

FINANCIAL EVALUATION OF PROPERTY DEVELOPMENT PROJECTS. RESIDUAL VALUE METHOD

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Abstract

Risk is an inherent part of any investment and production process, which is why it must be clearly defined and assessed. In fact, property development is a process, which is under the effect of myriad influencing factors, and the analyst or appraiser, together with the developer, have the task to evaluate the degree of impact of each of these risks on the specific project. The main purpose of Residual Valuation Method is to separate the variables, whose value is unknown, from the others, whose value is known to us or we can determine it with sufficient certainty. Provided that we know the total value of the completed project, deducting from it the value of the known variables we will receive a residual value, which will represent the value of sought variables.

Key words: financial evaluation, residual valuation, rv, property development, property finance

Property development is a constant process, and therefore the developer must not just conduct a one-off appraisal in the research and evaluation phase, but rather needs to constantly reappraise the profitability of the scheme throughout the development process. Risk is an inherent part of any investment and production process, which is why it must be clearly defined and assessed. In fact, property development is a process, which is under the effect of myriad influencing factors, and the analyst or appraiser, together with the developer, have the task to evaluate the degree of impact of each of these risks on the specific project.

Financial evaluation of property development projects uses several conventional techniques or methods, namely:

- Residual valuation;
- Cash flow method together with the discounted cash flow method (DCF);
- Uncertainty analysis and risk assessment;
- Sensitivity analysis.

Residual valuation

The main purpose of this method is to separate the variables, whose value is unknown, from the others, whose value is known to us or we can determine it with sufficient certainty. Provided that we know the total value of the completed project, deducting from it the value of the known variables we will receive a residual value, which will represent the value of sought variables. Unknown variables usually are:

- **Risk/return** ratio; or
- **Land value.**

There are two primary types of residual valuation depending on the final outcome sought:

- **Assessment of the investment risk/return** – total development costs, e.g. land, construction cost, etc., are deducted from the estimated value of the completed development or from the capitalisation of the income from the property for a period of time. In this way the developer or the financial institution assess to what extent the rate of return on investment is adequate according to their expectations.

- **Affordable land price** - all property development costs without the land are deducted from the estimate of the value of the completed development scheme. The obtained value is the affordable land price, which the developer should pay.

Examples for evaluation models of both types of residual value are shown in Table 1 and Table 2.

Key variables used in the residual value model are:

- Land price;
- Building construction cost;
- Prevailing rents/sales prices;
- Interest rates;
- Investment yields;
- Time.

Table 1. Model - Risk and return from investment - Residual Valuation		
1. Net Development Value - NDV	11 640 000.00	lv.
1.1. Expected annual rent:	1 080 000.00	lv.
Net Leasable Area	4 500.00	sq.m.
Annual rent per sq.m.	240.00	lv.
1.3. Investment Yield	9.00%	%
1.4. Years of Purchase	11.11	No
1.5. Cost of Investment @3%	-360 000.00	lv.
2. Development cost – TDC	9 503 292.00	lv.
2.1. Land costs	315 700.00	lv.
Land price	300 000.00	lv.
Land price per sq.m.	200.00	lv.
Land sq.m.	1 500.00	sq.m.
Land inspection cost	10 000.00	lv.
Agent Commission	4 500.00	lv.
Agent Commission %@Land	1.50%	%
Notary and other fees	1 200.00	lv.
Notary and other fees %@Land	0.40%	%
2.2. Building Cost	6 600 000.00	lv.
GDA	5 500.00	sq.m.
BC/1 sq.m.	1 200.00	lv.
2.3. Professional fees 12.5%@BC	825 000.00	lv.
2.4. Costs for design visa	3 000.00	lv.
2.5. Costs for permits end surveillance	50 000.00	lv.
2.6. Funding fees	54 000.00	lv.

Credit acceptance fee	4 000.00	lv.
Credit management fee	50 000.00	lv.
2.7. Financial costs	990 192.00	lv.
Annual interest	7.00%	%
Monthly interest	0.58%	%
Development period - months	36.00	months
Building period - months	18.00	months
Months from finishing to sale	12.00	months
Land interest rate@ Development period	66 297.00	lv.
All costs but land interest rate@Buildinf period/2	395 955.00	lv.
All costs but land interest rate @ Months from finishing to sale	527 940.00	lv.
2.8. Leasing agents commission 10%@annual rent	108 000.00	lv.
2.9. Promoting costs	50 000.00	lv.
2.10. Sale costs	407 400.00	lv.
Agent commission	174 600.00	lv.
Agent commission %@NDV	1.50%	%
Notary and other fees	232 800.00	lv.
Notary and other fees %NDV	2.00%	%
2.11. Other DC	0.00	lv.
2.12. Unpredictable costs	100 000.00	lv.
2.13. Developer profit/Developer risk	2 136 708.00	lv.
2.14. Developer profit/Developer risk @TDC	22.48%	%

- Net Development Value**

Making an evaluation based on the residual value method includes calculating the so-called **Net Development Value**. For convenience the examples use the abbreviation **NDV**. There are two variables used in establishing a development project's value, namely **rent** and **investment yield**. Both variables can have a significant effect on the final evaluation, therefore it is extremely important to pay them special attention for their proper determination.

The **rent** is determined most frequently by using historical analysis of the change in rental rates in recent years, as well as analysis of the current state of the market. The objective is to determine the trend of the future change in the rent and to estimate its levels at the time of completing the project. Usually appraisers or agents are hired for this analysis. Estimating the market rent is called "fair market rent" as defined by the International Standards Valuation Committee. According to it fair market rent is: *"the estimated amount for which a property, or space within a property, should lease on the date of valuation between a willing lessor and a willing lessee on appropriate lease terms in an arm's-length transaction, after proper marketing, wherein the parties had each acted knowledgeably, prudently, and without compulsion"*.

Rents are typically calculated per square meter of area. For example **12.50€/sq.m.** In the case of an office building, the net area of the building, which is the internal usable space excluding circulation

space and toilets space in the building that can actually be let, excluding circulation space, staircases, elevators and toilets. This area is known as the **Net Lettable Area, (NLA)**.

The investment yield is the rate of return on invested capital in the relevant project and it is used to discount the future rental income stream in order to calculate the capital value of the development project in today's money. From the present value calculation a multiplier is derived, which represents the reciprocal value of the **investment yield** and it is known as the **year's purchase (YP)**. The year's purchase shows how many years are needed to buy back the investment at the rate of return, i.e. to recover the capital invested in the project. The calculation is based on the perpetuity method. This approach is based on taking a snapshot of the current market rents, assuming that they will remain at their present level in perpetuity. Table 3 presents exemplary values of the income from the investment and YP.

Using the calculations in Table 3 we can calculate the **present value (PV)** of a project, which yields annual rental income of BGN 200,000 at a rate of return on capital or investment yield of 8 %. In this case we must multiply 200,000 times 12.50 years and the result will be BGN 2,500,000. Table 4 presents the calculations for present value of the investment at the same level of annual return with the various levels of investment yield from Table 3. This present value in fact represents the **net development value of the property**. The value is net because it does not include the site acquisition costs upon sale, as well as the state and local taxes and fees.

The investment yield or the rate of return on invested capital is determined using the market comparisons /analogues/ method. Analysis includes examination of concluded deals for the sale of already completed projects with maximum similarity, in terms of intended use, as well as in terms of distribution, quadrature, quality and materials. The specific yield is a function to the investor's estimation of the future rents and the risk of their uncertainty.

The establishment of the project's cost is usually focused on the two main variables, namely: land price and building construction cost.

Table 2. Model - Residual value of the marginal cost of land		
1. Net Development Value - NDV	11 640 000.00	lv.
1.1. Expected annual rent:	1 080 000.00	lv.
Net Leasable Area	4 500.00	sq.m.
Annual rent per sq.m.	240.00	lv.
1.3. Investment Yield	9.00%	%
1.4. Years of Purchase	11.11	No.
1.5. Cost of Investment @3%	-360 000.00	lv.
2. Net entrepreneurial costs (excluding land) - NTDC	9 120 070.03	lv.
2.1. Building costs	6 600 000.00	lv.
GBA	5 500.00	sq.m.
Building costs per 1 sq.m.	1 200.00	lv.
2.2. Professional fees 12.5%@BC	825 000.00	lv.
2.3. Costs for design visa	3 000.00	lv.
2.4. Costs for permits end surveillance	50 000.00	lv.
2.5. Funding fees	54 000.00	lv.
Credit acceptance fee	4 000.00	lv.

Credit management fee	50 000.00	lv.
2.6. Financial costs	922 670.03	lv.
Annual interest	7.00%	%
Monthly interest	0.58%	%
Development period - months	36.00	months
Building period - months	18.00	months
Months from finishing to sale	12.00	months
Land interest rate@ Development period	395 430.00	lv.
All costs but land interest rate@Buildinf period/2	527 240.00	lv.
2.7. Leasing agents commission 10%@annual rent	108 000.00	lv.
2.8. Promoting costs	50 000.00	lv.
2.9. Sale costs	407 400.00	lv.
Agent commission	174 600.00	lv.
Agent commission %@NDV	1.50%	%
Notary and other fees	232 800.00	lv.
Notary and other fees %NDV	2.00%	%
2.10. Other DC	0.00	lv.
2.11. Unpredictable costs	100 000.00	lv.
2.12. Developer profit/Developer risk 22.5%@NTDC	2 052 015.76	lv.
2.13. Residual value – RV	467 914.21	lv.
2.14. Marginal Lend Price@ RV/Correction coefficient	304 152.45	lv.
Land price for 1 sq.m.	202.77	lv.
Land sq.m.	1 500.00	sq.m.
2.15 Land Cost Coefficient	1.261	Coeffic.
Land Cost Coefficient	1.000	coeffic.
Coefficient for land inspection cost	0.032	coeffic.
Coefficient for Agent Commission %@Land	0.015	coeffic.
Coefficient for Notary and other fees %@Land	0.004	coeffic.
Coefficient for interest rate over land 7% Annual@Developmant period	0.210	coeffic.
2.16. Development profit from land 22%@Cost coefficient	1.220	coeffic.
2.17. Correction coefficient	1.538	coeffic.

Table 3	
ROI %	YP
50.00%	2.00
35.00%	2.86
40.00%	2.50
25.00%	4.00
15.00%	6.67
10.00%	10.00
8.00%	12.50
7.00%	14.29
6.00%	16.67
5.00%	20.00
4.00%	25.00
3.00%	33.33
2.00%	50.00
1.00%	100.00

Table 4			
ROE %	YP	Annual Rent	Project Present Value
50.00%	2.00	200 000 lv.	400 000 lv.
35.00%	2.86	200 000 lv.	571 429 lv.
40.00%	2.50	200 000 lv.	500 000 lv.
25.00%	4.00	200 000 lv.	800 000 lv.
15.00%	6.67	200 000 lv.	1 333 333 lv.
10.00%	10.00	200 000 lv.	2 000 000 lv.
8.00%	12.50	200 000 lv.	2 500 000 lv.
7.00%	14.29	200 000 lv.	2 857 143 lv.
6.00%	16.67	200 000 lv.	3 333 333 lv.
5.00%	20.00	200 000 lv.	4 000 000 lv.
4.00%	25.00	200 000 lv.	5 000 000 lv.
3.00%	33.33	200 000 lv.	6 666 667 lv.
2.00%	50.00	200 000 lv.	10 000 000 lv.
1.00%	100.00	200 000 lv.	20 000 000 lv.

The calculation of net development value (NDV) is used mostly for quick determination of the market price of a specific property that generates income in the form of rents. This type of property is also called income-producing properties and form a part of the investment properties according to International Financial Reporting Standard (IFRS).

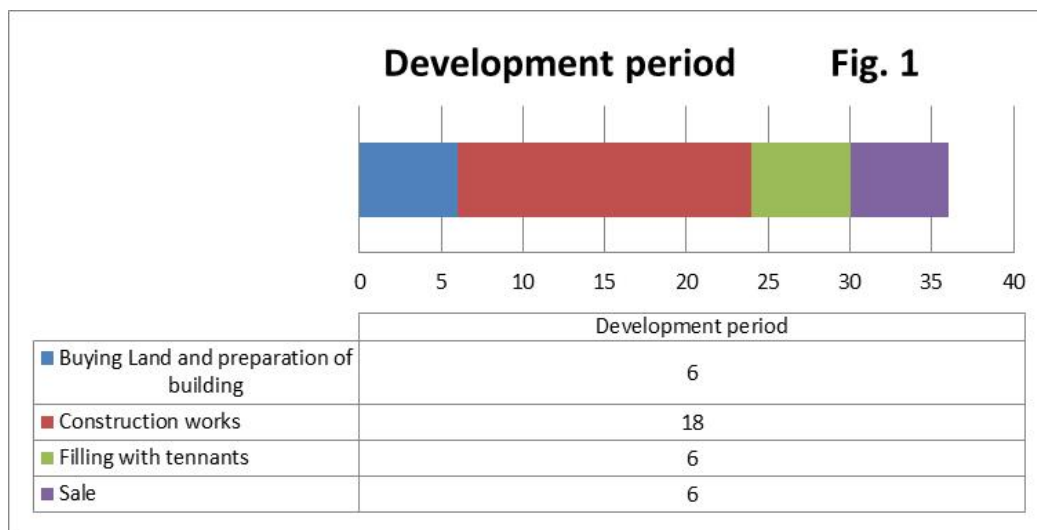
- **Total Development Costs**

Total Development Costs (TDC) include the following components:

- *Land costs* – Land costs include the land price, which is either the price already negotiated or being sought, as well as any additional costs related to acquiring the site, such as: notary fees and charges for entry of the transaction into the land register; local taxes and fees; agent's introduction fees; fees and expenses for drawings, certificates, etc., if borne by the buyer;
- *Building costs* – Building costs are estimated by the developer's quantity surveyor or economists and are usually expressed as a 'per unit' cost, such as the overall rate per square meter – e.g. 1,200 BGN/sq.m. Usually construction costs are calculated over the period of construction, but no allowance is made for inflation.
- *Professional fees* – these costs represent the fees for professional services employed in the completion of the development of the project and are normally calculated as a percentage of the building costs, these include: the architect, the project manager, the structural engineer, the mechanical and electrical engineers, etc.;
- *Site investigation fees* – these are the costs for legal analysis of the land owner, as well as for other analyzes of the site parameters, geology, geodesy, presence of archaeological objects, etc.;
- *Planning fees* – some developments necessitate a change in the use of the property, respectively procedures for and urban development plan for the project;
- *Building regulation fees* – construction permits, endorsements at individual stages of the project, opinions of state control authorities, etc.;
- *Funding fees* – in case of arranging development finance from a financial institution, these include the fees for solid commitments, application fee and management fee;
- *Finance costs* – these are the interest costs in case of financing the project with bank credit in addition to own capital, and their determination depends on the duration of the development period of the project and the expected interest rate agreed with the bank (fig. 1); in the case there are provisions for external financing, but it is not yet agreed, the so-called "rule of thumb" is to be adopted, according to which: building costs, which will be incurred over the contract period, are divided in half and then the interest is calculated over the whole development period, land costs accumulate interest over the whole development period, and all development costs, excluding funding costs, accumulate interest from the completion of the project to its sale.
- *Letting agent's fees* – these fees relate to the cost of the agents letting the project to prospective tenants;
- *Promotion costs* – these are the costs of marketing and advertising, which the developer incurs in order to promote the project and attract prospective tenants.
- *Sale costs* - these are costs that are related to the sale: agent's fees, solicitor's fees, notary fees, state fees, etc.
- *Other development costs* – these costs are specific to each individual project;
- *Contingency allowance* – due to scalability and duration, relatively few property developments, if any, are completed exactly as originally planned, nor are they likely to adhere entirely to the initial budget forecast; contingency allowances are calculated depending on the experience of the developer and the risk profile of the project;

Developer's profit/risk allowance is usually calculated as a percentage of the total development costs or, alternatively, as a percentage of the net development value (NDV);

It is possible that additional costs can arise for the developer if it is an investor wishing to retain the property and let it out for some time. In this case additional maintenance costs on the property will arise for the developer, as well as rental income on the other side. In the case of financing through "**advance purchase**", it is possible that the developer has committed to the financing institution to pay for his own account rent on the un-let areas until their letting to tenants.



The residual valuation method has its pros and cons. On the one hand this method is relatively easy to calculate, provided that the expenses of the developer, as well as the estimated annual return of the future project, can be calculated with a sufficient level of certainty. On the other hand this method represents a snapshot of the expectations of the developer and its economic team. It does not reflect the uncertainty of changes both in deadlines and in the values over time, nor does it reflect the fact that development costs do not occur simultaneously. For these reasons interest costs, laid down on the basis of the "rule of thumb", can be quite inaccurate. The last problem can be overcome by using an evaluation based on the **cash flow method**.

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