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Theories of value and price as basis of the methodical approaches to the estimation of the real estate

Introduction

To explain the nature of any object of the real estate is possible only on the basis of the theory of value. In accordance with above mentioned it is important that connection between the existent theories of value and present approaches of money estimation of the real estate will be investigated. The noted research will promote improvement and further development of methodology of real estate estimation.

Research methodology

In the process of research various methods will be used. A historical method will allow learning an origin and development of theories of value in their dialectical connection and contradiction. Abstract and logical method will contribute to investigation of cause-and-effect relations between researched processes and phenomena. The methods of analysis and synthesis will enable to reveal essence of value and price. A graphic method will provide evidentness of revealed relations.

Theoretical background

To explain the nature of any object of the real estate and a land plot as well is possible only on the basis of the theory of value.

Aristotle said: "if one commodity is exchanged for another, it means that these commodities are equal" [Political Economy 1973, p. 148–172]. It was the

first and necessary step to create the theory of value, although Aristotle didn't create the theory itself.

Nowadays there are a lot of such theories – from the labor theory of value to the theory of "demand/supply".

William Patty can be considered to be the founder of the theory of value. His well-known expression is "labor is a father of wealth, land is its mother". As a representative of school of mercantilists W. Patty considered that value was created only by that part of labor which was spent on the production of money metal (silver), and other part of labor created the value in the case when its products were exchanged for money [Patty 1993, p. 7–78].

This thesis was based on that fact, that any commodity was easily exchanged for silver (money), while there were insurable obstacles for a direct commodity exchanged. But even in that case, if such exchange took place, money was used in it "ideally", that the proportions of exchange were determined through the value estimation of commodities in money.

Consequently the gravimetric unit of money metal was considered to be the clot of value (criterion of wealth obtained from nature by labor). The value of other commodities was determined by the presence of this metal, and considered to be derivative.

Physiocrats, unlike mercantilists, considered that the unique resource of wealth is agriculture (on the whole – industries engaged in using of natural resources), because it is agriculture where surplus of nature products over necessary expenditures is made and its means that only such labor is productive.

Other labor was considered consumer qualities of commodity, but, on their opinion, only the so-called "net product" of nature presented value, that is mentioned above surplus.

The thesis of Adam Smith that labor creates value in any industry of production became a prominent contribution to the development of the labor theory of value. Engaging in polemics with mercantilists, he wrote: "labor was original price and original sum which was paid for all products. All the riches of the world were originally purchased for labor, not for gold or silver" [Smith 1935, p. 371].

The labor theory of value was later developed in the works of Karl Marx, who stated that value was publicly necessary labor embodied in work. K. Marx distinguished concepts "value" and "cost of production" as the real prices did not correspond and could not correspond to value, defined on the basis of his theory. The followers of K. Marx wrote on this occasion: "Indeed, in practice prices of specific commodities, as a rule (and sometimes very substantially), differ from value. And coincidence of prices of specific commodities with their value is very uncommon and unique phenomenon" [Lyshin, Kokorev, Naumov 1986, p. 9].

Say, unlike Marx, proved that value was created not only by labor, but also by capital and nature, per what Marx criticized him.

The theory of "marginal utility" played a noticeable role in the development of world economic view. According to it the price of commodity is determined by its so-called marginal utility (Devon, Gayek, Robins) [Political Economy 1973, p. 148–172].

With the growth of consumption of any commodity the utility of each next unit diminishes in comparison to the previous one (the tenth spoon of soup appeases hunger not as much as the first one, and the hundreds – already harms).

This theory was not able to explain the economic nature of value in a proper way, but its thesis appeared to be fully acceptable to determine prices on profitable objects.

Concerning profitable objects, the synonym of their utility is a profit which they are able to make. Exactly this profit (utility) is basis for determination of prices on such objects.

The widespread theory of demand and supply according to which price is size which counterbalances demand and supply deserves attention. Defined by such method price of commodity correlates with expenditures on its production: producers, individual expenditures of whom are higher than "equilibrium price", will leave the market, so supply will decrease and price will increase, reaching an equilibrium in a new point; if price exceeds expenditures considerably, supply will increase and price will decreases, again reading an equilibrium, but in other point.

Since the second half of the XX-th century science has influenced the production more and more. This indisputable fact was acknowledged by the representatives of both market and planned economy "science is converted into direct productive forces". The role of an intellectual factor in the process of production is very important and will grow in future.

Results and discussion

The analysis of points of view of the economists of different times and peoples, an attempt to combine thesis of their theories, as far as it's possible, with the purpose to find out the essence of value and price allowed to do certain generalizations and come to the following conclusions. Value is determined by socially necessary needs in production resources to make a useful thing (service). They are such resources as land, labor, intellect and capital.

In this case, **Land** is the surface of our planet cultivated by people, including its fertile layer (soil), water surface, natural resources, spatial base of production, source of useful things, and also raw materials to make them.

Labor is the realized activity of people, directed to produce a useful thing.

Intellect is a capacity of people for creative labor. Intellectual activity is driving force of cultural progress, including scientific and technical progress.

Capital is material (except land) and financial resources of production.

All the mentioned above resources are the factors of production, thus the fourth among them (capital) is a derivative from the three first. The model of value and its components is shown in Figures 1 and 2.

|	**Main factors of production**			**Derived factor**
Resources	Land **L**	Labor **Lb**	Intellectual activity **I**	Capital **C**
Value	ln + Δln	lb + Δ lb	i + Δi	c + Δc

Figure 1
Model of value
Source: Own research.

Value includes expenditures and income.
Expenditures:

ln – expenditures on nature revival and protection (part of rent that is "returned" to land); lb – wages; i – expenditures on intellectual activity; c – value of the used capital.

Income:

Δln – "net" rent (part of rent received by a man); Δ lb – profit produced by labor; Δi – profit produced by intellect; Δc – profit produced by capital.
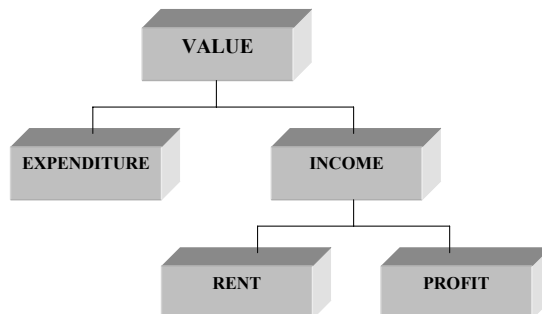
Figure 2
Components of value
Source: Own research.

Obviously that the main role in the process of producing of value is played by a man – his/her labor and intellect. It is a man who is an initiator and organizer of production, in the process of which useful things, which have value and meat various human needs and wishes, are produced.

But effectiveness of human activity greatly depends on natural resources and capital. Finding out of nature of value allows defining the essence of price. Price is money equivalent of value (exactly value, not "cost of production"). A price can range and it ranges round value under the influence of correlation "demand/supply".

The nature of such ranges is explained by our synthesis of theories value with the theories of marginal utility and demand/supply (so called synthesis of theories "value– utility – equilibrium").

Market equilibrium state is shown in Figure 3.

At market equilibrium supply corresponds to effective demand ($ED1/S1 = 1$) and price – to value ($P1 = E + I$).
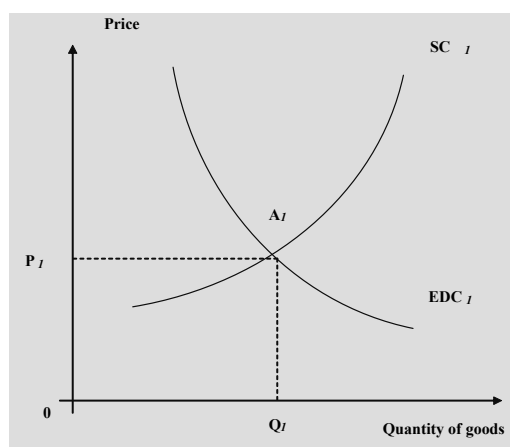
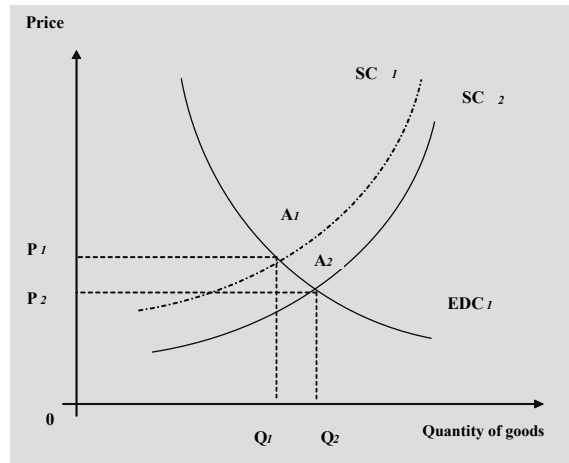**Figure 3**
Market equilibrium
Source: Buryak P., Gupalo O., Stasyuk I., 2008.

We should state that buyers' behavior at the market is determined by their wish to meet their own needs in economic marks, taking into account solvency. Thus the marginal utility of a thing is compared with the marginal utility of money.

With the increase of a number of the commodities purchased by a buyer and relative reduction in money remain, the marginal utility of commodities falls, and the marginal utility of the money, which amount is less and less, grows; purchasing power is gradually depleted. Only in this way we can explain consumer behavior at the market. We can't explain it by using value approaches.

Commodity producers use other reasons. Producing a useful thing, they correlate a price of it with the possibility of expenditure compensation and acquisition of income.

If supply grows (ED1/S2 < 1), greater quantity of commodities can be sold only in the case of price reduction (Fig. 4). There will be a situation, when P2 < P1, which will result in supply reduction and equilibrium restore, when P1 = E + I.

Figure 4
Supply increase
Source: Buryak P., Gupalo O., Stasyuk I., 2008.

In the case of supply reduction comparing with Q1 the correlation "demand/ supply" will be disturbed again, but already in other side (ED1/S3 > 1), that will stimulate the increase of price (Fig. 5).

The new situation, when P3 < P1, will stimulate an increase of supply and equilibrium restore P1 = E + I.

Fluctuations in demand will result in the same consequence (Fig. 6 and 7).

Falling-off in demand (a curve EDC4 comparing with the curve EDC1) will result in the situation when mass commodities Q1, can be sold at the price P4. In its turn the situation ED4/S1 < 1 will result in the situation P4 < P1, that will force to reduce supply to Q4, and this in turn will result in resumption of the price P1.

Increase in demand will result in reverse consequences (Fig. 7).

So, a market under the conditions of competition aspires to renewal of the broken correspondence between value and price, which is disturbed again and again. Only market can define value and price of commodity.

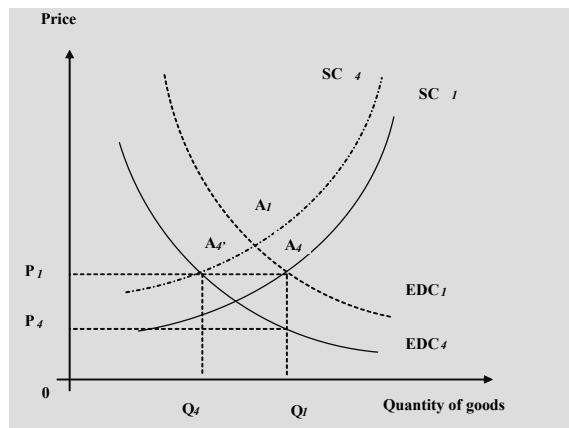The formula of price is the following:

$$P = (E + I)(ED/S)^a \tag{1}$$
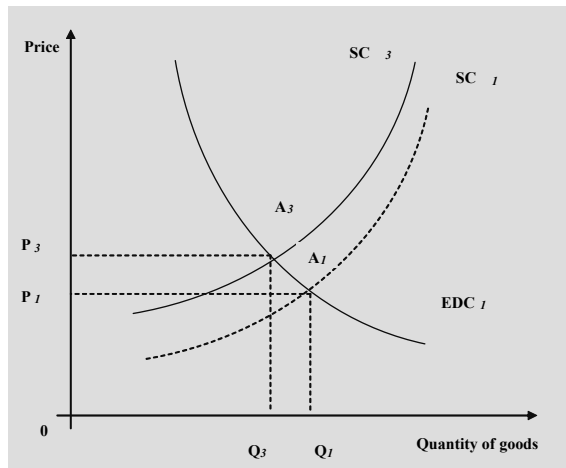
Figure 5
Supply decline
Source: Buryak P., Gupalo O., Stasyuk I., 2008.

Figure 6
Demand decline
Source: Buryak P., Gupalo O., Stasyuk I., 2008.

where a – the coefficient of elasticity, which shows on how many percents a price is changed with the change of correlation of ED/S on one percent.

Substantiating synthesis of the cost theories, theory of marginal utility and demand/supply we didn't try to expose them widely (it is an object of other research). Our task was an exposure of theoretical base of the methodological approaches to the estimation of real estate. Therefore the exposition was as laconic as it was allowed by the set task, and more over, the working out in detail of exposition changes the essence of the obtained results in no way.
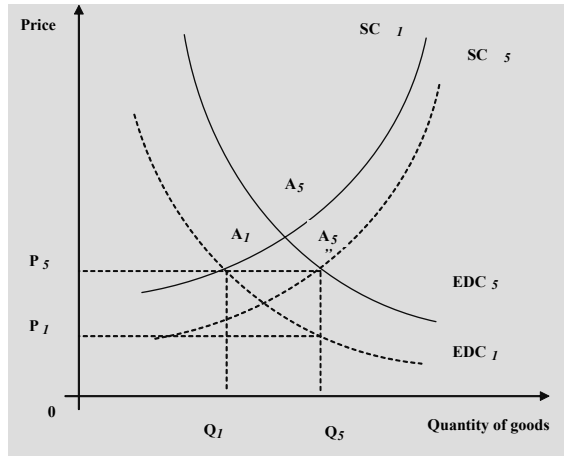
Figure 7
Demand increase
Source: Buryak P., Gupalo O., Stasyuk I., 2008.

The results are: profitability of production factors (Fig. 1) – is basis for the calculation of their marginal prices, expect labor and intellectual activity, producers of which are free people. In the times when people were commodities (slavery, serfdom), their marginal price could be calculated in the same way.

As land doesn't have a certain term of profitable use, marginal price of profitable land/plot is calculated by this correlation:

$$PLn = \Delta Ln / 0.01DR \tag{2}$$

where
PLn – prices of land (land parcel), unit of money;
DR – a discount rate, % annual.

In connection with the fact that capital, as a rule, has a certain term of its useful existence, its marginal price is determined by discounting of incomes, which will be brought in by this object in future.

$$P_c = \sum_{i=1}^{t} \Delta_{c3} q_{PVM^3} + LV \tag{3}$$

where
P_c – prices of capital (object), unit of money;
q_{PVM^3} – a coefficient of present value of money;
LV   – liquidation value of capital, unit of money.

If annual value Δc doesn't change during the term of useful existence of an object, formula (3) degenerates in the following one:

$$P_c = \Delta_{c_3} q_{PV\dot{A}} + LV \tag{4}$$

where $q_{PV\dot{A}}$ – a coefficient of present value of annuity.

In addition land improvements and capital as well can be estimated concerning value constituents, given in Figure 2. Thereby

$$P = E + I, \tag{5}$$

where

P – price of land improvements or capital, unit of money;

E – expenditures on land improvements or creation of estimated object, unit of money;

I – income, which provides necessary level of expenditures on land improvements or creation of an object unit of money.

These methodological approaches to the estimation of real estate objects as Income and Cost approaches are based on the mentioned above theoretical basis. Comparative approach by which the estimation of real estate is carried out by comparison of sales prices on the objects which are analogical or alike to the estimated one, is widespread enough. It takes into account the correlation between demand and supply on the date of estimation.

It also allows taking into account all substantial factors, which influence demand and supply (place of location, environment, transport network etc.). The most reliable sale price of an object of the real estate by this method is determined in this way:

$$P = \overline{P} \pm \sum_{i=1}^{n} \sum_{j=1}^{m} \Delta P_{ij} \tag{6}$$

where

P – price of an object of the real estate, unit of money;

$\overline{P}$ – a middle median (or modal) price on similar objects, unit of money;

n – amount of similar objects of the real estate, selected for estimation;

m – amount of indications (factors of comparison) in accordance with similar objects differentiate between themselves;

P_{ij} – difference in price (adjustment in price) concerning i-object after j-indication.

So, economic theory (more precisely, theories of value and price) is the basis of the existent methodological approaches to the estimation of real estate.

Conclusions

Researches proved that synthesis of various theories of value and price is possible. There is direct genetic connection between the existent theories of value and price and approaches of the real estate expert money estimation. To explain nature of the real estate estimation approaches applied in this time is possible on the basis of system analysis of the theory of value, the theory of "marginal utility" and the theory of "demand/supply". Revelation of above mentioned connection will promote improvement and further development of approaches of real estate estimation.

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Teorie związane z wartością i wyceną jako podstawa metodyczna podejścia do szacowania wyceny nieruchomości

Streszczenie

Majątek związany z nieruchomościami pełni istotną rolę w zabezpieczaniu obligacji finansowych: hipoteka jest nierozerwalną cechą funkcjonowania rozwijających się gospodarek. Jeżeli podstawowy warunek zabezpieczenia hipoteki na podstawie oszacowanych obiektów jest spełniony, to wycena nieruchomości została przeprowadzona przy uwzględnieniu podstawowych reguł zapewniających jej bezpieczeństwo.

W przedstawionych badaniach została stwierdzona bezpośrednia relacja pomiędzy teoriami dotyczącymi wartości i ceny a podejściem do wyceny nieruchomości. Na podstawie analizy teorii wartości „marginal utility" oraz „de-

mand/supply", wyjaśniono podejście do szacowania wartości nieruchomości (przy uwzględnieniu zarówno przychodów, jak i kosztów wyceny). Kombinacja różnych, niełączących się ze sobą teorii nie jest oczywista, a kontrowersyjne jest zagadnienie harmonizacji połączenia efektywności oraz dostępności tego rozwiązania (bazujące na różnych teoriach). Pozwoliło to na ujednolicenie zastosowanych rozważań w celu szerszego zrozumienia istoty badanego procesu oraz samego zjawiska wraz z uwzględnieniem wyróżniającej się kategorii w tej problematyce, jaką jest „cena" oraz „wycena metodą ekspercką".