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SELECTED MODERN APPROACHES TO THE VALUATION OF FIXED ASSETS FOR INSURANCE PURPOSES

Introduction

Every business entity is forced to value its assets for different purposes. One of these purposes or reasons is the valuation of fixed assets for insurance purposes. In various monographs we can meet with many methods of valuation. Some of them intersects each other or have similar approaches and are used also for insurance purposes, but various insurance companies in addition also use their specific approaches. We have been long devoted to this issue and this proposed contribution is the outcome of the research project of Ministry of Education SR VEGA No. 1/0681/12 “Economic environment and the dynamics of changes in the insurance sector” solved at the Department of Insurance of NHF EU in Bratislava.

The aim of this paper is to briefly define the basic methods of business valuation, methods of the fixed assets valuation and an analysis of various ways of determining the sum insured in selected insurance companies in the Slovak Republic.

1. Methods of business valuation

Basic principles of valuation are based on the theory of value, which determines also various valuation models. For establishing the market value there have been enforced three basic principles: the principle of return, principle of comparison and the principle of equity substance. Based on these principles, in the process of business valuation, there are used a lot of methods that can be joined into three

basic groups. These groups are referred to as three basic internationally accepted valuation methods¹: Income approach, Market approach (Method based on market comparison), Asset approach (Sum of the assets approach).

During business valuation these methods can be utilized alone, eventually also their combination depending on the nature of the asset or purpose of the valuation. The most common combination uses asset and income approaches.

The correct selection of the valuation method must also take into account the nature of business that is valued, that means at what stage of development it is, what its position on the market is and what are the future prospects. These facts are also very important within the valuation for insurance purposes.

1.1. Income approach

Income approach derives the assets value from value of future income of assets ownership, which can be obtained, or the income potential of an asset. Valuation includes the amount of income, takes into account the factors affecting the expected future development and determines the present value of income provided a continuous economic existence of business. The income approach ranks: discounted cash flow method, capitalized earnings method and the method of economic value added. All can then be easily expressed mathematically by the formula²

$$C_v = \frac{N}{P} * 100$$

C_v – expected discounted return,

N – expected future return on assets (may it be profit or cash flow),

P – chosen interest rate in %.

1.2. Market approach (Method based on market comparison)

The method is based on information about specific prices or market values of similar businesses. For proper determining of value it is necessary, that there exist small slight differences between various businesses, in terms of industry, product, legal form or size. During the valuation of fixed assets, the value is determined by analyzing the sale or purchase of comparable assets recently under

¹ E. Kislingerová: Oceňování podniku. S.H. Beck, Praha 2001, s. 23

² http://old.fph.vse.cz/veda/publikace/download/Ocenovani_kap5.pdf

current market conditions. Market comparative methods include methods applied in comparison with similar businesses, whose value is known, derivation of business value from comparable transactions, derivation of business value from data about businesses listed on the stock market. This method, however, has the greatest practical importance where there is an active and developed capital market and sufficient reliable data.

Mathematically, the model can be expressed by the formula³:

$$V = \frac{1}{n} \sum_{i=1}^n P_i * k_i$$

V – market value,

P_i – realized selling price,

k_i – coefficient expressing relative similarity of valuated and sold asset,

n – the number of comparison cases.

1.3. Asset approach (Sum of the assets approach)

The asset approach derives the business value from total value of the fixed assets that the business is composed from and assets belonging to it. In this approach each fixed asset is evaluated in certain way. The sum of these prices then gains summary valuation of the fixed assets. Deducting all liabilities and debts gives the net asset value. Asset approach includes various types of methods, most commonly used are: book value method, the method of substantial value, liquidation value method.

Mathematically, it is possible to express using valuation models for determining the market value of the equity principle of substance in the form⁴:

$$V = \sum_{i=1}^m C_i^p + \sum_{j=1}^t C_j^t$$

C^p – the value of tangible parts of valuated asset

C^t – the value of intangible parts of valuated asset

³ Ibid.

⁴ Ibid.

2. Valuation of fixed assets

The business is, in terms of the total capital invested, defined as a functional combination of all its related assets (property), which include tangible assets (real estate – buildings, plant, machinery and supplies), intangible assets and working capital (difference between current assets and current liabilities). These assets are valued separately for different purposes and one of them is the valuation for insurance purposes. In monographs we encounter a variety of valuation methods of fixed assets, but the choice of the appropriate method depends mainly on the nature of the asset itself and the expert who valued assets. That determines and decides which method is most suitable for the valuation of a particular asset.

2.1. Fixed assets valuation methods

Some fixed assets valuation methods are used for various purposes of valuation, such as financial accounting, tax purposes, but also above mentioned valuation for insurance purposes. Such methods shall be included⁵:

1. Valuation based on replacement cost basis: in this case, it is determined the cost of a new asset of the same nature, design and capacity. These costs represent the base value of the replacement cost.

2. “Good as new”: there are situations where plants and machinery operate satisfactorily thanks to proper maintenance. In these cases are applied valuation methods, which represent the actual original cost less depreciation, but with the addition of maintenance costs.

3. Sum of part valuation: this method is used when the device has not a composite character. In this method, all the different parts/components are measured separately and then added together to form a composite value. This method has disadvantage of the technological process in the sense, that if one part is damaged or not available, the whole assembly becomes unusable. Loss in such a situation is not just concerned to that particular part.

4. Fair value method: this method is used for the valuation of assets, which can currently be exchanged in the market for some part exchange.

5. Depreciation method:

a. Book value: represents the written down value of the asset in the book of accounts. In the first year, this represents a real cost of asset. With each passing

⁵ E. Shapiro, K. Davies, D. Mackmin: *Modern Methods of Valuation*. „EG Books“ 2009, s. 14.

year corresponding depreciation are attributed and the asset value is reduced accordingly. Some time the value of the asset is so low that it will not represent the actual value of the asset.

- b. Market value: this method allows depreciating the current replacement value of assets during the years of operation, unless it comes to market value.

2.3. Fixed assets valuation for insurance purposes

Fixed assets valuation for insurance purposes has its own specifics and differences and for this reason there are valuation methods used exclusively in the insurance industry. For insurance purposes there is usually used the term market value, but it must be added that during the first five years book value and market value may be the same. Market value represents the amount, for which an asset of the same age and destination can be bought and sold. Usually takes into account depreciation due to the use and appreciation due to inflation. It should be clear that the reason for insurance is to obtain complete compensation in the event of a claim and, therefore, any method of assets valuation used for the purposes of insurance must take this into account. Basis of claims is generally realized by one of the following methods⁶:

1. Indemnity basis method: in this case the value of the asset is related to age, current condition and suitability for use and therefore also takes into account the wear and tear due to age and use. In the case of claim, the financial pressure is on the insured.

2. Reinstatement Value Basis method: depreciation will not be deducted and settlement claim is made under the condition, that original asset will be replaced by a new of a similar type, capacity and functionality, but not better than property that was damaged or destroyed. In this case, the insured will have the smallest financial burden.

3. Under certain circumstances and with the insurance company agrees, compensation may also be conducted on the basis of the agreed value.

For the purpose of asset valuation, that set the sum insured, assets can be divided into the following groups:

- buildings, furniture, equipment, fixture, inventory, etc.,
- plant and machinery,
- stocks,
- financial investments, assets and liabilities.

⁶ http://www.api.org.au/assets/media_library/000/000/528/original.pdf

This division is important because each group has its own specific characteristics and differences, and therefore needs a different valuation approach.

Buildings, furniture, equipment, fixture, inventory may be valued at⁷:

1. Original cost basis: that is a cost for which the building was acquired or built. May form the basis of the sum insured during the first year after its acquisition or emplacement. With hindsight, it is necessary to adjust this value due to depreciation of time and appreciation due to inflation.

2. Book value basis: book value represents the written down value of the asset after being determined initial depreciation rates on an annual basis. Over time this will lead to a great underinsurance, with exception of a new building in its first year of insurance.

3. Market Value Basis – represents the sum for which an asset of the same age and condition can be purchased or sold. This value takes into account the wear and tear of asset and appreciation thanks to inflation. The current cost of construction of similar buildings are adopted and also reduction of age, use, maintenance are applied. Generally accepted method, that is currently used for the valuation of such buildings, is to apply the scales of unit costs in the gross external areas of the building or buildings focus in cubic meters and then modified to suit the particular circumstances of valuation (built-up area and construction specifications).

4. Reinstatement Value Basis – represents the value of a similar new property, provided that the property will be replaced without the financial burden of the insured.

Plant and machinery – are the devices and ancillary equipment in the industry created in order to carry out certain pre-established function, whether used alone or in combination with other on an increase in the productivity of the operating device. Include all equipment in a fixed or variable form. They differ from the real estate, are deployed in the production, processing or assembly of products from raw material stage to finished products. Calculate the sum insured for machinery and equipment, especially older ones, can cause various problems. For brand new in their first year of insurance are the best original capital costs. But these costs may require additional revision at the time of their first renewal of insurance. Similarly, the capital costs may not provide adequate cover replacement cost in the event of a claim. Therefore, an insurance valuation of plant and machinery frequently uses these valuation methods⁸:

⁷ https://www.oma.org/Resources/Documents/052012OMR_Businesspropins.pdf

⁸ <http://www.iiisla.co.in/filedown/IISA%20seminar%20VALUATION%20OF%20PLANT%20&%20MACHINERY.pdf>

1. Market Value Basis: this method is suitable for machines of similar type, used for universal purposes, freely available on the market for sale or purchase. Replacement cost of plant and machinery is reduced by depreciation. However, this method is not suitable for plant and machinery of special nature that are not currently on the market.

2. Reinstatement Value Basis: this method is represented by the replacing costs of a new asset of the same nature and capacity. Old plant and machinery is given the new price according to new plant and machinery, if such is available. In case of very old machines, the problems occur right because of this condition.

3. For very old plant and machinery, whose value is zero, but thanks to good maintenance, these machines are still working, some insurers apply the method of the residual value, which represents 25%-50% of actual costs, and the rest is considered as depreciation.

Stocks – stock valuation for insurance purposes does not present a big problem for insurance company. Stocks consist of: raw materials – these are the supplies intended for processing into finished products and include all material that is used to complete the total product. Raw materials are valued at the net acquisition cost plus shipping charges.

Stocks in process – represent a material, that is in the process of production and are measured as the maximum value of the stocks in process, the cost of raw materials, other inputs and processing costs at any given time.

Finished goods – these are the products for which the manufacturing process is completed in all respects, are packaged and ready for sale. These products are valued at the net production cost including factory overheads. In cases where there is not a detailed calculation available, valuation can be drawn from the selling price after a reduction of unspent expenditure or profit.

Stocks in trade – represent goods, which are for sale in stores, shops or supermarkets. Goods in the hands of dealers or wholesalers can normally be replaced in case of loss or destruction. Therefore, right the market price at the time and place will be present the claim. The basis of settlement will be the replacement cost and not the price at which the goods would have been sold.

Financial investments, assets and liabilities – financial investments are valued at market price and the price of funds, assets are valued at their present value at the time of valuation, where the nominal value of the acquisition is discounted at the effective interest rate on the present value and the sum is reduced by the amount of bad assets, liabilities are discounted similarly to the assets.

The value of assets for insurance – insurance value – can be determined by one of the following ways⁹:

1. New value – the amount that has to be spent on the acquisition of a new asset of the same type, size and quality at a given location, including all costs. In case of the new value insurance, it is to the insured paid claim, that represents cost of a new asset, which allows a renewal of asset or cost of repair, whereby the asset will return to its original condition,

2. Time value – the new value reduced by an amount corresponding to the degree of depreciation or other impairment of the asset. Time value is used if depreciation exceeded 70%-80% of the new value. In case of the time value insurance, it is to the insured paid claim in the amount corresponding to the value of insured damaged asset, immediately prior to the insured event,

3. General value – the price of asset, under which the building or other structure is possible to buy at a given time. Used, for example, if the damaged building or other structure is intended to be demolished or it is otherwise impaired so that it cannot be used for any other purpose,

4. A combination of new value and time value insurance, for example in case of partial damage coverage on the principle of new value insurance and total damage on the basis of time value insurance. Or for example in the case of asset insurance to 30 % of depreciation on the principle of new value insurance and an asset with higher degree of depreciation on the principle of time value insurance etc.

3. Comparison of fixed asset valuation methods in selected insurance companies

Given the complexity and breadth of issues solved in the contribution, in the application part we present only part of the results of our research – valuing one group of fixed assets, namely buildings and structures. Object of comparison were two insurance companies operating in the Slovak insurance market, their methodology and implementing regulations, or scales, which are to be used for property insurance.

The insurance company “A” uses to determine the proper valuation of assets for insurance particular decision procedure whether or not the property (building, structure) will be reviewed by the new value or time value, it is de-

⁹ A. Majtánová a kol.: Poistovníctvo. IURA EDITION, Bratislava 2009, s. 171.

cided by the technical depreciation. Technical depreciation must be greater than 60%, while technical depreciation is determined based on the technical life of the asset, age and quality of maintenance according to Table 1.

Table 1

Determination of the technical lifetime of buildings and constructions

	Type of building / Constructional material characteristics	Maximum depreciation	Lifetime (years)
1.	Halls and buildings – bricked with reinforced concrete frame or panel outer wall	80%	80-100
2.	The same as 1, the thickness of the masonry above 45	80%	120-200
3.	Halls and buildings – masonry construction	80%	60-80
4.	Buildings with steel skeleton	80%	60-70
5.	Halls with steel frame – tough old version	80%	50-60
6.	Halls with steel frame – modern light version	80%	30-50
7.	Log structures on concrete or stone foundations	80%	50-80
8.	Wooden storage shed, shed, single garage	80%	30-40
9.	Buildings in light version, the superstructure	85%	20-30
10.	Wells	– digged	100
11.		– drilled	50
12.	Fences	– bricked	50
		– with foundation wall	40
		– others	30
13.	Castles, monuments, churches	80%	<300
14.	Water towers	– steel construction	30-50
		– reinforced concrete	40-60

Source: Allianz – Slovenská poisťovňa, a.s. interný materiál. Sadzobník pre poistenie podnikateľov, verzia 3.0, s. 9.

Table 2 is important for the process of determining insurance to new or time value. Based on the maximum technical lifetime is determined the applicable column for the age of the building.

From the column, which corresponds to the maximum technical lifetime, will be reviewed corresponding row in the right table for technical depreciation. Here is an important decision, how the appropriate object is maintained and whether is in excellent, good or poor condition.

Table 2

Determination of the depreciation of buildings and constructions

Maximum technical lifetime (years):								Technical depreciation % by maintenance of the building		
20	30	40	50	60	80	100	200	excellent	good	poor
Age of building or construction (years):										
1		2		3	4	5	10	0,25	3	5
2	3	4	5	6	8	10	20	1	6	10
3		6		9	12	15	30	2,25	9	15
4	6	8	10	12	16	20	40	4	12	20
5		10		15	20	25	50	6,25	16	25
6	9	12	15	18	24	30	60	9	20	30
7		14		21	28	35	70	12,25	24	35
8	12	16	20	24	32	40	80	16	28	40
9		18		27	36	45	90	20,25	33	45
10	15	20	25	30	40	50	100	25	38	50
11		22		33	44	55	110	30,25	43	55
12	18	24	30	36	48	60	120	36	48	60
13		26		39	52	65	130	42,25	54	65
14	21	28	35	42	56	70	140	49	60	70
15		30		45	60	75	150	56,25	66	75
16	24	32	40	48	64	80	160	64	72	80
17		34		51	68	85	170	72,25	79	80
18	27	36	45	54	72	90	180	80	80	80
19		38		57	76	95	190	80	80	80
20	30	40	50	60	80	100	200	80	80	80

Source: Ibid., s. 10.

New value insurance is used to the maximum technical depreciation, which must be more than 60%. In Table 2, these values are highlighted in shaded. For all values of technical depreciation, which are below the shaded values, including those highlighted values, is used the time value insurance.

The second analyzed insurance company uses to determine the value of the building a sum insured, which is defined as the upper limit of the claim for each insured event, which occurred in the reporting period of insurance. In connection with the valuation of the building all the structures are insured to the new value. Concerning the set of real estate, in the resulting sum insured is included the sum insured of the main building, ancillary buildings, garages, building components and accessories, glass, fencing, building materials and small construction machinery.

The sum insured in the insurance company may set the following options¹⁰:

- by calculation according to the following scale,
- by expert opinion, taking into account the baseline. However, if the baseline is higher, it can be considered as the sum insured, at the request of the client; an expert's opinion cannot be older than six months and a copy must be attached to the insurance contract,
- on the basis of the budget of the construction costs, in case if it is a partially built construction,
- by the client, but the client can increase the sum insured by maximum 50% compared to the sum insured, which is determined by calculation. Sum insured, which is based on expert opinion, or based on financing construction costs cannot be increased.

The sum insured based on the scale is set as follows:

$$\text{Sum insured (SI)} = \text{coef. A} \times \text{coef. B} \times \text{coef. C} \times \text{coef. D}$$

where: coefficient A is the expense indicator,

coefficient B is the coefficient of the real estate,

coefficient C is the coefficient of indexation,

coefficient D is the coefficient of place of insurance.

Conclusion

In conclusion it can be stated, that the valuation methods are based on several basic models. Their aim is to determine the value of the asset for the intended use. The purpose of valuation techniques is to determine in the final stage the value of assets, on the basis of transparent methods, principles and methodologies, so that the value could be acceptable for the required purpose. The valuation of assets for insurance purposes can be based on generally applicable methods, but as we have pointed out in our contribution, insurance companies nevertheless are using some specific methods of fixed asset valuation for insurance purposes.

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¹⁰ Metodika ČSOB poisťovňa, a.s. interný materiál . Domos kompakt – poistenie domov. s. 8.

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Summary

Every business entity is forced to value their assets for different purposes. One of these purposes or reasons is the valuation of fixed assets for insurance. The property valuation for insurance purposes has its own specifications and differences and for this reason there are also methods used only for the valuation in insurance. The value of assets for insurance may be determined at the replacement value, time value, general value or a combination of insurance at replacement and time value. The aim of this paper is to briefly define the basic methods of business valuation, valuation methods of fixed assets and analyze the various ways of determining the sum insured for insurance purposes, which are used in selected insurance companies in Slovak Republic.