

# The Principles of Valuation of Banks, Insurance Companies, Pension Funds and Investment Funds\*

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**Abstract:** The aim of this article is to analyze the methodology of the valuation of banks, insurance companies, pension funds and investment funds. This methodology is prepared by respecting the basic principles of the valuation of enterprises with the projection of the specifics of single financial institutions. The result is then presented as the recommended procedure of valuation of appropriate financial institution. In case of commercial banks the income approach based on dividend potential and obligation prices model are the most suitable approaches. The income approach is based on two phase method supposing the ability to identify the future plan of single income activities and the ability to manage the risk management of banks. The discount rate is derived from the CAPM model. Also in case of pension funds and investment societies the income approach based on dividend potential is used whereas in case of investments funds the asset-based approach is the best. The methodology of valuation of insurance companies is composed of the income valuation, the market comparison method, and the obligation pricing model. Each of these fundamental procedures will be used to the same degree.

**Key words:** valuation; methods; analysis; financial institutions

**JEL codes:** G20, G32

## 1. Introduction

The aim of this article is to analyze the methodology of valuation of banks, insurance companies, pension funds and investment funds. This methodology is not unified and the process of the valuation is realized ad hoc according to the concrete approaches of the single valuation institutions. The preparation of some valuation standards must be realized by projecting some specifics of the concrete financial institutions into the valuation approaches known for the purpose of the traditional enterprises. The specifics of the financial institutions are representing mainly by the management of finance concerning the process of obtaining money from the savers and of providing loans to the debtors. The most important role plays also the investment activity where the financial institutions usually not only increase the value of their own money invested, but also money of their clients. The great difference lies also in the capital structure of this financial institutions where for example in case of the commercial banks the indebtedness in on the level more than 90%. For that reason it is not possible for the

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purpose of the identification of the discount rate of the financial institutions to use the method of the average cost of capital and only the cost of equity is necessary to use.

Three most important approaches are known for the purpose of the valuation of the enterprises, the income valuation, the market comparison valuation and the property valuation. Are these methods suitable also for the financial institutions? The property valuation is only the subsidiary method of valuation, but it could be easier than in case of the traditional enterprises because most items of the property of the financial institutions are valued in real (fair) values and it is not necessary to adjust their values for their real equivalent. But this method is suitable only for the purpose of the valuation for accounting and tax purposes and not for the valuation of the financial institutions as whole companies. But the value of the financial institution's assets could be useful also for the methods of so called obligation pricing model which will be analyzed later. The market comparison method can be use in a similar way as in case of the traditional enterprises if it is found some comparable financial institution or some comparable transaction. Also it is necessary to find some suitable so called multipliers as for example P/E ratio or M/B (Market/Book Value) or their combination. If there is real possibility to find above mentioned comparable institutions this method could more precise and easier as for example the income valuation. The income approach is the most important approach to the valuation of the enterprises and in case of the financial institutions the situation is the same. The income valuation in fact is the only valuation which takes into account the future potential of the institution being valued. But the great difference in valuation of the financial institution and the traditional enterprise lies in the chosen method. The traditional enterprises are usually valued by the free cash flow method which is not suitable for the financial institutions which administer also money of their clients and have above mentioned great indebtedness. The value of the equity is only necessary to identify and for that reason it is useful to use the income valuation based on the removable net income or the dividend potential which is represented by the amount of the capital that could be obtained from the financial institution by their shareholders or owners. Besides the three basic methods, the income method, the market comparison method and the property method, there is also the method called the obligation pricing model which is represented by the combination of the income and property method. It is based on the following equation (Hrdý M., 2011, pp. 21-36):

$$H = \frac{R}{C} \times U$$

Where H—market value of the financial institution (bank),

R—return on equity,

C—cost of equity,

U—adjusted net value of assets (market value of assets — liabilities)

This model is mainly suitable for the commercial banks valuation. The advantage of this method lies in a relatively easy way to identify the entry data, but this method in comparison with the traditional income approach does not take into account the future potential of the commercial bank being valued and so the results by using of this methods are lesser than in case of using the income method. If there some common information concerning the valuation principles of the financial institutions, it is possible to identify some concrete approaches to the valuation of concrete financial institutions.

## 2. Valuation of the Concrete Financial Institutions

In the following text the basic approaches to the valuation of the commercial banks, insurance companies,

pension funds and investment funds will be analyzed.

## 2.1 Valuation of Commercial Banks

Only common and basic information are stated in the professional literature (Miller W. D., 1995, p. 434) and for that reason it is necessary to prepare some basic approach how to cope with the problem of the valuation of the commercial banks. If there is the comparable commercial bank or the known comparable transaction, the market comparison method could be used with the multiplier on the basis of the P/E ratio or M/B ratio or the share of incomes of the commercial bank being valued and the comparable commercial bank. In other cases the combination of the income method and the obligation pricing model must be used. The income method is based on so called two phase method based on the removable net profit or the dividend potential. The final valuation is derived from the following equation (Hrdý M., 2011, pp. 21-36):

$$H = \sum_{n=1}^N \frac{D_n}{(1+i)^n} + \frac{D_n \times (1+g)}{i-g} \times \frac{1}{(1+i)^N}$$

Where H–market value of the commercial bank,

D<sub>n</sub>–dividend potential in nth year,

N–number of years of the financial plan,

n–single years of the financial plan,

i–discounted interest rate,

g–requested increase in dividend payments.

The dividend potential = net removable income is derived from the following equation (Hrdý M., 2011, pp. 21-36):

$$D_p = \check{C}_p - K_p - I_n - P_f - O_p$$

Where D<sub>p</sub>–dividend potential = removable net income,

Č<sub>p</sub>–net income = adjusted profit for the valuation purpose,

K<sub>p</sub>–capital requirements on the basis of the indicator of the capital adequacy,

I<sub>n</sub>–the necessary investments for the purpose of the requested growth,

P<sub>f</sub>–the law and statutory profit funds,

O<sub>p</sub>–limited conditions for dividend payments according to the Commercial Code

Besides the two phase income methods also the above mentioned obligation pricing model could be used and then the final valuation could be the average of both values or the appraisal could choose the higher or lesser value according to the results of the strategic and financial analysis which are used also in case of the valuation of the enterprises.

## 2.2 Valuation of Insurance Companies

The valuation of the insurance companies will be realized on the same basis as the valuation of the commercial banks, but there are some differences. The methodology of the valuation of insurance companies is composed of the income valuation, the market comparison method, and the obligation pricing model. Also the plan of so called technical reserves is the most important part of the financial plan of the insurance company because these items are important for the future liabilities of the insurance company for its persons insured. The equation for the two phase method will be the same as it is case of the commercial banks, but the derivation of the dividend potential or the removable net income would be a bit different. It could be derived from the following equation (Hrdý M., Ducháčková E., 2011, pp. 3-18):

$$DPP = VTN + VT\check{Z} + VFI - NFI + (-) P\acute{U} + OV - ON - DP - PZ - OFP$$

Where DPP–dividend potential = removable net income,

VTN–the result of the technical account for the non life insurance,

VT $\check{Z}$ –the result of the technical account for the life insurance,

VFI–the incomes from the financial investments,

NFI–the costs of the financial investments,

P $\acute{U}$ –transfer accounts from the financial investments at the life and non life insurance,

OV–the other incomes,

ON–the other costs,

DP–tax of incomes,

PZ–the law and statutory profit funds,

OFP–limited conditions for dividend payments according to the Commercial Code

The obligation pricing model is used in the same way as it is used in case of the valuation of the commercial banks. The advantage for the market comparable method is a relatively developed market of insurance companies in Europe and so the comparable insurance company or the comparable transaction to find is relatively easier than in case of the commercial banks. If the three values, from income approach, from the market comparable method and from obligation pricing model are known, the final result will be the average of these three values.

### 2.3 Valuation of the Pension Funds

The valuation of the pension funds would be derived from the income approach based on the dividend potential or removable net income. The final value is composed of the two parts. The first part is represented by the value identified from the voluntary pension insurance and the second part then from the second pillar of the pension system based on obligatory pension insurance. The value from the voluntary pension insurance could be derived from the following equation (Hrdý M., 2013):

$$TH_{DPS} = \sum_{n=1}^N \frac{OCVDPS_n}{(1+i)^n} + \frac{OCVDPS_n \times (1+g)}{i-g} \times \frac{1}{(1+i)^N}$$

Where TH<sub>DPS</sub>–the value of the pension fund from the voluntary pension insurance,

OCVDPS–removable net income in nth year from the voluntary pension insurance,

N–the number of the years of the financial plan,

n–the single years of the financial plan,

i–discount interest rate,

g–expected annual growth of dividends.

The value from the obligatory pension insurance is derived from the following equation (Hrdý M., 2013):

$$TH_{DS} = \sum_{n=1}^N \frac{OCVDS_n}{(1+i)^n} + \frac{OCVDS_n \times (1+g)}{i-g} \times \frac{1}{(1+i)^N}$$

Where TH<sub>DS</sub>–the value of the pension fund from the obligatory pension insurance,

OCVDSn–removable net income in nth year from the obligatory pension insurance,

N–the number of the years of the financial plan,

n–the single years of the financial plan,

i–discount interest rate,

g–expected annual growth of dividends.

The final value (FV) of the pension fund will be then:

$$FV = TH_{DPS} + TH_{DS}$$

The most important item in the previous equations is represented by the removable net income in nth year from the obligatory pension insurance or from the voluntary pension insurance. These data would be mainly derived from the different types of charges for the administration of the savings of the participants of the pension insurance.

#### 2.4 Valuation of the Investment Funds

The valuation of the investment funds would not be very easy thing because the planning of the investment activity is very complicated. Unlike the previous types of financial institutions, the property valuation would play an important role. The increase of the property value leads to the increase of the value of the investment fund. So the value of the property and also the incomes from this property would make up the value for the shareholders or the owners. So the final value of the investment fund would be the combination of the property value and the income value. The final value could be derived from the following equation (Hrdý M., 2013):

$$THIF = THMIF + \sum_{n=1}^N \frac{D_n}{(1+i)^n} + \frac{D_n \times (1+g)}{i-g} \times \frac{1}{(1+i)^N}$$

Where THIF–market value of the investment fund,

THMIF–market value of the investment fund on the date of the valuation,

Dn–dividend potential or removable net income for the owners,

n–the single years of the financial plan,

i–the discounted interest rate,

g–expected dividend growth.

#### 2.5 The Discount Interest Rate in Case of the Income Valuation of the Financial Institutions

The discount interest rate (IR) for the purpose of the valuation of the financial institutions could be derived from the cost of equity as it was mentioned already in previous text. The cost of equity could be calculated in three ways. The first way is based on so called dividend growth model which suppose the estimation of the future dividend. The final sample is the following:

$$IR = \frac{Dividends \times 100}{Market Value of Shares - Issuing Costs} + Expected rate of growth$$

The second possibility is to derive the cost of equity from Capital Assets Pricing Model (CAPM) or so called Security Market Line (SML). SML works with the cost of equity on the basis of the requested return in dependency on the risk of the individual share in comparison to the market portfolio. The interest rate is then derived from the following equation:

$$IR = Cost of Equity = Risk Free Rate + \beta \times Market Risk Premium$$

The key problem in this case should be the identification of the coefficient  $\beta$  which express the sensitivity of the change of the return of the concrete share in dependency of the change of the return of the market portfolio. In  $\beta = 1$  this change is the same and for that reason the risk is the same as it is on the market portfolio and so the cost of equity and the required return could be the same as the return of the market portfolio.

In case of the valuation of the commercial banks the reality was identified that in case of the relatively stabilized banks coefficient  $\beta$  oscillate according to the value equaled 1. So the process of the identification of the coefficient  $\beta$  comes out from the value of 1 and is then adjusted according to the area where the bank is situated

and according to the share of the investment and non investment activities because the investment activities are more risky. The final equation is the following (Hrdý M., 2012, pp. 14-26):

$$\beta = \beta_K \times P + \beta_I \times (1 - P) + R_R + R_O$$

Where  $\beta$  = final coefficient beta,

$\beta_I$  = the basic coefficient beta for the investment activity ,

$\beta_K$  = the basic coefficient beta for the commercial activity,

$R_R$  = the risk surcharge concerning the expected growth of the bank,

$R_O$  = the risk surcharge concerning the area,

$P$  = the share of commercial activities on the whole incomes of the bank.

In case of the valuation of the insurance companies must be identified individually the share of the life insurance and the share of non life insurance ( $P$ ) if the insurance company offers both types of insurances and also the risk of the area must be take into consideration. The final equation would be the following (Hrdý M., 2012, pp. 14-26):

$$\beta = 0.9 \times P + 1.1 \times (1 - P) + (-)R_O$$

The values 0.9 and 1.1 are derived from Table 1:

**Table 1 Coefficients Beta of the Chosen Types of Financial Institutions**

Type of Financial Institution	USA	Evropa	Developing Markets
Great Banks	0.71	0.90	0.9
Small Regional Banks	0.91	0.88	1.05
Investment Banks	1.50	1.55	1.9
Credit Unions	0.66	0.75	0.85
Brokerage Investment Firms	1.37	1.25	1.5
Life Insurance Companies	1.17	1.20	1.1
Non Life Insurance Companies	0.91	0.95	0.9

Source: Damodaran A. (2009). "Valuing financial service firms", New York, Damodaran, 2009, available online at: <http://pages.stern.nyu.edu/~adamodar>.

The last possibility how to cope with the problem of the identification of the discount interest rate for the purpose of the valuation of the financial institutional is to use so called building-up method. This method is based on the basic risk free rate which is step by step increased by the risk surcharges form the different types of risks. In case of the commercial banks there are for example the risk surcharges for the credit risk, interest risk, liquidity risk, exchange rate risk, share risk and operational risk.

### 3. Conclusion

The aim of this article is to analyze the methodology of valuation of banks, insurance companies, pension funds and investment funds. The preparation of some valuation standards was realized by projecting some specifics of the concrete financial institutions into the valuation approaches known for the purpose of the traditional enterprises. The information obtained from the analysis was final synthesized into the recommendations how to act in case of the process of the valuation of the concrete financial institutions. The valuation of the commercial bank could be realized by the method of the market comparison if the value of the comparable commercial bank is known. Otherwise the income method based on the dividend potential and the

obligation pricing model is used. The final valuation is then the average of both values or the appraisal could choose the higher or lesser value according to the results of the strategic or financial analysis. In case of the valuation of insurance companies the three methods, the market comparison, the income valuation and obligation pricing model, are used and then the final valuation equals the average of these three methods results. The valuation of the pension fund is realized by using the two phase income method based on the removable net income or dividend potential where the net incomes in single years are calculated from the fees paid by the participants in the system of the pension savings on a voluntary or on an obligatory basis. The results of the valuation of the investment funds would be the combination of the valuation of the fund's property and the income valuation of the expected incomes from this property. The most important part in the process of the income valuation of all financial institutions plays the identification of the discount interest rates. This rate must be derived from the cost of equity and there are three possibilities how to do it. The first is based on the dividend growth model, the second on the building-up method and the third on the market security line. In the third case the process of the identification of the coefficient beta plays a very important role.

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