Possible distortion in the pricing of real estate assets for generation of long-term periodic income due to the use of "Total Return" as an indicator of investment quality

Marcelo Vespoli Takaoka¹, João da Rocha Lima Jr.²

¹ Escola Politécnica da Universidade de São Paulo, Al. Madeira 222, 14º andar, Alphaville Barueri, São Paulo, Brasil. E-mail: marcelo.takaoka@poli.usp.br
² Escola Politécnica da Universidade de São Paulo. E-mail: rocha.lima@poli.usp.br

ABSTRACT

This paper aims to warn of possible distortions in the pricing of real estate assets to generate long-term periodic income, due to the approach according to which investment returns are being read. The concept of the "Total Return (TR)" indicator, derived from the understanding that the income from investments on these assets includes the "operating income" plus the "change in value of assets in the short term", can cause a shift in perception of the quality of the investment.

Key-words: real estate, pricing, total return, periodic income, long-term investment.

Possível distorção na precificação de ativos de base imobiliária para a geração de renda periódica de longo prazo devida ao uso do “Retorno Total” como indicador da qualidade do investimento

RESUMO

Este trabalho pretende alertar para a possível distorção na precificação de ativos de base imobiliária para a geração renda periódica de longo prazo, devida à forma segundo a qual podem estar sendo lidas as rendas dos investimentos. O conceito de “Retorno Total (RT)” derivado do entendimento de que a renda dos investimentos nestes ativos compreende a “renda da exploração” somada à “variação de valor do ativo no curto prazo” pode provocar um desvio na percepção da qualidade do investimento.

Palavras-chave: mercado imobiliário, precificação, retorno total, renda periódica, longo prazo.
1. Introduction

The purpose of this paper is to warn of a possible distortion in pricing of real estate assets for the generation of long-term periodic income (LTPI) caused by the manner in which investment returns are being read. The concept of “Total Return (TR)”, derived from the understanding that returns from investments in these assets are comprised of "operating income" plus "short-term change in asset value”, can cause a shift in the perception of investment quality.

There are two types of investors interested in real estate assets for LTPI: short- and medium-term investors, who are interested in generating wealth by means of short- and medium-term economic opportunities, and long-term investors, who are interested in periodic returns to maintain their quality of life and their financial independence, sacrificing opportunities for economic gains in view of their long-term intention to remain in possession of the real estate asset.

It should be noted that the function (utility) of real estate assets for LTPI lies in its capacity for harmonic generation of LTPI for the investors with a long-term focus. Hence, the ones who determine asset value are these long-term investors, by taking into account, mainly, LTPI received from other competitive assets, real estate or otherwise. The short- and medium-term investors merely speculate on expectations of the asset's future price variation for the long-term investors, considering, for example, interest rate variations or the asset's increased LTPI earning capacity.

Therefore, for assets with similar risks, the quality of the investment generating long-term periodic income is tied only to the yield, that is, to its regular earning capacity in relation to the initial investment made, keeping in mind that the investor retains the asset in the pursuit of income, such that he does not take advantage of nor is he hurt by sporadic variations of the asset value in the market over the short term.

The yield is the anchor according to which investors compare investment opportunities among the available possibilities, with a pattern of similar risks. What has taken place is that the number of entities using the “Total Return” indicator to measure the investment quality of this type of asset has grown, and this indicator, which adds the yield to the valuation or devaluation of the asset, can distort the perception of the long-term investor and, consequently, the evaluation of the asset.

While this indicator may appear to be the most appropriate, since it allies earning capacity with asset valuation or devaluation, if for any reason the asset value fluctuates, thereby increasing the value (with no increase in returns), this valuation incorporated into the quality indicator of the investment can generate an expectation that can only be sustained with systematic growth of the asset value, which will not take place.

To illustrate, in a simplified manner, let us suppose that an asset with a yield of 6% per year has a valuation of 3% due to a drop in basic interest rates, but its earning capacity remains the same. The “Total Return” in this case will be 9%, which will affect perception of the investment quality, indicating a potential valuation of this asset 50% higher in relation to the anchor of 6% in the minds of the investors. The event that generated the asset valuation has come and gone, but the TR indicator still shows 9% per year, influencing the pricing (upwards) when drawing a mirror scenario for the operational cycle.
It should be emphasized that the component of asset valuation indicated by the TR only takes place if at that moment the investor sells the assets, that is, one can opt for the sale in detriment of future income or opt for future income in detriment of the sale. Hence, this indicator does not reflect the situation of those that remain in the investment, which is the prime condition.

2. Methodology

The decisions made in long-term investments are the fruit of six preponderant factors: knowledge, time (duration), utility, fundamentals, expectations, confidence, and opportunity costs. (Figure 1)

![Figure 1 – The six investment dimensions for the investor interested in LTPI](image)

The fundamentals underlie the decision in terms of the history of behavior, past and present information relative to the investment, consumers, macroeconomic conditions and quality and governance of the asset management that affect the perception of quality of the investment for the future.

The expectations refer to the potential of utility (benefit) of the investment to the investor and the hope for the investment's future behavior in the sense of guaranteeing this benefit for the future.

Confidence, in turn, is the condition necessary for deciding on a given investment, because one doesn't invest in something in which one has no confidence. People invest because they believe in the possibility of receiving some benefit from the investment.

Opportunity cost is the cost relative to the loss of potential gains from opportunities passed over (economic, social, environmental) that could generate satisfaction, pleasure, or happiness for the investor. In other words, it represents the value of the losses associated to the alternatives not chosen. (Takaoka, 2010, p.149)

It should be understood that each individual is characterized by his knowledge, which is comprised of information, education, and experiences (including the anchors that interfere in the decision), aligned with his culture and capacity to comprehend the investment opportunity. (Figure 2)
For Daniel Kahneman and Barry Schwartz, the decisions we make are the consequence of the perception of pleasure and pain from our past experiences (memories of utility), present experiences (instant utility), and expectation of future experiences (expected utility), which in turn depends on how good or bad those experiences were in the past (during the experiences and at their end), the duration of those experiences and the benchmark of good and bad that we have at the moment of the decision. (SCHWARTZ, 2004, p. 47-52 and KAHNEMAN, DIENER, SCHWARZ, 1999, p. 3-22)

According to Takaoka (2010, p.76) “Anchors are an important element in the decision, because even if the information is homogeneous for a group of people with the same social and economic characteristics, they will behave differently if their anchors or pre-established references in the past are different, that is, if they have a distinct baseline of investment opportunity on the object of choice using distinct past references.”

Dan Ariely (2008, p. 21-29), Professor of Behavioral Economics at the MIT Media Laboratory, conducted a series of studies on the behavior of individuals and the correlations between predefined anchors and references in the initial decision on a given subject. In these studies, Ariely obtains significant results on the influence of random anchors on the choice of the participants, showing that true anchors and false ones, obtained by means of past experiences or information, influence the decision process.

Following, Dan Ariely (2008, p.26) shows the power of anchors by means of an experiment with a group of MBA students from MIT a few years ago:

“Now here we have a nice Côtes du Rhône Jaboulet Paralel,” said Drazen Prelec, a Professor at MIT’s Sloan School of Management, as he lifted a bottle admiringly. “It is a 1998.”

At the same time, sitting before him were 55 students from his market research class. On this day, Drazen, George Loewenstein (a professor at Carnegie Mellon University), and I would have an unusual request for this group of future marketing pros. We would ask then to jot down the last two digits of their social security numbers and tell us whether they would pay this amount for a
number of products, including the bottle of wine. Then, we would ask then to actually bid on these items in an action.

What were we trying to prove? The existence of what we called arbitrary coherence, the basic idea of arbitrary coherence is this: although the initial prices (such as the price of Assael’s pearls) are “arbitrary”, once those prices are established in our minds they will shape not only present prices but also future prices (this makes them coherent”). So, would thinking about one’s social security number be enough to create an anchor? And would that initial anchor have a long-term influence? That’s what we want to see….

“Now I want you to write the last two digits of your social security number at the top of the page,” he instructed. “And then write them again next to each of the items in the form of a price. In other words, if the last two digits are twenty-three, write twenty-three dollars.” (Drazen apud Dan Ariely, 2008, p.27). In this case, Drazen was trying to create an anchor price of the items in the mind of the students.

Did the digits from the social security numbers serve as anchors? Remarkably, they did: the students with highest-ending social security digits (from 80 to 99) bid highest, while those with the lowest-ending numbers (1 to 20) bid lowest. The top 20 percent, for instance, bid an average of $56 for the cordless keyboard; the bottom 20 percent bid an average of $16. In the end we could see that students with social security numbers ending in the upper 20 percent placed bids that were 216 to 346 percent higher than those of the students with social security numbers ending in the lowest 20 percent. (Dan Ariely, 2008, p.28)

The way the information is presented or framed is a relevant factor in making a choice, since presenting the information on a given investment in different ways can influence a decision positively or negatively. (Figure 3)

**Figure 3 – The five dimensions of information**
As stated previously, we must consider that there are two types of investors interested in acquiring real estate assets: [i] The investor that desires long-term periodic income to satisfy his basic needs, maintain his standard of living and financial independence; and [ii] The speculating investor who is more interested in receiving gains on the potential valuation of the real estate asset than enjoying the income that come from exploring the asset.

According to Takaoka (2009, p.31), in the specific case of investments for the generation of monthly long-term income, the expectations of long-term investors are: “[i] income to ensure future financial independence; [ii] income to maintain quality of life in the future; and [iii] income to satisfy future needs and desires, considering the possible loss of present income due to unemployment, retirement, or some other factor that reduces the earning capacity by means of work or present investments. As secondary factors, also bearing consideration are: [iv] the investor's confidence in the capacity to maintain, for a long period, a homogeneous and updated income and [v] the possibility of the investment in assets that generate long-term monthly income being a savings account for eventual unforeseen needs, such as disease or other setback, that could generate the need to undo the investment. In this case, the investment should have liquidity or serve to guarantee loans.”

For the first type of investor (long-term), the evaluation of the real estate asset that generates LTPI is a function, mainly, of its earning capacity over time, which is the main quality attribute for the investor who wants to obtain long-term periodic income (utility). For the latter, the main interest lies in the capacity of valuation of the asset in the short- and medium-term due, for example, to variations in interest rates and/or potential for relative increase in returns.

Therefore, considering that the primary function (utility) of the asset is the generation of long-term periodic income, asset value should be determined by the investor who wishes to obtain long-term income, by means of the ratio between returns and asset value, in the face of other options of long-term investment in the market. In this case, considering that the asset has long-term earning capacity, the valuation of the asset should be tied only to questions of supply and demand for these assets (opportunity), long-term interest rate fluctuations (opportunity costs), and risks of loss of earning capacity. But this is not what has happened in reality, as will be shown further along.

This paper intends to show that both the way information is presented as well as true or false anchors can influence the investment decision, leading investors (short, medium, and long-term) to make a mistake, even if they are aware of the change in the way information is presented, in this case the insertion of the “Total Return” indicator, by conducting an analysis of investments made in REITs (Real Estate Investment Trusts) in recent years.

For the purpose of this evaluation, a REIT was chosen from the Office sector, due to the more homogeneous and long-lasting lease contracts in relation to the residential or shopping center real estate sector. We opted for the Boston Properties REIT (BXP) as it was the largest in the Office sector, with 143 properties in the office sector and only one hotel (Chart 1).

“Boston Properties is a fully integrated, self-administered and self-managed real estate investment trust that develops, redevelops, acquires, manages, operates and owns a diverse portfolio of Class-A office, including one hotel. The Company is one of the largest owners and developers of Class-A office properties in the United States, concentrated in five markets - Boston, Washington, D.C., Midtown Manhattan, San Francisco and Princeton, N.J.”
Since that the main objective of REITs is the generation of LTPI for its investors, the evaluation of REITs must occur based on its capacity to generate homogeneous and stable LTPI over the years in relation to the amount invested. Thus, fluctuations in the value of the REITs must be rationally attributed to the following factors: [i] Variation of income; [ii] Variation in long-term interest rates; [iii] Variation in short-term interest rates; [iv] Variation in inflation levels (protection of assets from the deterioration of either currency purchasing power or financial investments); [v] Risk of loss of capacity to generate homogeneous and stable LTPI; and [vi] Supply and demand of REITs.

There is another factor that can influence the evaluation of REITs: the form of presenting information, in this case related to the “Total Return” indicator. So, we will analyze the behavior of the value of BXP over time and possible correlations with the five initial factors (income variation, long-term and short-term rates, inflation and risk of loss of earning capacity). If none of these factors conclusively explain the variations of the BXP price, there is the possibility that the “Total Return” indicator is influencing the BXP price variations.

Finally, we will conduct an analysis to compare the behavior of the price index of the “Equity REITs” with the behavior of the BXP price variation and verify whether there is a similarity between them. If this similarity exists, the conclusions drawn from the graphic analysis of the BXP can be extended to the Equity REITs in general.

3. Results

As we can see, there is nothing that justifies the price variation of the BXP in relation to the income variation trend, which, over the years, remains practically stable with a slight decrease. (Graph 1)

When comparing the behavior of the price with long-term interest (U.S. government securities/Treasury constant maturities/Nominal - 20-years Maturity), once again there is no explanation for the REIT price variation, because there is no positive or negative correlation of the curves of REIT price in relation to the curve of the long-term US government securities. (Graph 2)
In the case of the "U.S. government securities/Treasury bills (secondary market)", there appears to be a correlation, but it is not real, as the price variation should be inverse to the interest rate variation. So, neither does the curve of the short-term interest rate variation manage to explain the variation in the REIT price, except in its final interval, as of 2009, when the REIT price rises due to the low interest rates in the period, but as soon as the interest rises the trend should be a price drop. (Graph 3)

In the case of the evaluation of REIT behavior in relation to behavior of inflation over the years, there is likewise no apparent correlation since there is no variation in the inflation index that would justify the price variations of the REITs. (Graph 4)
As we can see, the price behavior of the Boston Property follows the variation of Equity REITs in the American market, which means that, on average, most of the Equity REITs had behavior similar to that of the BXP. (Graph 5)

Based on this graph, we can extend the research and observe the behavior of the Equity REITs in a longer time period to analyze their average behavior in relation to both long-term and short-term interest. (Graph 6)
In this case, we can see that, in general, interest rate variations do not explain the price index variations. However, the price index increases more steeply as of the fourth quarter of 2002, the same period in which the steepest increases occur in the price of real estate in the United States due to greater facilities and credit incentives as well as the loosening of criteria for analyzing families' financial capacity.
4. Discussion

Roubini and Mihm (2010, p.26) state that: “From such beginnings, financial disasters proceed along a predicable path. As credit becomes increasingly cheap and abundant, the coveted asset becomes easier to buy. Demand rises and outstrips supply; price consequently rises. But that’s just the beginning. Because the assets at the heart of the bubble can typically serve as collateral, and because the value of the collateral is rising, a speculator can borrow even more with each passing day. In a word, borrowers can become leveraged.”

Furthermore, according to Roubini and Mihm (2010, p.40) “The symptoms of crises that had been glimpsed in the 1990s emerging-market meltdowns start to materialize in the United States. Worse, with interest rates at historic lows after the FED aggressively countered the fallout of the tech bust, a housing bubble began to inflate, first in the United States and then in many other countries.” This of course coincides with the beginning of the rise in the price index of the Equity REITs.

By 2001, interest rates had reached historic lows, raising the purchasing power of families interested in buying real estate, which in turn increased the demand for new and used real estate and hence the value of real estate in general. This stimulated even more the entry of investors, who began buying real estate because its value was increasing and one could make money by means of mortgages tied to the valuation of the real estate acquired, with no consideration of the purpose for which the real estate was built.

It is noteworthy that by the beginning of 2004 interest rates began to rise again and it would be logical that the price index of the Equity REITs would devalue; however, this did not take place and the REITs did not stop increasing in value until the beginning of 2007, possibly sustained by the TR indicator which takes into account asset valuation in the previous period. (Graph 6)

But, according to Roubini and Mihm (2010, p.27) “At some point, the bubble stops growing, typically when the supply for the bubbly asset exceeds the demand. Confidence that price will keep rising vanishes, and borrowing becomes harder. Just as a fire needs oxygen, a bubble needs leverage and easy money.” This is what led to the abrupt devaluation of the Equity REITs index, as observed in Graph 6.

It should be emphasized that this simplified mechanism of basing the investment decision on past behavior of the asset, together with the information of the TR indicator, which introduces the percent variation of price in the period (past) to the yield, can lead the investor to make a mistake in relation to the profitability anchor that he has in mind (which contemplates only the yield), suggesting implicitly that its profitability is the sum of the income plus the price variation in the period, which, as we have stated, ends up stimulating speculative increases that are not sustained over time because they are not supported on the basic evaluation fundamentals of a good such as income utility, earning capacity, income quality, capacity to pay for the investment, or supply and demand.

In this case, when the price stops rising, the devaluation of the asset can occur, and the leveraged investment can generate leveraged losses for its investors.
5. Conclusion

We can conclude that the TR indicator may influence the valuation of assets by itself in light of an increase in the price generated, for example, by means of interest rate variation. As we have stated, if for any reason the value of the asset fluctuates, thereby increasing the value (with no increase in returns), this valuation incorporated into the quality indicator of the investment can generate an expectation that can only be sustained with systematic growth of the asset value, which will not take place, leading in the end to a price drop to parameters appropriate to the earning capacity of the asset and the opportunity cost of other investment options.

In other words, the form in which the information is presented, by means of the TR indicator, can influence the investment decision and cause artificial valuation of the asset and losses to its investors.

6. References


