

Process of purchasing Real Estate in the market

When a person acquires real estate, she/he also acquires a set of rights, including possession, control and transfer rights. Investment in real estate involves the commitment of funds to property with an aim to generate income through rental or lease and to achieve capital appreciation. However, the real estate income can be highly unpredictable and consequently investment in real estate is very risky as it is the case with investment in equity. One of the main reasons for the collapse of even the largest financial institutions, in the recent times, leading to the recession of major economies of the world is due to the collapse of the real estate business. This global crisis could have been prevented if the potential risk factors leading up to it had been identified at an early stage. But the risk assessment associated with this strategic investment was not properly followed. Thus, in order to be able to increase chances of investments in real estate returning profitable margins, it is critical that risk factors are identified and a proper investment strategy put into place.

1.1 Real Estate

Mr. MugheesShaukat in his paper (2010) defined real estate as land & Buildings associated with it. This definition is used because land & associated buildings is finite and can be used for transaction purpose . Procuring the Real Estate is used as a hedge for inflation.

1.1.1. Classifications

Residential – Family housing, Apartments.

Commercial – Shopping centers, Malls, Clinics and Multiplexes etc.

Industrial – manufacturing plants, warehouses, etc., used by businesses for production and storage of goods.

Office – Office buildings, Towers.

Hospitality – Hotels and Resorts.

Land – Typically includes land without any buildings or agricultural land.

1.1.2. Investment Risks Types

Any investment requires certain strategies and also associated with the risk. Real Estate investment is of no exception. The risk of investment in properties depends on the type, location and the status of the property in terms of its development. S.M. Giliberto, (1993) in his paper classified the risks as

Low Risk—properties in major metropolitan cities with stable long-term cash flow. For example, leased office buildings in metropolitan cities. This is because tenants are usually signed to multi-year leases

Moderate Risk— properties with less predictable cash flows, either as a result of their location, or their status. For example, a shopping center in the process of being leased up or an older mall in need of complete renovations and re-leasing; etc. or Hospitality properties as their cash flow is less predictable because the guests in a hotel signs very short-term leases when reserving a room.

High Risk— properties with limited or no cash flow, because of their current status where the investments tend to be in longer term which requires a greater degree of skill in execution. They also tend to provide the greatest return over the long term.

1.2 Investment Scenario-a brief

The research literatures on real estate are organized into five broad categories. The topics are: (1) returns on real estate investments; (2) diversification and portfolio optimization benefits; (3) returns on real estate versus other types of investment; (4) returns on real estate measured by REIT performance; and (5) inflation and real estate returns.

There have been lots of academic studies and articles have been published examining the ways of increasing the efficiency of Real Estate Investment. The academicians have studied both at micro and macro level.

The ideas of real estate risk management comes under the domain of financial transactions with regard to properties buy or sell at an opportune time where it could provide high yield.

Real estate investment exposed to different risks. Some of the researchers have advocated for the creation of Real Estate Investment Trust (REIT). They also advocated the selection and portfolio construction criteria should be based on operating efficiency.

1.2.1 Risk Assessment

In 1952 Markowitz developed Modern Portfolio Theory (MPT) , which is based on simple assumption that the risk is defined as volatility (price fluctuations). As per MPT,

the investors are willing to take more risks when there is a chance for more profit. Initially the researchers and academicians found this logic is compelling as it is easy to understand & it also makes perfect sense.

The MPT is based on certain assumptions. Some of the important assumptions are:

The investor do not consider buying / selling cost, tax , dividend and capital gains while making investment decisions

Market liquidity is infinite.

The investors are aware of all the risks; for more volatility the investor will look for more return.

Selling of assets is only motivated for higher rate of return in a shorter time span.

Politics and investor psychology have no effect on the markets.

Young & Graff (1995) while assessing Real Estate Risks used MPT in their research observed that the strategic risks on investment can be minimized by combining different stocks for investment.

For example, Webb and O'keefe (2002) suggested that real estate comprises 10-20% of total stocks should be of real estate. The rest should be into bonds, currencies, international stocks & bonds.

Roger J Brown (2000) in his dissertation extensively worked on the use of MPT that can be used in Real Estate Risk Assessment. Brown also the first one who introduced the concept of three tiers real estate based on public & private use.

C. F. Simons et al (2002) took this research one step further by reviewing literatures on international direct real estate investment and tried to analyze how the real estate portfolios are being analyzed.

R.I. Anderson in his paper (Journal of Real Estate Portfolio Management, January, 2003) extensively studied the works of other researchers (Anderson, Lewis etal 2000) on the risk of Real Estate Investment both at the macro and micro level. Anderson defined that at the macro level the competition in the real estate market makes the risk minimum. Whereas at the micro level, the risk is greater if the market is inefficient. He then advocated that the strategic risk may be minimized by establishing diversified real estate portfolios.

In 2004, Mr. Brown investigated the risk in real estate investment by conducting theoretical and empirical analysis of risk and returns accruing to individuals who were involved in real estate investments. He claimed that the returns are not normally

distributed and that private real estate investors compensate for the distributional burdens their market imposes upon them by carefully assessing and controlling unavoidable non-systematic risk.

N.E Hutchison et al (2005) in their paper argued that the risk in real estate investment is attributed to the valuation of property done by the valuers. In other words, the risk assessment measures need to be more rigorous to minimize the risk of investment. Therefore, they suggested that an investor is exposed to many risks notably valuation accuracy & valuation variance. The authors also suggested that the real estate investment has certain forms of risks in terms of valuation of the property. They recommended that investment risk will be minimized by improving the valuation methods. The authors then defined "investment risk as the probability that the cash flows and the resulting target rate of return will not be realized".

The researchers have examined the risk and returns from many perspectives, both empirically and theoretically. A common area of interest is the investment performance and the associated risk both in the commercial and individual real estate. One area of real estate returns in which researchers are in general agreement is the ability of real estate to offer an inflation hedge. It is also general belief is that real estate assets provide protection against the negative consequences of unexpected inflation.

The question now comes how to minimize the risks of investment. Harold Nitish (2006) in his paper cited that choosing a prime location will be the main component for minimizing investments. To substantiate his argument he developed a price model based on the structure, location and rent of various cities in Germany. However, it does not fully assess the elements of risk fully.

Even though MPT is the major breakthrough in the financial world some real estate researchers have tried to use this theory with some mixed reservations.

For example, Mr. H. Mohd Ali in his PhD dissertation (2006) have done extensive investigation and found that MPT without major modifications cannot be used as is risk assessment in real estate.

Stanley McGreale et al (2009) have made an extensive study in risk management in real estate for both UK & USA. Their summarization is that there is a need for diversifying the investment portfolio in order to reduce the risk.

1.3. Why is this Research?

The activities of risk management in real estate investment are largely similar to the activities of financial methods. However, by surveying the available literature & material it can be concluded that the following factors are ignored.

1.3.1. Large commercial properties have been widely studied. Little has been done on small and medium sized real estate risk analysis.

1.3. 2. Most of the tools & the methodology relates to stock market investments; but no definite methods have been illustrated to minimize the medium & small size real estate investment risks which will

Identify sources of risk

Measure and monitor those risks

Devise an approach to control, mitigate or hedge

1.4. Research Objectives.

The intended outcomes from the research include:

- A tested dynamic risk-sharing mathematical model to be used by an individual real estate investor who would like to share the risk with his partners and yet earn a good margin. This model will provide an alternative to the MPT risk model
- A process that will be used to update the various estimates involved in the model from time to time to capture the dynamics of the real estate market. A risk-sharing mathematical model must be robust to the changing dynamics in the real estate market due to continued economic uncertainty and market fluctuations.
- A process by which the impact of the current decisions will be analyzed considering subsequent decisions. A more effective risk-sharing model will be strengthened by its durability and its ability to take into account potential crises and economic shocks.
- A management process that will be used while applying the model.

1.5 Research Approach

In view of the above, an important consideration will be to enhance the core competencies in risk management.

The first step in this regard is to develop a risk-shared dynamic mathematical portfolio selection model for real estate business to be used by private real estate Tier II investors. Using this model, simulation of various alternative options will be carried out.

Based on the outcome of the simulation, a strategy for implementation for the selected alternative will be developed. This will then lend immunity to any private investor against market instability, and other macro factors which influence the real estate market to a

certain extent. This will help the investors who would like to share the risk with his partners as well as earn a good margin.

Real-life data will be collected and will be used to test and validate the model.

Last, strategies for implementation will be developed.

1.6 Methodology

In order to test and validate the mathematical model that will be proposed as an alternative to the MPT risk model, real world data needs to be gathered. The highly dynamic nature of the Middle East real estate market makes the GCC countries interesting cases to use in the sample for this thesis.

The nature of the data to be collected is shown in chapter 5. Appropriate statistical methods and techniques like sampling, regression, analysis of variance, etc., whichever applicable, will be used to estimate the parameters of the model and test the reliability of the same.

Next, appropriate non-linear mathematical programming technique that deals with dynamics of decision making will be used to derive the operating decision rules.

Extensive simulation will be carried out to test the sensitivity of the parameters involved in the mathematical model and establish the limits of the operating policies.

The statistical analysis will eventually be used to test the validity of the mathematical model using the GCC countries as empirical data. Furthermore, the rules for updating the estimates of the parameters from time to time will take into account the global perspectives that will be developed.

In addition, strategies for the using the operating decision rules will be developed.

1.7 Road Map

Chapter 3 presents a review of the existing literature detailing the hypotheses used and statistical and mathematical models used by the researchers in the past

Chapter 4 presents the methodology how the data will be collected which will be the back bone of dynamic risk-sharing mathematical model.

Chapter 5 presents the nature of the data collected and the methodology used for estimating the various parameters used in the mathematical model and test their sensitivity using appropriate hypothesis testing techniques.

Chapter 6 presents the operating decision rules derived by using appropriate non-linear mathematical programming technique.

Chapter 7 presents the sensitivity analysis of the parameters and the limits of the operating decision rules using simulation methodology.

Chapter 8 gives the strategies to be adopted for using the operating decision rules and the procedures for updating the parameters from time to time as required.

Finally, conclusions and future direction of studies are presented in Chapter 9.

LIST OF ORIGINAL PAPERS.

The following papers have been reviewed:

- Bond, M. and Michael Seiler, "Real Estate Returns and Inflation: An Added Variables Approach", *Journal Of Real Estate Research*, Vol. 15, No. 3, 1998.
- D. Di Bartolomeo et al. (2005), "A New Approach to Real Estate Risk", Northfield Information Services.
- D.C. Quan and J.M. Quigley (1989), "Inferring an Investment Return Series for Real Estate from Observations on Sales", *AREUEA Journal*, Vol. 17, No. 2.
- E. J. Holsapple et al. (2006), "Foreign "Direct" and "Portfolio" Investment in Real Estate: An Eclectic Paradigm", *Journal of Real Estate Portfolio Management*, 11: 37-49.
- F. Huffman (2004), "The Quantification of Corporate Real Estate Risk", *Real Estate Issues* (web).
- Gordon J. Alexander (2009); "From Markowitz to Modern Risk Management"; *The European Journal of Finance*, Vol. 15, Nos. 5–6, July–September 2009, 451–461
- Giliberto, S. M., "Measuring Real Estate Returns: The Hedged REIT Index", *Journal of Portfolio Management*, Spring 1993.
- K. Addae-Dapaah et al. (2002), "Real Estate Portfolio Diversification by Sources of Return", *Journal of Real Estate Portfolio Management*, 1(1).
- M. Statman (1987), "How Many Stocks Make a Diversified Portfolio?" *Journal of Quantitative and Financial Analysis*, 22: 353–63.
- M. Hamada et al. (2001), "Martingale Methods in Dynamic Portfolio Allocation with Distortion Operators", *Proceedings of the 2001 Quantitative Methods in Finance Conference*

- MugheesShaukat, (2010). Master thesis. "Sale/Debt based Sukuk: Current Position and Challenges". "The introduction to Islamic Capital Market". Ch.2 p 30-32.
- Pyhrr, Stephen A., Born, Wales I. and Webb, James R. (1990); "Development of a Dynamic Investment Strategy Under Alternative Inflation Cycle Scenarios"; The Journal of Real Estate Research; Vol. 5, No. 2; pp 177-193.
- R.I. Anderson and T.M. Springer (2005). "Investor Perception of Retail Property Risk: Evidence from REIT Portfolios", Journal of Shopping Center Research, 12: 104-120
- R.Y.C. Tse and J.R. Webb (2006), "Public versus Private Real Estate in Hong Kong", Journal of Real Estate Portfolio Management, 53-61.
- Roger J. Brown (2004), "Risk & Private Real Estate Investments", Journal of Real Estate Portfolio Management, 10: 113-139.
- T.W. Anderson & Cheng Hsiao (1981), "Estimation of Dynamic Models with Error Components". Journal of American Statistical Association, 76: 598–606.
- W. N. Goetzmann and S. M. Wachter (1994), "The Global Real Estate Crash: Evidence From an International Database", Yale School of Organization and Management