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A SIGNIFICANCE OF A CHOICE OF A SUITABLE EVALUATION METHOD IN A PERIOD OF UNFAVOURABLE ECONOMIC SWAYS

VÝZNAM VOLBY VHODNÉ OCEŇOVACÍ METODY V OBDOBÍ NEPŘÍZNIVÝCH HOSPODÁŘSKÝCH VÝKYVŮ

Abstract

This article solves the evaluations of the examined middle-size building enterprise in a period of a financial crisis namely by means of a property substantial method and a returns´method DCF Entity. The contribution can be divided into two main parts namely into theoretical and practical ones. The contents of the theoretical part are explanations of basic concepts connected with the solved problems; the practical part is aimed at own case study which includes basic data about the examined building enterprise and its evaluations by property and returns´ways. The contribution sets itself the objective to prove the fact that in the period of unfavourable economic sways, the property substantial method appears as a suitable way of the evaluation.

Introduction

This contribution is intent on the problems of the evaluation of the middle-size building enterprise of a regional significance in a period of unfavourable economic sways. It goes out from the fact that a choice of a suitable method reprezents a very important step in a process of a building enterprise evaluation and therefore it is necessary to pay him a due attention. While in the introductory chapters of the contribution the basic concepts connected with a property substantial method and a returns´ method DCF Entity are explained, the practical part devotes its attention to the examined middle-size building enterprise of the regional significance and its own property and returns´ evaluations. The aim of the contribution is to demonstrate on the created model of the building enterprise an external negative effect of a critical character and to prove on the basis of own experience that in the period of unfavourable economic sways when the building enterprise is in debt only the property substantial method appears as suitable for a calculation because the returns´ method DCF Entity becomes inaccurate. In order to reach this aim the evaluations of the examined building enterprise are carried out for the year 2010 in which the most outstanding negative effect of a financial crisis on its economic results was noticed.

The Terminology Connected with The Solving Problems

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- Property Substantial Method – is based on an analysis of particular components of a property which are evaluated to a date of an evaluation and under a presumption that an enterprise will continue in its activity.
- Returns´ Method DCF Entity – is based on a calculation of Free Cash Flow which is a volume of financial means accessible to owners of an enterprise without a risk of disturbing its further development.
- Prognosis β – there are four possibilities of its assessment (on the basis of business and financial risks, historical data, factors for a valuation of a coefficient β, the risk in USA for the branch of building industries) whereupon an arithmetical average of values calculated by means of these four possibilities is used in a further calculation.
- Dangerous Premiums of a Country – there are two possibilities of their assessment (by means of dangerous premiums for the Czech Republic or according to the categories) whereupon the first possibility is used in a further calculation because it is more accurate and goes out from real data.
- Secure Interest Rate – is ascertained from a return of ten years´ state bonds.
- Costs on Equity – their calculation goes out from Capital Asset Pricing Model which is modified for the Czech Republic namely by means of additional charges for small enterprises, a market capitalization and the other specific risks.
- Costs on Debts – are based on a calculation of Interest Reimbursement Ratio.
- Average Costs of A Capital – reprezent a sum of costs on Equity and Debts whereupon an income taxation rate and shares of Equity and Debts in a total capital are taken into consideration.
- Two-Phase Calculation of An Enterprise Value – is based on calculations of a current value of the first phase and a continuing value in the time.

The Basic Data about The Examined Building Enterprise

- The title: X1 s.r.o.
- The law form: a corporation with a limited liability
- The object of the activity: A production of steel constructions of halls
- Complete realizations of structures including complete repairs and reconstructions
- Carpentry, slatery, locksmithery and tinsmithery
- Constructions of family houses, industrial halls and agricultural objects
- The region of the activity: a region of Pardubice
- The year of the establishment:1992
- The management of the enterprise: 2 managers
- The number of employees: 55
- The holder of the certificate: ČSN ISO 9001:2001
- The day of the evaluation: 31. 12. 2010

The property evaluation by The Assessment of The Substantial Value (X1 s.r.o.)

The total assets = the gross substantial value

B. I. The long - termed immaterial property	0
B. II. The long – termed material property	9 299 000
B. II. 1 The pieces of land	593 000
B. II. 2 The structures	7 394 000

B. II. 3 The independent movable things and the sets movable things	942 000
B. II. 8 The given advance payments on the long – termed material property	370 000
B. III. The long – termed financial property	245 000
B. III. 3 The other long – termed securities and shares	245 000

Table 1: The Fixed Assets from the Balance in Czech Crowns

(Source: The Balance of The Building Enterprise X_1 s.r.o., 2010)

C. I. The stocks	3 726 000
C. I. 1 The material	1 026 000
C. I. 2 The incomplete production and pre-made products	2 700 000
C. III. The short – termed claims recounted on their current values	6 658 720
C. III. 1 The claims from the business relationships recounted on their current values	6 234 720
C. III. 7 The short – termed given advance payments	424 000
C. IV. The short – termed financial property	1 837 000
C. IV. 1 The money	235 000
C. IV. 2 The accounts in banks	1 602 000

Table 2: The Circulating Assets from The Balance in Czech Crowns

(Source: The Balance of The Building Enterprise X_1 s.r.o., 2010)

It stands to reason from Table 2: The Circulating Assets from The Balance in Czech Crowns that claims after a term of a maturity have to be recounted on their current values whereupon it pays generally that the longer the term of a maturity is, the more the value of a claim falls.

The adjusted assets in Czech crowns	**Au**
The long – termed immaterial property	0
The long – termed material property	9 299 000
The long – termed financial property	245 000
The stocks	3 726 000
The claims	6 658 720
The short – termed financial property	1 837 000
The marketably adjusted total assets	21 765 720

Table 3: The Recapitulation of The Adjusted Assets in Czech Crowns

(Source: The Balance of The Building Enterprise X_1 s.r.o., 2010)

The material value = the gross substance (Au) = 21 765 720 Czech crowns

The debts in Czech crowns	**Pu**
B. I. The reserves	0
B. II. The long – termed obligations	122 000
B. III. The short – termed obligations	9 124 000
B. IV. The banking credits and stopgaps	3 500 000
The other liabilities	300 000
The debts and the other liabilities	13 046 000

Table 4: The Recapitulation of The Debts and The Other Liabilities in Czech crowns

(Source: The Balance of The Building Enterprise X_1 s.r.o., 2010)

Equity in the market value = the net substance (Au – Pu)

(Au – Pu) = (21 765 720 – 13 046 000) = 8 719 720 Czech crowns

The material value – the net substance (Au – Pu) assessed by the property method amounts 8 719 720 Czech crowns to 31.12.2010.

The Returns´ Evaluation by The Method DCF Entity (X1 s.r.o.)

Prognosis β

The possibility 1: The assessment on the basis of business and financial risks

Formula 1: The assessment of the coefficient β on the basis of business and financial risks:

$$\beta = 1 + OR + FR$$

(Source: Mařík, M., Maříková, P., 2005)

$$\beta = 1 + 0 + 0,4$$

$$\beta = 1,4$$

The building enterprise X_1 s.r.o was included in the third class of the systematic business risk because it belongs to average enterprises which means that it doesn´t fulfil any criterion of the higher business risk (OR = 0). From the financial risk´s point of view, it is chosen FR = +0,4 because the indebtedness of the enterprise does in the year 2010:

CK/VK = 12 746/ 10 063 = 1,27 x 100 = 127 %

The possibility 2: The assessment of the basic of historical data

If financing by equity is taken into consideration, it is possible to exclude the coefficient β_N for the branch of building industries from the informative source.

Formula 2: The assessment of the coefficient β on the basis of historical data:

$$\beta_z = \beta_N \text{ x } [1 + (1\text{-}d) \text{ x } CK/VK]$$

(Source: Mařík, M. Maříková, P., 2005)

$$\beta_z = 0,40 \text{ x } [1 + (1\text{- } 0,19) \text{ x } 12\ 746/\ 10\ 063)]$$

$$\beta_z = 0,8104$$

The possibility 3: The assessment on the basis of factors for a valuation of the coefficient β

Factors influencing the coefficient β including the scale for the evaluation of the riskiness are stated in the following table whereupon the evaluation of the building enterprise X1.s.r.o is stated in the column "The choice of the evaluator".

The scale for the evaluation of the riskiness	**0,5**	**1**	**1,5**	**"The choice of the evaluator"**
1. The susceptibility to changes of an economic cycle	a minimal susceptibility	it develops with a cycle	a high susceptibility	in develops with a cycle → 1
2. The negotiating strength towards supplies	a prevalence of an enterprise	well - balanced	a prevalence of suppliers	well – balanced → 1
3. The negotiating strength towards customers	a prevalence of an enterprise	well - balanced	a prevalence of customers	well – balanced → 1
4. The share of fixed costs in total costs	low	average	high	average → 1
5. The rate of the indebtedness	less than 40%	40% -80%	80% and more	80% and more → 1,5
6. The size of an enterprise	great	middle	small	middle → 1
7. The diversity of an area	considerable	middle	small	middle → 1
8. The diversity of products	considerable	middle	small	middle → 1

Table 5: The Scale for The Evaluation of The Riskiness

(Source: Mařík, M., Maříková, P., 2005)

In the following table the particular grades of the risk including the number of their occurrences on the basis of which the coefficient β is calculated are taken into consideration.

The grade of the risk A	**The number of the occurrences B**	**A x B**
0,5	0	0
1	7	7
1,5	1	1,5
Total	8	8,5

Table 6: The Valuation of The Coefficient β

(Source: Mařík, M., Maříková, P., 2005)

Formula 3: The valuation of the coefficient β:

$$\beta = (A \times B)/B = 8,5/8 = 1\ 0,625$$

(Source: Mařík, M., Maříková, P., 2005)

The possibility 4: The risk in United States of America for the branch of building industries

$$\beta = 1,32$$

The evaluation: Prognosis β

The possibility 1: $\beta_1 = 1,4$

The possibility 2: $\beta_2 = 0,8104$

The possibility 3: $\beta_3 = 1,0625$

The possibility 4: $\beta_4 = 1,32$

Formula 4: The evaluation of the prognosis β:

$$\beta = (\beta_1 + \beta_2 + \beta_3 + \beta_4)/4$$

(Source: Mařík, M., Maříková, P., 2005)

$$\beta = (1,4+ 0,8104 + 1,0625 + 1,32)/4$$
$$\beta = 4,5929/4$$
$$\beta = 1,1482$$

The Valuation of Dangerous Premium of A Country

The possibility 1: The valuation of dangerous premiums for the Czech Republic

In the Czech Republic it is calculated with the total premium for the risk at the height of 7,20% which is created by the basic premium for the risk (5,50%) and the additional premium (1,70%).

The possibility 2: Expert valuations of dangerous premiums according to the categories (Business Valuation News)

The building enterprise X_1.s.r.o was included in the second category because it is established and financially stable, it has a good management and a relatively strong position on a market, it shows a stable previous development and it is possible quite well to presume its further development; the dangerous premium assessed on the basis of Business Valuation news amounts 11 - 15%.

The evaluation: Total dangerous premius

The possibility 1: 7,2%

The possibility 2: 11 – 15%

Further on it is calculated with the dangerous premiums at the height of 7,2% (see The possibility 1) because this valuation is more accurate and goes out from real data. The possibility 2 is quite subjective and therefore it is used only for a comparison.

The Secure Interest Rate - r_f

The secure interest rate is found out from the return of ten years´ state bonds and amounts $r_f = 4,40\%$ for the year 2010.

Costs on Equity – r_e

Cost on Equity are calculated on the basis of Capital Asset Pricing Model which is adjusted by additional charges for small enterprise (PMP), a market capitalization (PTK) and the other specific risks (PSR).

Formula 5: Cost on Equity:

$$r_e = r_f + \beta \times ZRP + PMP + PTK + PSR$$

(Source: Mařík, M., Maříková, P., 2005)

$$r_e = 4{,}40 + (1{,}1482 \times 7{,}20) + 4 + 0 + 3$$
$$r_e = 19{,}67\%$$

Costs on Debts – r_d

Cost on Debts reprezent the sum of the secure interest rate and the additional charge whereupon the basis of their calculation reprezents Interest Reimbursement Ratio.

Formula 6: Interest Reimbursement Ratio:

Interest reimbursement Ratio = EBIT/ costs´ interest

(Source: Mařík, M., Maříková, P., 2005)

Interest Reimbursement Ratio = 2773/ 129 = 21,50%

→ the examined building enterprise X_1 s.r.o. was included in the rating grade D which means that the additional charge amounts 14,00%.

The secure interest rate r_f of the long-termed state bonds is stated in the previous text at the height 4,40% for the year 2010.

Formula 7: Cost on Debts:

$r_d = r_f$ + the additional charge

(Source: Mařík, M., Maříková, P., 2005)

$$r_d = 4{,}40\% + 14{,}00\%$$
$$r_d = 18{,}40\%$$

Average Costs of A Capital – WACC

Average Costs of A Capital reprezent a sum of Costs on Equity and Debts whereupon it is necessary to take an income taxation rate as well as shares of Equity and Debts in a total capital into account.

Formula 8: Average Costs of A Capital:

$$WACC = rd \times (1 - t) \times D/C + re \times E/C$$

(Source: Mařík, M., Maříková, P., 2005)

$$WACC = 18{,}40 \times (1 - 0{,}19) \times 55{,}9/100 + 19{,}67 \times 44{,}1/100$$
$$WACC = 17{,}0\%$$

A Two - Phase Calculation of An Enterprise Value

In the following tables the market value of the building enterprise X_1 s.r.o. is calculated namely on the basis of the current value of the first phase and the continuing value in the time.

Data in thousands of Czech crowns	**The calculation**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**
Earnings before Interest and Taxes	V30	-265,00	1 914,00	1 396,00	699,00	347,00	2 773,00
The income taxation rate	the rate	26,00%	24,00%	24,00%	21,00%	20,00%	19,00%
The taxation of Earnings and Interest	ZZ_{before} = V30 x the rate	-68,90	459,36	335,04	146,79	69,40	526,87
Earnings and Interest after Taxes	ZZ_{after} = V30 - ZZ before	-196,10	1 454,64	1 060,96	552,21	277,60	2 246,13
Adjustments by non - monetary operations	$CF_4 = CF_5 + CF_6 + CF_{10} + CF_{12}$	894,00	1 713,00	863,04	760,86	1 683,62	1 436,00
Depreciations of fixed assets	CF_5	687,00	650,00	53,04	626,52	814,35	571,00
Changes in states of items of correction, reserves and the transient accounts of assets and liabilities	CF_6	-600,00	62,00	-73,00	-568,26	242,82	95,00
The account of costs´ and the returns ´interest	CF_{12}	177,00	193,00	128,00	86,18	-48,95	129,00
The profit (the loss) from sale of fixed assets	CF_{10}	630,00	808,00	755,00	616,42	675,40	641,00
Cash Flow from the operating activity before changes of Working Capital	CF = ZZ after + CF_4	697,90	3 167,64	1 924,00	1 313,07	1 961,22	3 682,13
Changes of Working Capital	$CF_{14}= CF_{15} + CF_{16} + CF_{17}$	-3 486,00	2 208,00	826,00	3 683,82	-5 451,94	-3 800,00
The change in the state of claims	CF_{15}	-10 262,0	-13 239,0	26 395,0	-7 125,82	-26 164,55	-12 984,00

The change in the state of short-termed obligations	CF_{16}	6 211,00	19 066,00	- 23 954,00	12 990,47	20 196,68	10 353,00
The change in the state of stocks	CF_{17}	565,00	- 3 619,00	- 1 615,00	- 2 180,83	515,93	- 1 169,00
Cash flow from the operating activity	CF_p= CF + CF_{14}	- 2 788,10	5375,64	2 750,00	4 996,89	- 3490,72	- 117,87
The acquirement of fixed assets	CF_{24} = CF_{25} + CF_{26}	- 859,00	- 1 150,00	- 1 534,00	- 1 227,73	- 1 412,26	- 1 051,00
Receipts from the sale of fixed assets	CF_{26}	- 630,00	- 808,00	- 755,00	- 616,42	- 675,40	- 641,00
Cost connected with the acquirement of fixed assets	CF_{25}	- 229,00	- 342,00	- 779,00	- 611,31	- 736,86	- 410,00
FCF entity - Free Cash Flow into the enterprise	FCF = CFp + CF_{24}	- 3 647,10	4 225,64	1 216,00	3 769,16	- 4 902,98	- 1168,87
Interest Payment Off (WACC) 17,0 %	the rate	0,735	0,681	0,630	0,583	0,583	0,583
DFCF= Discounted Free Cash Flow	DFCF = FCF x the rate	- 2 680,62	2 877,66	766,08	2 197,42	- 2 858,44	- 681,45
Cumulate Discounted Free Cash Flow		- 2 680,62	197,04	963,12	3 160,54	302,10	- 379,35
The sum of DFCF = the current value of the first phase by the method of DCF entity		- 379,35					

Table 7: The Cumulate DFCF Entity – The Current Value of The First Phase (X1.s.r.o.)

(Source: Mařík, M., Maříková, P., 2005)

Formula 9: The continuing value in the time:

$$T = (FCF_{T+1}/(i_k\text{-}g)$$

(Source: Mařík, M., Maříková, P., 2005)

T = - 379,35/0,08

T = - 4 742 thousands Czech crowns

	The calculation	**The total in thousands Czech crowns**
The evaluation of the first phase		-4 742
The discounted rate for the second phase		8%
The pace of the increase for the second phase		0%
FCF in the first year of the second phase	-4 742 x 1	-4 742
The evaluation of the second phase (the continuing value)	-4 742 / (0,08 - 0)	-59 275
The interest Payment Off WACC = 17,0 % for the year 2010		0,583
The current value of the second phase	-59 275 x 0,583	-34 557
The gross operating value	-4 742 + (-34 557)	-39 299
The interest-born debts to the date of the taxation		3 500
The net operating value	-39 299 – 3 500	-42 799
The non-operating assets to the date of the taxation		0
The resulting value of equity		-42 799

Table 8: The Resulting Market Value Assessed by The Method DFCF Entity

(Source: Mařík, M., Maříková, P., 2005)

The market value of the building enterprise X_1.s.r.o. assessed by the method DCF entity amounts - 42 799 000 Czech crowns to 31.12.2010.

Conclusions

The theoretical part of the contribution was aimed at the terminology connected with the problems of property and returns´ ways of evaluations. The contents of the practical part of the contribution were evaluations of the examined building enterprise by the property substantial method and the returns´ method DCF Entity

From the ascertained results of the used methods it stands to reason that in the period of unfavourable economic sways only the property substantial method appears as suitable for a calculation. By means of this the fact that if an enterprise is in debt, the returns´ method DCF Entity becomes inaccurate was confirmed. On the created model of the building enterprise the external negative effect of the critical character was demonstrated successfully. On the basis of these results it is possible to state that the building enterprise which is provided with a sufficient amount of a capital is always better ready for contingent sways of an economic situation.

On the basis of the ascertained results during evaluations the fact that two sides carrying out an independent evaluation can reach different results namely owing to a different interpretation of the same facts was confirmed. It ensues from this that there is no unique method by means of which it would be possible to find out a value of an enterprise. It is then possible to state that a choice of a suitable method reprezents one of the most important and very essential steps in a process of a building enterprise evaluation.

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