

Proposals to increase of economics effects of land-use residential and public buildings on the example of Kyiv

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Summary. The article considers the current state of land-use in Kyiv. Considerable part of almost all the city's functional areas is used inefficiently. To improve the economic efficiency of their exploitation, we propose an optimizing variant of land-use of residential and public developments by allocation of excess of residential territories. This will provide an opportunity to attract those land plots at auctions to increase revenues to the State and Local Budgets of Ukraine.

Key words: land tax, land lease, houses adjoining, excess territories, investments.

sources are characterized as weak and inaccurate.

PURPOSE OF WORK

Review the mechanisms of filling the State and Local budgets of Ukraine by improving the efficiency of exploitation of built-up territories in current land market terms on the example of Kyiv.

INTRODUCTION

Now, the land market of Ukraine is in its formative stage. As the capital of the country and the most economically strong city of Ukraine Kyiv takes the leading position in development of the market. Implementation of transparent mechanisms for searching and optimization of land resources can greatly stabilize economic reforms in the country [11]. The State can significantly influence the economy by tax regulation, changing the amount of tax revenues, tax rates, tax forms and methods. One way of filling the State and Local Budgets of Ukraine is selling land and (or) rights at land auctions. Therefore, the problem of finding available land spots on the territory of largest cities in Ukraine is particularly relevant, because territorial

THE MAIN MATERIAL

According to the proposal "Development Strategy of Kyiv till 2025", the capital of Ukraine will be developed the existing limits as a compact city. The analysis showed that the number of free land plots suitable for future development of the city, are very limited [3].

At the territory of Kyiv are defined main functional areas: public, residential and recreational zones, transport and engineering infrastructure, commercial and industrial zones, manufacturing, municipal services and special zones, operational areas, etc. Considerable part of city's functional areas is used inefficiently.

The volume of local resources is determined by necessity for residential and public facilities, hospitals and educational buildings,

shopping and entertainment malls, business buildings, hotels, sports complexes and other types of public buildings and for solving traffic problems at some districts, construction and reconstruction of streets network, road junctions, fire stations and other facilities. More effective exploitation of built-up territories can be resources for future development [4, 10].

Consider the options of improving economic efficiency of land-use residential high-rise buildings. According to urban settlements of regulatory areas of residential territories there are always neighborhoods excess (backup areas) adjoining to apartment buildings. Excess territory may be in districts where planned construction and (or) land improvements have not been implemented eventually [9, 20]. The volume of excess territories at residential districts or groups of high-rise buildings is determined by the difference of values – actual area of residential purpose, without area of buildings and regulatory square, required to existing residential buildings to meet the requirements of existing state building norms [18, 21, 23].

Excess territories can be used for new construction of different functions, if the area of excess territories and urban conditions and restrictions permit to do so [11]. Further such land plots can be formed as real estate properties and they or rights to them to be sold on a competitive basis. At the moment one of the most important tasks for Kyiv is to improve its investments attractiveness and first of all for capital investments. They provide real development of the territories and should have a significant multiplier effects on overall economic activity.

Capital investments are essential for urban development - the evolution of its social, industrial, engineering, transport and environmental infrastructure. In its turn, the level of infrastructure of the territories is an important determinant of investment attractiveness of the city in general and in its individual parts.

Price formation of urban land market is occurs under the influence by many factors: economic, social, political, cultural, govern-

ing the behavior of market participants and significantly affect the price level of supply and demand. However, a crucial role in the differentiation of prices for land in the city will play the following urban factors:

- transportation accessibility (accessibility to downtown, business centers, community centers, places of residence, public entertainment,
- the level of engineering equipment area,
- its historical, cultural and natural landscape value,
- environmental condition,
- socio-economic progress [4].

In other words, those factors in their totality determine the value of the urban territory of separate districts of the city.

In the following years the capital of Ukraine will develop more social, business and commercial buildings. This process will occur by increasing the level of business activity in the city due to mastering of new urban territories and intensification of existing areas.

The most attractive for investments are the following areas:

1. Citywide public and business centers created in places of concentration of public, business and commercial activities by the main city arteries.
2. Multipurpose community facilities that include public facilities - shopping, cultural, entertainment, offices and hotels, sports, etc.
3. Industrial and social complexes, that are created typically in areas of outdated and inefficient industries and are conglomerates of social, commercial and business establishments, industrial and warehousing (logistics) companies with high economic efficiency (so called Technopark) .
4. Recreation and community facilities that are created within nature conservation complexes and recreational facilities.
5. Detached investment attractive objects of perspective construction are placed usually on relatively small land plots within the existing residential, public, industrial and warehouse area:

- retail outlets, consumer services and catering,
- hotels, offices,
- facilities of culture, science and education,
- facilities of medicine, physical culture and sports,
- warehouse, transport companies [4].

Now consider the dynamics of land lease relationships in Kiev. In the city the first lease land contract was registered in 1994. As of 01.14.2010 there were 7430 lease agreements registered. Dynamics of lease contracts, acquire land lease rights and revenues from rent at 2008–2014 (Table 1).

At the end of 2014 revenues from land rent reached up to 1250 million hrivnya.

In total revenues from land use, payments for land lease increased from 60% in 2008 to 66% in September 2014.

One of the limiting factors for growth of concluded land lease agreements and revenues to the city budget is loopholes in legislation. That makes it possible to take the land for the permanent use and pay land tax of 1% of the normative monetary value of the land, whereas under the current Land Code each tenant (exclude enterprises, institutions, organizations, state and municipal ownership, organizations of disabled people and religious organizations) should use the land spots on lease by paying rent, which at least three times larger than the land tax [1, 20].

In accordance with economic-planning zoning, land spot is included in the 34th economic-planning zone, where the base cost of 1 sq.m. land is 632,71 hrivnya. The coefficient on the functional use of land spot accepted at 2,50 (land commercial use).

The land spot is not provided by:

- Central heating – 0,95,
- gas supply – 0,95.

Synthesis local coefficient C_{ls} equal to:

$$C_{ls} = 0,95 \cdot 0,95 = 0,90.$$

The land spot area is –1 708 sq.m.

Accordingly, monetary valuation V_n of the land spot with the peculiarities of the location of land within the economic-planning zone is, UAH:

$$V_n = 1708 \cdot 632,71 \cdot 2,50 \cdot 0,90 \cdot 1,028 \times \\ \times 1,152 \cdot 1,059 \cdot 1,2 = 3808\,720,25.$$

The position of land legislation to sell plots of state and municipal property including business entities for development is that such a sale should occur only on a competitive basis, via the procedure of land auctions. The only case where the law allows not to conduct auctions, is ransom of land for real estate owners of these objects ch. 2, Art. 127 and Art. 134 Land Code of Ukraine [13].

Sale of land of state and municipal property to citizens and legal entities on a com-

Table 1

| Period (years) | Land lease agreements concluded in the period | | Proceeds from the land tax on leases, mln. UAH | | Proceeds of rent of the total revenues from the land tax,% |
|----------------|---|---------------|--|---------|--|
| | Quantity, pcs. | Land area, ha | actual | planned | |
| | | | | | |
| 2008 | 698 | 1315,66 | 934,3 | 200,0 | 62,95 |
| 2009 | 772 | 1215,40 | 1063 | 230,0 | 60,0 |
| 2010 | 674 | 1072,43 | 1137 | 260,0 | 60,6 |
| 2011 | 379 | 230,06 | 1124,48 | 290,0 | 60,0 |
| 2012 | 218 | 216,93 | 1195,40 | 320,0 | 60,0 |
| 2013 | 166 | 152,90 | 1140,40 | 305,0 | 60,0 |
| 2014 | 168 | 174,10 | 1250,90 | 420,0 | 66,0 |

petitive basis (auctions, competitions), except for land plots on which facilities of real estate owned by the buyers of these sites. Sale of land plots of state or municipal property can also be made to foreign countries and foreign legal entities [4, art.129]. Sale of land to foreign countries and foreign legal entities is carried out by the respective counsels in consultation with the Cabinet of Ministers of Ukraine and may be subject to registration in a foreign entity permanent establishment of the right of doing business in Ukraine.

The introduction of competitive methods of selling vacant land plots has clear advantages for the local community since successfully conducted land auctions are an effective way to significantly increase local revenues. Practice shows that the presence of competition between buyers, the sale price exceeds land auction starting price by several times.

According to the Department of Land Resources during the period 2003–2014 years statistic of land plots sale at auction in Kyiv is as follows: 2003 sold 3 land plots with total area of 2,3231 hectares in the amount of UAH 10 306 482,19 in aggregate starting price of 9 545 482,19 UAH on purpose: 1. car wash, service station, 2. trade center, 3. production facilities. 2004 sold 3 land plots with total area of 0,4189 hectares in the amount of UAH 2 435 925 in aggregate starting price of 1 755 925 UAH on purpose: 1. construction and operation of the plant and vehicle maintenance, 2. a house, 3. construction and operation of a residential building with infrastructure Facilities, centers of retail and catering. 2005 sold 4 land plots with total area of 0,848 hectares in the amount of 5 944 531,98 UAH in the aggregate starting price of 3 584 531,98 UAH purpose: 1. for construction and operation of the administrative office building, 2. for construction and operation on the Facilities of trade and services, 3. construction and operation of retail and office center, 4. construction and operation of a commercial complex. 2006 sold 1 land area of 0,3 ha 5 028 091,11 UAH with a starting price of 1 248 091,11 UAH earmarked for construction and operation of retail and office center. 2007 sold 3

land plots with total area of 113,6251 hectares in the amount of 1 001 578,032 UAH aggregate at a starting price of 869 994 066,9 UAH on purpose: 1. for construction and operation of retail and catering, 2. construction, operation and maintenance of retail and catering, 3. for construction, operation and maintenance of residential houses and about Facilities of social and cultural purposes. 2014 sold 1 land plot area of 0,0788 ha for 2 000 377,75 UAH with a starting price of 1 143 073 UAH earmarked for construction and operation and maintenance service stations or car washes.

Procedure of monetary valuation provides a comprehensive analysis of land plots contained in the databases of state land cadastre. In the process of monetary evaluation used data: location of land plot, its area (square), configuration and spatial orientation; nature of the relief of the plot; levels of construction and land improvement; qualitative characteristics of soils; pollution level and noisiness; distance to the center of the city, transport links, etc. Of particular importance in the implementation of monetary valuation has information about the purpose of the land plot, the actual functional use, legal status, including information about the ownership, use (including leasehold), mortgages, easements, prohibitions on alienation, encumbrance and other restrictions on rights regulations and land use [2, 5, 6, 7, 14].

As the most effective use of land plot in Shevchenko district of Kyiv accept the placement of office center [22].

To make an objective assessment and taking into account the information collected, method for the land balance is used.

Balance method for land plots:

After analyzing of 4 selected offers lease rates for office space are calculated from the average of which is 157,50 UAH. And average value excluding VAT (20%) which is 131,25 UAH.

To calculate the revenue forecast to lease of office space 2765,44 sq.m.

1. Gross income I_g , UAH:

$$I_g = 131,25 \cdot 2765,44 \cdot 12 \cdot 0,95 = 4137\,789,6.$$

2. The annual operating expenses E_o include administrative expenses, maintenance and land tax.

Due to the fact that the premises have a large area and are leased to multiple business entities, in the management part property owners must have a manager, accountant, guards and cleaners.

The annual cost of managing the planned property equal to 252 000 UAH.

For buildings located on the land plots, the annual cost of routine maintenance C_{rm} , (UAH/year) indexed on the valuation date, is:

$$C_{rm} = 86 \cdot 2,34 \cdot 1,08 \cdot 3456,8 = 751\,298,15.$$

General operating expenses E_{og} are, UAH/year:

$$E_{og} = 252\,000 + 30\,494,29 + 751\,298,15 = 1\,033\,792,44.$$

3. Net operating income I_o , UAH:

$$I_o = 4137\,789,6 - 1\,033\,792,44 = 3\,103\,997,16.$$

4. The rate of capitalization R_c :

$$By\,1\,sq.m = 3\,102\,997,16 / 2\,765,44 = 1\,122,42$$

2 765,44 – area of office premises leased, sq.m.

$$R_c = 1122,42 / 11669,79 \cdot 100 = 9,6\%$$

5. Capitalized net operating income NOI , UAH:

$$NOI = 3\,103\,997,16 / 9,6 \cdot 100 = 32\,333\,303,75.$$

6. The cost of land improvements: the cost of land allocation and production of documents C_i [17] are based on estimates for land surveying work and equal to 50 000 UAH (excluding VAT).

The cost of buildings C_b on 1 sq.m. is 9 041 UAH inc. VAT (7 534,17 UAH VAT excluded), UAH:

$$C_b = 7534,17 \cdot 3456,8 = 26044118,86$$

where total expenditure on pay equity is 1 825 190,40 UAH.

An investor expects to receive a return on invested capital while investing in any business including construction [5]. In a market economy actual earnings relates more to the company's trade secrets, so it is too difficult to determine the level of income that may be considered typical for any variant of construction. But features of doing business in Ukraine provide a high level of profitability.

Due to the lack of reliable information on rate of return of investors, appraisers consider possible investors to take profits at some minimal profit, which encourages investors to invest in the facilities to measure up to a bank deposit rate. Investing in building seeks to profit no less than what investors could get when placing funds on deposit of leading banks in Ukraine.

An investor's income has been taken as 15,8% of the total cost of land improvements C_{il} , UAH:

$$C_{il} = (50\,000 + 20\,835\,295,09 + 1\,825\,190,40) \cdot 15,8 / 100 = 3\,588\,256,7.$$

If we consider the building process as a business option, this option can be predicted as some typical profit developer, which in this case is taken into account in the estimated cost of the facility, which is designed above the text.

In some cases development of conditional large-scale facilities assumes the appropriate credits, but the cost of credits seriously varies and depends on several factors (policy of a financial institution, the history of relationship with the borrower, risks of project loans, etc.), moreover consideration the value of credit resources requires determination of weight of the credit in development costs that must be justified. That is why forecasting the

cost of financing for the purposes of this assessment was not carried out. Today lend to business in Ukraine is about 20-25%, which is uneconomical for developers. Given the above construction financing costs are not counted.

Determine the total cost of land improvements C_i , UAH:

$$C_i = 50\,000 + 20\,835\,295,09 + 1825\,190,40 + 3\,588\,256,71 = 26\,298\,742,20.$$

7. The cost of land plot C_{lp} , UAH:

$$C_{lp} = 32333\,303,75 - 26\,298\,742,20 = 6\,034\,561,55.$$

If we consider an investor as a buyer of real estate, the key issue for him is a business that is better to invest and how profitable.

When an investor buys a property in form of building or structure, the question is what is better to do with land: buy or rent it when an investor has its own funds.

Calculate the feasibility of redemption a land plot on the example a land plot located in the Shevchenko district of Kyiv. To buy the land plot is necessary to take a bank loan in the amount of 6034 562,00 UAH. The average lending rate of commercial banks in Ukraine for businesses is 20%. At the annual loan repayments the investor can spend 50% of income, ie 1 551 998,58 UAH. To determine how many years borrower will repay the loan we will apply the following formula:

$$n = \log_{(1-r)} \frac{a}{a - PV \cdot r}, \quad (1)$$

where: a – annuity equal payments or contributions are made with the same frequency, PV – the present value of the loan, r – interest rate, n – the number of charges (years). Thus, under these conditions, the loan can be paid over 8 years. The amount spent on the credit is equal to 12 415 988,64 UAH.

To calculate the rent it is necessary to multiply rental rate by the regulatory mone-

tary value of land plot [8, 12]. The rental rate for the property is 10% from the normative assessment $3\,808\,720,25 \cdot 10\% = 380\,872,03$ UAH/year.

If the amount which spent on loan to share the rent rate, we'll find out how long the land plot can be rented for these funds, years:

$$12\,415\,988,64 / 380\,872,03 = 32.$$

To find out what option will bring more profit, we'll use the following formula:

In case of buying land, the income will be over 32 years, UAH:

$$8(3103997,1 - 1551998,5) + 8 \cdot 3103997,1 = 37\,247\,965,92.$$

In case of renting land for 32 years, the income at the end of the period will be equal to, UAH:

$$32(3103997,16 - 380872,03) = 87\,140\,004,16.$$

On the example is set that for buying a land plot, a bank loan must be taken out in the amount of 6 034 562,00 UAH. The average lending rate of commercial banks in Ukraine for businesses is 20%. At the annual repayment investor can spend 50% of income, ie 1 551 998,58 UAH.

After calculations for loan repayment requires 8 years, and if the rent, then after 32 years of activity will profit more if rented land. This means that land leasing is more profitable option for investors.

CONCLUSIONS

1. Proposed mechanisms of search and optimization of land resources on the example of Kiev will largely can stabilize State transformations that are associated with the transition to market-based forms of management.

2. Selecting of excess adjoining acreage of residential areas and forming them as fa-

cilities of immovable property, will involve them for sale on a competitive basis.

3. The introduction of competitive ways of selling vacant land plots has undeniable advantages for the local community, since successfully conducted land auctions are an effective way to significantly increase revenues to local budgets.

REFERENCES

1. **Calinescu T., 2010.** Moral aspects of modernization the tax policy in the conditions of existence the depressed territories. TEKA: kom. Mot. Energ. Roln., OL PAN, vol. XA, 57-63.
2. **Dehtyarenko Y.F., Lyhohrud M.G., Mantsevych Y.M., Palyeha Y.M., 2007.** Methodological foundations of monetary valuation of land in Ukraine, Kyiv, 624. (in Ukraine).
3. **Development Strategy of Kyiv till 2025, 2011.** (in Ukraine).
4. **General Plan of the city of Kyiv, 2002.** ME «Institute of the General Plan of Kyiv». (in Ukraine).
5. **Harrison H., 1994.** Estimation. RIO Mo-sobluprpolihrafvydav, 231. (in Ukraine).
6. **Methodology** expert money assessment of land, approved by the Cabinet of Ministers of Ukraine "On expert valuation of land", from **11.10.2002.** No 1531. (in Ukraine).
7. **Procedure** for expert money assessment of land, approved by the State Committee for Land Resources of Ukraine "On approval of expert money estimation of land" from 09.01.2003 2 and registered by the Ministry of Justice of Ukraine on **23.05.2003.** No 396/7717. (in Ukraine).
8. **Procedure** of normative evaluation of agricultural land and settlements (registered by Ministry of Justice of Ukraine on **05.04.2006** №388/12262). (in Ukraine).
9. **Program** of land use and protection in Kyiv for 2011-2015, **2002.**
10. **Prusov D., Badah V., 2013.** Principles for municipal facilities reconstruction based stability assessment methodology. Motrol: kom. Mot. Energ. Roln., OL PAN, Vol. 15_5, 31-35.
11. **Sulima-Samuylo G.D., Malashevskiy M.A., Mosiychuk Y.A., Berova P.I., 2014.** Kyiv National University of Construction and Architecture. Approaches for taxation of excess land territories of housing development. Urban and territory planning: scientific-technical digest. Kyiv, KNUCA, Nr 53. (in Ukraine).
12. **The decision** of the Kyiv City Council. **26.07.2007.** No 43/1877(add No 2) "On approval of technical documentation for regulatory monetary value of land in Kyiv and the Order of the definition". (in Ukraine).
13. **The Land Code of Ukraine, Revision of 12.03.2015.** (in Ukraine).
14. **The Law** of Ukraine "On the assessment of property, property rights and professional valuation activities in Ukraine". **12.07.2001.** No 2658-III. (in Ukraine).
15. **The Law** of Ukraine «on investment activity». **18.09.1991.** No 1560-XII. (in Ukraine).
16. **The National Standard** "General Principles of Property Valuation and Property Rights" approved by the Cabinet of Ministers of Ukraine. **10.09.2003.** No 1440. (in Ukraine).
17. **The National Standard, 2013.** NSTU-N B B.2.2-9:2013 Guidance on the allotment of districts territories (city blocks) to determine the areas surrounding apartment buildings. (in Ukraine).
18. **The National Standard, 28.10.2004.** Real Estate Valuation. Approved by the Cabinet of Ministers of Ukraine, No 1442. (in Ukraine).
19. **The rules** of professional appraiser, approved by the Ukrainian Society of Appraisers. **4.11.1995.** Protocol No 7. (in Ukraine).
20. **The Tax Code of Ukraine, Revision of 01.04.2015.** (in Ukraine).
21. **Tuzova L.I., Berova P.I., 2013.** Peculiarities of application methodical approaches concerning allotment of districts territories (city blocks) in different urban conditions. Urban and territory planning: scientific-technical digest. Kyiv, KNUCA, Issue No 47. (in Ukraine).
22. **Ukrainian** qualifier of the target land use, approved by the State Committee for Land Resources of Ukraine on **24.04.1998.** (in Ukraine).
23. **Urban** planning. Planning and development of urban and rural settlements. State building standards SBS 360-92**. **2002.** Kyiv, Architecture and housing policy of Ukraine. (in Ukraine).

ПРЕДЛОЖЕНИЯ ПО УВЕЛИЧЕНИЮ
ЭКОНОМИЧЕСКОГО ЭФФЕКТА
ОТ ИСПОЛЬЗОВАНИЯ ЗЕМЕЛЬ ЖИЛОЙ И
ОБЩЕСТВЕННОЙ ЗАСТРОЙКИ НА ПРИ-
МЕРЕ ГОРОДА КИЕВА

Аннотация. В статье рассмотрено нынешнее состояние использования земель города Киева. Значительное количество территорий практически всех функциональных зон города используется неэффективно. Предложен вариант оптимизации землепользования жилой и общественной застройки с вычлене-

нием сверхнормативных площадей жилых территорий и повышением экономической эффективности их использования, что даст возможность включить их в оборот земель на конкурентных основаниях. Это, в свою очередь, позволит увеличить размер поступлений в соответствующие бюджеты государства.

Ключевые слова: земельный налог, арендная плата, придомовая территория, сверхнормативная площадь, инвестиции.