and economic crisis and the considerable limitation of the financial capabilities of the population, the issue of strengthening state support in t.ch. and private schools.

[11] EUA Public Funding Observatory, 2014. – 21 p. [Електронний ресурс]. – Режим доступу: http://www.eua.be/Libraries/Governance_Autonomy_Funding/PFO_analysis_2014_final.sflb.ashx.

[12] Sianesi and Van Reenen (2002) The Returns to Education: A Review of the Macro-Economic Literature. IFS Working Paper № W02/05. Institute for Fiscal Studies and University College London. [Electronic resource]. – Access mode: http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.175.8483&rep=rep1&type=pdf

In view of the fact that the thesis on the necessity of developing a knowledge economy dominates in the world, higher education becomes one of the most important elements of the economic system. Knowledge economy is such an economic system in which production of goods and services takes place on the basis of high-tech activity that accelerates technical and scientific progress, and where key intellectual resources are the education and personal competences, that is, the quality of human capital. For the knowledge society, the processes are privileged associated with the creation of new knowledge, their transmission through the educational process, distribution and use in production. Knowledge economy is defined as an economy in which the source of growth is both specialized (scientific) and everyday knowledge, as a result of which, along with natural resources, capital and labor, the processes of accumulation and use of knowledge become the dominant factor, resulting in the constantly growing competitiveness of the economy, as well as an increase in the quality and adequacy of funding for higher education [[13]].

The main task of higher education in the knowledge economy is the formation of conditions for the development of human capital, the creation, conservation, distribution and use of knowledge, which requires the quality of education and appropriate effective funding. In turn, effective funding involves the targeted and transparent use of budget funds. Including further development of the credit mechanism for higher education which is considered necessary.

In view of the above, the main problems in funding of science and education in Ukraine include:

- the lack of development of innovative financing mechanisms that would ensure the high quality of education and science;
- the inability to attract credit resources to finance education by households due to their high cost;
- inefficient spending of budget funds in the fields of education and science (primarily because of the unformed criteria of socio-economic efficiency, as well as insufficient application of the principle of "evidence-based knowledge transfer"[[14]]);
- low level of private investment in the development of science and education, due to unformed demand of business entities for innovation, as well as insufficient practical orientation of research and development;
- low level of attraction of international grants as a result of insufficient integration of Ukrainian scientists into the Single Scientific (Research) Space;
- transfer of powers to finance vocational education from the state budget to local budgets without proper elaboration of the prerequisites for attracting regional private capital to this sphere, in particular, with the provision of opportunities for public-private partnership (PPP);
- underdeveloped institutions of public control over the effective use of state financial resources, including taking into account sectoral specifics.

In the EU countries, there are different models of funding education that differ in the ratio of private and public funding, but they share a combination of different sources of funding. Taking into account international experience, Ukraine should focus on the formation of an interim model of distribution of funds within the framework of budget financing of higher educational institutions of the III and IV accreditation levels, which is connected with the need for the evolution of the introduction of a client-oriented model of the provision of public services in higher education and investment realization in the sphere of education. Such models are discussed in consultation with representatives of the EU Member States and in the expert community.

It should be noted that state-owned higher education institutions are non-profit organizations. The models discussed today should not include the concept of "profit". Consequently, the received financial result should be directed to the fund of development of higher educational institutions, at which cost the investment is carried out. But in practice, state universities do not receive such funds, or their size is insignificant and insufficient to make investments, while private ones lose the motive for development, since investments in the establishment of an educational institution cannot bring profits to investors.

Today, the budget funding is quite limited and covers only the expenses necessary for the survival of higher education institutions, primarily staff salaries, scholarships and utility bills. Higher educational establishments are trying to provide material and technical development for their own funds, which are formed, first of all, thanks to paid educational services.

[13] Smith K. What is the 'Knowledge Economy'? Knowledge Intensity and Distributed Knowledge Bases [Electronic resource] / Keith Smith. – Netherlands : UNU/INTECH, 2002. – 29 c. – Access mode : <http://www.intech.unu.edu /publications/discussion-papers/2002-6.pdf>$; Powell W. The Knowledge Economy [Electronic resource] / Walter W. Powell, Kaisa Snellman // Annual Review of Sociology. – 2004. – № 30. – P. 199–220. – Access mode : http://web.stanford.edu/group/song/papers/powell_snellman.pdf; OECD glossary of statistical terms. Knowledge-based economy [Electronic resource]. – Access mode : http://stats.oecd.org/glossary/detail.asp?ID=6864

[14] Implementation, Scaling Up and Sustainability: Continuing Discussion on Evidence-Based Policy Research in Education London, 6-7 July 2006 [Electronic resource]. – Access mode: http://www.oecd.org/edu/ceri/37107848.pdf

The solution to the problem of financing for the material and technical support of higher educational institutions is a powerful tool for development, which will contribute to the quality of higher education as a factor in the development of the knowledge economy. In addition, the volume of budget financing of education under the state order practically does not provide capital expenditures due to the limited budget funds. The existing demographic situation (decrease in the number of applicants) does not allow unreasonably to increase the cost of training under the contractual form, including its investment costs. Therefore, there is a legitimate need to optimize the distribution of available resources of higher educational institutions, which will make it possible to allocate funds for investment costs.

It is also advisable to take into account the suggestions of experts from USAID to consider the possibility of refusing state institutions of higher education to have a status of a budget institution, which will enable them to expand the possibilities of attracting and using financial resources from different sources.

Such a change in status implies a comprehensive study of the advantages and disadvantages, as well as determining the ways of normative and legal ensuring of the functioning of universities - state enterprises.

In the process of improving the funding system, it is advisable to focus funding at world-class universities with significant teaching and research potential, including at the expense of reducing expenditures at universities, which do not have the prospects of scientific and pedagogical development.

And finally, we should note that in any model of university financing, funds should be directed, first of all, to upgrading the material and technical base (modern laboratories, research equipment, etc.) and pay for the work of the scientific and pedagogical staff (first of all, leading scientists working in these educational institutions). Under such conditions it is possible to build world-class universities in Ukraine.

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CONVERGENCE VS DIVERGENCE OF ECONOMIC DEVELOPMENT OF REGIONS OF UKRAINE

Abstract

Terms of economic development, local economic development, administration of regional economic development are considered. Three major areas of economic development, difference between formulation of the economic development of the region in Ukrainian (post-Soviet) terminology and international terminology, the approach to economic development which consists of three components are described. Possibilities of using the theory of convergence in deciding of how to choose administrative methods for local economic development, β-convergence and σ-convergence indicators are shown. Convergence vs Divergence of regions of Ukraine (in terms of Gross Regional Product per capita) and Convergence vs Divergence of the regions of Ukraine (by the share of innovative enterprises in their total number) are calculated according to the official data. It is concluded that there are a huge necessity for the development and selection of the most appropriate methods for administration of regional development, based on the study of the processes of convergence and divergence.

Key words*: Ukraine, region, local economic development, convergence, public administration, regional economic development.*

Economic development is a popular and contemporary research area. The questions of theory and practice of economic development are very important and relevant, but ambiguous and controversial. The problematic range of theoretical issues relates to a variety of approaches to understand economic development. The number of questions is growing rapidly when an understanding of economic development relates to the state, region, and enterprise.

The study of economic growth and development is not a single branch of economics but falls, in fact, into two quite different fields. Development economics is easy to characterize as one of three major subfields of economics, along with microeconomics and macroeconomics. More specifically, development economics resembles economic history in that it seeks to explain the changes that occur in economic systems over time [1].

Economic development is very difficult to study, because there are many factors that influence this process. There is a logical chain of "economic development – local economic development - management of local economic development". There are several approaches to determining ways to manage local economic development. In turn, the choice of ways to manage local economic development depends on the overall goal. The hypothesis of this scientific paper is to identify such methods for managing local economic development, the use of which will serve the purposes of sustainable development of the state.

First of all, we are defining the terminology. In general, economic development have to improve our standard of living throughout the creation of jobs, the support of innovation and new ideas, the creation of higher wealth, and the creation of an overall better quality of life. Economic development often is categorized into the following three major areas: i. Governments working on big economic objectives such as creating jobs. These initiatives can be accomplished through laws, industries' regulations, and tax incentives or collections. Programs that provide infrastructure and services such as bigger highways, community parks, new school programs and facilities, public libraries or swimming pools, new hospitals, and crime prevention initiatives; iii. Job creation and business retention through workforce development programs to help people get the needed

skills and education they need. This also includes small business development programs [2].

And what is Region Local Economic Development? There is a difference between formulation of the economic development of the region in Ukrainian (post-Soviet) terminology and international terminology. Ukrainian scientists consider the economic development of the region as a micro-module of the economic development of the state.

The economic development is designed to guide national and subnational governments as they craft and implement aims of the strategies such as growth, promoting employment, and improvements in well-being.

As a rule, the approach to Economic Development consists of three components: a set of key principles for improvements in well-being; a framework that allows governments to match their goals and priorities with targeted strategies that build on a sound macroeconomic and institutional foundation or are executed in parallel with efforts to strengthen that underlying foundation; a toolkit consisting of tactics and concrete actions [3].

At international terminology the purpose of local economic development (LED) is to build up the economic capacity of a local area to improve its economic future and the quality of life for all. It is a process by which public, business and nongovernmental sector partners work collectively to create better conditions for economic growth and employment generation. LED is thus about the communities continually improving their investment climate, and business enabling environment to enhance their competitiveness, retain jobs and improve incomes.

Local communities respond to their LED needs in many ways, and a variety of approaches can be taken that include: Ensuring that the local investment climate is functional for local businesses; Supporting small and medium sized enterprises; Encouraging the formation of new enterprises; Attracting external investment (nationally and internationally); Investing in hard infrastructure; Investing in soft infrastructure (educational and workforce development, institutional support systems and regulatory issues); Supporting the growth of particular clusters of businesses; Targeting particular parts of the city for regeneration or growth (areas based initiatives); Supporting informal and newly emerging businesses; Targeting certain disadvantaged groups [4].

The theory of convergence may be used for a comprehensive solution of choosing methods for administration of local economic development. Deep explanations for these processes are given in the study of Justin Yifu Lin [5].

There are two types of convergence: β-convergence means that poor regions develop faster than rich, and for σ-convergence there is a decrease in allocation of per capita income between regions. Both convergence indicators are used to evaluate convergence processes in empirical studies. The results for the US and European regions are the same. International studies have shown that regional convergence of per capita incomes occurs in industrialized countries, although the erosion of regional income disparities is very slow.

Consequently, there is an evidence that innovation accelerates the processes of convergence but calculations (in tables 1 and 2) did not confirm this fact.

Comparison of the data presented in Tables 1 and 2 shows that the trends are different. Convergence's indicators by terms of Gross Regional Product per capita and innovative enterprises in their total amount are the same in Zaporizka, Odeska, Kharkivska regions. Convergence's indicators by terms of innovative enterprises in their total amount are the same in Zaporizka region, which indicator by the share of innovative enterprises in their total amount had been growing dramatically from 2010 to 2015. Other trends that should be mentioned are that all indicators in Khmelnytska, Cherkaska, Chernivetska, Chernihivska had been slowly declining from 2010 to 2015 too.

Thus, despite the fact that there are significant scientific achievements in the field of public administration of regional development, given for example in sources [7, 8, 9], there is a huge necessity for the development and selection of the most appropriate methods for administration of regional development, based on the study of the processes of convergence and divergence.Increasing of innovative activity of business can help to increase the convergence of regional development indicators. A lot of indicators are much needed for the objective assessment of trends in convergence of regional development. This direction should be the prospect for further research.

Table 1

Convergence vs Divergence of regions of Ukraine (in terms of Gross Regional Product per capita)

Region	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Ukraine	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
AR Crimea	0,689	0,697	0,682	0,678	0,703	0,699	0,683	0,698	0,695	-	-
Vinnitska	0,637	0,630	0,591	0,588	0,612	0,607	0,624	0,624	0,657	0,738	0,803
Volynska	0,671	0,636	0,627	0,602	0,595	0,590	0,596	0,593	0,583	0,629	0,655
Dnipropetrovska	**1,271**	**1,310**	**1,347**	**1,509**	**1,399**	**1,471**	**1,477**	**1,375**	**1,364**	**1,456**	**1,420**
Donetska	**1,333**	**1,352**	**1,303**	**1,270**	**1,167**	**1,228**	**1,279**	**1,198**	**1,114**	**0,753**	**0,579**
Zhytomyrska	0,593	0,571	0,548	0,563	0,576	0,619	0,603	0,602	0,597	0,642	0,661
Zakarpatska	0,573	0,565	0,545	0,518	0,508	0,520	0,507	0,526	0,502	0,519	0,495
Zaporizka	**1,140**	**1,150**	**1,163**	**1,134**	**1,039**	**1,002**	**0,968**	**0,944**	**0,899**	**1,009**	**1,090**
Ivano-Frankivska	0,738	0,701	0,649	0,631	0,630	0,628	0,680	0,720	0,707	0,738	0,715
Kyivvska	**0,925**	**0,939**	**0,970**	**1,005**	**1,098**	**1,108**	**1,208**	**1,246**	**1,177**	**1,248**	**1,295**
Kirovogradska	0,682	0,664	0,616	0,659	0,660	0,658	0,699	0,680	0,752	0,792	0,848
Luganska	0,868	0,867	0,879	0,895	0,835	0,838	0,880	0,799	0,722	0,382	0,232
Lvivska	0,710	0,718	0,704	0,678	0,711	0,693	0,719	0,751	0,734	0,779	0,804
Mykolaivska	0,832	0,840	0,789	0,789	0,860	0,859	0,821	0,765	0,805	0,823	0,894
Odeska	0,920	0,892	0,892	0,958	1,026	0,955	0,904	0,833	0,857	0,847	0,898
Poltavska	**1,235**	**1,232**	**1,194**	**1,097**	**1,126**	**1,256**	**1,237**	**1,183**	**1,177**	**1,302**	**1,430**
Rivnenska	0,669	0,664	0,626	0,596	0,590	0,584	0,587	0,581	0,559	0,671	0,654
Sumska	0,693	0,675	0,661	0,665	0,687	0,666	0,695	0,669	0,692	0,730	0,801
Ternopilska	0,491	0,500	0,485	0,473	0,516	0,496	0,528	0,512	0,495	0,548	0,538
Kharkivska	**0,963**	**0,976**	**1,010**	**1,039**	**1,070**	**1,002**	**0,982**	**0,923**	**0,916**	**0,957**	**0,987**
Khersonska	0,610	0,580	0,524	0,583	0,618	0,608	0,596	0,551	0,569	0,589	0,652
Khmelnytska	0,615	0,604	0,587	0,582	0,594	0,576	0,606	0,613	0,594	0,668	0,682
Cherkaska	0,713	0,706	0,667	0,711	0,726	0,734	0,740	0,756	0,770	0,830	0,878
Chernivetska	0,497	0,486	0,476	0,477	0,473	0,464	0,464	0,447	0,446	0,449	0,438
Chernihivska	0,691	0,663	0,651	0,645	0,662	0,653	0,679	0,680	0,665	0,719	0,758

Source: calculated by author according to official data [6].

Consequently, the calculation of the Gross Regional Product per capita in relation to the average Gross Regional Product shows that «rich» regions (such as Dnipropetrovska, Donetska, Zaporizka, Kyivska, Poltavska, Kharkivska) have higher Convergence Index.

Table 2

Convergence vs Divergence of the regions of Ukraine
(by the share of innovative enterprises in their total amount)

Region	2010	2011	2012	2013	2014	2015
Ukraine	1,000	1,000	1,000	1,000	1,000	1,000
AR Crimea	0,799	0,877	0,954	0,899	-	-
Vinnitska	**1,058**	**0,969**	**1,029**	**1,148**	**0,882**	**0,850**
Volynska	0,835	0,712	0,737	0,621	0,671	0,665
Dnipropetrovska	0,655	0,534	0,611	0,704	0,832	0,751
Donetska	0,763	0,650	0,674	0,621	0,907	0,676
Zhytomyrska	0,892	0,883	0,943	1,036	0,776	0,896
Zakarpatska	0,777	0,577	0,486	0,408	0,373	0,584
Zaporizka	**0,381**	**1,693**	**1,703**	**1,704**	**1,422**	**1,208**
Ivano-Frankivska	**1,302**	**1,331**	**1,171**	**1,266**	**1,416**	**1,249**
Kyivska	0,554	0,595	0,514	0,799	0,720	0,769
Kirovogradska	0,950	0,951	0,994	1,083	1,075	1,434
Luganska	0,806	0,828	0,743	0,663	0,758	0,653
Lvivska	0,964	0,810	0,766	0,982	1,019	1,116
Mykolaivska	**1,194**	**1,399**	**1,703**	**1,473**	**1,236**	**1,803**
Odeska	**1,129**	**1,264**	**1,274**	**1,041**	**1,043**	**1,121**
Poltavska	0,849	0,503	0,474	0,479	0,497	0,936
Rivnenska	0,748	0,742	0,834	0,882	0,925	0,613
Sumska	**1,288**	**1,061**	**1,063**	**0,828**	**1,093**	**1,145**
Ternopilska	**1,201**	**1,356**	**1,274**	**1,012**	**0,925**	**1,006**
Kharkivska	**1,417**	**1,129**	**1,263**	**1,373**	**1,391**	**1,653**
Khersonska	**1,273**	**1,626**	**1,491**	**1,396**	**1,503**	**1,197**
Khmelnytska	**1,216**	**1,368**	**1,286**	**1,077**	**0,683**	**0,711**
Cherkaska	**1,094**	**1,061**	**0,920**	**0,888**	**0,658**	**0,994**
Chernivetska	**1,022**	**1,141**	**1,051**	**0,976**	**0,969**	**0,983**
Chernihivska	**1,223**	**1,092**	**1,166**	**1,225**	**0,814**	**0,769**

Source: calculated by author according to official data [6].

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POUR UNE NOUVELLE POLITIQUE D'AMENAGEMENT DU TERRITOIRE

L'expression «aménagement du territoire» ne se traduit pas en anglais. Ni dans aucune autre langue. Le terme de «Spatial planning» utilisé pour les traductions officielles n'est en fait compris chez nos partenaires européens qu'au sens des documents d'urbanisme et de cartographie. A l'OCDE, le comité où l'on parle des territoires est le «Territorial Development Policy Committee[1]» et en Union Européenne l'objectif annoncé est la «Territorial Cohesion».

L'aménagement du territoire est en effet un concept bien français. Il n'a pas été inventé par Jean-François Gravier dans son ouvrage « Paris et le désert français » publié en 1947, car il s'agit d'une tradition bien plus ancrée dans notre culture, illustrée notamment par Colbert puis au cours de la révolution industrielle[2], et formalisé dès le début des années cinquante, notamment par le ministre Claudius Petit pour qui *«L'aménagement du territoire, c'est la recherche dans le cadre géographique de la France d'une meilleure répartition des hommes en fonction des ressources naturelles et de l'activité économique[3]»*.

C'est bien pour cela que, jusqu'à une date récente, une cinquantaine de délégations provenant de tous les continents du monde venaient chaque année visiter la DATAR et que ses experts étaient invités à intervenir devant l'école de hauts fonctionnaires chinois de Shanghai [4], devant l'agence de développement des territoires de Colombie[5], ou encore pour mettre en place les administrations de gestion des fonds structurels européens de Pologne et de Hongrie au moment de leur adhésion à l'UE.
La DATAR avait été créée en 1963[6] par le général De Gaulle qui en confia la conduite à Olivier Guichard. Il s'agissait d'une « administration de mission », ce qui signifie que son rôle était de réfléchir et de concevoir des stratégies et des actions que les « administrations de gestion » mettraient en œuvre par la suite. C'est ainsi que furent conçus, les métropoles d'équilibre, les villes nouvelles, les « pôles de croissance », les grandes zones industrielles telle que celle de Dunkerque, la reconversion des bassins miniers et sidérurgiques, la prime d'aménagement du territoire, les contrats de plan, et plus tard, les clusters et les pôles de compétitivité. Ce grand élan qui a bouleversé le paysage économique français pendant cinquante ans a été remarquablement décrit par Jérôme Monod, successeur d'Olivier Guichard, dans ses mémoires[7].

Mais les temps ont changé. D'abord la DATAR n'existe plus. Et les acteurs de l'aménagement du territoire se sont multiplié : comment envisager aujourd'hui de s'engager dans une politique des territoires sans concertation avec les collectivités locales, les organisations professionnelles, les partenaires sociaux et associatifs ?

[1] Comité des politiques de développement territorial.
[2] Voir à ce sujet l'article de M.G. Dessus dans la revue «Economie rurale», 1953, vol 16, p. 3 à 8.
[3] «Pour un plan national d'aménagement du territoire», document présenté en conseil des ministres en février 1950 par Claudius Petit, ministre de la Reconstruction et de l'Urbanisme.
[4] CELAP: China Executive Leadership Administration of Pudong.
[5] FONADE (Fondo financiero de Proyectos de Desarollo) devant lequel des experts de la DATAR sont intervenus pour la mise au point des «contratos plan» qui ont été repris dans la négociation avec les FARC.
[6] Décret du 14 février 1936.
[7] Jérôme Monod «Les vagues du temps» ; FAYARD.

Comment favoriser la cohésion territoriale sans dialoguer avec l'Union Européenne?

De même, les instruments de l'aménagement du territoire, tels que les contrats de plan, les pôles de compétitivité, les politiques des zones de revitalisation rurale, ou le Fonds National d'Aménagement et de Développement des Territoires (FNADT) font partie maintenant de la gestion territoriale courante mais n'apportent plus la réponse attendue aux déséquilibres croissants entre les territoires.

Or ces déséquilibres nous les connaissons. Nous les connaissons parce que nous avons lu «Fractures françaises» et «La France périphérique» de Christophe Guilluy[8], et parce que nous avons entendu les débats de la campagne présidentielle, de même que le message envoyé par les électeurs des territoires qui se sentent délaissés.

Dans un rapport intitulé «Aménagement du territoire: plus que jamais une nécessité», publié le 31 mai dernier, la commission de l'aménagement du territoire et du développement durable du Sénat[9] appelle à fonder une nouvelle «doctrine d'aménagement du territoire». Le rapport souligne l'absence de stratégie de la part de l'Etat et constate qu'une demande d'aménagement du territoire s'exprime fortement au sein de la population. Enfin, le rapport propose que, si les régions et les intercommunalités ont un rôle fondamental à jouer, il est nécessaire de rétablir un Etat stratège, pilote de la politique d'aménagement du territoire.

Dans le contexte actuel de redéfinition des orientations des politiques publiques, le moment est particulièrement bien choisi de s'interroger sur ce que pourrait être la stratégie de l'Etat en matière d'aménagement du territoire.

En premier lieu, on pourrait reprendre l'initiative de Charles Pasqua en 1994, alors ministre de l'intérieur et de l'aménagement du territoire, qui avait lancé un grand débat sur l'aménagement du territoire au cours duquel toute la population, sans restriction, avait été invitée à rencontrer les préfets, sous-préfets et les élus pour faire remonter des idées dont la synthèse a inspiré une loi instituant des schémas stratégiques et des instruments financiers qui ont marqué de manière significative l'évolution des territoires à la fin du siècle précédent.

Il conviendrait aussi de s'inspirer davantage de ce qui se fait au-delà de nos frontières. La DATAR a malheureusement souvent ignoré les politiques mises au point à l'étranger, comme par exemple, l'adaptation des services publics au vieillissement de la population de certaines zones rurales au Japon, ou les clusters virtuels en Allemagne. Lorsque j'étais à la DATAR j'avais tenté d'engager une démarche de parangonnage sur les politiques de déploiement du très haut débit sur les territoires. Faute de moyens, il n'a pas été possible de faire réaliser une étude approfondie. Et les relations avec l'OCDE, qui pourtant mène une réflexion très riche au sein du comité des politiques de développement territorial, n'ont jamais été réellement exploitées.

Enfin, il est indispensable que la construction des stratégies territoriales fasse l'objet d'une véritable concertation permanente et institutionnalisée entre l'Etat, les collectivités locales, les entreprises et les principales associations actives sur le territoire.

A cet effet, on peut imaginer que soit créé aujourd'hui, un lieu d'échanges, d'information et de conception de stratégies pour les territoires, comprenant un pôle international, un pôle pour la connaissance des territoires qui comprendrait l'Observatoire des territoires[10], un pôle de prospective territoriale chargé de concevoir différents scénarios pour les territoires, et enfin un pôle de conception stratégique qui serait au cœur de la mission de cet organisme.

Le CGET n'a pas vocation à assurer une telle mission car il s'agit d'une « administration de gestion » chargée de l'application de dispositifs existants. En revanche une institution telle que France Stratégie pourrait en être chargée à condition que la réflexion sur les stratégies territoriales y soit bien identifiée.

Une autre solution serait de créer une structure ad hoc, très légère et pilotée par un conseil composé paritairement de représentants de l'Etat, des collectivités locales et d'associations directement concernées par les territoires. Cette structure pourrait reprendre le nom de DATAR ? On peut toujours rêver…

[8] Voir également à ce sujet l'article «Dynamiques et inégalités territoriales» dans le numéro de juillet 2016 de «France Stratégies».
[9] Rapport d'information de MM. Hervé MAUREY, président de la commission et sénateur de l'Eure, et Louis-Jean DE NICOLAŸ, sénateur de la Sarthe Rapport n° 565 (2016-2017).

[10] L'observatoire des territoires était une composante de la DATAR: http://www.observatoire-des-territoires.gouv.fr/observatoire-des-territoires/fr/node

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ENDOGENOUS INVESTMENT WITHOUT NATIONAL CURRENCY AS ECONOMIC REGRESSION: AN INTRODUCTION

Abstract

National Sovereign Currency for endogenous investment proceeds but the answer is to economic development.

Key words: *Money, National Saving ratio, Economic Growth-manship.*

< And because we know that > investment with nations' own currency > everywhere is spoken against… Act 28[22]

In a none inspirational thought, as far as investment is concerned, seemed to be the act of investing Money that actually depicts the characteristics of nationhood of a sovereign political entity; with all its norms that this entails – Liberty of Private Property and its security thereof, from the hands of an institutional authority invested with the power of the people. In other words, a nation that does not sought to have her own (currency-Money that creates fluidity of National transactional proceeds, would continue to be lingering in limbo; seeking to place the ills of the said < inequality >, the maneuvering act of conscientiously keeping some trading Nations at the Peripheral bay, and with pains, while taking the benchmarking posture/in comparison with the existing < inequalities > in trade.[1]

The promiscuities and debates of scholars in Economics as well as their contemporaries have failed to study the actual root causes of such economic inequalities among trading nations in the World Economy, and in many cases, have put the blame wrongly on globalization. In fact, there is nothing wrong with globalized trade if the trading partners are willing to opt for win-win game, and as such deriving the accruing gains from trade.

The actual question to be raised is: what went wrong with globalization ever since the 14th Century until present? Does capital thus accumulated being found in the hands of all trading nations? Are nations aware of the responsibilities with respect to maintaining the Economic viability and the sustenance thereof of their ever growing populations?

Nations in trade, thanks to equitable distribution of the accruing benefits through globalization, have to save and invest on productive investments that depict its true identity and the use of their national currency as this had existed for centuries. The apparent unequal trade had benefited other trading entities that had consolidated the abundant capital thus accumulated, and subsequently the use by quite a few firms, for example, that constituted a capital-base stock with distinct trademarks ranging from 1746 through 1838, etc. Hence, national trading venture with an endogenous currency, such as Renminbi of China, for example, where the manipulation and the taming of the currency becomes the preoccupation of the Chinese elites in power, and the Economic welfare of the State – must not be ill spoken among other trading nations in the World. The Chinese independent economic maneuverability through the use of its currency is but an emulating factor for other trading nations, and more so, for the African trading nations. Furthermore, trading nations that have the ambition to invest in their territorial geopolitical environments, such as those in Africa, for example, are bound to venture and to have their money to invest as oppose to the existing puppet currency which goes no way in terms of huge and heavy investment ventures for their people and their economic development. The possible acquisition of such indigenous currency for investment, will serve as policy

[1] Author : THOMAS PIKETTY, book: < Le capital au XXIè siècle >, Press Paris: Editions du Seuil, © 2013, PP. 144-151

makers to administering domestic economic adjustments whenever necessary and at their own time and will for its people; and the subsequent convertibility process in the face other basket of currencies.

Endogenous investments are paramount among all trading nations, as it improves the lives of domestic national workers, thanks to the wages allocated, which in turn, drives the domestic consumption factor in situ to the progress of Economic growth. Nonetheless, where national workers receive no decent wages for their future proceeds until present, was more or less, the absence of acute interpretation of the - Ruling Price Mechanism – concerning the products in the Market, their rigidity, and the percentage share of investment that has taken place in the trading nations states as well as the output. If nations endowed with resources can no longer survive in their international trade proceeds, as a result of permanency of an unchanging foreign currencies posture that hampers practically their endogenous growth, the non-existing currency which prevails for such trade are but, forceful act of managing the unchangeable trade situation that breeds no capital stock for futuristic investment. Although, this system has existed for centuries, distinct trading Nations had lost their consciences through the times and currently in the times; appreciating the existence of a dampened Economic nation and it failed to question at what – Ruling Price Mechanism – does our commodities said to be obtained in the market through imports?

The instrumentalization of Puppet currency, for example, - Even Jesus Christ saw the coin made on the effigy of Jules Cesar, did said, – < Render to Cesar that which belongs to Cesar>. As a matter of fact, trading nations' vital economic interest can only be preserved if each nation uses its own money/currency with all Maneuverability for success or for failure, with Gold reserve, for the value thereof in their Central National Banks (CNB). And in all foreign exchange transactions, for example, there seemed to be the continuity of financial transactional trade that goes on among nations including the skilled financial labor force that animates the vibrancy of the sector in question. Or, should puppet coins framed out of nowhere, are to be used by trading nations, let it be simultaneously the same for all traders in a market where there seemed to be no friendship but interests. Although trade is an engine of economic growth, it behooves the trading state to have gained from trade through the fixation of the price of the goods she placed in the Market.

But the price thus fixed in essence, has to carry both variable and invariable costs of production tantamount to the establishment of the true price of placed commodities. A question worth studying in this article as concerns investment is primarily – and at what point in time does the state in trade consider its people savings and investment objectives becoming congruent for growth? For scholars like Lachmann L. did consider that capital was a heterogeneous stock of national resources which gave rise to income stream. The stock included **land**, as well as non-permanent resources – whereas Hayek had excluded land from the stock of capital…>[2]

The ever growing trend of resource rich nations in trade but characterized to be ever poor countries has become a Litany for other trading nations whose ambition symbolizes simply to assist and not to trade indeed. However, Trade among nations entails the necessary efforts engaged in production, - where land becomes paramount, and as such must be an income bearing factor to the traders – and subsequently, the ability of the trader to incorporate the true price of this finished good that is being brought to the market.

For scholars like the puppet coin with no real value could not obtain a tangible investment proceeds, if we call a state to be one; makes no sense to be required to invest, when the Trading states may tends to advocate for domestic investment, the calculations are far from being favorable to the people, but to Cesar's aspirational goals – interests. However, at what Point in time does the state in trade consider its people savings and investment objectives for Growth.

Nonetheless, my 27 years of teaching experience on topics such as political economy for development and international environmental politics gives the author the inspiration to ascertain that Natural climatic changes as well as resource depletion are certainly accruing negative factors to all trading Nations Balance of Payment (BOP), and the more reason why we must not separate the cost of land, as its excavations; thus reintegrating all costs in the investment pendulum.

[2] Brian McCormick, Book : <Hayek and the Keynesian Avalanche>, St Martin's Press, New York, © 1992, P.127

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INVESTMENT POLICY: CASE STUDY CBUS

1.0 Purpose and objectives of the Policy

The purpose of this Investment Policy Statement (IPS) is to set the framework within which the investment principles determined by the United Super Pty Ltd (the Trustee), the trustee of the construction and Building Unions superannuation Fund (the Fund), are to apply to the Fund's investment related functions. This IPS is the Trustee's key investment policy document and forms an integral part of the Trustee's investment Governance Framework.

This document outlines the Fund's investment objectives and how the Trustee formulates, implements,monitors, and reviews the strategies aimed at achieving those investment objectives.

2.0 Definitions, and what is not covered by the Policy

Definitions:
APRA – the Australian Prudential,Regulation Authority.
Asset – any item expected to provide future economic benefit.
Beneficiary – is a person who has a beneficial interest in the Fund.
Board – the trustee board of the United Super Pty Ltd.
Custodian – a corporation that may be appointed by the Trustee at any time as custodian of the whole or part of the portfolio.
Fund is the Construction and Building, Unions Superannuation Fund.
IC is the Trustee's Investment Committee.
IIC is the Internal Investment Committee.
IMG is the Fund's Investment Management Group.
Invest means to apply assets or make a contract for the purpose of gaining interest, income, profit or gain.
Investment manager – a corporation appointed to invest on behalf of the Fund.
LTSAA – the Long Term Strategic Asset Allocation.
MySuper product – a product that satisfies the characteristics of section 29TC of the SIS Act, for which the RSE licensee has been authorised by APRA to offer.
Prudential standard – a standard determined by APRA under subsection 34C(1) of the Superannuation Industry (Supervision) Act 1993.
QAAR – the Fund's Quarterly Asset Allocation Review.
RSE licensee means the Trustee.
RSE licensee law means:

- The Superannuation Industry(Supervision) Act 1993
- The Superannuation Industry(Supervision) Regulations 1994;
- Prudential standards;
- the Financial Sector (Collectionof Data) Act 2001;
- the Financial InstitutionsSupervisory Levies Collection Act 1998; and
- the relevant provisions of the Corporations Act 2001 SIS Act means the Superannuation Industry (Supervision) Act 1993.

Trust Deed means the Fund's Trust Deed, as amended from time to time Trustee is the United Super Pty Ltd.

What is not covered by this policy:
This document sets out the general principles that govern the investment of the Fund's assets, it does not provide in-depth details of the processes applied to implement those principles. Further details of those processes and mechanisms are set out in other policy and process documents and manuals.

3.0 Applications

This policy applies to all Trustee Directors, all Cbus Executive Managers and all members of the Fund's internal investment team.

4.0 Responsibilities and accountability

The Trustee is at all times responsible for the Fund's investments, including establishing an investment governance framework that is appropriate for the size and complexity of the Fund.

In order to efficiently manage the Fund's investments, the Trustee delegates certain decision making responsibilities to various committees and management groups.

Details of these delegations are set out in the relevant committee charters.

5.0 Governing Legislation and Regulatory Requirements

The Trustee must invest the assets ofthe Fund in accordance with:

- the Trust Deed of the Fund;
- RSE licensee law;
- the Trustee's RSE licence;
- the Income Tax Acts & Regulations;
- Superannuation Industry;
- Supervision Acts and Regulations;
- the Corporations Act & Regulations; and
- its fiduciary duties.

The Trustee has considered these requirements in the drafting of this policy.

6.0 Formulating Investment Strategy

The primary role of the Trustee is to prudently manage the Fund's investments, which, at its broadest level, involves developing an appropriate investment strategy, effective implementation of that strategy and its monitoring and periodic review.

The remaining sections of this document set out how the Trustee, in accordance with its fundamental investment beliefs and guiding principles, addresses these issues.

6.1 Range of Investment Options

The Trustee recognises that members have different financial circumstances and risk appetites. Therefore, the Fund offers members a range of investment options designed to allow members the flexibility to select an investment option, or combination of investment options, that best suits their particular objectives.

The range of investment options available to members is reviewed regularly and at least annually as part of the annual Strategic Review. The range is adjusted from time to time in reaction to the anticipated needs of members and changes to the external and regulatory environment.

The Board is the only body with the authority to make changes to the range of investment options offered by the Fund to its members. The removal and or addition of new investment options is considered a material event that should be supported by adequate research and due diligence, including a full risk assessment and cost benefit analysis.

6.2 Investment Strategy

The Trustee formulates an investment strategy for each of the investment options offered by the Fund. Collectively these strategies, together with the investment strategies for the Fund's reserve accounts, make up the investment strategy for the whole Fund.

The Board is solely responsible for setting the long term strategies for the investment options and is supported in this role by the Investment Committee (IC), the Internal Investment Committee (the IIC) and the Fund's asset consultant. The Trustee expects that under most circumstances the external support provided by the asset consultant will be sufficient for it to make informed decisions on investment strategy, however, the Trustee may seek further external advice when the Trustee deems it prudent to do so. In such circumstances, the process used to attain this additional advice will be dependent upon the circumstances that prevail at the time and the nature of the advice being sought.

When setting the investment strategies the Trustee takes explicit consideration of the trustee investment covenants, among other things as set out in sectio 52(6) of the SIS Act 1993. In addition to these legislated trustee covenants, the Trustee's overarching principles when setting an investment strategy is to ensure the strategy is aligned with:

- the objectives of the investment option (incorporating the Trustee's risk appetite);
- the circumstances of the Fund; and
- the Trustee's Investment

Governance Framework (including that the Trustee has the skills, expertise, time and resources available to effectively and efficiently implement and monitor the strategy).

6.3 Investment Objectives

The overall objective of the Fund is to maximise the retirement outcomes for members, which from an investment perspective is measured by long term net returns, on an after fees and taxes basis. The Trustee has formulated both risk and return investment objectives for all investment options offered to members. Each diversified investment option has a principal objective, which includes an objective of achieving a return in excess of inflation (measured by CPI), with a relatively high probability over a stated investment time horizon.

In addition, the principal objective incorporates limiting the likelihood of a negative return to a pre-determined

frequency. Further to the principal objective, the Fund has also set internal targets that are used when constructing and monitoring the investment strategies for its investment options.

In setting these objectives, the Trustee recognises the importance of specifying the investment time horizon for each investment option and for ensuring a high level of confidence in achieving the stated objectives.

6.4 Setting the Investment Strategy

The Trustee's first task in setting an investment strategy is to formulate the investment objectives. Once these are set, the Trustee uses financial modelling to guide its determination of an appropriate investment strategy for each option. This involves determining the asset classes that are suitable for inclusion in the investment option and the appropriate exposure to those asset classes. For this purpose, the Trustee is required to make assessments regarding the expected risk and return of asset classes, as well as the correlation between asset classes. Importantly, the investment strategy will also be determined with consideration of factors that are not captured by the financial modelling framework (e.g. liquidity constraints).

When considering strategic investment decisions, the Trustee focuses its resources on the areas of highest importance, in order:

1. The long term strategic asset allocation decisions;
2. Dynamic tilts away from the long term strategic asset allocation decision; and
3. Asset class configuration of managers.

The Trustee acknowledges that financial models are not infallible and must be used with care. Nevertheless, the Trustee believes that appropriate modelling and simulations are powerful tools in developing a greater level of understanding of the relative interactions of investments and their associated risk factors.

In using models, the Trustee does not rely solely on normal market conditions and ensures adequate stress tests and scenario tests are performed to ensure that non-normal conditions and tail risks are captured. To the extent that some extreme risks are off-model and not captured by the stress and scenario tests, the Trustee relies on expertise, subjective judgement and careful monitoring.

6.5 Stress Testing and Scenario Testing

The Trustee recognises that risk levels associated with most asset classes and the correlations between asset classes vary over time. As such, risk levels within a particular investment strategy may change materially through time. For this reason, when setting an investment strategy, the Trustee uses a series of stress tests and scenario tests to ensure it designs investment options that are resilient and can be expected to meet their objectives over a variety of market conditions.

The Trustee is currently assisted by its asset consultant in conducting the stress and scenario tests. The purpose of the analysis is to help identify the way in which sources of return and risk factor exposures are likely to interact, including the impact on overall diversification, under different market conditions.

The Trustee uses a variety of stress tests and scenario analysis to assist it design the Target Portfolios and determine if the potential outcomes are acceptable and within the risk appetite.

6.6 Long Term Asset Allocations and Target Portfolios

The Trustee sets the Long Term Strategic Asset Allocation (LTSAA) and the Target Portfolio for each investment option and, where appropriate, the ranges within which these exposures should be maintained. The LTSAA represents the asset allocation expected to achieve the principal objective over the long term, in the absence of any views on market cycles or the medium outlook for investment markets.

Using the LTSAA as the starting reference point, the Trustee incorporates its views of the medium term investment environment and opportunities in the market to construct the Target Portfolio. The Target Portfolio is expected to have a higher probability of achieving the principal objective than the LTSAA, over the medium to long term.

The Target Portfolio for each investment option is reviewed quarterly as part of the Quarterly Asset Allocation Review (QAAR) and the Annual Strategic Review. In certain circumstances, it is possible for the Target Portfolios to be reviewed between normal review cycles. The trigger for such reviews would be a material change to the Trustee's views of the medium term investment environment.

The Trustee Board is the only body with the authority to set and approve changes to the LTSAA and ranges for the investment options. The Board delegates authority for setting and reviewing the Target Portfolios to the Investment Committee.

For clarity, the Trustee does not use a Tactical Asset Allocation (TAA)approach, which involves taking much shorter duration positions such as monthly, weekly or daily.

Asset Allocation Ranges

The asset allocation ranges are considered by the Trustee and the Investment Committee as part of the annual Strategic Review. The ranges may also be considered outside of that review process should that be deemed appropriate.

The basis for changing the asset allocation ranges would typically include (but are not limited to):

- A re-assessment of the LTSAA, which would in turn reflect either a change in the investment objectives or a change in view about the longterm properties (e.g. risk, returnand correlation) of asset classes;
- A re-assessment of the degree to which the Trustee wishes to target asset allocations that are different to the LTSAA; and
- A re-assessment of the degree to which the asset allocation may be affected by large moves in investment markets.

6.7 Asset Class

Structures and Sector Configurations
The Fund seeks to obtain economies of scale and operational advantages by directing its investment options' exposures to different asset classes into collective pools of investments. That is, the exposure to an asset class from each investment option is invested as a single pool with the same sector and manager configuration.

The Investment Committee formally reviews each asset class sectorconfiguration every year. These reviews are staggered throughout the year to ensure adequate resources and time can be dedicated to each review. In addition, the portfolios are subject to ongoing monitoring throughout the year by the Fund's internal investment team, supported by the Fund's asset consultant.

6.8 Reviewing theStrategies

At the end of each financial year, and more frequently if required, the Fund conducts a comprehensive review of the LTSAA, the ranges and the Target Portfolio of each investment option, which includes a series of stress and scenario tests. The results of the annual Strategy Reviews are presented to both the Investment Committee and the Board.

The annual Strategy Review is designed to not only reassess the asset allocations and associated risk and return objectives of the investment options but also to test that the strategies remain aligned to the circumstances of the Fund and the Trustee's investment governance framework. In addition to the annual Strategic Review, the Target Portfolios are also reviewed quarterly to reflect the Trustee's current views on the medium term outlook, taking into account a wide range of information including, but not limited to: measures of absolute and relative value; a range of feasible medium term economic outlooks and their likely investment consequences; changes in economic and market risk factors; and changes in the diversification and liquidity needs of the option.

Further, should the internal investment team or the Fund's asset consultant have the view that there has been a material change to the environment they can recommend that the Trustee reviews the Target Portfolios of the investment options.

6.9 Liquidity

The Trustee believes that additional returns can be achieved through exposure to illiquid assets over the long term. As a long term investor with significant and stable net cash inflows, the Trustee believes it has an advantage over other investors that may have ashorter time horizon, or lower levels of net cash flows, and that by investing in illiquid assets the Fund can benefit from an illiquidity premium. In addition to the illiquidity premium, exposure to illiquid assets can also provide the Fund with diversification benefits and a reduction in volatility, due to different exposures to risk factors and the appraisal based valuations of unlisted assets.

The Trustee recognises that the Fund needs to maintain a degree of liquidity in each investment option in order to meet its ongoing obligations to beneficiaries and to ensure appropriate risk management and equity between transacting and non-transacting members. As such, the Trustee explicitly considers liquidity issues when setting the LTSAA and the Target Portfolio for each of the investment options offered to members.

The Trustee's approach to managing liquidity risk is covered in more detail in the Board approved Liquidity Management Plan.

6.10 Valuations

Accurate and timely asset valuations are important to ensure equity is maintained across new, continuing and exiting members. As such, the Trustee considers the availability and reliability of valuation information an important aspect of setting and reviewing investment strategies. The Trustee maintains a separate Asset ValuationPolicy to ensure the methodologies and assumptions for the valuations of assets held by the Fund are reasonable and to address any potential adverse impacts between beneficiaries as a result of valuation procedures.

The Trustee acknowledges that valuation principles vary across different asset classes and investment structures. However, the Trustee's general approach to valuations includes valuing assets in accordance with approved accounting standards.

The Trustee is responsible for understanding the basis of the valuation of all assets held by the Fund. In this respect, the Trustee has processes in place to ensure the basis of valuations for all assets are appropriate, reasonable, verifiable and internally consistent.

The Trustee is also responsible for determining the frequency at which Fund assets are valued and is committed to regular (and at least annual) independent valuations of Fund assets. The valuation frequency represents a trade-off between ensuring member equity and incurring undue costs.

6.11 Use of Derivatives

Derivatives, such as futures, forwards, swaps, options and options on futures, are financial assets or liabilities whose value depends on, or is derived from, other assets, liabilities or indices.

Derivatives have an important role in the Fund's overall investment strategy andwhen used must be consistent within the overall objectives of the investment strategy. The Fund's investment managers are permitted to use derivatives to achieve their investment objectives, particularly in regard to controlling risk and maintaining desired exposures.

The Trustee may also use derivative instruments directly to hedge existing positions, improve implementation efficiency, or to manage asset allocations.

6.12 Costs and Fees

The main costs that may be incurred through investments include fees or charges associated with: investment managers; investment advisors; custodians; transition managers; lawyers; tax advisors; and the internal investment team.

When considering a potential investment, the Trustee examines the fees and costs associated with buying, holding and realising that investment. The Trustee accepts the costs associated with transacting unlisted assets are generally higher than listed markets.

These costs are included in the overall cost benefit analysis and due diligence of those investments. The Trustee believes the level of such costs associated with investments is an important consideration for determining the investment strategy for each investment option. In that context, the Fund assesses the net benefit to the member from a risk and return perspective when considering investments for inclusion in the investment options.

6.13 Taxation

The Trustee considers the impacts of taxation as an important factor when developing investment strategies. The main areas considered are detailed below:

- Investment objectives: the returns targeted by the Trustee are those experienced by the member and are net of taxes.
- Asset allocation: after-tax risk and return assumptions are used in quantitative analysis to help determine the asset allocations.
- Investment strategies to be employed within asset classes: the likely tax impacts of investment strategies are an important consideration in determining the preferred strategies.
- Appointment of investment managers: the ability of a manager to operate in a tax effective manner is assessed. This is particularly important in the context of Australian equity managers, where the benefits of tax effective management can be considerable. As such, for the Australian equity sector the Trustee:
  - measures all managers against an after tax benchmark;
  - provides managers with access to a pre-trade tax analyser tool; and
  - instructs the custodian to incorporates tax propagation.
  - Tax reviews are also conducted on the tax arrangements of pooled vehicles and international managers to assist in minimizing inefficient tax leakages and manage any tax risks.
- Direct investments: the expected tax impact on returns is an important assessment when determining the expected net benefit to members and whether such investments should be made.
- Rebalancing: the impact of tax is considered when rebalancing.
- Asset sales: the tax impact is a consideration when deciding to redeem from a manager and/or sell an asset.
- Corporate Actions: the tax impact is a consideration when deciding to participate in Corporate Actions, including restructures.

The Trustee may seek specialist taxation advice, and/or tax rulings, when deemed appropriate to do so.

Tax laws (including Australian tax laws) are in a continual state of change and reform, which may affect the investments of the Fund. The Trustee has policies which aim to manage and mitigate tax risks associated

with investments. These policies are consistently updated in-line with the changing business environment.

Implementing Investment Strategy

The following section sets out the Trustee's general guidelines for implementing its investment strategies. At a high level this includes using the following external service providers:

- Asset Consultant;
- Master Custodian; and,
- Investment Managers.

7.1 Investment Manager Selection

Investment managers are only appointed after a rigorous search and selection process in accordance with the Fund's Due Diligence Policy and, where appropriate, its Outsourcing Policy.

7.2 Product Selection Diversification of managers

When deciding on the size of the allocations to individual strategies, the Trustee balances the need for adequate diversification of risk factors with the need for the allocation to be large enough to provide a meaningful contribution to the overall risk and return characteristics of the portfolio. To minimise risk and style biases, the Trustee seeks to appoint a mix of managers with different investment styles within the listed asset classes.

The Trustee uses a mix of quantitative analyses and qualitative judgments to assess each manager's capabilities and portfolio characteristics. Within the unlisted asset classes, the Fund typically seeks to develop and maintain a small number of close relationships with managers in which it has a high conviction. It should be noted that in the private equity subsector, there are a large number of managers that provide considerable diversification.

Mandates and Pooled Trusts; The Trustee prefers individual mandates over pooled trusts, as mandates afford the Fund a greater level of control and, hence, operational risk management over the Fund's investments. In particular, when investing through individual mandates the underlying assets are typically held by the Fund's custodian, providing the Fund added security and flexibility (transition and tax efficiencies) of direct ownership.

Mandates also provide the Fund with greater transparency through to the underlying holdings and voting rights for the share holdings. When an investment is made in accordance with the Fund's Outsourcing Policy and the relevant legislation.

The Trustee recognises, however, that some investments can only be accommodated in pooled arrangements. When investing through pooled arrangements the Trustee prefers vehicles with likeminded investors managed by parties aligned with the interests of the Fund and with the right ownership structure and culture. Where possible, the Trustee uses its influence to ensure the terms of the pooled vehicles are aligned to its needs.

Direct Investments; As a large scale investor, the Fund looks to use its scale to access opportunities to invest directly into assets. When investing directly the Trustee prefers partnership investments and coinvestments, and seeks directorship rights and pre-emptive rights wherever possible.

When investing directly the Trustee seeks likeminded partners and, therefore, it is important the Fund develops and maintains strong relationships and collaborates with other super annuation funds, asset owners and investment managers.

The Trustee recognises direct investing requires additional resources to source, execute and manage. Assets will only be held directly where the Trustee considers it is in the best interests of members. Consideration will be taken of the Fund's expertise, time and resources in any decision to directly hold assets.

7.3 Manager Removal

The Fund's contracts with investment managers typically include termination provisions, which set out the processes for exiting the arrangement. Generally, manager terminations are considered when the Fund revises its investment strategy and/or risk appetite, resulting in the manager no longer having a role in that strategy, or the Trustee loses faith in a manager's ability to fulfil its role in the portfolio.

7.4 Transition Management

Transitioning assets between managers requires careful management to ensure the risks and costs of the project are maintained within tolerable levels. Each transition is assessed on a case by case basis and where the IMG determines that the benefits of appointing an external transition manager outweigh the costs and risks of managing the project internally a manager will be appointed. The transition manager's role is to:

- Minimise transaction and related costs;
- Highlight and manage any risks associated with the transition;
- Manage the expectations of all investment managers involved in the transition;
- Manage the instruction of trades and reconciliations with the Fund's custodian; and

- Provide the Trustee with summary analysis and reporting.

The Fund maintains specialised accounts within its equity portfolios for the purposes of managing transitions.

7.5 Strategic Holdings

The Fund holds a number of relatively small investments in business partner organisations, which in total represent less than 1% of total Fund assets.

The Trustee believes that it is in members' overall best interests for it to invest in strategic holdings and to join with other like-minded superannuation funds to have a controlling influence. The Trustee believes that this approach combines the best elements of insourcing (influence over the quality and cost of services) with the economies of scale of outsourcing to third parties.

7.6 Currency Hedging

The Fund is exposed to currency risk as a result of investing in international assets. The Fund considers the currency risk of an investment separately to the investment characteristics of the underlying assets.

The Fund sets an overall desired exposure to currency and implements it in various ways across the underlying asset classes - the general approach to managing the currency risks in each asset class is set out below:

- Fixed Income – Where appropriate these investments are fully hedged within the product by the investment manager.
- Property, Infrastructure, Alternative Debt and Alternative Growth – Where appropriate the preferred approach is to be fully hedged within the product by the investment manager. Where this is not feasible the Trustee will overlay a full passive hedge using the Fund's currency manager.
- International Equities – the Trustee will overlay a partial passive hedge using the Fund's currency manager.

The Trustee does not believe that active currency management provides appropriate risk adjusted returns for the fees paid. However, the Trustee accepts that currency markets, and in particular the Australian dollar, may exhibit periods of relative over or under valuation.
The Trustee seeks to adjust the Fund's foreign currency exposure in response to extreme over or under valuation of the Australian dollar to moderately enhance the risk and return outcomes over the medium-term.

7.7 Performance Based Fees

The principal return objective for each investment option is to produce a return above an inflation target, net of all investment fees and taxes. As such, the fees charged by investment managers are an important aspect in determining whether the Fund will meet its investment objectives.

The Trustee accepts that investment managers should be rewarded appropriately for the services they provide and that active management fees are justified where there is a high probability of net outperformance over time. However, the Trustee also acknowledges that it is not in members' interests to overpay for a service.

Therefore, the Trustee's due diligence process for all new managers explicitly considers the fee structures so that, wherever possible, reward structures are aligned with the interests of the Fund. Fee structures are also reviewed on an ongoing basis throughout the year as part of the asset sector strategy reviews.

The Trustee accepts that on occasion, and for some asset classes in particular, the Fund will enter into contracts where the reward structure may consist of a base fee and a performance related element. These arrangements are considered on a case by case basis with the due diligence covering, at a minimum, a documented assessment against the legislative requirements.

7.8 Environmental,Social and Governance (ESG) Issues

The Trustee believes that Environmental, Social and Governance (ESG) issues are material investment matters and as such should be incorporated into investment processes. Therefore, as long as returns to members are not detrimentally impacted, the Fund will prefer to invest with investment managers who have incorporated ESG in their investment process. This is done because:

- It is consistent with fiduciary obligations to members in the light of changing external conditions;
- The Trustee expects the approach will lead to better risk adjusted returns for members;
- ESG issues are expected to impact on the long-term sustainability of companies and assets, and therefore form an important input to the risk management process; and
- Organisations that manage the risks and opportunities arising from ESG issues effectively are likely to be more successful than those that do not over the long-term. To encourage investment managers to integrate ESG considerations in their evaluation, the Trustee takes the following

actions:

- Includes a clause requiring investment managers to consider ESG issues within their investment processes in all new or renegotiated investment management agreements;
- Assesses investment managers' abilities to incorporate ESG in their investment process as part of the manager assessment and due diligence process;
- Measures investment manager progress in integrating ESG annually as part of the manager review and sector review processes, and by asking managers to report on their ESG activity; and
- Encourages investment managers to sign the Principles of Responsible Investment and to source and review ESG related research.

The Trustee notes that in addition to the work carried out by its investment managers, it pursues an active share ownership program, including requirements around voting its shares.

Further details of how the Trustee implements ESG principles into its investment strategy are outlined in the ESG Policy.

7.9 Crediting Rates

The Fund's custodian provides a valuation of each diversified investment option's investments every week and at month end. Weekly declared crediting rates are determined for each investment option on the basis of these valuations, together with an assessment of the tax payable on the investment option's earnings and an estimate of the investment option's investment costs.

7.10 Securities Lending

Securities lending (also known as scrip lending) describes the market practice by which, for a fee, securities are transferred temporarily from one party (the lender), to another (the borrower), with the borrower returning the securities either on demand or at the end of an agreed term.

The Trustee believes it can add value to the portfolio, over the medium term on a risk adjusted basis, through securities lending. As such, the Trustee has entered into a security lending programme with its master custodian. None of the Fund's mandates with investment managers permit the manager to engage in securities lending, however, the Fund may be exposed to securities lending through its holdings of pooled trusts.

7.11 Reserving

The Fund does not operate an investment reserve for smoothing investment results. The Fund has three reserve accounts: the Operational Risk Financial Reserve, the General Reserve Account and the Group Life Account.

All three accounts have their own policy documents detailing how they are managed, including their investment strategies. The Trustee has designed its principal investment objectives for each investment option to be aligned with its members' likely future financial needs.

Therefore, the ultimate measure of risk for the Fund is failing to meet these investment objectives Investment risk is commonly described in the context of the volatility of returns.

However, this is an incomplete measure of risk and therefore the Trustee also considers the following high level measures of risk in its investment processes:

- The probability of a negative return;
- The indicative loss in adverse and
- extremely adverse environments; and
- The expected time period to recover from a material loss.

While acknowledging the importance of preserving capital, the Trustee also acknowledges that to meet its long term investment objectives the Fund must accept and manage various forms of investment risk.

8.0 Risk Management

The Investment Committee is responsible for ensuring exposure to investment related risks remains aligned with the Trustee's risk appetite and overall risk management framework.

The Trustee has a strong risk focus and maintains a number of specific policy documents for managing a number of the key investment risks to which the Fund is exposed. The asset allocation of an investment option is the primary determinant of its risk characteristics and, therefore, the Trustee focuses most of its risk management resources on managing the asset allocation decisions.

This includes ensuring adequate diversification across and within asset classes, adequate stress testing of portfolios, appropriate ranges and rebalancing processes. The Trustee has also established a risk factor framework to ensure the investment strategies not only have reasonable diversification by asset class but also by other investment risks or factors.

Diversification Limits

Diversification of exposures is a key component of managing investment risk and the Fund has established

some basic diversification limits to help ensure it is not over exposed to any single risk:

- An investment manager will normally not be allocated
- A single actively managed product will not normally be allocated more than 10% of the Fund's total assets; and
- The Fund generally seeks to avoid becoming a substantial shareholder of listed entities (i.e. holding 5% or greater of issued share capital).

However, this may occur from time to time due to the collective decisions made by investment managers.

The success, or otherwise, of an individual asset should not have the ability to meaningfully impact the performance of the overall portfolio. Therefore the Trustee explicitly considers the appropriate magnitude of the allocation to all new assets. In doing so, the Trustee considers the following high level issues:

- The asset class and sub sector;
- The liquidity of the asset;
- The overall risk profile of the asset;
- The factor risks of the assets; and
- The correlation of the factor risks with the rest of the portfolio.

Risk Monitoring

The investment risks in all the Fund's investment options are formally reviewed each year as part of the annual Strategic Review. Changes to the risk profiles of the options and changes to the investment market environment are reviewed quarterly as part of the QAAR.

The IMG monitors the asset allocations of the investment options and economic markets on a weekly basis. At a Fund level, a number of material investment risks, key mitigating controls and investment risk tolerances are captured in the Risk Management Strategy and are subject to ongoing monitoring and reporting through the Trustee's wider risk management framework.

9.0 Performance Monitoring

The investment performance of each investment option and subsector asset class are reviewed against their objectives each quarter and during the strategic review. The investment performance of each of the Fund's investment managers is assessed quarterly against a benchmark index that is appropriate for the strategy.

The primary source of performance information is the Trustee's custodian, which is operationally independent from the investment process. The Fund's investment managers also provide performance information. Having two sources of information provides the Fund with additional comfort as to the integrity of the figures reported to it.

Performance Monitoring and Benchmarking

The Investment Committee reviews the performance of investment options and each investment manager each quarter and more regularly as required.
Summary performance data is also provided to the Board. The performance of the Fund's investment managers is monitored on an ongoing basis by the internal investment team and the Fund's asset consultant, including regular contact with the investment managers. More formal reviews occur at the annual asset sector strategy reviews. The principal goals of the monitoring are to:

- Assess the preformation of each investment option against their objectives;
- Assess the manager's performance against its stated objectives;
- Review any changes to a manager's rating or key drivers of the rating;
- Review any changes in the manager's business or personnel;
- Compare the manager's performance against other managers and market indices; and
- Review the manager's positions relative to its mandate.
- Mandate Compliance

The Fund's custodian provides daily monitoring of investment managers' compliance with their mandates. The Trustee also requires that its investment managers provide a monthly sign-off that there have been no compliance issues throughout the month (or remedial actions where there has been an issue).

Reporting Framework

The Fund receives a variety of weekly, monthly and quarterly investment reports from, amongst others, its investment managers, custodian and asset consultant. The internal investment team is primarily responsible for receiving and monitoring this information and producing summary reports to be presented to the IMG, the IIC, the IC and the Board as appropriate.
The nature of investment markets mean that some aspects of investment reporting must be reactive and responsive to the issues at hand, however, there are a number of investment reports regularly produced for the IMG, IC and Board. These are set out in the Investment Governance Framework.[1]

[1] The paper was written on a base of Cbus Summary "Investment Policy Statement Summary", 2 March 2017.

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Scientific interests: project management, finances, international cooperation, macroeconomy.

Requirements for papers

- Papers are accepted in English and French. Good English and French spelling and punctuation are preferred. Papers should be written in a third person, impersonal style and any use of 'I/we' should be avoided.
- Papers should not normally exceed 10,000 words. All papers are refereed by acknowledged experts in the subject.
- Abstracts of approximately 300 words are required for all papers (abstract in English and French is required for articles written in French).
- Paper should include no more than 7 keywords.
- Papers should be compiled in the following order: title page; abstract; keywords; main text; acknowledgments; appendixes; references.
- The introduction should clearly define the nature of the problem being considered. The new contribution the paper makes should be identified and situated in relation to the relevant scientific literature and, wherever possible, the practical relevance of its results should be indicated. The "Regional Innovations" journal will publish papers that evaluate important topics relevant to new areas of emerging research and policy.
- All the authors of a paper should include their full names, affiliations, postal addresses, telephone numbers and email addresses on the cover page of the article. One author should be identified as the corresponding author. We wish for Review Articles to be written by experts who are personally committed to writing the manuscript, and therefore limit authorship to a maximum of 3 authors.
- For all papers non-discriminatory language is mandatory.
- The use of tables and color figures to summarize critical points is encouraged. Tables should be prepared on separate sheets; they should not be embedded within the text. Each table should have an appropriate caption.
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- Endnotes should be marked clearly in the text at a point of punctuation, and listed consecutively at the end of the paper. They should not be listed at the bottom of each relevant page.
- The full references should be listed at the end of the paper. They must include the names and initials of all the authors, the year of publication in parentheses, the full title of the paper (or book), the full name of the journal, the volume number and pages and, for books, the publisher's name and city of publication. The references in the text should be done in square brackets (for example, [2; 4; 15]).

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INTERNATIONAL CONFERENCE

"E-Commerce Strategies: Challenges and Perspectives"

21-22 November 2018

The aim of the conference is to involve a wide range of experts in discussing important trends and development of e-commerce and innovative strategies for sustainable development nowadays. Organizations around the world are contemplating alternative approaches to e-commerce, considering the national, regional and global implications of this new business tool. New technologies are changing on a daily base consumer habits and commerce models. As a result, a growing number of entrepreneurs transfer their business online and leading retailers are turning to the Internet in search of new customers and new ways to grow. The Conference carries forward spreading knowledge and awareness about e-commerce and its components in different countries.

Conference participants: scientists, PhD students, business, NGOs experts are invited to take part in the conference.

The conference will provide an excellent opportunity to disseminate, share and discuss the impact of university-university, university-business and business-business interactions.

Main conference topics for discussion:

- Current state and trends in e-commerce;
- Private sector involvement;
- Impact of the global and national crisis on the implementation of e-commerce strategies;
- Impact of strategic projects and programs on e-commerce development;
- Innovations, knowledge transfer and culture exchange in e-commerce and their influence on sustainable development;
- Public sector policy and partnership with private and tertiary sectors in the field of e-commerce;
- Networking in e-commerce;
- Regional organisations and e-initiatives.

Conference publication: the conference materials will be collected and published in a special volume of the Regional Innovations Journal.

The conference is organized by the Association "InterRegioNovation" and supported by the International Business Institute (Paris, France), the International Forum of the Territories (France), FRANCeXP Association (France), Association "Baltic InterRegional Development hub" (Latvia), Institute of Economy of the Academy of Sciences of Belarus (Minsk, Belarus), Department of Economic Cybernetics, Taras Shevchenko National University of Kyiv (Ukraine), Eastern-European Institute for Cross-Border Studies (Kharkiv, Ukraine), Ukrainian-Francophone Academic Centre (Karazin Kharkiv National University, Ukraine), Kharkiv National Medical University (Ukraine).

The conference fee is 20 euro.

Please submit the application with your thesis (2500 words maximum) before **November 07, 2016** to the Conference Committee at **info@irn.center**

Application form should include the names of authors, position, institution, post address, phone, e-mail.
The conference language is English but theses will be accepted in English and French.
The Organizing Committee is entitled to selecting papers to be presented at the conference.

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