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SPECIFICITIES OF USING INCOME APPROACH METHODS FOR COMPANY VALUATION

Moiseiev V.V.
graduate student
ORCID: 0000-0002-0785-2527
Iorgachova M.I.
c.e.s., as.prof.
ORCID: 0000-0003-1933-6447
Odessa National Economic University, Odessa, Pushkinska, 26, 65082

Abstract. *The article focuses on the examination of the essence of the income approach to company valuation and its application, purposes, and conditions under which it can be used. It discusses the main methods of the income approach, such as the direct capitalization method, the discounted cash flow method, dividend discount method and adjusted present value method, and explores the fundamental methodological aspects when calculating the company's value using these methods. For each method, a detailed sequence of calculations is provided in the form of a step-by-step algorithm with specific explanations, making the application of each income approach method clear and practical. The article also highlights the specific features and characteristics of the income approach and each of its methods. Besides listing the positive aspects, it also presents the drawbacks of this approach, enabling potential users of income approach methods to make informed decisions about the possibility and necessity of using the income approach in company valuation.*

Key words: *company value, income approach, valuation method, company valuation, direct capitalization method, discounted cash flow method, dividend discount method, adjusted present value method.*

Introduction.

Today, any company, during its existence, faces the question of choosing the most optimal approach to its valuation from a diverse set of models: income approach, market approach, cost (asset-based) approach, and mixed approach. According to the theory of F. Modigliani and M. H. Miller (Modigliani, Miller, 1958) - the creators of most modern valuation methods, the value of a company consists of two components: the steady state value of its current operations and the value of its future operations. Later, F. Modigliani and M. Miller first proved that the future earnings play a crucial role in determining the value of the firm (Modigliani, Miller, 1961).

Other researchers have also made significant contributions to the advancement of the company valuation concept. Contemporary studies have delved into both theoretical and practical aspects of determining a company's value, including works by (Modigliani, 2001), (Momot, 2007), (Mozenkov, Kaliuzhnyi, 2009), (Kotsurubenko, 2020). Furthermore, studies have focused on identifying key (financial and non-financial) drivers of value growth (Kostyrko and Zamai, 2022).

Company valuation depends on the scenario of its development it is based on. Hence, an effective business approach unequivocally necessitates considering the previously mentioned definitions of company value, which essentially fall into two primary categories (including intermediate solutions): valuation as a going concern

and valuation based on the liquidation value of the company (reflecting the possibility of its cessation or winding-up).

If the company is actively operating and sustaining its workforce, it should be appraised using the income approach. This approach assumes that the market value of the business is determined by its potential for generating future income. Consequently, the focus is placed on the projected cash flows attainable through the continued operation of the business. Let us now delve deeper into this particular approach.

Main text

The income approach is based on determining the value of an object based on the present value of projected income generated from owning it. In general terms, the descriptive model of the income approach can be summarized as follows: "No potential buyer (or investor) will pay a price higher than the present value of the object's anticipated future income from its use.

The basis of the approach includes the following principles:

- expectation, which means that the value of property is determined by the value of future benefits from owning the object;
- substitution — a potential buyer will not pay more for an object than the costs of acquiring other property capable of generating a similar income;
- highest and best use — the value of the object is determined by the present value of expected income and is calculated based on the most efficient use of the object, including income from its possible sale.

The income approach allows for the consideration of expected investment income. Therefore, its use is necessary for the analysis of the advisability of investing and when justifying the decision to finance investments in the object of evaluation. This approach, more than the comparative and cost approaches, reflects the potential buyer's view of the object of evaluation as a source of profit.

Most often, the approach is used when determining the value of property that is potentially profitable - this includes commercial real estate (office, warehouse premises, retail space, hotels); some types of residential real estate; integral property complexes; financial interests; universal equipment. It is quite difficult and inappropriate to use the methods of the income approach when assessing non-profit real estate: property that can only function as part of a larger production structure.

The main disadvantages of the approach: the need for long-term income flow forecasting; the impact of risk factors on the predicted flow; and the difficulty of collecting data on the profitability of similar objects.

Unlike the cost and comparative approaches, the accuracy of the forecasted profit indicators largely depends on the appraiser's subjective perceptions. Of all three approaches, the degree of subjectivity is the highest in the income approach.

There are 4 main methods of the income approach (Figure 1).

The direct capitalization method is used in cases where the forecasted annual income is stable and does not have a clearly expressed trend to change, and the period of its receipt is not limited by time.

In the direct capitalization method, the value of the property is determined by using only two variables: the expected income from the evaluated object and the

income or profit rate. The income usually refers to the net operating income that the property can bring in a year, and the profit rate refers to the coefficient or capitalization rate. The basic formula of the method looks like this:

$$V = \frac{I}{R} \quad (1)$$

where V – the property value calculated using the direct capitalization income method;

I – the net operating income for the period;

R – the capitalization rate.

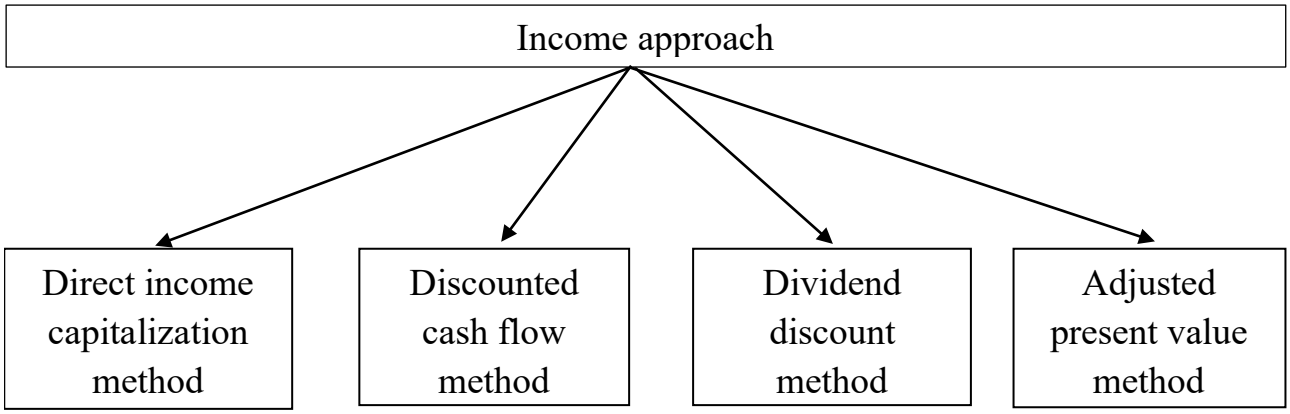

Figure 1 - Classification of income approach methods

The direct capitalization income method involves the following sequence of valuation procedures:

1. Forecasting gross income and operating expenses. Determining the net operating income as the difference between gross income and operating expenses;

2. Justifying the choice of valuation procedure for determining the capitalization rate and calculating it;

3. Calculating the value of the object using the formula 1.

Real estate evaluation begins with determining potential gross income. Potential gross income (PGI) is the maximum income that the evaluated property is capable of generating. It is determined by calculating the sum of expected revenues from the property with 100% occupancy. The potential gross income is the total revenue from the main type of activity and additional services that complement the main type of activity. For example, if the main activity is leasing premises, then the rental income is the gross income from the main type of activity, and other profits that the property owner can receive (fees for using garages, parking lots, advertising installation fees) are additional income.

Then, the actual gross income (AGI) is determined — the potential gross income minus losses from vacancies (underuse of the property's area) and non-payments (Z).

$$AGI = PGI - Z \quad (2)$$

Normally these losses are expressed as a percentage of the potential gross income. Losses are calculated at a rate determined for the typical level of management in the given market, i.e., the market indicator is taken. However, this is

only possible under conditions of a significant information base for similar objects. In the absence of such, to determine the coefficient of underloading (underutilization), the appraiser first of all analyzes the retrospective and current information on the appraised object, i.e., existing lease agreements in terms of duration, frequency of their renewal, the size of periods between the end of one lease and the conclusion of the next (the period during which the real estate units are free), and on this basis calculates the coefficient of underutilization of the real estate object:

$$Cul = \frac{Dn * Tc}{Na} \quad (3)$$

where Dn - the share of real estate units (this can be a standard office, or commercial premises, or an apartment), for which contracts are renewed annually;

Tc - the average period during which a unit of real estate is free;

Na - the number of rental periods in a year (months or quarters).

The determination of the underutilization coefficient is based on retrospective and current information, therefore, to calculate the forecasted AGI, the obtained coefficient should be corrected taking into account the possible loading of areas in the future, which depends on the following factors:

- general economic situation;
- prospects of regional development;
- stage of the real estate market cycle;
- the ratio of supply and demand in the evaluated regional segment of the real estate market.

The loading coefficient depends on different types of real estate (hotels, shops, apartment buildings, etc.). When operating real estate objects, it is desirable to maintain a high loading coefficient, as a significant part of operating costs is constant and independent of the level of loading.

The appraiser adjusts for losses in payment collection by analyzing retrospective information on a specific object with subsequent forecasting of this dynamics in perspective (depending on the prospects for the development of a specific segment of the real estate market in the region):

$$Kp = \frac{Pa}{PGI} \quad (4)$$

where Kp – the coefficient of losses during payment collection;

Pa – the losses during payment collection;

PGI – potential gross income.

Based on retrospective and current information, the appraiser can calculate the coefficient of underutilization and losses during the collection of rent payments with further adjustment for forecasting the amount of actual gross income:

$$Kun = \frac{Pa + Pun}{PGI} \quad (5)$$

where Kun – the coefficient of underutilization and losses during the collection of rent payments;

Pa – losses during the collection of rent;

Pun – losses from underutilized areas;

PGI – potential gross income.

In addition to losses from underutilized areas and losses during the collection of rent payments, it is necessary to take into account other costs that can be associated with normal use of the property for maintenance purposes, including tenants (for example: income from renting a car park, warehouse, etc.) and which are not included in the rental fee.

After determining the actual gross income, the net operating income (NOI) is calculated - the actual gross income from the appraised object, excluding its operating costs (C).

$$NOI = AGI - C \quad (6)$$

Operating costs of the object are divided into operating costs and reserve costs. Operating costs are associated with the exploitation of the object, providing services to users, maintaining a flow of income. Operating costs are divided into fixed and variable.

Fixed costs are costs that practically do not depend on the degree of real estate exploitation (for example, property tax, insurance payments, etc.).

Variable costs are costs that change depending on the level of use and loading of the real estate object. Variable costs include payment for utilities, cleaning, garbage removal, expenses for object management (payments to administrative staff for concluding lease agreements for available areas, control over timely receipt of rental payments, maintaining the functional suitability of the object), salary to the maintenance staff.

Reserve costs are costs associated with the real estate object, which have to be incurred once every few years, as well as costs, the amount of which changes significantly over time. For example, the replacement of elevators, security alarms, improvement of pedestrian paths, driveways to the house. In other words, reserve costs include costs for the purchase (replacement) of various accessories for the appraised object.

The next step in the direct capitalization method is to determine the capitalization rate. The capitalization rate is a measure used to convert future income from the appraised object into its current value. This indicator takes into account both the net profit that the appraised object brings and the compensation of capital spent on its acquisition.

In general terms, the capitalization rate is defined as:

$$R = \frac{I}{V} \quad (7)$$

There are several methods for determining the capitalization coefficient:

- taking into account the reimbursement of capital expenditures (with adjustments for changes in asset value);
- related investments or the investment group technique;
- direct capitalization.
- determination of the capitalization coefficient taking into account the compensation of capital expenditures.

The capitalization coefficient consists of two parts:

- rate of return on capital (investments);

- rate of return of capital to repay the amount of initial investment. Moreover, this element of the capitalization coefficient is applied only to the part of assets that depreciates (that is, to buildings and structures, but not to land, which does not wear out).

The rate of return on capital (it is equivalent to the discount rate) is built using the cumulative method and consists of:

+ risk-free rate of return;

+ premium for the risk of investing in real estate;

+ premium for low liquidity of real estate;

+ premium for investment management (managing investments in real estate is considered a more complex and risky activity than managing investments in financial assets - hence the additional premium).

The risk-free rate of return is the rate of return on investments in highly liquid assets, i.e., this rate reflects the 'actual market opportunities for firms and individuals to invest money without any risk of non-return'. In reality, despite the name, the risk-free rate assumes not the absence of risk in general, but a minimal level of risk, characteristic for a given market.

The risk-free rate is used as a base to which the rest (previously listed) components - adjustments for different types of risk associated with the specifics of the appraised property - are added.

The risk-free rate according to the Western methodology is considered to be the rate of return on long-term (10-20 years) government bonds on the world market (USA, Germany, Japan, etc.). When using this risk-free rate, it is necessary to add a premium for the risk of investing (country risk).

In the process of evaluation, it is necessary to take into account that nominal and real (i.e., including and excluding the inflation component) risk-free rates can be in different currencies. When converting the nominal rate to real and vice versa, it is appropriate to use the formula of American economist Fisher, derived in the 1930s (Fisher, 1930):

$$Rn = Rr + Jinf. + Rr \times Jinf. \quad (8)$$

where Rn – nominal rate;

Rr – real rate;

Jinf. – annual inflation growth rates.

Furthermore, Fisher proved that the criterion for evaluating investments is not connected with which type of consumption (current or future) investors prefer. Different types of investors use the same investment indicators, so they can unite in one company and delegate management functions to professional managers. The managers should find compromise solutions that satisfy all investors, based on the maximization of the market value of the company's shares (Mendrul, 2002).

It's important to note that when using nominal (including the inflation component) income flows, the capitalization rate (and its components) should be calculated in nominal terms, and with real (inflation-adjusted) income flows - in real

terms. To convert nominal income flows into real ones, the nominal amount should be divided by the corresponding price index, i.e., the percentage ratio of the price level for the year in which the cash flows will arise to the price level of the base period.

As a result of inflation adjustment, the retrospective information used in the evaluation is brought to a comparable form, and inflationary price growth is taken into account when making cash flow forecasts.

Calculation of different risk premium components:

- the liquidity premium takes into account the impossibility of immediate return of investments made in real estate and, according to expert estimates from most sources, is usually accepted at the level of 3-5 percentage points.
- the real estate investment risk premium takes into account the possibility of accidental loss of consumer value of the object and can be accepted in the amount of insurance deductions in insurance companies of the highest reliability category.
- the investment management premium. The riskier and more complex the investments, the more competent management they require. The investment management premium should be calculated taking into account the underload coefficient and losses when collecting rental payments.

The capitalization rate includes the investment return rate and the capital return rate. If the amount of capital invested in real estate remains unchanged and will be returned upon its resale, the capital return rate is zero. The capitalization rate (Rc) will be equal to the return on investments rate R.

$$Rc = Rd \tag{9}$$

where Rc – capitalization rate;

Rd – discount rate (return on investment rate).

There is a general formula for calculating the capitalization rate for different scenarios of changes in real estate value:

$$Rc = R + \Delta \times Kret, \tag{10}$$

where D – change in the value of the asset (with a + sign if the value decreases, with a - sign if the value of the asset increases);

Kret – capital return rate, which is calculated using one of three approaches - Ring, Inwood, Hoskold.

There are three ways to compensate for the invested capital in the event of a complete loss of value by the object by the end of the term of ownership:

- straight-line return of capital (Ring method);
- return of capital based on the sinking fund and the return on investment rate (Inwood method). It is sometimes called the annuity method;
- return of capital based on the sinking fund and the risk-free interest rate (Hoskold method)

Ring Method. This method is advisable to use when it is expected that the repayment of the principal amount will be made in equal parts. The annual capital return rate is calculated by dividing the 100% value of the asset by the remaining useful life, i.e., this is the value reciprocal to the service life of the asset. In this case,

it is considered that the funds directed to the sinking fund are not reinvested. The capitalization rate formula takes the following form:

$$Rc = Rd + 1/n \quad (11)$$

where n – the remaining economic life;

The capital is returned in equal parts over the service life of the real estate object.

The Inwood Method is used if the capital return amount is reinvested at the investment return rate. In this case, the return rate as a component part of the capitalization rate equals the sinking fund factor at the same interest rate as for investments.

$$Rc = R + SFF(n, Y) \quad (12)$$

where SFF – sinking fund factor;

Y = R - return on investment rate.

Hoskold Method. It is used in cases when the return rate of primary investments is somewhat high, which makes reinvestment at the same rate unlikely. For reinvested funds, a risk-free return is expected..

$$Rk = R + SFF(n, Yб) \quad (13)$$

where Yб - risk-free interest rate

For example: an investment project provides for a 12% annual return on investment (capital) for 5 years. The sums for the return of investments can be reinvested without risk at a rate of 6%. Determine the capitalization rate.

If the capital return rate equals 0.1773965, which is the sinking fund factor for 6% for 5 years, then the capitalization rate equals 0.2973965 (0.12 + 0.1773965).

If it is predicted that investments will lose value only partially, then the capitalization rate is calculated a bit differently, since partial compensation of capital is carried out through the resale of real estate, and partially at the expense of current income.

With a fall in the asset price, regardless of whether the capital return rate is calculated by the Ring, Hoskold, or Inwood method, the return on investment rate is less than the capitalization rate:

$$Rc > R \quad (14)$$

If an investor expects the price of real estate to increase in the future when investing in property, the calculation is based on the investor's forecast of rising land, building, and structure prices influenced by increased demand for certain types of real estate or due to inflation growth. In this regard, there is a need to account for the increase in the value of capital investments in the capitalization rate:

$$Rc = R - \Delta \times SFF(n, Y) \quad (15)$$

where Δ - the percentage increase in the asset price

Thus, if an increase in asset value is projected, the discount rate will be higher than the capitalization rate.

$$Rc < R \quad (16)$$

If a decrease in the value of real estate over time is predicted, there is a need to

take into account the return of the principal amount of invested capital in the capitalization coefficient (recapitalization process). In this case, the capitalization rate consists of the return on investment rate and the capital return rate, in some sources called the recapitalization factor. Thus, the appraiser assumes that part of the net operating income goes to the return of initial investments, forming the so-called sinking fund with an interest rate Yr - the reinvestment rate. The funds are constantly reinvested to ensure the full return of the initial investments in the object at the end of the term of ownership (it should be noted that the sinking fund can be both real and conditional: the property owner decides on its formation, but the appraiser should always take into account the sinking fund in calculations).

The indirect income capitalization method (or discounted cash flow method (or discounted cash flow method) is used in cases where the forecasted cash flows from the use of a property are uneven in size or unstable throughout the forecasting period.

The main feature and advantage of this method is that it allows to take into account non-systematic changes in profit, for which there are all prerequisites in the modern economy of our country: changes in prices for raw materials, materials, energy resources, changes in legislation, as well as the fact that with the help of this method you can estimate an object that not only brings irregular income, but is even loss-making.

For loss-making enterprises, it is necessary to consider from which specific type of activity the losses were incurred, and cash flow calculations should be made separately for operational and financial activities. (Shtefan, 2021)

The market value of the object, according to discounted cash flow method, is determined as the sum of the income's present values for each forecast period and the value of reversion, calculated at the appropriate rate.

The first component of value is the present value of annual income over the term of ownership of real property. The flow of net operating income for future periods is brought to its present value by the discount formula at the appropriate rate. All present values are summed up:

$$PV = \sum_{i=1}^{n} \frac{NOIi}{(1 + d)i} \quad (17)$$

where NOI i — income in the i-th year;

n – the last year of the forecast period (ownership period);

d – the rate of return on capital (discount rate).

The second component - the reversion value - is the income at the end of the property ownership period; nothing else but the present value of the income that can be obtained from ownership during the remainder of its economic existence (or during resale). The income is reduced to the present value through the discount rate:

$$BR = \sum_{i=n+1}^{k} \frac{NOIi}{(1 + d)i} \quad (18)$$

where k – the term of economic existence of real estate.

The discounted cash flow method assumes the following sequence of evaluation procedures:

1. Justification of the forecast period.

In international practice, the standard forecasting period is considered to be 10-15 years. However, in conditions of an unstable economy, an economy of transition period, like the economy of Ukraine, the forecast period can be narrowed down to 2-3 years. Of course, the value of the object, calculated in the second case, will be significantly less than the value obtained using a longer profit forecasting period, moreover, such a state does not reflect the "real" state of the object, but is a consequence of difficulties in making a forecast.

2. Forecasting cash flow sizes:

— trends of income and expenditure cash flows are built;

— the periodicity of income receipt is assessed.

3. Justification of the choice of the valuation procedure for determining the discount rate and its calculation.

The discount rate represents compound interest used in calculating the present value of future payments. There are different methods for determining the discount rate:

— build-up method;

— alternative investment comparison method;

— extraction method.

The build-up method is based on the fact that the discount rate is a function of risk and can be determined as the product of all risks associated with the acquisition and operation of a property or other operations related to the valuation object (for example, real estate market risk, capital market risk, low liquidity risk, inflation risk, property management risk, as well as financial, environmental, legislative risks).

The alternative investment comparison method is based on the proposition that projects similar in risk should have similar discount rates.

The extraction method assumes that the discount rate is calculated based on data on concluded deals.

1. Determining the present value of the cash flow.
2. Predicting the reversion value.
3. Determining the value of the appraisal object using the formula:

$$V = \sum_{i=1}^{n} \frac{NOIi}{(1 + d)i} + \sum_{i=n+1}^{k} \frac{NOIi}{(1 + d)i} = PV + BR \quad (19)$$

The discounted cash flow method is used for most commercial properties. From a theoretical point of view, this method is the best, but it is relatively labor-intensive. However, there are accessment cases that cannot be performed without using the discounted cash flow method - for example, the development and evaluation of investment projects.

Assessing the merits of different DCF models, we can observe their considerable

practical importance and data-intensive nature, stemming from their coverage of a broad spectrum of operational, financial, and investment activities within the company. The calculations necessitate precise determination of the forecast period and growth rates, as well as the application of scientifically grounded approaches to ascertain the company's cost of capital. Moreover, these calculations rely on insights into the actual interests of owners and shareholders, alongside a comprehensive analysis of strategies for future development (including reinvestment, necessary capital injections for projected revenues, product diversification, mergers, geographical expansion etc.). These aspects entail significant practical complexities. In addition to these considerations, alternative models like the APV (Adjusted Present Value) method and the DDM (Dividend Discount Model) exist, with the latter predicated on expected dividend payments.

According to the DDM, the value of the company is estimated as follows:

$$V = \frac{\Sigma DPS_t}{(1 + CE)^t} \quad (20)$$

where DPSt – the expected dividend payments (dividends per share);

CE – the cost of equity, expressed as a percentage.

It's important to highlight that, similar to DCF models, there exists the option of using various "staged" methods within the DDM, contingent upon the company's level of economic development. While DDM serves as a method for business valuation and can offer some degree of convenience by streamlining calculations—eliminating the need for intricate forecasts concerning changes in capital investments, debt capital, operational, and other expenses—it nonetheless relies on discounting dividends over a corresponding period. This process entails making forecasts about a multitude of factors, including the company's cash flows for dividend policy forecasting. Consequently, this complicates calculations using the model and makes it practically impossible to use the model in the practice of corporate finance in Ukrainian companies. Furthermore, DDM's effectiveness is contingent upon the company's transparency and openness regarding its dividend policy, which ideally should be public knowledge. However, in reality, this transparency tends to be more of an exception than the norm.

Regarding the APV method, it's important to highlight that despite its convenience in business valuation, it has not gained significant popularity among practicing appraisers. The author of the APV method (Stewart Myers, 1974) proposed to determine the value of the company as the total value of cash flows generated by various types of economic activities in several stages:

1. Determination of the main value generated by operational cash flows, including the company's value without the market value of its debt. To implement this step, free cash flow (FCFF) and the value of unlevered equity (CEu) are used:

$$V = \frac{\Sigma FCFF}{(1 + CE_u)^t} \quad (21)$$

where FCFF – free cash flow to firm.

CEu - the value of unlevered equity, %.

2. Determination of the value created through various financial instruments (such as the market value of debt, the amount of accrued taxes, and the impact of the tax shield).

The resulting debt burden has two directly opposite effects on business efficiency. Firstly, it generates a substantial tax shield, thereby reducing the tax burden significantly. Conversely, heightened leverage poses a threat to the financial stability and autonomy of the company, leading to a low financial independence ratio. Consequently, this scenario engenders unfavorable conditions for financing and increases bankruptcy risks for the company.

3. Assessing the potential for bankruptcy poses the greatest challenge, as there isn't a singular correct method for evaluating bankruptcy probability. In practice, bankruptcy probability often relies on Eurobond ratings of prominent multinational corporations and their default risk levels, supplemented by industry benchmarking and other relevant factors.

Therefore, the company's value according to the APV method is determined as follows:

$$V = \frac{\Sigma FCFF}{(1 + CE_u)^t} + t \times Debt - B_p \times PVBC \quad (22)$$

where PV BC – the present value of the bankruptcy costs (according to the residual value of the company and its assets, etc.).

Bp – the probability of bankruptcy, %;

While the APV method incorporates certain aspects of the DCF model, particularly in determining the base value, there is a degree of interchangeability between these methodologies. However, in practical application, the APV method encounters limitations, mainly due to the final component of its formula. Determining bankruptcy costs and the probability of bankruptcy for the company poses significant theoretical and practical challenges, rendering the APV method difficult to fully employ. Moreover, the APV method assumes a constant corporate income tax rate (T) and a stable growth rate (g) for both forecasted and "post-forecasted" periods, which is impractical and can result in potentially inaccurate calculations.

Conclusion

Thus, when choosing among existing approaches to determining the value of a company, it is necessary to take into account the advantages and disadvantages of existing approaches and methods, the specifics of the company being evaluated, as well as the set goal according to which it is planned to carry out this calculation of the value of a certain company: improving the efficiency of the company; attracting investors; going to the stock markets, selling the entire company, and other goals. As can be seen from this research, the income approach remains one of the key approaches to determining the value of a company, and the methods used within this approach: the direct income capitalization method, the discounted cash flow method, dividend discount method and adjusted present value method - have certain advantages in terms of company valuation and are understandable when used, and the specific features of the income approach are its advantages and a specific integral part of the company valuation process itself.

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