Companies' Innovative Development Trends in the Green Economy

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The article systematizes and analyses the latest trends in the market of innovative activity of venture enterprises. An analysis of the role of Ukrainian entrepreneurs-innovators in the development of this form of entrepreneurship in the light of the formation of the "green economy" is conducted. The tendencies of development of venture investments in 2013–2016 are revealed. The role of small and large enterprises in the development of venture business in Ukraine and abroad is analysed. The main trends of innovative development in the Ukrainian economy towards the green economy are determined. The advantages and disadvantages in the development of this direction for the Ukrainian economy are shown. The main further ways of innovative development in the modern economy have been identified. Among them: spread of intelligence in cloud technologies, self-managing systems, the security of the Internet of Things, customer centricity, sharing economy, API economy.

Keywords: company, development, green economy, innovation, trend.

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Introduction. The level of innovation of the enterprise is its competitive advantage, which determines its competitiveness both on the national and global markets. An innovative model of enterprise development requires the development of the large-scale and effective innovative projects, the implementation of which significantly affects the acceleration of economic modernization, increasing its competitiveness and investment attractiveness. This necessitates the use of flexible financial instruments that stimulate the innovation process and the concentration of financial resources.

An effective form of financial support for innovative projects is a venture investment, and venture capital is the source of financial resources. The increase in the volume of venture investments makes it possible to implement highly risky innovative projects, to promote the activation of innovative activities to ensure the country's economic development in the context of the formation of a single investment innovation space with a large-scale transnational capital intersection and the modern technologies (Ринок, 2016).

Analysis of recent research and publications. The publications of associates of the process of venture capital formation are devoted to the research of venture financing: T. J. Perkins, E. Kleiner, W. F. Coffield, B. Byers (from KPCB – USA venture capital firm). The issues of formation and functioning of venture investments are paid attention by Russian and Ukrainian economists and business developers: Yu. P. Ammosov, A. M. Balaban, A. A. Dahaiev, E. A. Fiiaksel, N. M. Fonshstein, A. M. Poruchnik, L. L. Antoniuk, L. I. Fedulova, I. S. Kuznetsova.

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Research task. The purpose of the research is to review the latest trends in the venture capital market, as well as analyze the contribution made by Ukrainian entrepreneurs-innovators in the development of this form of entrepreneurship in the light of the development of the "green economy".

Results of the research. In the modern economy, small firms play a special role among others organizational structures. The market economy is characterized by the spread of market relations to all economic spheres. Therefore, innovations are seen as a commodity. The USA practice of organization of the search research has created a kind of entrepreneurship – venture (risky) business, which is gaining more and more turnover from year to year.

Venture business is represented by independent small firms specializing in research, development, production of new products. They are created by scientists-researchers, engineers and innovators. It is widely distributed in the US, Western Europe, Japan and has a tendency to spread all over the world. It is believed that a small team can perceive and generate new ideas much more mobile, but the question immediately arises: "What will be the source of investment, a new and sometimes insane project?". And the answer here is: "It is necessary to look for an investor or an investor company that, like the creator of the project, will believe in this idea and invest it." Sometimes new ideas are quickly found their investors, and sometimes it takes years or even decades.

In the sphere of venture investment, the highest global level of activity for the last two decades has been recorded. According to the global report on venture investments by Ernst & Young (EY) in 2015, $148 billion was invested, which is 54 % more than in 2014 (Ринок, 2016).

International investors want to participate in a smaller number of transactions, but with large volumes, investing in business enterprises in later stages, when the success of the business idea is obvious. Therefore, companies that want to get venture financing, it is important to prove their viability. If we are talking about small amount of investment, then for start-ups, who are looking for funds even in the early stages there are plenty of opportunities.

Because of the economic crisis, the activity on the Ukrainian market of venture investment has fallen, but domestic startups are still of considerable interest. Investors are looking for objects at relatively low prices, preferably in sectors where Ukraine has a global competitive advantage.

The years 2015 was successful for the world market of direct and venture investments, despite the global economic slowdown, the increased volatility of public capital markets and sharp competition, which raised investment multiples to new highs.

According to Bain & Company, in 2015 the amount of funds raised in Private Equity amounted to $527 billion, which is $28 billion less than in 2014 (Figure 1). Favorable conditions for achieving high performance in recent years were ensured, among other things, by a high level of activity of direct investment funds from companies' capital.

Worldwide venture capital activity declined by 24 percent in 2016, from 17,992 completed financings in 2015 to 13,665. Total deal funding also declined from $141 billion in 2015 to $127 billion this past year. However, Asia remained steady year-over-year at just over $39 billion. Europe experienced a 7-year high in VC fundraising activity, with $10.5 billion raised over 62 closed funds, while US fundraising increased from $35.2 billion in 2015 to $42 billion in 2016. Worldwide corporate participation in VC continued to grow in 2016, representing 15 percent of all deals. In contrast, Venture-backed exits declined 26 percent year-over-year, although signs indicate 2017 may see a renewal in the IPO market (Venture, 2016).

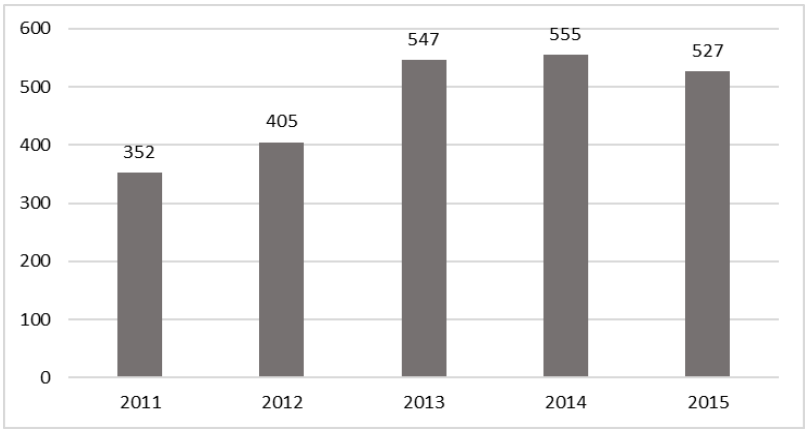

Figure 1. Investment in Private Equity, billions USD (Ринок, 2016)

The total amount of yields to Private Equity through a buyout in 2015 was slightly below the $456 billion in 2014. However, with the volume indicators of $422 billion and with the number of 1166 deals, the result of 2015 is very close to the record-breaking 2014 (Figure 2).

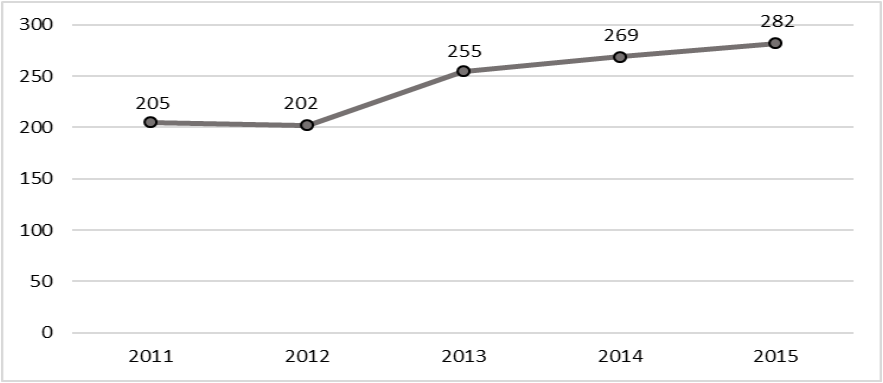

Figure 2. Buyout investment, billions USD (Ринок, 2016)

New buyout investments in 2015 amounted to $282 billion, which is $13 billion more than in 2014. The vast majority of transactions were concluded in North America and Europe.

According to the rating for 2016 (by the IESE business school, Spain), from 120 countries of the list the most attractive for Private Equity and Venture Capital are the United States, United Kingdom and Canada. They are at the highest ranking positions with Singapore (4th place), Hong Kong (5th place), Australia (6th place), Japan (7th place) and other developed countries Western Europe and Asia.

By the way, Ukraine is on the 71th place in the ranking next to Malta and Egypt, although in its previous version for 2015 our country was at 78th position, and in 2013 – at 74th. Ukraine is higher than many CIS countries and Central Europe (Serbia, Armenia, Montenegro, Belarus, Moldova, etc.) (The Venture, 2016).

Ukraine has a relatively small number of active players in the Private Equity market – about 5-10 companies. Their assets are in agriculture, telecommunications, confectionery industry, retail, mechanical engineering, food industry, IT sector, the sphere of security services, etc. Venture funds invest mainly in the IT companies.

Ukraine now does not belong to investment-attractive countries, but still "moment" investments are made to Ukrainian enterprises. Despite the negative trend, in Ukraine there are many new and promising forms of enterprises development of different economy sectors. Consider those that are most connected with the modern economic trend called "green economy" or in other words, which are based on "green technologies". Private Equity companies invested all of them.

In 2015, the $100 mln of Growth funding (on the back of lower GDP in dollar terms), pushed Ukraine nearly to the top of the CEE ranking by the ratio of PE investments relative to GDP. For the world's most technologically advanced nations like Israel and U.S. this was as high as 1.19 % and 0.32 %, respectively, and the European average was at 0.30 %. The ratio of PE investments to GDP jumped to 0.16 %, leaving behind most of the CEE countries, save for Poland (0.19 %). The number of deals was down by 23 %, while average ticket increased to $1 mln.

Green financing is a key enabler for transitioning to a greener economy. There are numerous post-crisis opportunities for greening a range of sectors of the economy which have the potential of boosting job creation and economic growth at the same time as environmental externalities are reduced. A green economy transition will require substantial financial resources and to channel sufficient private and public financial resources is a major challenge. Some of the important features include:

- Public investments are important in sectors like water, waste, R&D, energy;
- Small and medium-sized enterprises play an important role for adopting eco-innovation by investing in green products and services;
- EU support for eco-innovation and green investments through the Cohesion Policy;
- The banks play a key role in the process: both IFIs and national and local banks;
- Commercialising and applying environmental technologies requires a broad mix of financial instruments: including classical loans and guarantee mechanisms (Baltzar, 2014).

According to the progress assessment of priority areas of scientific and technological development performed by UINTEI, the state budget expenditure on "green" scientific research and innovations in 2015 amounted to 5,138.5 mln UAH against 6,155.0 mln UAH in 2013, or 15.1-13.0 % of the total budget allocations to science and innovations. On top of that, over the past three years the predominant share of expenditure was earmarked for scientific research which accounted for 96.4-97.5 % of the total spending (Report, 2016).

One of the key trend for green investment in Ukraine is electric cars. Electric cars are becoming more and more popular, and leading automakers are actively adding them to their range. However, the development of this industry in new markets is hampered by the lack of infrastructure, namely, charging stations. Ukrainian startup GreenFuel undertook to solve this problem.

The idea originated in 2014 and the founders of GreenFuel began to develop it. It turned out that at that time, special charging stations, which allow you to quickly fill up the car, there were only a few in Kyiv, and they were located in uncomfortable places. Therefore, the developers faced the task of creating an electric charge that charges quickly (at the moment, with this electrical charge, Tesla Model S charges eight times faster than from an ordinary outlet), is able

to power several cars at the same time, could be installed in public places, could meet all the requirements and standards of USA and Europe.

Having such characteristics, the creators have developed this device. The project, as is known, was funded by Private Equity. As a result, the output of the project has a new product, which meets all standards and requirements, an innovative product. The uniqueness lies in the fact that according to developer calculations the only 100 UAH is enough to charge the car for 450 km of run, and also that in comparison with the USA and European analogs it is several times lower (Держи, 2016).

The second project – "No Fire" is also developed by Ukrainian start-ups, the main product of which is a smart energy monitoring system called Ecoisme. Ecoisme is a home energy monitoring system that detects home appliances consumption and shows how much money users spend on it. It eliminates grid and solar energy overuse and notifies owners if something is about to break. The system requires just one sensor in the home which tracks energy consumption and it is connected to the fuse box in a contactless way.

With Ecoisme you get a friendly dashboard of your energy usage. Thanks to unique technology, combining nonintrusive load monitoring and spectrum analysis, Ecoisme can single out your home appliances, check their energy efficiency and suggest the best ways for you to save energy. You install the sensor to your fuse box (breaker) and download the app. The sensor detects all of your appliances, monitors the energy being spend and displays the cost to you. If you forget to switch off your iron, electric oven or AC, Ecoisme will take care of it, and send you a friendly reminder. It will notify you even if you forget to close a your fridge door, or leave a window open in winter time. By detecting all of the devices in your home, Ecoisme's unique algorithm will give a personalized advice for smarter energy consumption (Пожара, 2016).

Ecoisme saves about 15 % of electricity, which is an important efficiency indicator. At the threshold of the development of the "green economy" this application will be an excellent assistant for any smartphone user who aspires that his home consumes as little energy as possible.

"Electricity instead of gasoline" is another idea of Ukrainian entrepreneurs which want to follow the "green economy". For Ukraine, electro-taxi is a rarity, but in the whole world it is an acknowledged trend. Many European, American and Asian countries have already been resettled on electric taxis and every year they are being popularized more and more.

All over the world, the state provides preferences for the purchase of electric cars, which unfortunately has not yet been adopted in Ukraine. So in Estonia, an automobile owner receive compensation up to 50% of an electric car price, in the US – $7.5 thousands, in France – €7,0 thousands, in China - $10-18 thousands, for a bus – $82 thousands. Even in Russia were created favorable conditions for the development of the electric vehicles market: in 2014 there was abolished the import duty at a rate of 19 %.

The developers of the project estimated that at the moment there is an economic sense to import electric vehicles with a mileage of 150-250 km, then the prices of Renault Fluence Z. E. or Nissan Leaf after the customs clearance will be from €23 to €35 thousands. They also believe that the cost of 100 km of the trip will be 7-10 UAH. Therefore, the payback period of purchasing an electric car for commercial use (taxi and delivery services) will be 2.5–3 years (Электричество, 2016).

"Switching to electric traction" is a moto of one more Ukrainian enterprise that finds new spheres of electric drive application. The company called "Electric cars" is currently in high demand among its foreign customers, its main goal is to promote and develop alternative sources

of energy supply, electric vehicles, ecological and energy-efficient constructions in Ukraine (EcoElectro, 2016).

The most famous and popular products are the invention called Serenis ESS (a modern battery-powered energy storage system consisting of a lithium-ion battery equipped with inverters and controllers that allow to control the distribution of energy in the online mode), a special device for hydroscheme on the electric drive, energy for which solar panels or wind generators are provided (this device has found its application in the Maldives, UAE, Qatar, Kuwait), electric drives for boats and airplanes, and many others (Переход, 2016).

Beside mentioned above we can identify some *main trends shaping innovation* nowadays:

#1: Spreading intelligence throughout the cloud. Connected smart machines, such as robots and autonomous vehicles, are fundamental to the evolving Networked Society. Enhanced cloud architecture that can distribute and share machine intelligence will enable smart connected machines to work on an increasingly higher level.

#2: Self-managing devices. Combining sensory data with AI techniques enables the data from massive numbers of sensors to be merged and processed to create a higher-level view of a system.

#3: Communication beyond sight and sound. Communication will evolve in a highly remarkable way over the coming years, as interaction between human beings and machines evolves to include additional experiences and senses.

#4: Fundamental technologies reshaping what networks can do. The laws of physics are the only real restriction on the development of communication networks.

#5: Weaving security and privacy into the Internet of Things fabric. In a world where everyone's personal and financial information is available online, cyber security and privacy are very serious issues for consumers, corporations and governments alike. And the rapid rise of wearables, smart meters, and connected homes and vehicles makes security and privacy more vital than ever (Ewaldsson, 2016).

#6: Customer Centricity. The ability to understand each user and provide them with personalized experiences is what everybody is talking about. Companies that successfully make the transition from legacy to digital and omnichannel, which are enablers of customer-centricity, are going to succeed by disrupting and will dominate their industries. Those who lag behind with customer centricity will eventually become extinct.

#7: Micro Economy. Micro Economy solutions come in two main flavors – "Micro-X," like micro-payments or micro donations, and "Pay-by-X," like pay-per-mile insurance or pay-per-hour rental.

#8: Sharing Economy. The sharing economy is about owning the customer-supply interface. Uber, the world's largest taxi company, owns no vehicles. Facebook, the world's most popular media owner, creates no content. And Airbnb, the world's largest accommodation provider, owns no real estate.

#9: API Economy. Application Programming Interface (API) is a technical term that has migrated into the business domain. I am seeing new words like "API-fication" emerge from senior executives across many industries. This trend signifies the shift from stand-alone products and services to open ecosystems of integrated solutions (Galper, 2016).

Conclusions. Thus, it can be concluded that within the framework of the implementation of the innovative development strategy for Ukraine, the potential of venture enterprises is not sufficiently used. Ukrainian ideas and their initiators have more than enough. However, the Ukrainian government is not yet in a position to support young innovators: funding is now

directed to other sectors of the economy, and this sector is rather small. Therefore, hundreds of domestic ideas find their application and implementation in the territories of other countries.

To overcome this situation, it is necessary to stimulate venture enterprises by providing them with tax benefits by government. Developing venture enterprises today, we will be able to give a great potential for the development of the Ukrainian "green economy" tomorrow.

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Сучасні тенденції інноваційного розвитку підприємств в світлі розвитку «зеленої економіки»

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У статті систематизовано і проаналізовано останні тенденції на ринку інноваційної діяльності венчурних підприємств. Проведено аналіз ролі українських підприємців-новаторів у розвитку даної форми підприємництва в світлі формування «зеленої економіки». Виявлено тенденції розвитку венчурних інвестицій в 2013–2016 рр. Проаналізовано роль невеликих і великих підприємств у розвитку венчурного бізнесу в Україні та за кордоном. Визначено основні тенденції інноваційного розвитку в українській економіці в напрямку зеленої економіки. Показано переваги та недоліки розвитку цього напрямку для української економіки. Ідентифіковано основні подальші шляхи інноваційного розвитку в сучасній економіці, серед яких: поширення інтелекту в хмарних технологіях, самоврядні системи, безпеку Інтернету речей, споживча централізація. часткова економіка, API-економіка.

Ключові слова: компанія, розвиток, зелена економіка, інновації, тренд.

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Современные тенденции инновационного развития предприятий в свете развития «зелёной экономики»

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В статье систематизированы и проанализированы последние тенденции на рынке инновационной деятельности венчурных предприятий. Проведён анализ роли украинских предпринимателей-новаторов в развитии данной формы предпринимательства в свете формирования «зелёной экономики». Выявлены тенденции развития венчурных инвестиций в 2013–2016 гг. Проанализирована роли небольших и крупных предприятий в развитии венчурного бизнеса в Украине и за рубежом. Определены основные тенденции инновационного развития в украинской экономике в направлении зелёной экономики. Показаны преимущества и недостатки в развитии этого направления для украинской экономики. Идентифицированы основные дальнейшие пути инновационного развития в современной экономики, среди которых: распространение интеллекта в облачных технологиях, самоуправляемые системы, безопасность Интернета вещей, потребительская централизация, долевая экономика, API-экономика.

Ключевые слова: компания, развитие, зелёная экономика, инновации, тренд.

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