1.0 <u>Introduction</u>

The modern engineering science has perhaps led iconic real estate developments to symbolize cities, countries, or regions in some cases. Additionally, the real estate sector has gained a magnificent influence on the overall economy of a given country for its nature that moves along various economic segments with it such as infrastructure, tourism, logistics, retail and much more. It shall not be forgotten in this regard that real estate demonstrated by housing is a basic human need since the creation of mankind where it has evolved from very simple huts anciently to state of the art mansions in the modern era.

The housing segment within the real estate sector resembles different meanings from various perspectives. What someone calls home is called investment by someone else and business by another. This demonstrates how a number of businesses varied in nature revolve around housing in mere terms.

The financial viewpoint nevertheless is about generating profitable rates of return upon direct investments in housing whether through developments or acquisitions to be either sold or leased, or a combination of both. In this regard, the paper in hand shall discuss various elements affecting profitability in the housing market within different geographical dimensions.

The value addition of the paper lies behind suggesting methods of maximizing profitability on a standardized investment in The United States, Japan, Singapore, India, and The United Arab Emirates, along with optimizing a portfolio that combines investments in each country.

After the introduction, it is important to present a glance on the related financial and non-financial literature to form a general understanding of what had been presented on this topic by industry and academic peers, challenged or supported by the author's view on their theories and opinions either to build on, or to avoid redundancy in concepts.

The following section shall demonstrate the methodology that is dependent on studying macro-economic forces affecting demand, supply, and cost estimates to finally form country-wise case studies based on periodical Net Present Values.

The findings section would follow the methodology to consolidate the results of each country's analytics in terms of forces affecting the investment itself, and present a summarized cash-flow deriving the values behind the periodical Net Present Values that are demonstrated graphically. Thereafter, the summary and conclusions section would naturally summarize the findings of the paper in a simplified format along with shortfalls and areas of future studies. it shall also include the author's recommendations.

2.0 <u>Literature Review</u>

Because Real Estate investment decisions do not depend on a world-wide unified formula, and as the valuation could be formed through various methodologies, the following section sheds light on prior works done around the Real Estate feasibility studies covering various concepts and geographical outlooks and indicators, with general and specific analytical review and commentary.

In this regard, it is important to digest the concept of profit pools as they are regarded one of the most common tools in strategy shaping. Nonetheless, although profit pool analyses are

quite the same in principle, they tend to differ on application where each industry, or company in further micro terms, looks at business in a different manner and outlook the future through their own perspective.

Orit Gadiesh and James L. Gilbert (1998) outline a simple four-step model that could be used as a base for profit pool calculation.

In simple terms, this four-step process starts with identifying which value-chain activities influence profitability in present and future time horizons. This requires a complete understanding of the profit centers as well as cost centers.

The second step is to assess the profitability of each value-chain activity and investigate means of improving them and comparing them to the baseline benchmark. This is very helpful in identifying which activities are priorities of focus and which activities could be neglected for its small contribution to the overall profitability, at least in the short term.

The third step combines the profitability of all value chain activities and investigates synergies at a higher level to achieve a value that is greater than the sum of the parts. And finally, the fourth step is to assess the overall calculation through reconciling the numbers and developing multiple scenarios that could further strengthen the overall powerfulness of the calculation.

This article discusses the methodology of applying profit pools analysis at a very high level, and neatly outlines the general structure of the calculation. However, its shortfall lies in understanding the supply and demand forces and factoring them in the profit pool calculation. An understanding of supply and demand enhances the future profitability outlook and provides closer-to-reality scenarios. In more specific terms, the demand side analyses provide an understanding of consumer trends and behaviors which generates more realistic outlook on the revenue side of the business and helps in identifying the market gaps which could be fulfilled generating higher market shares and ultimately higher profitability. On the other hand, an understanding of the supply side factors in future competition and could form a base for understanding the magnitude of possible market share enhancement over the period of study. The article also highlights but not emphasize on the cost side of the Profit & Loss statements, which could also enhance profitability to a large degree by efficiently managing costs and especially overheads.

Nonetheless, Orit Gadiesh and James Gilbert (2009) take another perspective on profit pools looking at a number of companies which could deploy profit pool analyses into action in a way that shaped their competitive advantage. For a start, they define profit pools as the total profits earned in an industry through its various elements in the value chain. Nevertheless, it is important to shape the profit pool carefully and understand that the activity holding the largest share of the industry revenues does not necessarily hold the largest profit margins. They provide an example of automotive industry where the largest revenue share falls under the car manufacturing and selling activity whereas car leasing and related financial services generate the highest profit margins despite holding less share in the overall profit pool. Likewise, the microprocessors manufacturing in the personal computers industry holds the highest profit margins despite the end user selling points holding the largest segment of the revenues in the industry. Nevertheless, achieving a competitive advantage position according to the authors would require foregoing old concepts and a level of openness to focusing on bottom line profits

rather than achieving larger scales of revenues which consecutively requires boldness in decision making after a proper evaluation of the overall industry profit pool.

It is true that focusing merely on revenues is conceptualized with achieving competitive advantage and ultimately higher profitability. This misconception generally leads business leaders to ignore focusing on costs and economies of scale as well as other profitable segments in an industry. Nonetheless, the authors have not factored the risk element associated with various activities in the value chain of an industry and did not introduce the concept of diversification. The Real Estate industry would also hold various activities in its value chain and it is an area very much worth investigating for the purpose of this paper with embedding the concept of risk and diversification.

A visibility on the supply and demand factors could be achieved through analyzing each of the countries in the study by investigating the financial literature on most recent basis for articles that relate to real estate investment trends of each country within the paper's horizon, which would also be helpful into generating a qualitative rather than mere quantitative analysis into the study.

To begin with, Moran Zhang (2013) indicates that the increasing trend in residential property markets in the United States is expected to continue but on a slower phase in 2014 onwards. Moran indicates that the prices growth rates in 2013 has been spectacular to investors as it reached highs of 11% driven by strong investments and tight supply conditions. Moreover, the housing prices has been increasing since 2011 demonstrating a healthy recovery period from the last Global Financial Crisis, and is expected to moderate in the upcoming years where the market would automatically adjust to supply and demand forces.
The analogy on the supply side is that the current slight undervaluation of residential properties offers investors a slight arbitrage opportunity if they could correctly time the market, and the demand side is also boosted by lower unemployment rates and increasing purchasing power of end-users. Furthermore, government officials have stated that there are no expectations of sharp increases in interest rates, as it would very slightly increase if ever. This indeed serves both economic forces as investors find a room to gradually increase prices up to reaching fair values, and end-users tend to be more encouraged to buy.

In this sense, US property market represents an attractive opportunity to both quick dollar seekers, and medium to long-term investors for its growing nature and increased demand. It is noticeable that the United States government, unlike most Asian markets, believes in Adam Smith's theory of the invisible hand that implies that markets generally reach equilibrium points through natural supply and demand forces. Hence, the government does not impose any heavy monetary policies, and if ever, encourages investments by standardizing interest rates and easing lending regulations.
However, investors are advised to react to market conditions fast, for the slowing pace of growth rates in pricing is expected to continue as a larger gap of the demand is getting fulfilled gradually. The analogy is that most parts of the United States are not considered as business

hubs and are generally end-user driven. Therefore, it lacks the speculative nature and do not usually become overvalued.

On the contrary in Japanese markets, the supply and demand momentum is affected by serious inefficiencies in land lease problems. Yukio Noguchi and James Poterba (1994) argue that the problem underlies multiple folds whereas the local culture strongly believes that houses are assets that can build capital gains and find leasing lands an unappealing option whether for living or investments. The other main reason is the strong regulations forced by Japanese governments overly protecting the lessee. The authors compare fair rent against absolute rent levels whereas fair rents are explained by the payment factor of the NPV of land price. Their comparison shows that fair rents in that sense are almost twenty times the actual rent received by landlords on leased lands especially in the main cities with Tokyo being the greatest example.
This ratio does not seem rational even with considering inefficiencies in the supply and demand. Therefore, the authors explain a number of other reasons such as the effect of the JPY strong appreciation in the last years. This would not only affect the local demand where purchasing power becomes lower, but also discourages foreign direct investment for land is typically not a speculative asset class, and investors worry that the bubble would crust within the holding period. Another reason explained by the author is the concentration of businesses in main cities shifting the demand curve gradually upwards and consecutively the supply curve to ultimately inflating the equilibrium point.

Japan in that regard is clearly not a heaven for leasing businesses where the actual rents tend to be twenty times shorter than the expected dividend calculated through Discounted Cash Flow methodology. Nevertheless, it can be a very attracting environment for Build-to-Sell businesses where the appreciation percentages are higher than most other places in the world. The risk however lies in finding buyers where the article explains that demand is generally low given the inflated prices.
This implies that although Japanese economy is considered one of the most developed economies, and investors tend to generate steady and low growth of returns in such economies, it is rather risky to invest in Japanese property market. A point worth mentioning is that a portion of this phenomenon in Japanese economy is caused by strict regulations, and these regulations could be revised at any point of time in the future.

Singapore on the other hand is a balancing market where real estate prices with emphasis on residential properties have been falling in the later part of 2013 due to government regulations according to Bloomberg (2013). The city that was considered along with Hong Kong to demonstrate the highest residential property prices at a specific point of time lead the government to introduce new regulations as precautionary measures to counter another housing bubble post the Global Financial Crisis. The new regulations included linking maximum debt capacity to borrowers' income, increasing taxes on properties related capital gains, and significantly increasing down payments to residential properties. Nonetheless, analysts are still witnessing a level of demand on properties, which they claim is quite rational for developers having to cut prices on existing and upcoming projects, and ultimately their profit margins.

The obvious implication of this report is that Singapore real estate market is quite cyclical, and is also heavily influenced by government regulations especially on the short run. However, a deeper look would reveal that the city still presents an unfulfilled demand, which might be originating from end-users rather than investors and capital gains seekers. It is important to look at population growth to rationalize this analogy. On the other hand, this also implies that investing in Singapore property market would prove profitable on the long run as the government tends to gradually relax the monetary policies, and capital gains start to hike again. The current period demonstrates an attractive investment to investors sitting on larger pools of cash and equity who can afford limiting the high interest rates and increased minimum down payments.

Similarly but slightly differently, Jones Lang Lasalle (2013), one of the leading research organizations world-wide have revealed in their latest report on MENA market conditions that the real GDP growth in the UAE have slowed down in 2013 in comparison to 2012. Nonetheless, as this might give a negative market indicator to most places in the world, the case of the UAE is different where 2013 have witnessed increased public confidence in the UAE's economy as a whole and the real estate sector in more specific terms. Following the announcement of Dubai being the host city of World Expo 2020, the announcement of new residential, commercial, industrial, and touristic projects have significantly increased represented by government backed projects, national and international private sector contribution, and an increased level of foreign direct investment. The fact reinforces the country's position of being a regional business and tourism hub along with being considered a safe haven for real estate investments. It is however important to note that such favorable market conditions might result in a booming phase with overvaluation and therefore, the central bank of the UAE have announced certain regulations including mortgage caps to limit the price growth and overall inflation in the economy. In the housing market in particular, the policies are pretty much directed towards the occupiers rather than the landlords and investors.

With the UAE's market attaining higher popularity, one of the main drawbacks for investors considering opportunities in the country would be the intense competition as all other micro and macro-economic indicators are favorable. In this regard, product positioning and consumer centrism is crucial when investing in the UAE real estate market and especially in Dubai. Following the announcement of Expo 2020 host city, Dubai is much likely to experience increased demand for residential properties as more and more people tend to move into the city with increased job opportunities and a favorable market infrastructure. On the other hand, new mega-projects have already been announced to match the expected demand levels and hence, the bottom line would be Dubai might be a risky investment although if successful, would generate a magnificent returns on investment.

Moving East in the continent, the case is very different with India as Times of India (2013) shadows an interesting perspective on property prices trend in India whereas it examines the trends of property supply and demand in cities like Heydarabad rather than the main cities of Mumbai and Delhi.

The article outlines the findings of Real Estate Developer's Association as it finds that although cost of construction have been behaving on an increasing trend within the last four years, the selling and leasing prices are also expected to behave on an increasing trend to meet the cost of construction behavior.

Nevertheless, the article also indicates that the city that represents Indian suburbs, have genuinely recovered the consequences of the last Global Financial Crisis where leasing areas have been leased to a large degree and a wide range of residential properties have been selling well at reasonable prices with expected moderate inflationary trend.

This clearly explains that emerging markets and especially other than the main cities of a given country reacts slowly to supply and demand principles. This could possibly create arbitrage opportunities to investors who could correctly time the market and establish business at times of expected future growth to adjust to market conditions, and enjoy a relatively guaranteed growth opportunities. However, investors should very much bear in mind that these markets although promising, demonstrate significant degrees of business, political, and market risks and hence, the size of the business in such markets would very much depend on investors risk appetite.

On a summarizing and comparative level, Global Property guide (2013) analyzed residential property prices in more than 40 countries investigating the general global trend as they divide the study into regional analysis comparing the prices in the later part of 2013 accompanied with a future outlook to the same period in the prior year.

The study reveals that the UAE and particularly Dubai ranked first in the residential properties price increase index due to the robust business and financial infrastructure along with the city being considered as a safe haven. The United States however ranked 6th on the index with relatively robust growth in the overall economy accompanied with relaxed monetary policies as interest rates have become generally stable and acceptable. These indicators resulted in increased demand for housing driven mainly by end users, and higher supply consecutively.

The study also revealed that Japan ranked 8th on the index with a promising future outlook due to monitory policies introduced by the Japanese government which can be summarized into devaluation of the home currency, increasing public infrastructure spending, and aggressive quantitative easing.

Singapore also demonstrated a growth percentage that is not relatively aggressive where it ranked among the best 25 performers in terms of housing price increase. The main reason behind the less aggressive growth could be that home prices are already relatively high.

On the other hand, India has demonstrated negative growth rates in residential property prices despite the overall growth in the economy's performance. A possible reason nevertheless could be lack of foreign direct investment as the country has never been governmentally or economically stable.

A classical implication would be that investments in countries with a positive growth outlook would prove profitable to real estate investors and countries like India with a forecasted negative outlook are not considered attractive.

Nevertheless, although the above might give a general sense of direction, a deeper look into each country's qualitative and quantitative analytics is required to form robust investment decisions.

It is worth indicating that real estate gurus seek arbitrage opportunities to capitalize upon rather than mere industrial growth, which requires creative but sensible modeling and rationale formed through applying various financial concepts and excelling in modeling them together in order to achieve accurate outlooks.

For which, Discounted Cash Flows are the most generic, widely-accepted financial methodology in valuation. In this sense, Pablo Fernandes (2007) discusses some corporate valuation methodologies starting with financial statements derivatives that are based on Balance Sheet's Net Asset Value with the analogy that this represents the liquidation value of the company's assets. However, balance sheets are not generally marked to market and hence may not represent the actual fair value. The next method in discussion is to evaluate Profit & Loss statements ratios and compare them to industry benchmarks investigating arbitrage opportunities. The third method is to combine the ratios derived from the P&L and the asset valuation derived from the BS to arrive at a more accurate analysis of the overall performance and value.
Nevertheless, Pablo Fernandes emphasize that despite the variation of valuation methodologies, the Discounted Cash Flow has the highest representation of reality for it evaluates the actual cash value of a company or an asset and factors in time value of money.

This is essentially true where financial statement valuation methodologies is proven helpful in the general sense of evaluating performance, historic value in precision, and profitability margins, whereas discounted cash flows evaluates the addition to the investor's net worth in today's dollar terms. The beauty of this methodology is that it not only disregards accounting adjustments and provides no room for manipulating the numbers; it also factors in assumptions based on the investor's outlook to the future and gut feeling. It is also worth mentioning that this methodology is helpful for either evaluating a project in particular, a company in general, or buying or selling a stock.

Where returns might be the bottom line deriver of investments, it is of high importance to consider risk and risk reduction strategies with great emphasis on diversification. The Modern portfolio theory by Markowitz indicates that investors base their fund allocation across a portfolio through evaluating risk and return of each asset class separately, along with evaluating the co-movement of asset classes in a portfolio to decide on optimum allocation. From this perspective, Heidi Falkenbach (2009) investigates whether the commercial property market in Finland has provided diversification benefits in its early years of internationalism. The study consider financial returns on property markets in fifteen countries starting with unconstrained allocation portfolio and then assigning a 20% cap on the investment allocation on each country within the portfolio. The first stage of the analysis is evaluating only Finnish asset classes which revealed that holding Real Estate stocks generate the highest returns along with carrying the largest degree of risk. The second stage was to evaluate the risk and return

characteristics of the property market in each country solely which also hedges currency translation risks. The analysis revealed that Canada was the most attractive property market investment where it carried the highest average return with a relatively low standard deviation. A correlation analysis was then introduced to reveal that the property cycle is generally positively correlated across countries in the study which limits the diversification advantages. The next stage revealed combined portfolios considering cyclical co-movements and indicated that the highest expected return with the lowest possible standard deviation could be achieved through allocating funds between the UK and Portugal in 70/30 manner respectively. Nevertheless, when considering foreign exchange risks in an un-hedged portfolio, the formula changes by allocating funds between Ireland and Portugal in 64/36 manner to achieve the highest expected return with the lowest possible standard deviation.

The concept of modern portfolio theory is very much applicable when evaluating real estate investments especially in creating a diversified portfolio across multiple countries. Nevertheless, the risks should be carefully evaluated in a general sense where Foreign Direct Investment risk should be also taken into consideration. The only missing element of the overall analyses in this article lies in identifying the costs of real estate investments in various countries where unlimited funding options might be viable in theory, but not in practical terms. In this sense, the ultimate portfolio optimization would be holding a portfolio with the highest expected returns and the lowest possible standard deviation among a number of feasible portfolios given a funding cap limitation.

The literature review provides a general sense of direction for the paper but does not summarize the findings as the analyses in later parts could reveal different results. The value addition of any paper in this essence is driven by capitalizing on prior works and adding to the financial literature by either further supporting a concept, or attempting to prove the opposition.
The literature review has preliminarily introduced concepts that the paper would agree with in a generic terms, but identified research gaps that shall be fulfilled in later sections. Moreover, it provided general investors outlook and analytics of the countries in the scope of the research, which would be essentially helpful in forming specific assumptions to be fed into each country's case study model.

The above concludes the Literature Review section, where the flow of the paper would discuss the general methodology in the following section concluded with specific case studies and portfolio combinations providing the findings in a detailed fashion

3.0 Methodology

The methodology of this paper would start with analyzing the profit pools for each country and accordingly the first step is to understand what the various value creation elements in the residential property industry are. The next step shall include demand assessment represented

by Revenue and Income forecast, followed by supply and competition analysis. Cost estimation analysis would be conducted then to arrive at a fair forecast in a country-wise case studies fashion. Finally, the results of these case studies will be consolidated into an optimum portfolio.

3.1 Residential Properties Industry Value Derivers

A complete profit pool analysis in this regard would include studying direct investments in real estate in terms of buying existing properties, or constructing a new development. Nonetheless, investments in this industry would also include buying and selling stocks of companies involved in real estate industry. Further, construction and logistics industry could also be involved in the entire cycle as well as maintenance and home furnishing.

However, this paper would only include options of direct investments in real estate as the beauty of such analyses are indicative to bull and bear positions of the industrial stock market of each country within the study. The case that widens the range of investment scope for investors with various funding options could benefit from the results.

3.2 Revenue and Income Assessment

The most important derivers of Revenue are forecasted demand and real returns demonstrated by rental increases or capital gains based on increasing the overall value of the property.

In this regard, the demand would be forecasted through evaluating macroeconomic factors historically and accordingly forming a future outlook as these elements directly affect the performance of real estate industry in general and residential properties in particular.

3.2.1- Demand Modeling Rationale

The most obvious deriver of the housing industry is population growth for housing is a basic need in any given country at any point in time. Nonetheless, the dominant segment of the population that derives the housing industry is the age group ranging between 15-40 years for this segment generally look for houses as end users not only as investors. It is fair however to label this segment as working force for the working force also generates income and demonstrates further capability of affording houses. This indicates that a boom in this segment would create a gap between the demand and current supply ultimately resulting in various investing options. However, the gap between demand and supply could either indicate that the market is capable of absorbing further housing developments and projects, or current landlords and investment home owners could increase rentals and maximize capital gains as the demand curve shifts upwards and the supply curve remains constant increasing the equilibrium point as the graphs below:
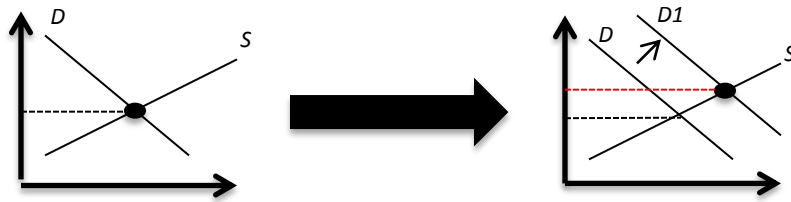
This means in theory that any given shift in demand would result in an exactly proportionate shift in the equilibrium price holding supply constant. Nonetheless, practicality suggests that end-users are capitally constrained and there is a degree where the population will not be able to afford housing upon. Hence, it is also important to consider GDP/Capita trend to evaluate the purchasing power of any given population, and to which degree either rental increases or capital gains would be sustainable from a consumer point of view.

Another factor that is of importance to consider is the interest rates where lower rates result in higher borrowing power and hence higher demand on housing. And the opposite also holds true where higher interest rates results in less borrowing power and ultimately less demand. Nevertheless, controlling interest rates is a mechanism of monetary policies enforced by governments to control the magnitude of investing activities, general pricing of consumer goods, and countrywide inflation.

This leads to the last macro-economic factor in demand estimation and that is inflation. This factor determines whether rental increases and capital gains are truly valuable to investors, or they only compensate for the increase in the pricing index, or even only a portion of it resulting in negative rental or capital gains growth in real terms. Hence, the GDP trend and GDP/Capita would be evaluated on real basis rather that nominal.

3.2.2- Forecasting Methodology

As the historical data was attained from various trusted statistical sources such as WorldBank and IMF websites, the forecasting methodology for each of the elements is based on historic trends, analyzing the growth rates for 2011 and 2012, and basing the future outlook accordingly.
The outlook of each element was calculated as follows:

- **Population** growth is forecasted based on the average growth rate of 2011 and 2012, where the average growth rate is constantly applied to the years between 2013 and 2020.
- **Labor Force** is taken as a percentage of total population where this percentage is the same of 2012, and is constantly applied to the entire forecasting period.
- **GDP** outlook is forecasted using the same methodology used for population where the historic average growth rate is applied to the forecasting period.
- **Inflation** rate is calculated using the historic average, and then standardizing the value for the remainder of the forecasting period.
- **GDP/Capita** is calculated through dividing the real GDP by the population for any given year. Nonetheless, Real GDP is attained through multiplying the nominal GDP by the inflation factor

- **Interest Rates** are standardized across the forecasting period where the rate in 2012 is held constant for any given country. The Real Interest Rate however, is simply calculated through subtracting the inflation rate from the nominal interest rates.

3.3- Supply and competition Analysis

The section above analyzes the demand force holding supply constant. However, principles of economics indicate that there will be a direct reaction on the supply side in an equal proportion deriving the equilibrium point back to normal. Nevertheless, reality in this regard proved that in practical terms, the reaction on the supply side would vary from a country to another in terms of magnitude and time lag, which reflects the importance of evaluating supply separately to arrive at a fair conclusion on the pricing outlook for each country within the study.

3.3.1- Supply study rationale and Calculation methodology

The methodology of assessing supply would be evaluating the real estate industry as a percentage of the total GDP and comparing it to a worldwide benchmark. The hint is that if the percentage of a specific country exceeds the benchmark, it would indicate that this market is already oversupplied and competition would be intense. And vise-versa, where a percentage that is lower than the worldwide benchmark would indicate an undersupply and a probable promising opportunity.

The worldwide benchmark was set on a weighted average real estate contribution to GDP in China, The United States, and European Union. These three economies represent over 50% of the Gross World Product and also represent three different continents with different economic standards and trends, which makes it a fair sample to arrive at a benchmark of real estate supply status.

The benchmark in this regard calculated through 2012 GDP results was 14% as per the following table

Country	Real Estate Contribution	Weight	Weighted Average
China	12%	14%	
US	16%	56%	
EU	10%	30%	
Total		**100%**	**14%**

The Real Estate Contribution is a fixed element whereas the Weights are percentages of total GDP of the four economies. The Weighted Average nevertheless is a sum of each economy's Real Estate Contribution multiplied by the respective Weight.

3.4 Cost Estimation Analysis

As the above sections are concerned with assessing the inflow streams of the paper, the cost section is directed toward estimating the outflow streams represented by costs of investments alongside various related costs.

3.4.1 Investment value calculation rationale

The rationale of cost estimation is based on the average construction price per square meter in each country from the latest report of Davis Langdon. The model then standardizes the construction size in each country to fit an average building of 100m2. Furthermore, it is of equal importance to consider land prices as well, which the model will factor in as a percentage of total development cost based on the reviewed literature of each country.

The last factor would be interest rates, which also forms part of the total cost to investors. Nevertheless, the total investment value that would form the basis for capital gains would disregard interest rates for this cost is not actually embedded in the overall value of the development itself. Rather, it is an investment related cost only.

The modeling of cash flow statements would assume that 20% of the overall value would be paid by investors as advances or down payments, whereas the remainder 80% will be borrowed at the relative borrowing rate. Thus, the total cost to investors disregards the principal portion of the repayment for it is embedded in the total property value.

3.4.2 Output representation

The cost calculation will consider an average scenario, a high end residential property scenario, and finally value property estimation. This is essentially useful as each category would be more demanded in different countries.

The tables below represent the Total Cost to investors and its respective elements in the three discussed scenarios.

Construction Cost in USD - Average

	US	Japan	Singapore	India	UAE
Average House /m2	3,650	4,000	3,000	650	1,810
100 m2	365,000	400,000	300,000	65,000	181,000
Land %of DC	25%	100%	30%	8%	50%
Land Price	91,250	400,000	90,000	5,200	90,500
Total Investment Cost	456,250	800,001	390,000	70,200	271,501
Intrest Rates	3%	1%	5%	11%	1%
Total Intrest Paid	60,225	44,800	84,240	29,765	10,860
(on 80% of cost for 5 years)					
Total Cost to Investors	516,475	844,801	474,240	99,965	282,361

Construction Cost in USD - Value Property

	US	Japan	Singapore	India	UAE
Average House /m2	1,825	2,000	1,500	325	905
100 m2	182,500	200,000	150,000	32,500	90,500
Land %of DC	25%	100%	30%	8%	50%
Land Price	45,625	200,000	45,000	2,600	45,250
Total Investment Cost	228,125	400,001	195,000	35,100	135,751
Intrest Rates	3%	1%	5%	11%	1%
Total Intrest Paid	30,113	22,400	42,120	14,882	5,430
(on 80% of cost for 5 years)					
Total Cost to Investors	258,238	422,401	237,120	49,983	141,181

Construction Cost in USD - High End

	US	Japan	Singapore	India	UAE
Average House /m2	7,300	8,000	6,000	1,300	3,620
100 m2	730,000	800,000	600,000	130,000	362,000
Land %of DC	25%	100%	30%	8%	50%
Land Price	182,500	800,000	180,000	10,400	181,000
Total Investment Cost	912,500	1,600,001	780,000	140,400	543,001
Intrest Rates	3%	1%	5%	11%	1%
Total Intrest Paid	120,450	89,600	168,480	59,530	21,720
(on 80% of cost for 5 years)					
Total Cost to Investors	1,032,950	1,689,601	948,480	199,930	564,721

3.5 Case Studies

The Case Studies represent the main portion of the paper where the results concluded from the analyses in the sections above shall be fed to the case study model generating a cash flow statement in which the NPV calculation will be based upon. Each case study will be independently presented in the findings section as the methodology will only describe the rationale and modeling.

Nonetheless, the NPV will be calculated on each year within the investment tenure for its essentiality in determining the optimum holding period that generates the largest NPV amount for the lowest possible degree of risk.

In this regard, the components of the cash flow projection are combination of positive and negative streams of cash given certain considerations as per the below

3.5.1 Negative Cash Flows

The initial outlay of the investment is set to be 20% of the total development value including land. The assumption is that the remaining 80% will be financed on the average interest rate derived from the demand estimations. Nonetheless, the assumed tenure of the loan is 8 years starting in 2013 and ending in 2020. However, the total development value is derived from the cost estimation section.

It is rather important to highlight that the loan repayment shall take a form of total balance upon selling the property as the model assumes repayment of all obligations upon sale of property.

This means that each year's installment would be deducted from the total loan value including interest as the year elapse.

3.5.2 Positive Cash Flows

Returns on investment shall be generated through rental charges that escalate on frequent basis, and capital gains that the property generates based on physical improvements and general market conditions. Therefore, the model assumes a constant rate of growth that is based on the understanding of the demand section. The only limitation to the model in this aspect is its inability to forecast cyclical trends. Hence, the commentary and conclusions of the case study will highlight the magnitude of cyclicality which also explains the risk factor demonstrated by the standard deviation.

3.5.3 Net Cash Flows

The sum of all positive and negative cash flows is translated into the Net Cash Flows which represent the bottom line that the yearly NPV calculations would based upon.

3.5.4 Standard Deviation

The Standard deviation is a quantitative measure of risk as it assesses the variances of returns from the mean. However, such calculations based on short-periods and largely ranged results that are highly common in real estate cash flow simulations would produce unrealistic results if calculated through mathematical inputs only. Therefore, qualitative judgments derived from the understanding of the literature, cost estimations, and demand and supply forces would form the basis of setting the expected magnitude of variances in each case study.

3.5.5 Yearly Relative Net Present Value

The NPV calculation is basically the sum of all positive and negative cash flows discounted at a specified discount rate for a given number of years. It is therefore straightforward to conclude that a positive NPV indicated a profitable investment, and a negative NPV indicates the opposite.
Nevertheless, investors form their judgments based on reward as well as risk. Hence, the NPV in each case study will be calculated at the end of every year, assuming that the property will be sold at that particular year. However, the following year NPV calculation would only consider the rental income of the previous year, and assumes sale of property occurs at the end of the same year. This would provide investors with a crystal clear image of when does the investment start generating profit and what are the marginal increases per year. This is helpful in deciding the optimum selling point for risk reduction purposes.

3.5.6 Case Study Scenarios

Each case will be represented by three scenarios where the base case would form the basis of applying best case and worst case scenarios. Nevertheless, the fixed elements represented by total development cost, interest rates, and inflation rates would be constant among all scenarios whereas the figures that were arrived at on a judgmental basis will vary to understand the possible variation magnitude. The findings will reflect only the base case scenarios and the remaining scenarios will be presented in the appendices.

3.6 Portfolio Optimization Analyses

Successful investments in the real estate sector is largely about correctly timing the market and efficiently managing costs of investment along with risk diversification. Therefore, after studying each market independently and forming a judgment on its profitability and risk characteristics considering market timing, this section is about creating portfolio simulations holding combinations of residential properties in different markets, and evaluating the best time of selling each property to generate maximum returns up to the end of the portfolio holding tenure, with shading light on investment efficiency in terms of choosing the best borrowing rates that are relatively constant.

The Findings section will present the Net Cash Flows of the optimum portfolio considering no funding restrictions. The presentation methodology will be largely similar to the case studies.

3.6.1 Portfolio Optimization Rationale

Whereas the rationale of portfolio optimization's country-specific components largely depend on the results of the individual case studies, the -portfolio optimization specific- components' rationale is explained as per the following components

3.6.1.1 Interest Rate Optimization

Smart investments consider borrowing at the lowest possible rate as well as reinvesting at the highest possible rate. Thus, as it is assumed that 80% of the total costs would be borrowed, it would be borrowed at the lowest rate among the countries in the portfolio taking inflationary factors into consideration. Similarly, the highest interest rate in the countries within the portfolio would be used to reinvest the positive Net Cash Flows.

3.6.1.2 Modified Internal Rate of Return (MIRR)

It would be calculated via the NPV formula presented earlier based on the Net Cash Flow of all including loan remainder payment and sales of properties in the respective optimum years according to the results from individual case studies. in this regard, MIRR is the rate that forces NPV to Zero considering cash reinvestment at the highest deposit rate chosen from the section above

3.6.1.3 Portfolio Standard Deviation

The portfolio risk represented by standard deviation takes into consideration the weights of each investment, each respective standard deviation, and the covariance between each asset as per the following mathematical formulas

Portfolio Variance = {(weight of (asset 1)^2 * St.Dev(Asset 1)^2)+…..(Weight of (Asset n)^2 * St.Dev (Asset n)^2)} + {(2*Weight (Asset 1) * Weight (Asset2) * Covar(Asset 1, Asset 2) +….(2*Weight (Asset N) *Weight (Asset n)*Covar(Asset N, Asset n)

Portfolio Standard Deviation = Square root of Portfolio Variance

4.0 Findings

This section will include representations of each country's case study conducted under the assumptions discussed in the Methodology section. This will be through presenting conclusions and analysis on the demand side and supply side along with incorporating cost estimations into a Cash Flow model to arrive at each NPV for every respective year. It is also incorporate the portfolio demonstration and prove how it becomes more profitable and less risky to hold a portfolio rather than a single asset.

Before analyzing each country on its own, the following graph represents indicative positions of each country's return based on preliminary qualitative understanding of the demand section as well as factoring in the cost section with only base case scenario
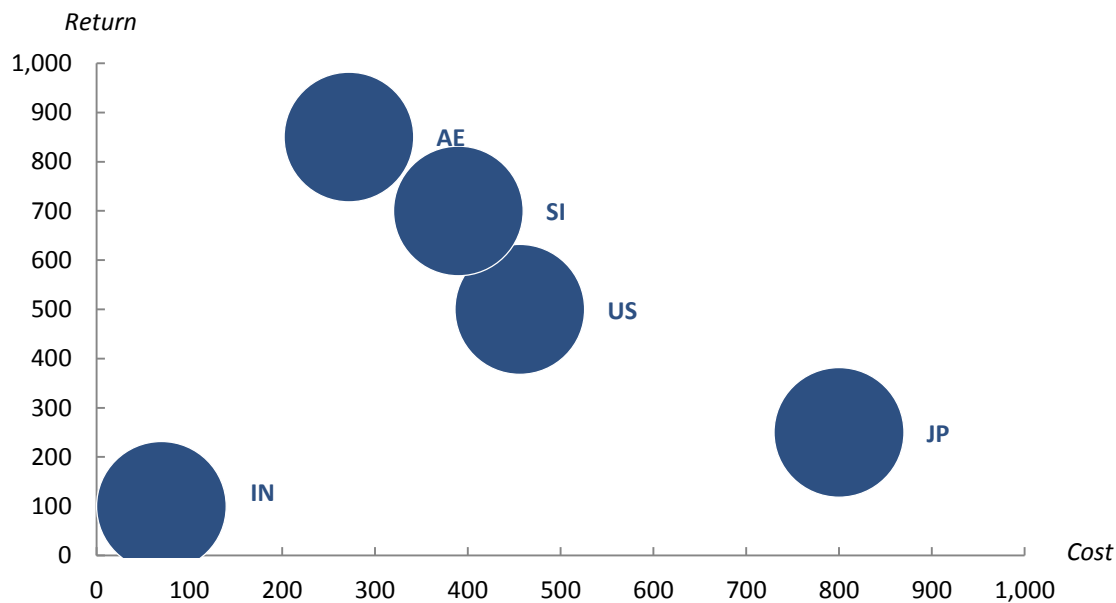
The graph clearly illustrates that the UAE ranks first in terms of investment worthiness, followed by Singapore and the US. The graph also illustrates that India is very low in terms of both return and cost, and japan is the least profitable investment where returns are generally low and costs are high.

Nevertheless, the analysis above could lead to a deeper numerical study investigating Net Present Values of each investment along with its related risk profile. This will be presented in a country-wise case study format where the findings in the sections above will be translated into inputs generating a numerical conclusion on the overall evaluation of each investment.

4.1 The United States

4.1.1 Demand Conclusions and Analysis

The analyses indicate that the population in the United States is indeed growing, which indicates a positive sign for demand in the housing industry. Furthermore, the GDP of the country grows at even a faster rate than the population reflecting a general growth in the GDP Per Capita where the expected growth for this indicator is 31% higher than 2012 levels. This could also imply that consumers would be willing to pay premium prices for more luxurious housing facilities.

Interest rates however are set on a relatively low level being standardized at 3% p.a., which also indicates a higher purchasing power driven by lower borrowing costs from a consumer point of view.

Inflation rates are also as low as 1%. Consumers generally prefer this rather than investors where it limits the rental increases ceiling, and might decrease the magnitude of capital gains. Generally, the demand in the United States is favorable for housing industry given that investors seek medium to long-term investment opportunities with a relatively low risk profile and low to medium growth in returns.

4.1.2 Supply Assessment

	2010	2011	2012	
GDP Bn	29,677	30,571	32,148	Oversupplied
Real Estate Contribution			16%	

With Real Estate contributing 16% to the total United States economy, the indicator is already above the worldwide supply. Nonetheless, given that the demand analysis resulted in profitable investment opportunities, it is not expected that this percentage would drop if not increases. The United States' supply curve would therefore react to the demand shift in upcoming years quickly demonstrating a high level of market efficiency where investors have lesser chances of capitalizing or arbitrages.

4.1.3 Cost Estimation conclusions

Although the development cost in the United States seems quite high, land prices are relatively low probably due to the size of the country and availability of land. Nonetheless, high construction prices could be explained by the high supply in the market.

On the other hand, moderate and stable inflation rates contribute towards a relatively stable cost of investment over time which makes timing the market an ineffective strategy of cost reduction.

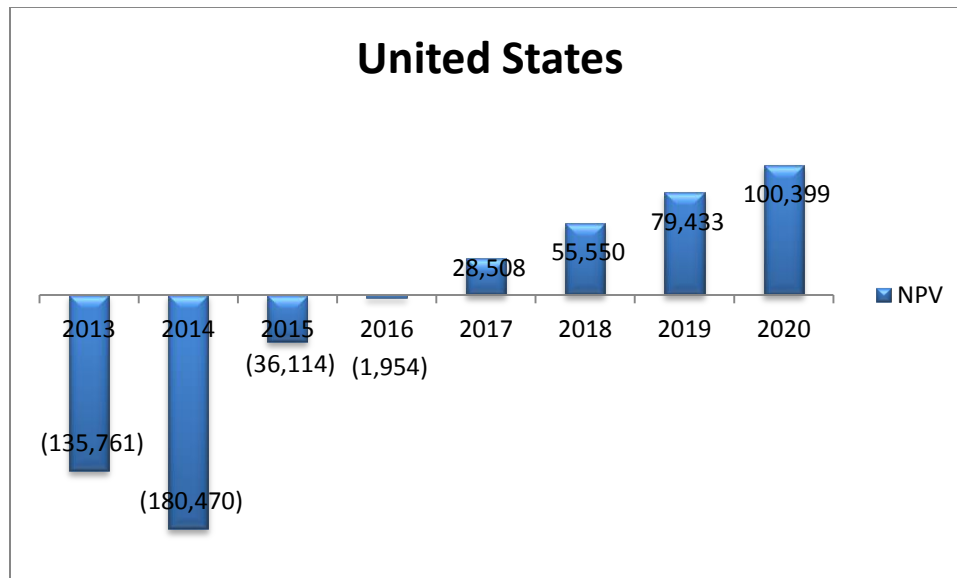4.1.4 Cash Flow Presentations and Analysis

Assumptions

Years to Complete Construction	2
Rental Growth %	3%
YoY Capital Gains	4%
Total Development Value	*456,250*
Rentals as a % of investment	*10%*
Yearly Loan Payment	*52,657*
Average Inflation Rate	*2%*
Applied Discount Rate	6%

Under the assumption that developing the property would take two years starting in 2013, the revenue will start flowing in 2015. Nonetheless, as the supply and demand analysis indicated that the US market is generally of low risk and low to average returns nature, it is expected that rental increases would be 3% on average and capital gains on yearly basis would average on 4%. As interest rates are 3.3%, and the average inflation rate is 2%, investors would require returns of 6% at least and thus the discount rate was set.

The table below represents the net cash flow calculation in nominal and real terms

	2013	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**
Initial Outlay	91,250							
Loan Payment	52,657	52,657	52,657	52,657	52,657	52,657	52,657	52,657
Rentals			45,625	46,994	48,404	49,856	51,351	52,892
Total Value			474,500	493,480	513,219	533,748	555,098	577,302
Net Cash Flow	(143,907)	(52,657)	(7,032)	(5,663)	(4,253)	(2,801)	(1,305)	235
Inflation Factor	0.98	0.95	0.93	0.91	0.89	0.86	0.84	0.82
Real Net Cash Flow	(143,907)	(50,234)	(6,546)	(5,142)	(3,764)	(2,414)	(1,095)	192
Sales Value			*441,760*	*448,080*	*454,199*	*460,091*	*465,727*	*471,079*
Standard Deviation				3%				

Hence, the Net Present Values in each year are presented in the graph below

United States

NPV values by year:
- 2013: (135,761)
- 2014: (180,470)
- 2015: (36,114)
- 2016: (1,954)
- 2017: 28,508
- 2018: 55,550
- 2019: 79,433
- 2020: 100,399

The first two years of operations reflect a negative NPV which indicates that this market is not suitable for speculation purposes. In fact, the longer the holding period is, the higher the NPV gets. This is also proven through the scenario analysis whereas positive NPV would be generated in the second year of operations in the best case, and the fifth year in the worst case. It should be also highlighted that rentals up to the third year do not cover the loan payment, which implies that investors would keep incurring negative yearly cash flows until the property is sold and capital gains are realized.

It can be therefore concluded that investments in the US real estate market is generally profitable given that investors seek medium-long term investments with relatively high funding levels.

4.1 Japan

4.1.1 Demand Conclusions and Analysis

Although GDP/Capita in Japan in 2020 is expected to be 40% higher than 2012 levels, it is important to note that the population component is growing at a negative rate which translates into less demand for housing in general, and higher demand for luxurious residential properties.

This analogy is also supported by the low borrowing rates that are even smaller than inflation indicating that borrowers do not even compensate banks for inflation.

One could therefore conclude that residential properties investments in Japan would offer a magnificent rental increases and capital gains opportunity. Yet, the investment itself is relatively risky for there is no natural growth on the housing demand side, but end-users would always be looking for better and more luxurious options.

Thus, opportunity to a successful investment would be tied to providing great value for money and maintaining this position over the holding period.

Another risk factor would be that more investors would enter the market due to higher levels of income and low borrowing rates.

4.1.2 Supply Assessment

	2010	2011	2012	
GDP Bn	5,534	5,914	5,960	Undersupplied
Real Estate Contribution			6%	

Japan currently stands at a significant undersupply in the real estate market. Reasons explaining this phenomenon could refer to the negative growth in population, which keeps housing on the bottom side of the economic priorities. Moreover, other possible reasons could be high prices of land and population density in the large cities and mainly Tokyo.

It can be therefore concluded that although the supply is low and not expected to significantly increase, the demand is also quite low and concentrated in particular areas. The supply and demand forces hence do not present a promising investment opportunity.

4.1.3 Cost Estimation conclusions

Japan represents the highest cost of investment among the countries in the study for the construction costs per SQM are the highest, and land prices are estimated to equal the total cost of development for lands in cities with higher density are much more demanded than less populous cities where the demand is very low. Another factor explaining this phenomenon would be the decreasing population which indicates less need for housing in general and therefore, it is expected that construction prices will indeed increase over time reaching nearly unsustainable levels from an investor's point of view.

Although Japan does not represent a great investment opportunity, timing the market could decrease the cost of investment.

4.1.4 Cash Flow Presentations and Analysis

Assumptions

Years to Complete Construction	2
Rental Growth %	2%
YoY Capital Gains	10%
Total Development Value	*800,001*
Rentals as a % of investment	*5%*
Yearly Loan Payment	*85,122*
Average Inflation Rate	*2%*
Applied Discount Rate	10%

Two years is a standardized figure for construction period across all case studies. However, rental growth percentage is quite low and barely compensates for inflation due to strict governmental regulations imposed on landlords and property owners. On the other hand, Capital gains are higher than average mainly due to land price inflation along with relatively heavy demand on properties in populous areas and large cities. The capital gains also compensate for high investment value as the rentals do not cover a proper portion of it. With all this said, it is fair to require a high rate of return to compensate for the risk that investors would take by investing in a market with low demand nature, and negatively growing population.

Therefore, the net cash flows in nominal and real terms in Japan are as per the following table:

	2013	2014	2015	2016	2017	2018	2019	2020
Initial Outlay	160,000							
Rentals			40,000	40,600	41,209	41,827	42,455	43,091
Total Value			880,001	968,001	1,064,801	1,171,281	1,288,410	1,417,251
Net Cash Flow	(245,122)	(85,122)	(45,122)	(44,522)	(43,913)	(43,295)	(42,667)	(42,030)
Inflation Factor	0.98	0.95	0.93	0.91	0.89	0.86	0.84	0.82
Real Net Cash Flow	(245,122)	(81,206)	(42,008)	(40,426)	(38,863)	(37,320)	(35,798)	(34,297)
Sales Value			819,281	878,945	942,349	1,009,645	1,080,976	1,156,476
Standard Deviation					18%			

The large capital gains derive positive cash flows whereas the rentals in mere terms would keep investors at a negative standpoint. This would imply that this market is relatively suitable for speculation, but would involve a large amount of investment on stake. This leads to arriving at a high standard deviation reflecting the high level of risk associated with investments in Japan, mainly as a result of high investment value and low demand.

The yearly NPVs in this regard would be as the graph below
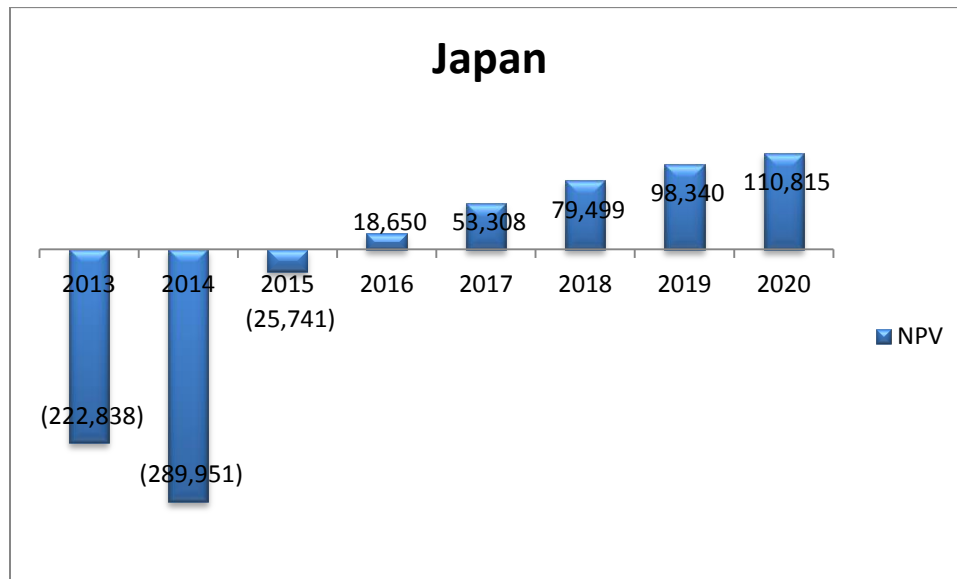
The graph indicates that upon sale of property, the investment would generate a positive NPV in the second year of operation. Nonetheless, the NPV grows at 186% in the third year of operation with a decreasing growth percentage onwards. Nevertheless, holding the property for longer periods would magnify the levels of risk especially in a market where population grows negatively and end-users constantly look for better value-for-money options. Therefore, it is fair to conclude that selling the property in 2017 would be the most rationale option for NPV growth percentage is significantly decreasing onwards, and to eliminate the higher risk associated with longer holding periods.

5.2.2- Singapore

4.1.1 Demand Conclusions and Analysis

Singapore might represent one of the very best investment opportunities where the GDP per Capita in 2020 is expected to be more than double the levels of 2012, with positive population growth. The country although demonstrates a need for further housing development, it shall be geared towards more high-end properties for income levels are rising at a high rate, and end-users would be willing to pay higher rates for better quality residential properties. Nevertheless, it is important to note that interest rates are relatively high in Singapore, reaching an average of 5% p.a., the fact that might discourage foreign investors sitting on limited funding options from investing in Singapore. On the other hand, inflation rates are also considerably high which reflects an opportunity to increase rentals at nominally high levels. Singapore is also considered to be one of the world-wide financial and business hubs for the great infrastructure it has to offer from social and economic points of view.
Thus, it could be concluded that Singapore offers an opportunity for great returns in terms of rental increases or capital gains, with a relatively low risk profile. Nonetheless, the luxury

residential properties are more demanded and therefore, the only limitation to investing in this country would be the high entry barriers in terms of funding.

4.1.2 Supply Assessment

	2010	2011	2012	
GDP Bn	211	232	262	Undersupplied
Real Estate Contribution			5%	

It is quite interesting that although Singapore is considered a world-wide business hub, its real estate contribution to GDP indicates a significant undersupply. The most obvious reason accordingly would be the high barriers to entry in terms of funding requirements along with high interest rates.

The demand analysis nevertheless presents a strong investment opportunity. With all the factors into consideration, Singapore is one of the best places in the world to invest in high-end residential properties.

4.1.3 Cost Estimation conclusions

Prices in Singapore although relatively high, the country would still stand as a profitable investment due to the capital gains investors can achieve during the course of investment. Nevertheless, the high prices could be also explainable by the high standards of construction required by the market who expresses further demand on high-end residential properties.

Land prices on the other hand are not considered to be very high, which probably relates to the shortage of supply and the increasing demand deriving the equilibrium price point down.

4.1.4 Cash Flow Presentations and Analysis

As discussed, a successful investment in Singapore would be geared towards a high-end luxurious residential property which logically does not value at average. Thus, it is assumed that the cost of construction per square meter would be double the average, in return for a higher premium represented by a higher percentage of rental to value

Assumptions

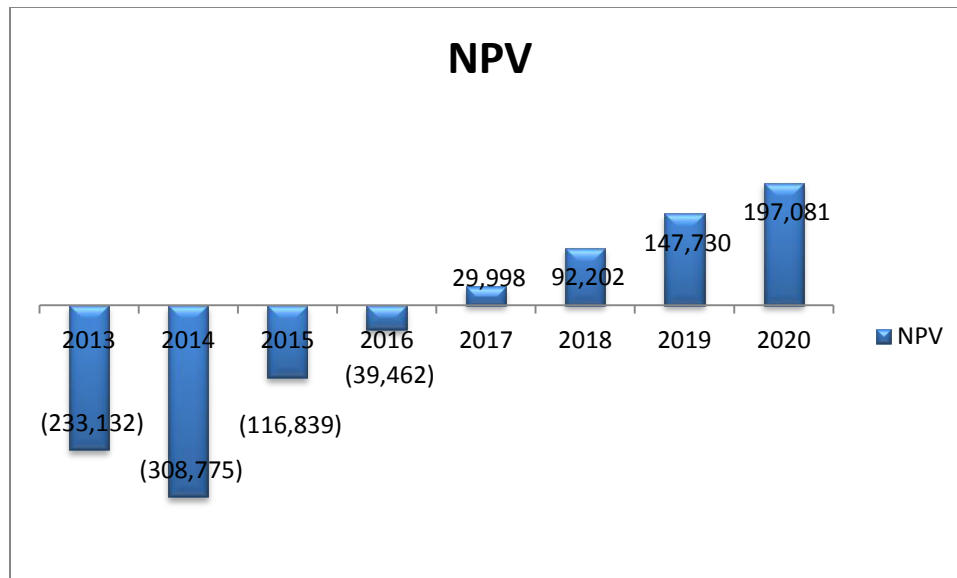|	
Years to Complete Construction	2
Rental Growth %	10%
YoY Capital Gains	6%
Total Development Value	780,000
Rentals as a % of investment	15%
Yearly Loan Payment	98,114
Average Inflation Rate	4%
Applied Discount Rate	9%

The boom in the market represented by population and GDP/Capita's considerable growth generates a 10% yearly growth in rental income. Nonetheless, end-users would constantly seek better value for money and hence, expected capital gains are not set on a very high rate to keep the competitive edge. On the other hand, rental to value percentage is set on a higher rate than other markets for the premium margin that can be applied on high end residential properties.

However, inflation rates are considerably high indicating a boom in the economy which although represents a great opportunity, also represents a degree of such risks that monetary policies could be applied to limit the inflation, or the market could crash after becoming unsustainable. This would urge investors to seek higher expected returns.

The cash flows under these assumptions are as follows:

	2013	2014	2015	2016	2017	2018	2019	2020
Initial Outlay	156,000							
Loan Payment	98,114	98,114	98,114	98,114	98,114	98,114	98,114	98,114
Rentals			117,000	128,700	141,570	155,727	171,300	188,430
Total Value			826,800	876,408	928,993	984,732	1,043,816	1,106,445
Net Cash Flow	(254,114)	(98,114)	18,887	30,587	43,457	57,614	73,186	90,316
Inflation Factor	0.96	0.92	0.87	0.83	0.79	0.75	0.71	0.66
Real Net Cash Flow	(254,114)	(89,872)	16,507	25,448	34,331	43,095	51,669	59,970
Sales Value			722,623	729,172	733,904	736,580	736,934	734,680
Relative NPV	(233,132)	(308,775)	(116,839)	(39,462)	29,998	92,202	147,730	197,081
Standard Deviation				8%				

High rates of return as considerably achievable in Singapore property market which is reflected by the triple digit percentages of marginal increase in yearly NPVs. Nevertheless, the market does not fit speculators where positive returns are only achieved in the third year of operations.

NPV

2013 (233,132)
2014 (308,775)
2015 (116,839)
2016 (39,462)
2017 29,998
2018 92,202
2019 147,730
2020 197,081

NPV

The NPV simulation represents an increasing trend of returns. Nevertheless, the marginal increases begin to diminish after 2018 where the highest marginal increase of yearly NPV appears. This indicates that risk averse investors are advised to sell the property in 2018 to avoid the associated risks of holding the property for a longer period of time that is subject to monetary policies applied in favor of end users or market crash driven by higher inflation percentages.

5.2.2- India

4.1.1 Demand Conclusions and Analysis

India is considered to be one of the most populous countries in the world, with a growing population at an average rate of 0.64%. Although the growth percentage is relatively low, it is in fact considered to be high in nominal terms averaging at an 82 million people per year.
The GDP per capita as well reflects a positive growth where it is expected to be almost 30% higher in 2020 than 2012 levels.
Nonetheless, investors shall be careful with looking at these indicators for although the increase seems favorable, the GDP per Capita levels are extremely low in nominal terms to an extent that the income per person in India is only 3% of the one in the United States.
It then becomes obvious that the general purchasing power is low, and end-users might not be able to afford rental increases or capital gains. Moreover, interest rates are generally high constructing a barrier to entry for investors, and barriers to borrowing affordability to consumers.
Inflation rates are nevertheless very high averaging at 10% p.a. which is more than three times the inflation growth reflecting the corruption in the economy affecting the general public.
Hence, unless the Indian government start implementing monetary policies, even necessities would become unaffordable at some point including housing.

4.1.2 Supply Assessment

	2010	2011	2012	
GDP Bn	1,506	1,706	1,670	Undersupplied
Real Estate Contribution			5%	

The demand force that generally derives it could explain the undersupply in the Indian real estate market. Lesser demand results in less profitable opportunities to investors who would not be able to increase rentals or even generate capital gains given the low purchasing power of the consumers. Furthermore, high interest rates construct an entry barrier to both domestic and foreign investors.
Nevertheless, the corruption in the country that resulted in a less favorable business and investment infrastructure, and is less likely to be resolved in the short to medium-term, contributes to the undersupply by keeping investors eyes away from the country. All these factors could ultimately result in a continued economic turbulence in the country represented by a considerable gap between supply and demand for a considerable period of time.

4.1.3 Cost Estimation conclusions

The cost of investment in India is considerably cheap in terms of construction cost per SQM and land cost. Nevertheless, India does not generally present a profitable investment on the returns side as there are no expectations for high capital gains or capacity to increase rentals. Furthermore, interest rates in India are high to a degree that over a course of five years, the cost of borrowing would equal more than 40% of the total development cost including land. This factor holds the supply and demand curves constant at low levels.

4.1.4 Cash Flow Presentations and Analysis

On the contrary to Singapore, the only possible success to residential properties in India would be properties that focus on value and could achieve profits with very low yields. Hence, only half of the average constriction price would be fed into the calculation model, alongside the following assumptions

Assumptions

Years to Complete Construction	2
Rental Growth %	2%
YoY Capital Gains	3%
Total Development Value	35,100
Rentals as a % of investment	10%
Yearly Loan Payment	5,379
Average Inflation Rate	10%
Applied Discount Rate	5%

The rental growth and capital gains are obviously assumed at low levels reflecting the slow demand associated with investment properties in Indian market. This is a fair picture of the economy where demand for mere housing is generally strong, but the population is-on average- unable to sustain housing costs.
Nevertheless, the applied income percentages are also a reflection of the very high interest rates that generally discourages foreign direct investment, as well as high inflation rates that are deemed unsustainable by the population as it is set at a constant rate that is more than three times the average growth of GDP per capita. Under this light, the cash flow simulation is represented by the following:

	2013	2014	2015	2016	2017	2018	2019	2020
Initial Outlay	7,020							
Loan Payment	5,379	5,379	5,379	5,379	5,379	5,379	5,379	5,379
Rentals			3,510	3,563	3,616	3,670	3,725	3,781
Total Value			35,978	36,877	37,799	38,744	39,713	40,705
Net Cash Flow	(12,399)	(5,379)	(1,869)	(1,816)	(1,763)	(1,709)	(1,654)	(1,598)
Inflation Factor	0.90	0.80	0.70	0.60	0.50	0.40	0.30	0.19
Real Net Cash Flow	(12,399)	(4,296)	(1,305)	(1,085)	(876)	(677)	(488)	(311)
Sales Value			25,112	22,028	18,773	15,343	11,728	7,924
Relative NPV	(11,809)	(15,705)	(18,372)	(17,303)	(16,345)	(15,494)	(14,750)	(14,110)
Standard Deviation				2%				

It could be concluded that investments under the assumptions above would never reach above zero as the net cash flows are always negative at all years assuming the property is held. It is yet worth mentioning that risk takers might be willing to invest in India and hold the investment for long periods hoping that the government would impose some monetary policies limiting the

inflation or undergo a quantitative easing process that would boost the economy's performance, and highly rewards investors thereafter as a result of low costs of investment. Nonetheless, these investors should bear in mind that they would be at loss for the period of holding the property if no significant changes occur in the economy in general.

The following is a graphical presentation of the NPV simulation to understand the investment trend:
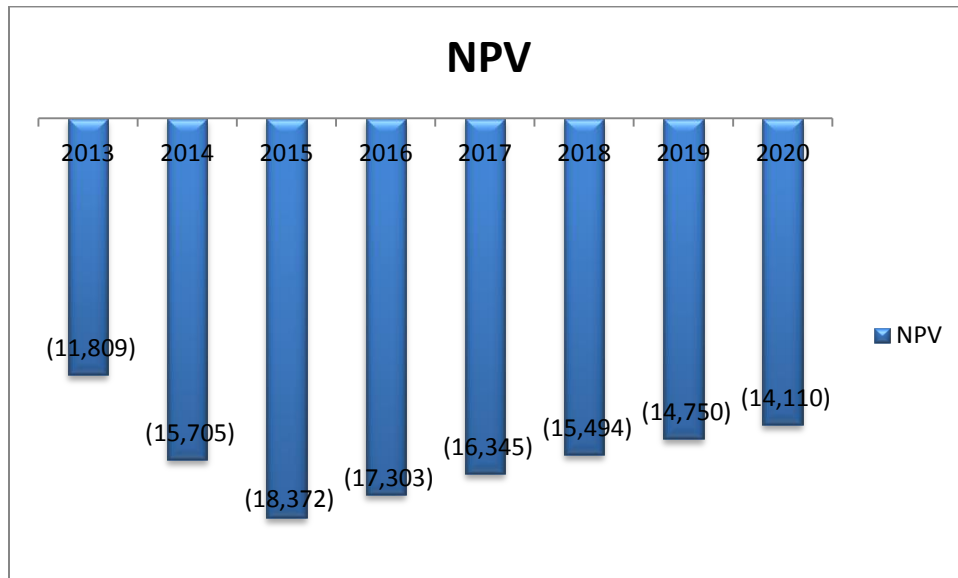
It is observed that the NPV in 2020 is actually lower than 2013 where the construction started, which very strongly reflects how investments in India would not prove profitable. However, the largest dip is after the first year of operations where the investment performance slightly improves thereafter.

5.2.2- United Arab Emirates

4.1.1 Demand Conclusions and Analysis

The UAE demonstrates a relatively high population growth averaging at a 4% p.a., and a magnificent 21% year on year growth of real GDP. This derives the GDP per Capita to be 225% higher in 2020 than 2012.

Moreover, low borrowing rates averaging at 1% only, gears the opportunities level to a very high degree accompanied with low inflation rates averaging at 1% as well.

The analyses indicate that nominal growth rates are no different than real ones, resulting in promising rental increments and high capital gains.

With the country being considered as a regional tourism and business hub, along with being considered a safe haven, opportunities to investors are massive, and quite promising for both speculators and medium to long-term investors.

Nevertheless, the real estate market in the UAE is quite cyclical where it has been proved that the last financial crisis has heavily affected the property prices. It is therefore important to correctly time the market in the UAE to achieve the best investment results.

4.1.2 Supply Assessment

	2010	2011	2012	
GDP Bn	285	345	419	Undersupplied
Real Estate Contribution			13%	

Although investing in the UAE seems very favorable from a demand point of view, the supply sits at a rate that is very close to the benchmark. Nevertheless, with Dubai winning the bid to host world expo 2020, it is highly expected that the percentage would go higher in the upcoming years. The implication is that an overly supplied market where demand is highly increasing could offer a considerable investment opportunity but not achieve high levels of rental increases or capital gains. The cyclicality of the real estate market in the UAE is another factor that needs to be taken into consideration for the shifts of demand and supply forces could go to extreme levels as witnessed in the boom years of 2005 to 2008, and the financial crisis that followed.
Therefore, a promising investment opportunity in the UAE should be relatively short-term, highly luxurious residential property that offers great value for money.

4.1.3 Cost Estimation conclusions

High levels of real estate supply in the UAE are easily explainable by relatively low cost of investment, and high degrees of demand.
This is economically illustrated by a shift of both supply and demand curves upwards with keeping the price point constant probably artificially, which raises the risk that construction prices might increase over time. The implication is that market timing becomes a very important factor in cost management and the evaluation of the overall investment in this regards. Investors who are interested into investing in high-end residential properties would probably achieve high levels of returns if they could act fast before the country becomes overly supplied and the prices increase to a point that would change the entire outlook of the investment.

4.1.4 Cash Flow Presentations and Analysis

The UAE is considered to be a regional tourism and investment hub, and it is very well associated with a luxurious lifestyle and high standard of living for the great condition that the economy in the country enjoys. It is therefore only rationale for real estate investors to consider high-end luxurious properties which are proven demanded much more than the average ones. Hence, the assumed average construction price have been doubled in the model that assumes the following:

Assumptions

Years to Complete Construction	2
Rental Growth %	5%
YoY Capital Gains	20%
Total Development Value	543,001
Rentals as a % of investment	17%
Yearly Loan Payment	56,772
Average Inflation Rate	2%
Applied Discount Rate	10%

Rental growth percentage is only quarter of the year on year capital gains percentage for the government has imposed consumer centric regulations by assigning a rental increment ceiling, whereas the capital gains are solely derived by supply and demand forces. The great demand resulting mainly from the increase of GDP per Capita gears the capital gains to limits that are as high as 20%. Nonetheless, the upward direction of the market resulting from interest rates that are as low as 1% triggers inflation which is currently at low levels. This is a clear indicator that this is indeed the best time to invest in the UAE, and it is rather fair to expect a high return for it also compensates for the possible risks associated with the investment.

Under these assumptions, the cash flow and NPV simulation were as per the following

	2013	2014	2015	2016	2017	2018	2019	2020
Initial Outlay	108,600							
Loan Payment	56,772	56,772	56,772	56,772	56,772	56,772	56,772	56,772
Rentals			92,310	96,926	101,772	106,860	112,203	117,814
Total Value			651,601	781,921	938,305	1,125,966	1,351,159	1,621,391
Net Cash Flow	(165,372)	(56,772)	35,538	40,154	45,000	50,089	55,432	61,042
Inflation Factor	0.98	0.95	0.93	0.91	0.89	0.86	0.84	0.82
Real Net Cash Flow	(165,372)	(54,160)	33,086	36,460	39,825	43,176	46,507	49,810
Sales Value			606,640	709,984	830,400	970,583	1,133,622	1,323,055
Relative NPV	(150,338)	(195,099)	72,269	184,486	289,250	387,538	480,222	568,079
Standard Deviation				9%				

The NPV turns to positive immediately at the end of the first operational year reflecting a true picture of the strength of the economy. Moreover, the NPV also grows at a nominally high rate

indicating a very high return on investment while bearing a bigger risk proportionate to stretching the holding period.

In fact, even the worst case scenario turns a lower value, but positive NPV at the end of the first operational year. This indicates that levels of risk associated with investments in this period of the economic cycle are minimal.

The graph below represents the NPV simulation and the following commentary will conclude with the best time to sell the property.
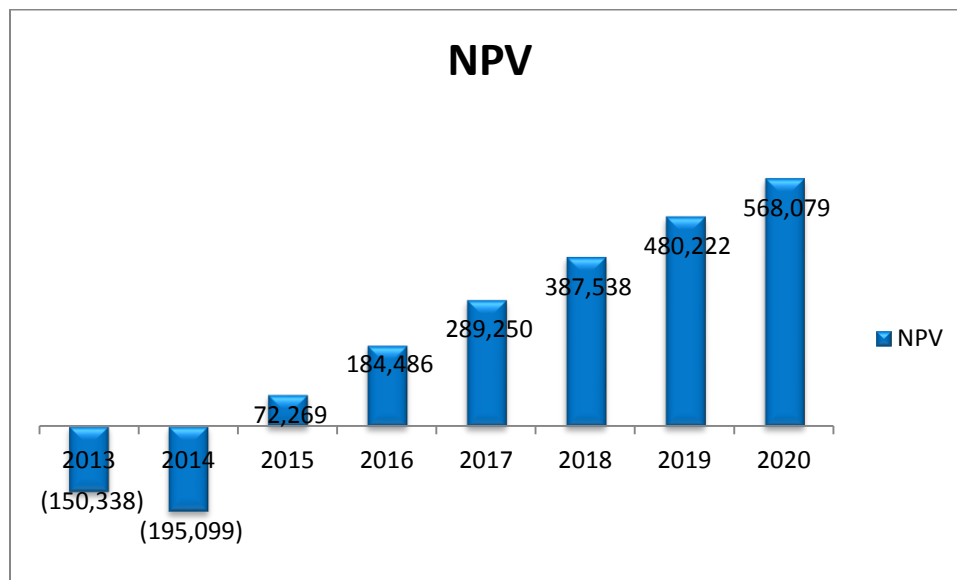
Although the NPV becomes positive at the end of the first operational year, and maintains an increasing trend, the marginal increase starts slowing down in 2017 falling from 155% growth to 57%, and 34%, 24%, 18% consecutively. The implication is that 2016 is the best year to sell the property eliminating the risks associated with longer holding periods that are closer to a possible change in the economy's direction according to the cyclical trend.

5.2 Portfolio Results Simulation

The case studies provide sufficient information to compose a portfolio combining all the investments that generate positive NPV on their own and hold varying risk profiles. In this light, the cash inflows and outflows of The United States, Japan, Singapore, and The United Arab Emirates have been considered to arrive at a portfolio level Net Cash Flow.It is rather important to highlight that all borrowings has been made in Japan where the lending rates were 1.4% p.a. in a mature economy that is unlikely to witness monetary policies directed toward increasing interest rates. On the contrary, reinvestments rates considered in the MIRR calculation were the borrowing rates are as high as 5%.

The Net Cash Flow results were as per the following:

	2013	2014	2015	2016	2017	2018	2019	2020
Net Outflow	(790,288)	(274,438)	(274,438)	(501,526)	(472,027)	(131,540)	(229,653)	(48,546)
Net Inflow	-	-	294,935	1,095,140	1,295,984	205,583	1,266,467	630,194
Net Cash Flow	(790,288)	(274,438)	20,497	593,615	823,957	74,043	1,036,814	581,648

This clearly shows how investments that are best suited for speculation as they quickly generate higher levels of return but are characterized with a high risk profile compensate for the earlier years which makes the portfolio generate a positive Net Cash Flow in the first year of operation. On the other hand, the more stable investments that are best suited to be held for a longer period of time reduce the overall level of risk a generate a stable average income that stabilizes the yearly returns of the portfolio and provide a higher chance of generating positive income for a longer period of time. In this instance, the United States with a standard deviation of 3% acted as a risk reduction element in the portfolio and it kept generating rental income up to 2020 where it was sold. Japan on the other hand, had increased the overall level of risk as it carried the highest weight where it comprised 31% of the portfolio with a standard deviation as high as 18%. The property in Japan has been disposed after the second year of investment to decrease the overall risk profile. Singapore and the United Arab Emirates having a similar investment nature have been phased to be sold in 2019 and 2017 respectively as the United Arab Emirates hold a slightly higher risk profile.

The overall Net Present Value of the investment over the course of 2013 to 2020 was USD1,328,459 demonstrating an IRR of 23% with a starting standard deviation of 7% with timely fluctuations as the composition of the portfolio changes with sale of assets.

5.0 Conclusions and Recommendations

To summarize all the above, this paper has begun with reviewing prior works conducted around residential properties in the United States, Japan, Singapore, India, and the United Arab Emirates, with embedding the author's general views within the literature review sections that was vital in drawing qualitative analytical reviews and conclusions. It has then moved to explaining the methodology that revolves around profit pools starting with exploring the various value drivers of the residential properties industry, followed by a general forecast on the supply and demand directions in each market. The demand assessment was conducted through evaluating various macro-economic factors that directly relates to residential properties whereas the supply force has been assessed via a comparison to a global index. Thereafter, cost estimation analysis has been conducted per country for a standardized project forming the basis of two other scenarios, and accordingly, country-wise case studies have been drawn to finally consolidate into an optimum portfolio.

Nevertheless, the findings highlighted that the United States enjoys a low risk factor but does not necessarily promise high levels of return. The exact contrary was Japan where the demonstrated capital gains are significant yet accompanied with high levels of risk. Singapore

and the United Arab Emirates however have introduced a different dimension as they are relatively similar in characteristics. Investors in these countries could achieve high levels of capital gains within a controlled environment of rental increases, and are not exposed to significantly high levels of risk given they time the market correctly. However, although all investments have demonstrated positive Net Present Values at some point between operational beginning in 2015, and end of holding tenure before or in 2020, analyses on Indian market have demonstrated negative Net Present Value for all the years despite the low costs of investments.

This was the basis of excluding India from the optimum portfolio that has been designed to optimize Net Present Values in each year considering the risk elements in each country, and the covariance advantage that a diversified portfolio introduces.

It is rather important to remind investors that at the end, forecasts are based on assumptions, and assumptions may not necessarily hold true every time. The world of investments combines successful and unsuccessful investors because of the quality of their investment analyses, their qualitative input and their ability to draw meaningful conclusions. In this regard, the paper in hand has introduced a general model with assumptions that can change in correspondence to changes in the market environment. Having highlighted this, the financial literature is open to build on the introduced models with further research and analysis or deepen the study of a country on its own.

6.0 References

Chan, R.W. & Lui, B.C. (2012), Discounted Cash Flow: Prediction as Art, *National Association of Investment Clubs* . Available from: http://brainmass.com/file/1387139/week6article.pdf [Accessed: October 10, 2013].

Falkencachf, H, 2009. Diversification Benefits in The Finnish Commercial Property Market. *International Journal of Strategic Property Management*, 13/23-25, 14

Fernandes, P. (2007), Company Valuation Methods. The Most Common Errors in Valuations. *IESE Business School*. Available from: IESE Business School, Web site: [Accessed: February 12, 2014].

Gadiesh, O. & Gilbert, J.L. (1998), How to Map Your Industry's Profit Pool, *Harvard Business Review*. Available from: University of Chicago, University of Chicago Press Web site: http://hbr.org/1998/05/how-to-map-your-industrys-profit-pool/ar/1 [Accessed: January 11, 2014].

Gadiesh, O. & Gilbert, J.L. (1998), Profit Pools: A Fresh Look at Strategy, *Harvard Business Review*. Available from: University of Chicago, University of Chicago Press Web site: http://hbr.org/1998/05/profit-pools-a-fresh-look-at-strategy [Accessed: January 11, 2014].

Ng, J. (2013), Singapore's Home-Price Decline Accelerates After Curbs. *Bloomberg*. Available from: IESE Business School, Web site: http://www.bloomberg.com/news/2013-11-28/singapore-s-home-price-decline-accelerates-after-property-curbs.html [Accessed: February 2, 2014].

Noguchi, Y. & Poterba, J. (1994), Land Prices and House Prices in Japan, *National Bureau of Economic Research,2*. Available from: University of Chicago, University of Chicago Press Web site: http://www.nber.org/books/nogu94-2 [Accessed: December 3, 2013].

Zhang, M. (2013), US Housing Market Outlook 2014: Slowdown In Housing Recovery, Home Prices To Rise By 4% Next Year, *International Business Times*. Available from: IESE Business School, Web site: http://www.ibtimes.com/us-housing-market-outlook-2014-slowdown-housing-recovery-home-prices-rise-4-next-year-1505646 [Accessed: January 27, 2014].

(2013), Realty Sector Will Recover In State Soon, Andhra Real Estate Body Says. *The Times of India*. Available from: http://timesofindia.indiatimes.com/city/hyderabad/Realty-sector-will-recover-in-state-soon-Andhra-real-estate-body-says/articleshow/23843964.cms [Accessed: November 20, 2013].

(2013), Top Trends for UAE Real Estate in 2013. *Jones Land Lasalle Report*. Available from: http://www.joneslanglasalle-mena.com/ResearchLevel1/JLL_Top%20Trends%20for%20UAE%20Real%20Estate%202013.pdf [Accessed: October 29, 2013].

(2013), World Housing Markets' Strongest Performance Since the Boom Years of 2006 and 2007, *Global Property Guide*. Available from: IESE Business School, Web site: http://www.globalpropertyguide.com/investment-analysis/Q3-2013-World-housing-markets-strongest-performance-since-the-boom-years-of-2006-and-2007 [Accessed: February 1, 2014].