Evaluation of a real estate property

Gabriela Oprica

Abstract

Real estate assets represents one of the three largest categories of assets among financial and companies. Real estate assets have the advantage of a greater financial stability in time, their price being more stable than the one found in other categories. They are also less risky therefore their rentability is lower. This is a well known fact that risk is proportional with the rentability.

Keywords: real estate, residential market, Monte Carlo

Introduction

The current thesis is structured in three chapters. For the first chapter I consulted advanced literatures, which contained important studies that share the same topic with this thesis. I also pointed the role of a feasibility study, which is mandatory before start investing in a real estate project.

In the next chapter, I used econometrics statistics in order to study the evolution of average price of real estate properties and its influence factors like: loan's interest rate, the time it takes to pay back a loan and the amount of contracted money.

In the last chapter, I finished the financial analysis of a real estate investment project in order to see its rentability. The investment project consist in building a residential tower in a central area of Bucharest. I believe that a central area of a city is much more attractive for real estate investors who will also want to build the property, not just buy it.

Literature review

In our country, the dynamics of real estate investments have not been researched as much as it was in other countries, even if they were well-developed or undeveloped countries. This can be observed by the lack of statistical information, whereas Romanian authorities did not pay much importance to the transparency of these data in this field of activity.

The researches done in this domain shows that the forces implied in real estate investments are represented by direct impulse like population total income, the ease of accessing bank loans, the demographic pressure as well as the costs implied by a new construction (Mikhed and Zemcik, 2009). There are also indirect impulse like the evolution of exchange rates (Alvarez -Lois, Nuno - Barrau 2007), the increasing prices (Muellbauer and Murphy, 2008) and the level of regulations between real estate properties and bank loans.

Important scientific articles point the importance of investments in real estate market in a country's economy and how they contribute to increasing the standard of living and the development of that country.

On international scale, Murphy (2008) claim that demographic factors, the income of the population, the number of existent real estate properties, the interest rate on loans determine the price of a housing unit. The speculations regarding the increase of the values of these real estate properties, also determines the price of a housing unit, and may lead to overrating prices. For example in Great Britain, restrictive urban regulations reduce the population ability to buy or build a property, in order to inhibit the investments in this sector.

The link between investments in real market and banks is also very important. Buildings could be seen as a reason for contracting a loan, but will also be pledged in order to receive the loan.

Authors Binay and Salman (2008) made a few researches in Turkey, and showed that the real estate buildings may be considered the most important part of people's household. Price variation towards the value of real estate assets also affects population capacity to spend and to contract loans.

Real estate market

In year 2008 the real estate market in Romania was heavily affected by the international crisis, as in this year a lot of residential projects were about to be finished.

Somewhere between 2006 and 2007, the demand of housing units was very big. This has lead to the development of two or three real estate residential projects in the same area, which generated a high positive impact on the clients who were analyzing the offers available on the market.

However, the real estate market was heavily affected by the international financial crisis, reducing the number of available assets on the market as well as the number of foreign investors. This slowed down the tremendous demand for housing units which started somewhere between 2006 and 2007. The number of deals also decreased for both individuals and legal entities, which were searching for a fresh constructed house or for an old one, because of restrictions applied to bank loans.

The economic crisis has radically changed the Romanian real estate market, and from the best performing economic segment, this industry became one of the black sheep of the national economy. The crisis deeply affected also the new homes, and along the market blockage, the development activity was not too rich either. The new residential ensembles are pushed towards outside the cities, where the developers can build cheaper. The projects themselves have become smaller, from ensembles with hundreds and even thousands of apartments to projects with only few blocks and several tens of small apartments. The prices continue to decrease, reaching at half the value from the boom period, from six years ago. Bucharest City was the worst affected by crisis, with prices falling by over 50% compared to the peak of the market from March 2008. According to imobiliare.ro, the new apartments from Bucharest have cheapened by some 53%, from 2,576 euro/ square meter to 1,204 euro/ square meter (in 2014). At this moment, a studio flat has an average price of 45,000 euro, while a two-bedroom apartment costs 74,000 and a three-bedroom apartment reached at about 111,600 euro.

The rentals market from Bucharest is registering huge differences between the rents asked for apartments in the six sectors of the Capital City. The most obvious difference in rents is between Sector 1 and Sector 6. With the rent for a two-bedroom apartment in Sector 1, a tenant could rent a four-bedroom apartment in Sector 6. According to an analysis made by imobiliare.net real estate website, the values of the average rents asked for apartments in Bucharest varies according to several criteria: the sector of the city, how the apartment is divided into rooms, the comfort level and the furniture.

Feasibility of investment property

The feasibility study shows the probability of success for a real estate investment project, but also the probability to accomplish the established goals. This also implies to estimate the amount of money involved, the key moments of required capital expenditures, the planned incomes, as well as the trust grade of all these forecasts.

To be more accurate this implies to carefully set the goals which will be used to measure the possible results.

The feasibility study also shows if a building is worth to be built or not, if a real estate project has rentability, or not. The most eloquent indicator used for choosing an real estate investment project is the current net income. This indicator shows the actual profit in monetary units, which may be compared with the units that will be obtained by the investor at the end of this project, assuming he will accept the analyzed project. As a conclusion we may say that the project will be adopted if the resulted NPV indicator has a positive value.

Case study

For my study case, I have chosen to analyze a real estate investment project, from the financial perspective, in order to see its rentability. The investment consists in building a residential tower with S+P+10 height regime in Tineretului neighborhood, on Calea Vacaresti.

The terrain is situated in a central area of Bucharest, in Tineretului neighborhood, on Calea Vacaresti Street. The land is a freehold property, has a clear and marketable title, resides in the central area of the town, and has a total surface of 2200 square meters.

The price requested by the current owner is 750.000 EURO, which leads to an average of 341 euro/m^2. Because on the real estate market the freehold properties have a negotiation rate between 10-15%, I assumed that the terrain could be bought for 650.000 euro. This amount corresponds to a price reduction of 14%. This way the unitary price becomes 295 euro/ m^2.

At the basement, there will be arranged 60 parking spots, one for every housing unit. At the ground floor, the building will have four commercial spaces, each having a usable area of 71 m^2. The investor will rent these four spaces on long term, using them as a constant income resource. On each floor there will be 1 apartment with 3 rooms and a total usable area of 77 m^2, 2 apartments with 2 rooms each and a total usable surface of 70 square meters, and three studios with total usable area of 43 m^2 each.

In the table bellow, I estimated the development costs, both indirect and direct, used to build the residential tower. These costs does not imply the acquisition costs of the terrain, but only a part of the total investment.

DIRECT COSTS:	***cost / MU***	***MU***	***Total cost euro***
Demolition, obstacles removal and basic terrain fix-up	2	euro / mp Ad	4,400
Connect to public utilities	10	euro / mp St	22,000
Parking spots	30	euro / mp Ad parking	51,000
Roads and alleys	30	euro / mp Ad roads	3,000
Constructions and build process	450	euro / mp Ad	1,980,000
TOTAL DIRECT COSTURI			2,062,600
INDIRECT COSTS :	***%***		
Proiection and diverse studies	2.50%		51,570
Building fees and authorizations (authorization to build, local council fee, tax for Construction Inspectorate):	2.00%		41,250
Marketing, sales and project management:	1.50%		30,940
Unexpected expenses	3.00%		61,880
Financing:	4.00%		82,504
TOTAL INDIRECT COSTS	13.00%		268,144
TOTAL DIRECT AND INDIRECT COSTS			2,330,744
BUILDER'S PROFIT	10%		233,070

TOTAL DEVELOPMENT COST			**2,561,086**

The investment project has three stages:

1. development stage;
2. working stage during explicit analysis period
3. working stage in perpetuity

The first stage, the development one, lasts two years. In the first year, the terrain is bought, and a big part of the whole construction occurs. There are only expenses without any income. I estimated that the development expenses are evenly distributed during these two years. In the second year of development, the construction is finally finished. In this whole period, the financing is made with self-funds and short-term bank loans.

The second stage of explicit analysis period consists in make full use of and derive benefits from the investment project. I estimated that all the housing units would be sold in maximum 4 years, taking into account the real estate market degree of absorption and the localization of the compound. There will be revenues coming from both selling the housing units and from renting the four commercial spaces which were build on the ground floor. In this stage, there are no more development expenses. The only expenses that will occur are coming from exploiting the commercial spaces. At the start of this stage, the long-term loan is contracting in order to complete the investor's own assets.

The third stage consists in perpetually renting the commercial spaces. At this phase, all the housing units have been sold and every bank credit have been paid.

	1	2	3	4	5	6	7
Venituri/cheltuieli	**Anul 1 dezvoltare**	**Anul 2 dezvoltare**	**Anul 1**	**Anul 2**	**Anul 3**	**Anul 4**	**Perpetuitate**
Nr. de apartamente de 3 camere vandute			3	3	2	2	0
Venituri din vanzarea apartamentelor de 3 camere			300,300	300,300	200,200	200,200	0
Nr. de apartamente de 2 camere vandute			5	5	5	5	0
Venituri din vanzarea apartamentelor de 2 camere			390,000	390,000	390,000	390,000	0
Nr. de garsoniere vandute			8	8	7	7	0
Venituri din vanzarea garsonierelor			447,200	447,200	391,300	391,300	0
Grad de ocupare spatii comerciale			100.00%	100.00%	100.00%	100.00%	100.00%
Venituri din inchiriere spatii comerciale parter			85,200	85,200	85,200	85,200	85,200
Achizitie teren	-650,000.00						
Venit brut potential (din exploatare)			1,222,700	1,222,700	1,066,700	1,066,700	85,200
Grad de ocupare spatii comerciale			75%	75%	75%	75%	75%
Venit brut efectiv (din exploatare)	-1,280,543.00	-1,280,543	1,201,400	1,201,400	1,045,400	1,045,400	63,900
Cheltuieli de exploatare	0	0	17,878	17,878	17,878	17,878	17,878
Venit net din exploatere	-1,280,543	-1,280,543	1,183,522	1,183,522	1,027,522	1,027,522	46,022
Cheltuieli cu dobanzi si rambursari de credite	0	0	701,565	701,565	701,565	701,565	
CFB			481,957	481,957	325,957	325,957	46,022
Impozit pe profit			77,113	77,113	52,153	52,153	7,364
CFN			404,844	404,844	273,804	273,804	38,658
Fluxuri de numerar	-1,930,543	-1,280,543	1,183,522	1,183,522	1,027,522	1,027,522	**528,745**
Factor de actualizare	0.92	0.85	0.78	0.72	0.66	0.61	0.56
Valoare actualizata a fluxurilor de numerar	-1,775,963.17	-1,083,685.13	921,382.08	847,606.41	676,960.77	622,756.08	294,800.31
Rata de actualizare (CMPC)	**8.70%**						
Investitia initiala	-2,859,648.30						
Credit necesar	-2,287,718.64						
Anuitati (rambursare in 4 ani)	**3.26**	**0.31**	-701,564.61	-701,564.61	-701,564.61	-701,564.61	
Valoare actualizata neta (VAN)	**503,857.35**						
RIR	**14%**						
Termenul de recuperare	**2.48**						
Rata de capitalizare a spatiilor comerciale	**15%**						
Rata de acoperire a datoriei	**1.69**						
Rata lichiditatii imobiliare (RLI)	**0.17**	**0.11**	**0.02**				
ROE	**0.71**	**0.48**	**0.07**				

Table 2. Discounted Cash Flow Method

A positive NPV indicator means that the investment projects will be approved, meaning they will bring profit for investors. In this study case, the NPV indicator is positive, having a value of 503.857 euro, therefore the investment should take place.

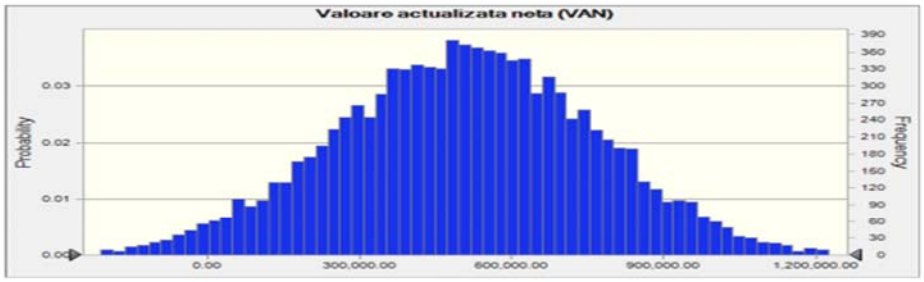
Monte Carlo

For Monte Carlo simulation, I used Crystal Ball software provided by Oracle Inc. As dependent variables, for whom I will do the prevision, I used the most important indicators of the investment projects: NPV and IRR. As independent variables, which will receive values according to a normal distribution, I have chosen the construction cost per usable square meter and the price of usable square meters of the rented commercial spaces.

We observe that the NPV series obtained after running the simulation is distributed evenly. The average value of previewed NPV is 507.380,83, just a little bit above the value found in the base scenario. The lowest values is -456.489,05 and the highest one is 1.950.600,06.

Forecast: Valoare actualizata neta (VAN)

Summary:
Entire range is from (456.489,05) to 1.494.111,01
Base case is 503.857,35
After 10.000 trials, the std. error of the mean is 2.557,51



Statistics:	Forecast values
Trials	10,000
Base Case	503,857.35
Mean	507,380.83
Median	510,789.80
Mode	—
Standard Deviation	255,750.63
Variance	65,408,382,715.02
Skewness	-0.0554
Kurtosis	2.95
Coeff. of Variation	0.5041
Minimum	(456,489.05)
Maximum	1,494,111.01
Range Width	1,950,600.06
Mean Std. Error	2,557.51

Picture 1. NPV Simulation Summary

According to the percent computed bellow, we can observe that the probability of a negative NPV is less than ten percent. Taking into account these values, this investment project can be executed.

Percentiles:	Forecast values
0%	(456,489.05)
10%	176,042.05
20%	291,751.01
30%	374,069.21
40%	443,860.35
50%	510,760.20
60%	574,512.20
70%	642,898.71
80%	726,105.45
90%	833,435.53
100%	1,494,111.01

Picture 2. NPV Percentiles

Conclusion

The analyzed property - residential tower – represents the consumer good which covers the basic human need to live, the asset whose means is to connect one of the most important economic relations but is also the most conservative way to invest your fortune, from which you will obtain long term financial benefits.

For most of us buying an immovable property represents one of the most important actions we do in our lives.

Bibliography

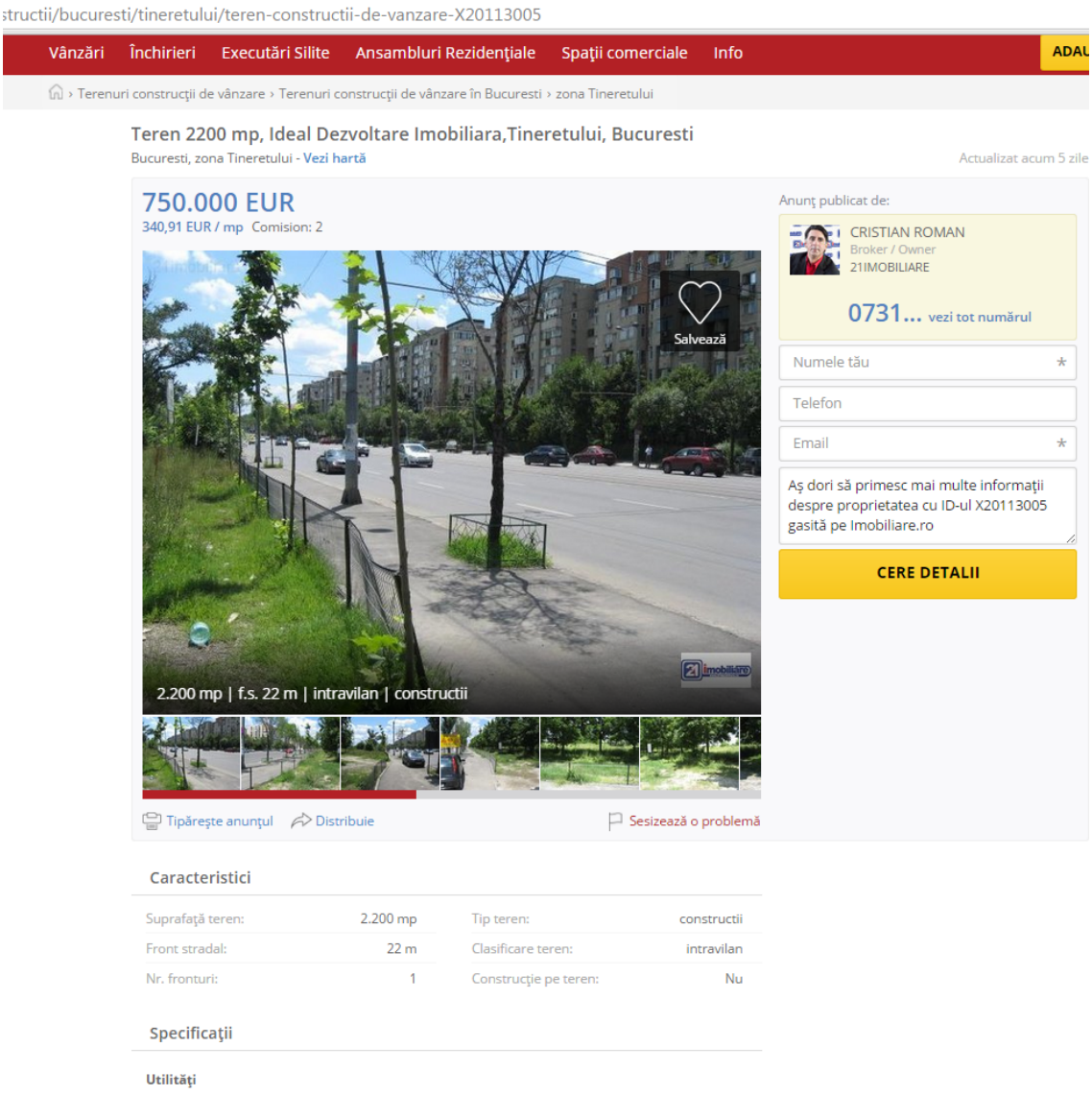
1. Appraisal Institute, *Evaluarea proprietăților imobiliare,* Editura ANEVAR, București, 2011
2. Bădescu, Gh., Oancea-Negrescu, M. D., *Analiza investițiilor imobiliare*, Editura Economică, București, 2009
3. Bănacu, C., S., *Evaluarea investițiilor imobiliare,* Tribuna Economică, București
4. Bănacu, C., S., *Teza de doctorat – Metodologia studiilor de fezabilitate in ramura construcțiilor,* ASE – Facultatea de Contabilitate și Informatică de Gestiune, București, 1997
5. Binay, S., Salman, F., *A critique on turkish real estate market*, Turkish Economic Association, 2008
6. Comănescu, M., *Serviciile imobiliare – evoluții si tendințe*, Editura Tribuna Economică, București, 2011
7. Deloitte Touche Tohmatsu, *Why is the Central European construction sector so interesting?*, a Private Equity perspective, Deloitte Touche Tohmatsu, 2008 Accesat la http://www.wall-street.ro/files/43874_1.pdf

8. Dragota, V., *Evaluarea si finanțarea investițiilor directe – culegere de studii de fezabilitate,* Editura ASE, București, 2009
9. Dragota, V., Ciobanu, A., Obreja, L., *Management financiar,* Editura Economică, București, 2003
10. Dragota, V., Dragota, M., Stoian, A., Tatu, L., *Gestiune imobiliară*, Editura ASE, București, 2005
11. Gardó, S., Martin, R., T*he Impact of the Global Economic and Financial Crisis on Central, Eastern and South-Eastern Europa*, OCCASIONAL PAPER SERIES, no. 114 / June 2010 Accesat la http://www.ecb.europa.eu/pub/pdf/scpops/ecbocp114.pdf
12. Global Property Guide, *Romanian Cost per Square Meter*, Iunie 2014, accesat la www.globalpropertyguide.com/Europe/Romania/square-meter-prices
13. Hui, H., C., *Transmission Channels linking real estate shocks with macroeconomic performance: evidence from Malaysia*, Nottingham University Business School Malaysia Campus, 2008
14. Hongyu, L., Park, Y., Siqi, Z., *The interraction between housing investment and economic growth in China*, The international real estate review, 2002
15. Koetter, M., Poghosyan, T., *Real estate prices and bank stability*, Journal of Banking and Finance, 2010
16. Mikhed, V., Zemcik, P., *Do house prices reflect fundamentals? Aggregate and panel data evidence*, Journal of Housing Economics, 2009
17. Muler, O., *Risks and rewards of leverage in Romanian real estate Investment*, The Bucharest Academy of Economic Studies, Romania, 2012, accesat la http://ac.els-cdn.com/S2212567112001840/1-s2.0-S2212567112001840-main.pdf?_tid=5b4f3c70-ec0311e4b1fd00000aab0f27&acdnat=1430046168_e49e7711b95bc3ed04ac91b22ce26d97
18. Muellbauer, J., Murphy, A., *Housing markets and the economy: the assessment,* Oxford Review of Economic Policy, 2008
19. Oproiu, A., *Teză de doctorat - Influența pieței imobiliare asupra creșterii economice din România*, Facultatea de Finanțe, Bănci, Asigurări și Burse de Valori, ASE, București, 2014
20. Popa, A., *Managementul proprietății imobiliare,* Editura ASE, București, 2003
21. Phang, S., *House prices and aggregate consumption: do they move together?,* Evidence from Singapore, Journal of Housing Economics, Elsevier, June 2004

22. Property Observer, *Residential Lease Prices in Bucharest*, Iunie 2014, accesat la http://www.propertyobserver.net/residential-lease-prices-in-bucharest/
23. Property Observer, *The romanian real estate market changed*, Iulie 2014, accesat la http://www.propertyobserver.net/romanian-real-estate-market-changed/
24. Property Observer, *The Rentals Market at the lowest level of the last six years*, Mai 2014, accesat la http://www.propertyobserver.net/the-rentals-market-at-the-lowest-level-of-the-last-six-years/
25. Șchiopu, C., *Clădiri. Sisteme – subsisteme constructive,* Editura IROVAL, București, 2003
26. Șchiopu, C., *Inspecția proprietăților în scopul evaluării,* Editura IROVAL, București, 2003
27. Vintilă, G., *Gestiunea financiară a intreprinderii,* Editura Didactică și Pedagogică, București
28. www.bnr.ro
29. www.imobiliare.ro

Annexes

Annex 1



Annex 1. Offer land for sale (source: www.imobiliare.ro/vanzare-terenuri-constructii/bucuresti/tineretului/teren-constructii-de-vanzare-X20113005)