

Investment perspectives: Approach in the real estate sector compared to the opportunity cost of the financial market



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ABSTRACT

The attributions of investment evaluation methods and their perspectives, enable the necessary knowledge for the flexibility in decisions making regarding the best investment. As a primary factor of this study, it is to be able to bring the importance and relevance of investment evaluation, its methods and techniques for making safe decisions. The approach was in the real estate sector compared to the opportunity cost of the fixed income financial market. When evaluating the financial viability of an investment, there will be doubts when making decisions regarding the definition of which is the best investment, or if it is acceptable, therefore, the evaluations must be carried out using methods and techniques that demonstrate the rates and the expected payback period of the investment, as well as its profitability and current value.

Keywords: Evaluation, Flexibility, Investment, Perspectives, Techniques.

1 INTRODUCTION

The evaluation of investments is related to the decisions to be made about the best investment project, related to risk and return in a given period of time, requires the use of specific methods that enable the most attractive choice, with consequent optimization of resources.

Investment decisions should be made based on evaluated indicators, as they commit financial resources for a long time and their effective return can only be estimated, which generates risks and uncertainties.

To enable investment decisions, valuation should be carried out using methods that demonstrate their financial return.

The objective proposed for this study was to evaluate the prospects of business investments in the real estate sector of the municipality of Palmas-TO, compared to the opportunity cost of investments in the fixed income financial market.

According to Gitman (2010, pg.331) Opportunity cost "are cash flows that could be realized through the best alternative use of an asset"



To achieve the proposed objective, the methodology applied in this study was the use of the net present value (NPV) method, comprised in a period of ten years, to determine the financial viability of real estate investments in the municipality of Palmas -TO, in comparison to the opportunity cost of profitability of investments in the fixed income financial market. using the same evaluation method and for the same period of time.

2 INVESTMENT VALUATION METHODS

The evaluation of investments can be carried out through methods and techniques that compare the results in a scientific manner.

Specific methods for evaluating investment alternatives can be used alone or combined, depending on each case, and are always valued at current values.

According to Gitman (2010), investments are classified as temporary and permanent, temporary investments are those that provide redemption in a period of time, and permanent investments are investments with long-term returns.

Casarotto Filho and Kopittke (2006, pg.104) "Economic engineering aims at the economic analysis of investment decisions. And it has very broad applications, as the investments can be from companies, individuals or government entities."

To assess the financial feasibility of the investment return prospects and their flexibilities, initial data are required, such as: Projected cash flow, time interval and present value and as a result the determination of NPV, which according to Gitman (2010, pg.369) "is found by subtracting the initial investment of a project (FC_0) from the present value of its cash inflows (FC_t), discounted at the company's cost of capital rate (r)".

NPV is a widely used technique for decision-making about investments and therefore consists of determining the present value of the projected cash flow, that is, determining the viability of the investment over a period of time, in relation to the initial investment.

The use of the NPV indicator as a measure of investment viability, by itself, does not guarantee the maximization of the investment, however, the basic reasoning for the decision of acceptability of the investment is with the result of the NPV greater than zero ($NPV > 0$), that is, the investment that presents the greatest aggregation of profitability in the period of time.

According to Gitman (2010, pg.371), another method can be used to evaluate an investment, the internal rate of return (IRR), which "consists of the discount rate that makes the NPV of an investment opportunity equal to \$0. It is the compound annual rate of return that the company will get if it invests in the project and receives the anticipated cash inflows." Therefore, IRR is an analysis technique where it makes it possible to calculate the interest rate that equals the present value of the projected cash flow with the initial investment.



According to Fensterseifer et al. (1987), cited by Costa Jr, Menezes and Asrilhant (2001, pg.20) "The IRR was chosen for comparison because it is one of the most used evaluation instruments by companies, although it was found that it is a method whose underlying hypotheses are, in general, misunderstood by the user", Costa Jr, Menezes and Asrilhant (2001, pg.20) stress that "the two methods are based on the same principles of capital equivalence and lead to the same decision".

According to Assaf Neto (2007, pg.386) "sensitivity analysis is a risk assessment methodology that reveals how much the economic result (NPV) of an investment will change in the face of changes in estimated cash flow variables", that is, the greater the variation in the determination of NPV, the greater the investment risk.

Furthermore, according to Assaf Neto (2007, pg.388) "the measurement of risk through the behavior of the economic scenario incorporates the distribution of probability in the study of the sensitivity of a project, proving to be very useful to the financial manager".

For example, does the investment project become sensitive if: the cash flow varies more or less each year? Will the NPV stick? What is the variation in the NPV of the investment if the cost of capital rate varies? These are doubts for the financial analyst to have as a basis for measuring the risk of an investment and its flexibilities.

3 REAL ESTATE INVESTMENTS

To enable the application of real estate investment valuation, this study was carried out through the collection of primary data throughout the year 2021, therefore, a survey was carried out with data on the market prices of apartments and commercial rooms in the city of Palmas-TO. In the initial data collection, we used websites of real estate agents (and real estate brokers) with a good reputation in the city, such as: Casa63, Logos, Nobre, Nova Morada, Petrópolis, Ricardo Monteiro, Vale, Vânia, Versátil and Vivanci.

After the definition of real estate agents and brokers, it was also necessary to define areas of interest for the collection of data on the price of real estate, due to the vast territorial extension of the city of Palmas. Like this It was determined which the blocks selected and the criteria used for the selection of the properties.

Regarding apartments, blocks 105, 106, 107, 110 and 405 of the north master plan were selected. In the South master plan, blocks 204, 306, 308, 704, 706 and 1104 South were selected. Such blocks, in general, are located close to public squares, points of accessibility to public transport, commerce in general, gas stations, schools, health centers, etc. In total, 30 residential properties were chosen to be categorized as apartments.



In relation to commercial rooms, blocks 103, 106, 307 and 401 of the north master plan were selected and in the south master plan, blocks 101, 103, 201, 401, 501, 504, 601, 1103, 1106, 1203, 1503 South and Jardim Aurenny III.

These blocks, in general, are inserted in areas with a high flow of people and are intended for the development of corporate and commercial activities. In total, 27 commercial properties were chosen to be categorized as commercial rooms.

As you can see, the areas determined for apartments and commercial rooms represent points of great interest in the city. This simple fact directly contributes to the liquidity of the property, that is, to the ability to rent or sell it, which is indispensable for the success of any investment in the real estate industry and, therefore, is essential for the analysis developed in this study.

4 FIXED INCOME INVESTMENTS

To enable the application of the evaluation of fixed income financial investment, this study was carried out by collecting secondary data throughout 2021, that is, it was delimited which assets would best fit the study. It was defined that variable income assets, or real estate funds, would not be evaluated, due to their great volatility and variation according to the market, as observed by Gerlach (2006), it was then delimited that the data research would use only fixed income assets, referring to CDB's (Interbank Certificates of Deposits), which are securities for raising bank funds, with a high degree of security and very relevant in the fixed income market.

As a second group of assets, the LCI and LCA (Agribusiness Letter of Credit and Real Estate Letter of Credit, respectively) were selected, which, according to the Brazilian Stock Exchange (2022) known as B3, securities backed by the real estate sector are the fastest growing in the fixed income market, while securities used to raise funds for participants in the agribusiness chain not only make the sector viable, They are also extremely attractive to physical and institutional investors. Although they are not as safe as CDBs (Bank Deposit Certificates), they have their advantages, such as the fact that they are not taxed on your income, as highlighted by the Brazilian stock exchange (B3).

Both the CDB asset and the LCI and LCA have their profitability calculated by the DI rate (Interbank Deposit Rate), and it is worth remembering that all assets are eligible for protection by the Credit Guarantee Fund. It was delimited that both assets would be profitable at rates with 95% and 105% of the CDI (Interbank Certificate of Deposit), rates considered plausible given the high interest rates currently practiced by the Central Bank of Brazil. Regarding the measurement of income, in addition to the annualized cash flows with the due income, the calculation of the Net Present Value (NPV) and the calculation of the Accumulated Present Value (APV) were performed.



5 RATES AND PARAMETERS

Firstly, as shown in table 1 below, the Basic Economic Interest Rate (SELIC) determined by the Monetary Policy Committee (COPOM) and the Extended Consumer Price Index (IPCA) carried out by the IBGE, considered as an official measure of inflation, the FOCUS report of 09/09/2022 for the years 2022 to 2025 was used as a secondary source, This report is a bulletin released by the Central Bank of Brazil (BCB) that seeks to bring the future forecasts of various economic indicators for the coming years, being used as a parameter for several financial institutions. The fiscal monitoring report of the Federal Senate (RAF) of 06/15/2022 was also used as a projection to determine the SELIC from 2026 to 2031.

The residential vacancy rate used was an average of 14.85% for all periods, based on the article written by Nadalin and Balbim (2011) published by IPEA in 2011. It should be noted that, for calculation purposes, this rate was used as a risk factor, i.e., as a means of discounting possible periods in which the properties will be vacant (renovations, change of tenants, etc.) and default on rent payments, therefore, in order to minimize the existing risk to the investment in real estate assets, the criterion of default and vacancy in future cash flow was used, i.e., separating cash flows from their risk. This approach converts projected or future cash flows into risk-free cash flows.

After defining the appropriate time frame, the rental values were adjusted annually according to the IGP-M and the IPCA. The General Market Price Index (IGP-M) was used in the first four periods (2022 - 2025) and the IPCA in the remaining six periods (2026 - 2031). As the selected assets are measured according to the DI rate, it was defined that the SELIC for the period would be an approximation (*proxy*) of this rate, that is, it was used as the CDI rate itself given its relative historical parity, therefore, whenever the SELIC rate and CDI rate are referred to, they will be considered synonymous throughout the analysis. Table 1 shows the SELIC, IPCA and IGP-M indices used in the investment evaluation.

Table 1: Rates Used for Profitability Calculations

Year	Selic %	IPCA %	PGI-M %
Year 2022	13,75%	6,40%	9,61%
Year 2023	11,25%	5,17%	4,71%
Year 2024	8,00%	3,47%	4,00%
Year 2025	7,50%	3,00%	4,00%
Year 2026	7,00%	3,00%	-
Year 2027	7,00%	3,00%	-
Year 2028	7,00%	3,00%	-
Year 2029	7,00%	3,00%	-
Year 2030	7,00%	3,00%	-
Year 2031	7,00%	3,00%	-

Authored by the authors based on the projections of the FOCUS and RAF Report

Through the research of real estate asset prices, it was possible to elaborate the average price of the properties chosen for each of the previously defined ranges. The prices obtained for residential



real estate assets (apartments) were: R\$875,000.00 (simulation 1); R\$725,000.00 (simulation 2); R\$508,000.00 (simulation 3); R\$337,555.56 (simulation 4) and R\$152,285.71 (simulation 5).

For commercial real estate assets (commercial rooms), the prices found were: R\$895,000.00 (simulation 6); R\$600,000.00 (simulation 7); R\$565,000.00 (simulation 8); R\$261,071.43 (simulation 9) and R\$152,796.67 (simulation 10).

Subsequently, it was sought to define the amount to be charged for rent in these properties, as it is possible to organize a regular cash flow. Such a task is not easy to perform since several factors reflect on the fair value to be charged. To solve this problem, several real estate agents in the region were consulted in order to find a common methodology to establish fair prices.

In this sense, it was concluded that the real estate market operates by charging between 0.3% to 1% of the commercial value of the property, with 0.5% being the most commonly charged for houses and apartments. Commercial rooms, as they require a higher value, are usually traded at 0.7% of the market value of the property. Thus, it was established that the rent of the apartments would be equivalent to 0.5% of their total value, while the rent of the commercial properties would be 0.7%.

Based on the average prices observed in real estate investments, the ranges for each investment were delimited (simulations 1 to 10). The construction of the cash flow of the assets then begins, seeking to observe comparatively, how the financial development of these investments would be over 10 years, a considerable horizon when seeking the financial evaluation of the investment in fixed income.

The calculation of the valuation of fixed income assets over these 10 years was by multiplying the respective CDI rates by their annual profitability, plus the initial value, thus arriving at the value referring to the total profitability (RT) of the assets. In the case of CDB assets, a 15% discount was made on income, representing the income tax levied on investments after 720 days, in accordance with normative instruction number 1585 of August 2015 of the Federal Revenue Service (RFB). Regarding the tax formalization of assets, it was decided not to adhere to a custody fee, resulting in a brokerage fee equal to zero (already applied by several brokers currently).

Aiming at a deeper and more realistic reading, we sought to bring these results to present values, using the SELIC rate as the Minimum Attractiveness Rate and enable the calculation of the present value of the accumulated flow (NPV), which indicates the present profitability without discount of the initial investment and the calculation of the net present value (NPV).

The calculations of the return on investment by NPV and NPVF were carried out in a standard way, but it is worth noting that the return on the principal invested both for real estate investment and in fixed income were calculated at the end of the period (10 years), that is, the returns received annually were reinvested in the assets (there was no withdrawal or annual deduction of income tax before the 10-year period).



In summary, we obtained all the rates of return of the 5 assets (2 different types of fixed income assets, each with 2 different rates and 1 real estate asset) for each price range determined as described in chart 1 below, finally, we compared the results and comparatively determined which would be the best investments, given their respective opportunity costs.

Table 1 - Relationship between assets and profitability

Active	Legend
A	LCI/LCA 95% of CDI
B	LCI/LCA 105% of CDI
C	CBD 95% of the CDI
D	CBD 105% of the CDI
E	Real Estate Investments

Source: The Author (2022)

6 COMPARATIVE SIMULATIONS

For the elaboration of the following simulations, the Total Return (RT), the Present Value of the Accumulated Flow (NPV) and the Net Present Value (NPV) were used as subdivided comparative terms for each asset, tools capable of providing a comparative evaluation between them, the central object of this study.

6.1 COMPARATIVE TABLES TO RESIDENTIAL REAL ESTATE ASSETS

Table 2 - Simulation 1: Assets equivalent to the initial investment of R\$875,000.00

Active	Initial	RT	VPFA	VPL
A	R\$875,000.00	R\$1,857,348.85	R\$1,115,790.43	R\$240,790.43
B	R\$875,000.00	R\$2,003,683.66	R\$1,212,696.39	R\$337,696.39
C	R\$875,000.00	R\$1,709,996.52	R\$1,015,142.71	R\$140,142.71
D	R\$875,000.00	R\$1,834,381.11	R\$1,097,512.77	R\$222,512.77
E	R\$875,000.00	R\$1,050,381.29	R\$ 659,070.04	R\$175,381.29

Source: The Author (2022)

In view of the above, Table 2 (simulation 1) shows the representation of each asset and its respective results.

There is a total return (RT) of R\$1,857,348.85 for asset A (Real Estate and Agricultural Letter of Credit with profitability 95% of the CDI rate), R\$2,003,683.66 for Asset B (Real Estate and Agricultural Letter of Credit with profitability 105% of the CDI rate), R\$1,709,996.52 for asset C (CDB 95% of the CDI), R\$1,834,381.11 for asset D (Bank Deposit Certificate of profitability 105% of DI) and R\$1,050,381.29 for asset E (real estate compared to apartment).

In this first simulation, carried out with an investment of R\$875,000.00, it was shown that the highest estimated return over 10 years is in asset B, with an NPV of R\$ 337,696.39. Asset A has the



second highest return, with an NPV of R\$240,790.43, followed by asset D, E and finally asset C, which presented the lowest profitability among all options evaluated.

Table 3 - Simulation 2: Assets equivalent to the initial investment of R\$725,000.00

Actives	Initial	RT	VPFA	VPL
A	R\$725.000,00	R\$1,538,946.19	R\$ 924,512.07	R\$199,512.07
B	R\$725.000,00	R\$1,660,195.03	R\$1,004,805.58	R\$279,805.58
C	R\$725.000,00	R\$1,416,854.26	R\$ 841,118.24.	R\$116,118.24
D	R\$725.000,00	R\$1,519,915.78	R\$ 909,367.73.	R\$184,367.73
E	R\$725.000,00	R\$ 870,315.92.	R\$ 546,086.61.	R\$145,315.92

Source: The Author (2022)

For simulation 2, all the projections of simulation 1 were used, but with a reduction in the initial investment to R\$725,000.00. It is evident that asset B presented, once again, the highest return (NPV of R\$279,805.58). This will continue to be verified in the other simulations, since its profitability is higher and it is not levied on income tax (IR). However, it should be noted that it will not always be feasible to find rates above 105% in assets exempt from income tax, making it necessary to compare them to other assets.

It is worth mentioning that asset C, a CDB with a return of 95% of the CDI, presented, once again, the worst performance among all the assets evaluated. In addition, asset E, apartment, also showed the same trend as before, being considered the second worst.

Table 4 - Simulation 3: Assets equivalent to an initial investment of R\$508,000.00

Actives	Initial	RT	VPFA	VPL
A	R\$508,000.00	R\$1,078,323.67	R\$647,796.04	R\$139,796.04
B	R\$508,000.00	R\$1,163,281.48	R\$704,056.87	R\$196,056.87
C	R\$508,000.00	R\$ 992,775.12	R\$589,362.85	R\$ 81,362.85
D	R\$508,000.00	R\$1,064,989.26	R\$637,184.56	R\$129,184.56
E	R\$508,000.00	R\$ 609,821.36.	R\$382,637.24	R\$101,821.36

Source: The Author (2022)

In this third simulation, in which an investment of R\$508,000.00 is used, we noticed the maintenance of the previously observed income patterns.

Asset B has the best performance, followed by asset A, asset D, asset E, asset C.

Drawing comparisons, we can see that asset B continuously continues to present a return 40.24% higher than asset A, while the latter has a return 8.21% higher than asset D. This asset, in turn, earned a return 26.87% higher than asset E, whose return, compared to asset C, was 25.14% higher.



Table 5 - Simulation 4: assets equivalent to the initial investment of R\$337,555.56

Actives	Initial	RT	VPFA	VPL
A	R\$337,555.56	R\$716,523.92	R\$430,447.16	R\$ 92,891.60.
B	R\$337,555.56	R\$772,976.64	R\$467,831.32	R\$130.275,76
C	R\$337,555.56	R\$659,678.67	R\$391,619.50	R\$ 54,063.94.
D	R\$337,555.56	R\$707,663.48	R\$423,396.04	R\$ 85,840.48
E	R\$337,555.56	R\$405,213.76	R\$254,254.58	R\$ 67,658.20

Source: The Author (2022)

In the fourth simulation, which uses an investment of R\$337,555.56, we continue to verify the maintenance of the observed patterns, i.e., asset B has the best performance, followed by asset A, asset D, asset E, and asset C.

It is worth mentioning the incredible results obtained by asset B, because in addition to being 40.24% higher than asset A, it was also 51.76% higher than asset D, 92.55% higher than asset E, and an impressive 140.96% higher than asset C.

Table 6 - Simulation 5: Assets equivalent to the initial investment of R\$152,285.71

Active	Initial	RT	VPFA	VPL
A	R\$152,285.71	R\$323,254.50	R\$194,193.07	R\$41,907.36
B	R\$152,285.71	R\$348,722.73	R\$211,058.66	R\$58,772.95
C	R\$152,285.71	R\$297,609.18	R\$176,676.26	R\$24,390.55
D	R\$152,285.71	R\$319,257.18	R\$191,012.01	R\$38,726.30
E	R\$152,285.71	R\$182,809.22	R\$114,705.09	R\$30.523,50

Source: The Author (2022)

In the case of simulation 5, an initial investment of R\$152,285.71 was used, once again the patterns are confirmed, including the proportion of differences, since the assets underwent the same valuation processes over the same time frame in the simulations (10 years), a fact easily verified by the comparative calculation performed previously.

6.2 COMMERCIAL REAL ESTATE ASSET COMPARISON TABLES

Table 7 - Simulation 6: Assets equivalent to the initial investment of R\$895,000.00

Active	Initial	RT	VPFA	VPL
A	R\$895,000.00	R\$1,899,802.54	R\$1,141,294.21	R\$246,294.21
B	R\$895,000.00	R\$2,049,482.14	R\$1,240,415.16	R\$345,415.16
C	R\$895,000.00	R\$1,749,082.16	R\$1,038,345.97	R\$143,345.97
D	R\$895,000.00	R\$1,876,309.82	R\$1,122,598.78	R\$227,598.78
E	R\$895,000.00	R\$1,234,492.20	R\$ 674,134.50	R\$339,492.20

Source: The Author (2022)

In the sixth simulation, carried out with an investment of R\$895,000.00, it was shown that the highest estimated return over 10 years is in asset B, with an NPV of R\$ 345,415.16. Asset E has the



second highest return, with an NPV of R\$339,492.20, followed by asset A, D and finally, asset C, which presented the lowest profitability among all the assets observed. Thus, it can be seen that the order presented in the previous simulations had been replaced, with the exception of the result presented by asset C, since it continues to be the option with the lowest real return.

Table 8 - Simulation 7: Assets equivalent to the initial investment of R\$600,000.00

Active	Initial	RT	VPFA	VPL
A	R\$600.000,00	R\$1,273,610.64	R\$765,113.43	R\$165,113.43
B	R\$600.000,00	R\$1,373,954.51	R\$831,563.24	R\$231,563.24
C	R\$600.000,00	R\$1,172,569.04	R\$696,097.86	R\$ 96,097.86.
D	R\$600.000,00	R\$1,257,861.33	R\$752,580.19	R\$152,580.19
E	R\$600.000,00	R\$ 827,592.54.	R\$451,933.74	R\$ 227,592.54.

Source: The Author (2022)

For simulation 7, all the projections of the previous simulation were used, but with another initial investment, in the amount of R\$600,000.00. It is evident that asset B presented, once again, the highest return (NPV of R\$231,563.24). This will continue to be verified in the other simulations, due to the similarity of the analysis of simulation 2.

Table 9 - Simulation 8: Assets equivalent to the initial investment of R\$565,000.00

Active	Initial	RT	VPFA	VPL
A	R\$565,000.00	R\$1,199,316.68	R\$720,481.82	R\$155,481.82
B	R\$565,000.00	R\$1,293,807.16	R\$783,055.38	R\$218,055.38
C	R\$565,000.00	R\$1,104,169.18	R\$655,492.15	R\$ 90,492.15.
D	R\$565,000.00	R\$1,184,486.09	R\$708,679.68	R\$143,679.68
E	R\$565,000.00	R\$ 779,316.31.	R\$425,570.94	R\$214,316.31

Source: The Author (2022)

In the eighth simulation, which uses an investment of R\$565,000.00, we noticed the maintenance of the patterns observed in the other tables. Through a comparative analysis of the results, carried out in a similar way to simulation 3, we noticed that asset B has a return 1.74% higher than asset E, while the latter has a return 37.84% higher than asset A. This, in turn, expressed a return 8.21% higher than asset D, whose yield, compared to asset C, was higher by 58.77%.

Table 10 - Simulation 9: Assets equivalent to an initial investment of R\$261,071.43

Active	Initial	RT	VPFA	VPL
A	R\$261,071.43	R\$554,172.25	R\$332,915.43	R\$ 71,844.00
B	R\$261,071.43	R\$597,833.78	R\$361,829.01	R\$100,757.58
C	R\$261,071.43	R\$510,207.13	R\$302,885.44	R\$ 41,814.01.
D	R\$261,071.43	R\$547,319.43	R\$327,461.98	R\$ 66,390.55
E	R\$261,071.43	R\$360,101.28	R\$196,644.98	R\$ 99,029.85

Source: The Author (2022)



In simulation 9, which uses an investment of R\$261,071.43, we continue to verify the maintenance of the observed patterns, that is, asset B presents the best performance, followed by asset E, asset A, asset D and asset C. It is worth noting the incredible results obtained by asset B, because despite being only 1.74% higher than asset E, it was 40.24% higher than asset A, 51.76% higher than asset D, and an incredible 140.96% higher than asset C. Such returns, with the exception of asset E, are the same as those previously presented in the comparison performed in simulation 4.

Table 11- Simulation 10: Assets equivalent to an initial investment of R\$152,796.67

Active	Initial	RT	VPFA	VPL
A	R\$152,796.67	R\$324,339.11	R\$194,844.64	R\$42.047,97
B	R\$152,796.67	R\$349,892.79	R\$211,766.82	R\$58,970.15
C	R\$152,796.67	R\$298,607.74	R\$177,269.06	R\$24,472.39
D	R\$152,796.67	R\$320,328.37	R\$191,652.91	R\$38,856.24
E	R\$152,796.67	R\$210,755.64	R\$115,089.95	R\$57,958.97

Source: The Author (2022)

In the case of simulation 10, the initial investment used was R\$152,796.67. Once again the patterns are confirmed, and the results are proportionally comparable to previous simulations for commercial real estate.

7 FINAL THOUGHTS

In the process of evaluating investments, the analyst will most likely have doubts in making decisions, with regard to determining the best investment, or with regard to its acceptability.

Valuations should be made with methods and techniques that clearly show the rates and the expected payback period of the investment, as well as its profitability and current value, through indicators that are compared to the opportunity cost of other investments.

Several methods can be used for the evaluation of investments, finally, the decision-making of the best investment alternative will be carried out after the verification of the favorable indicators, which influence the result conveniently studied and evaluated.

Relatively, based on the first five simulations analyzed for investments in residential real estate assets (1-5), it is possible to perceive, compared to investments in fixed income, that the relative variations of returns on residential investments remain constant for the assets analyzed, always following the following order of profitability, from highest to lowest as described: Asset B (LCI/LCA 105% of the CDI); Active A (LCI/LCA 95% of the CDI); Active D (CBD 105% of the CDI); Asset E (Real Estate Investments) and Asset C (CDB 95% of the CDI).

Thus, based on the last five simulations analyzed for investments in commercial real estate assets (6-10), it is possible to perceive, compared to investments in fixed income, the existence of a logical order between the results obtained, following the following order of profitability, from highest



to lowest: Asset B (LCI/LCA 105% of the CDI), Asset E (Real Estate Investments), Active A (LCI/LCA 95% of the CDI), Active D (CBD 105% of the CDI) and Active C (CBD 95% of the CDI).

It is worth noting that both the sensitivity and the return on investment are configured according to the variation of its parameters, i.e., substantial changes in the calculations of rental rates and prices and future expectations regarding fixed income yields (such as changes in future expectations about the basic interest rate - SELIC). These changes would generate changes in the rankings of the tables, as it would change the dynamic between risk – return on financial assets and real estate assets. It is then important to pay attention to the use of feasible rates of return for comparative evaluations of investments.

Finally, the sensitivity of investments is configured when there is a variation in their parameters, that is, if the rate used to calculate the rent varies, if the cash flow changes, changing the result of the classifications of the simulation tables of fixed income investment assets, residential and, especially, commercial assets. Variations in the parameters interfere, as the risk-return ratio between fixed income and real estate assets is very different.



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