

# Zeppelin's

# Real Estate Tech

April 2005

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## A Newsletter by Zeppelin Real Estate Analysis Limited of the Zeppelin Group

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**Chief Executive changes, LINK REIT's appeal & REITS' appeal, and HK\$31,000 per square foot of floor area literally helps touch the sky:** The past three months have witnessed the (early) stepping down of Hong Kong's first chief executive, the continuing saga on the LINK REIT, the lifting of geographical restrictions on real estate assets invested for REITS (to be formed in Hong Kong if any), and high-rise apartment units reaching HK\$31,000+ per square foot on Kowloon West. Interesting times lay ahead indeed.

### In this Issue:

- **USA Data: Home Price Jives with Income Not Population nor Density**, by Stephen Chung, Managing Director of Zeppelin Real Estate Analysis Limited with kind assistance and advice from our honorary business advisors, Dr. Anthony Ko, PhD (HKU), of the Chinese University of Hong Kong - TWG Community College, and Dr. E. Yegin Chen, PhD (MIT), Principal of Cardinal Advisors based in the USA.
- **Genetics and Neuroscience Changing Ways of Analysis**
- **China: Bubbly Debates on Real Estate Bubbles**

We are honored to have the said guest writers-advisors in this issue. We would also like to hear from prospective readers / writers who wish to share their real estate knowledge and experience with us.

This quarterly (generally published in January, April, July and October) newsletter is circulated freely via email to over thousands of readers including real estate developers, investors, fund managers, financiers, owners, users, top executives, senior managers, prominent academics and related professionals from Hong Kong and abroad. Our content is / has also been published in newspapers and web portals such as [China Daily](#), [Hong Kong Economic Journal](#) (a Chinese daily), [21<sup>st</sup> Century Business Herald](#) (China), [MITCRE Alumni Newsletter](#), the [Surveying Newsletter](#) of the Hong Kong Institute of Surveyors, [Centanet.com](#), [Netvigator.com](#), [Hongkong.com](#), [E-finnet.com](#), [Red-dots.com](#), [Realtradex.com](#), [FrogPondGroup.com](#), [lcofox.com](#), [PacificProperties.net](#), [Soufun.com](#) and [House18.com](#). We had also been quoted in the [Asian Wall Street Journal](#) and interviewed by [Radio Hong Kong](#). We also publish monthly articles and analyses in the months between. This newsletter is now into its [9<sup>th</sup> year](#) and [34<sup>th</sup> issue](#).

We also operate a website [www.real-estate-tech.com](http://www.real-estate-tech.com) through which we intend to share some of our real estate knowledge and ideas with interested parties. We also make available charts, tables, spreadsheets, reports, and the like for reference, the majority of it being free with some requiring a token fee.

**Zeppelin Real Estate Analysis Limited** is involved in real estate development, investment, and asset management with a focus on **independent analysis**, investment strategy, and portfolio management. It can also assist in setting up real estate analytical systems and content development. It is part of the Zeppelin Group of Companies which collectively also offers real estate project management, facility management, marketing management, building design and architecture, and capital management services.

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## USA Data: Home Price Jives with Income Not Population nor Density

Real Estate Tech, April 2005

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With assistance and advice from our honorary advisors Dr. Anthony Ko, PhD (HKU) and Dr. Yegin Chen, PhD (MIT)

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Your humble author has recently looked at some latest, available on the open published web, economic and demographic statistical data on the USA. Calculations and correlations were thus done, as had in a similar study years ago, to see which and what factors seem to have relatively significant influences on home prices in general.

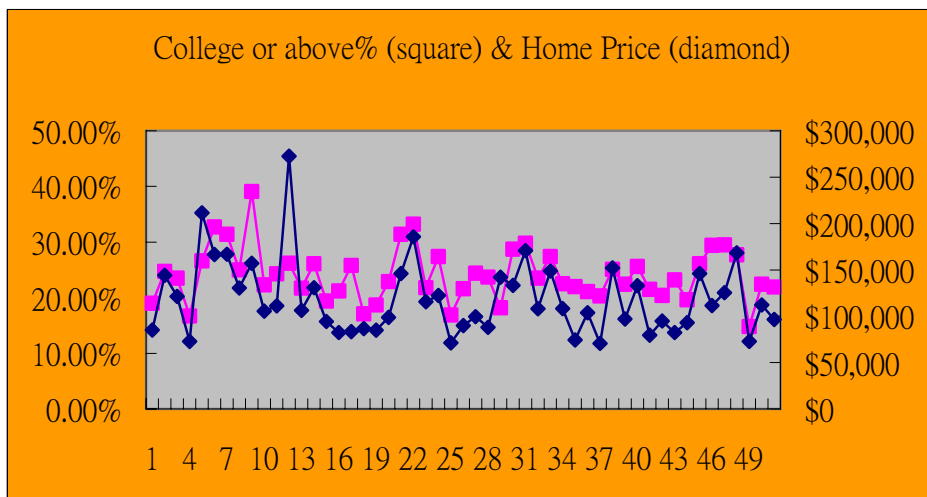
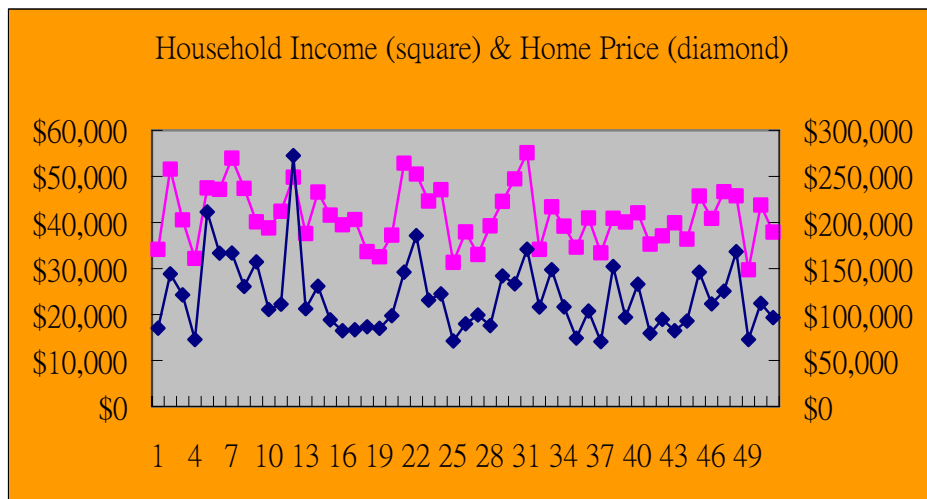
The overall results indicate that income has by far the most significant influence of all the factors / aspects surveyed on home price, which is not much of a surprise. The interesting portions belong to the revelations that 1) population has nothing whatsoever to do with home price, contrasting a common but mistaken belief that the more the people, the higher the home price, and 2) land density has nothing to do with home price either, contravening again a common but wrong perception that the more people there are in an acre, the higher the land price or home price, which conversely also implies that home price can be high or low irrespective of how much (serviced and unserviceable ) land there is. But there are more, read on:

- A) **Data source** = from <http://www.fedstats.gov/> published by the USA Federal Government. This study focuses on a variety of economic and demographics aspects on the state level and utilizes simple correlations only. Please also note the various data may not be exactly synched in time, though it is thought such discrepancies may not affect much in terms of procuring “order of magnitude” observations. Portions of the correlations are listed below.
- B) **Income factor** = irrespective of the income category, e.g. personal income per capita, earnings per job, household income, and the like, home price tends to show a higher correlation with income categories. Note 2 trends though. First, home price has a higher correlation with household income ( $R^2 = 0.58$ ), perhaps reflecting the reality that it is on a household (family) basis that people decide and / or work together to purchase a home. Second, home price has very little to do with the overall income level ( $R^2 = 0.08$ ), but shows higher correlations with income expressed on a per person / capita or household basis ( $R^2 =$  from 0.35 to 0.58).
- C) **Education** = First, home price also shows a relatively significant correlation with higher education i.e. those states with higher percentages of Bachelor degree or above holders among their residents tend to have higher home prices too ( $R^2 = 0.42$ ). Second, those states which have higher percentages of college graduates do seem to have higher personal incomes per capita ( $R^2 = 0.65$ ).
- D) **Foreign born population** = First, home price does not seem to have any significant correlations with ethnic / racial mix, i.e. whether a state is predominantly White, Black, Asian, or other background, has very little if any to do with its (median) home price. Second, notwithstanding the foregoing, those states which have higher percentages of 'foreign-born' residents, complimented in part by the percentage of non-English languages spoken at home, tend to exhibit higher home prices. The gut feel is that this may have less to do with the wealth or earning power of such foreign born residents (many are perhaps recent immigrants), but has more to do with the fact that immigrants / foreign born residents make up a significant tenant pool today. This contributes to a better than average rental market which in turn helps to sustain residential prices. Also, the foreign-born element seems to correlate more, compared to ethnic / racial aspects, with higher education level and income level too. Stating the obvious, there is no intention whatsoever in this article or newsletter to suggest or hint at any racial prejudice or discrimination of any form, just that the statistics have been so categorized by the relevant USA government bureaus.
- E) **Home building volume and supply** = as exhibited by the number of building permits granted (notwithstanding that a permit does not automatically translate into a home unit), home supply has

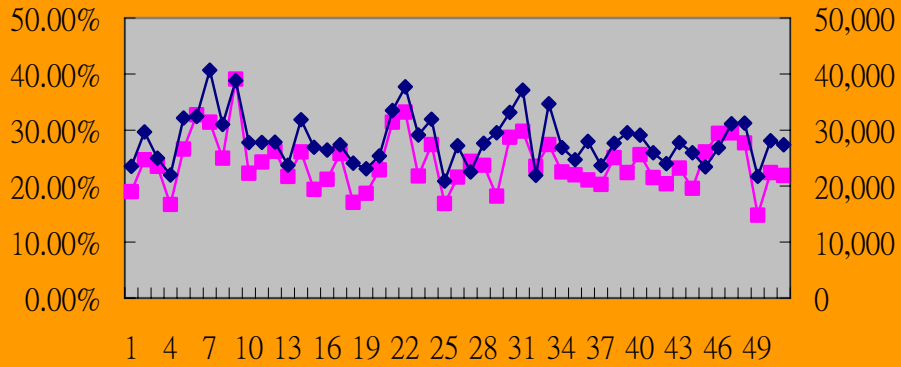
very little to do with home price. Nor does supply has much to do with population level, income, employment, poverty (which if significant should exhibit a negative effect), or population increase.

- F) **Population size and overall income** = there is a very high correlation between the population size and the overall personal income level. However, on an income per person / capita basis, a large population size does not mean much ( $R^2 = 0.06$ ). As income on a per household or capita basis jives with home price, it follows that home price jives little with population. Also, density in terms of how many people per square mile or acre affects little if any on home price ( $R^2 = 0.05$ ).

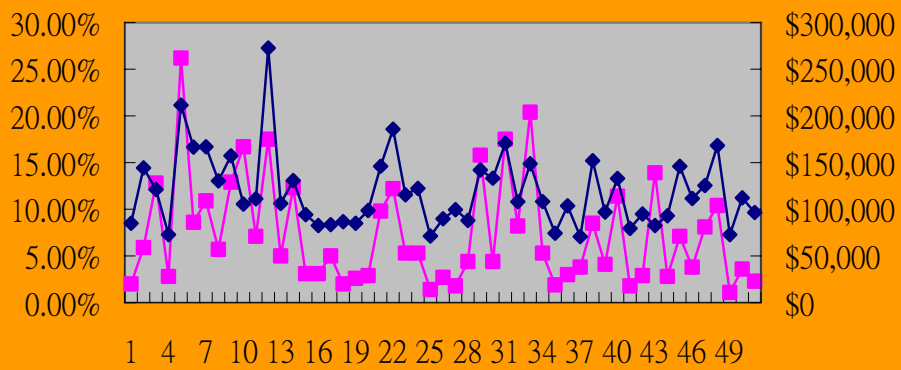
Assuming all things being equal, income, expressed in various categories, may be one of the (if not the) most influential factors in affecting home prices, notwithstanding the possibility that a high correlation needs not automatically imply a cause & effect relation. Also, while it can be argued that what is observed in the USA may not be applicable in other economies, the above brief study does cast doubt on a few commonly-held beliefs, such as “a higher population leads to higher home prices”. Perhaps it is time to revisit such notions.



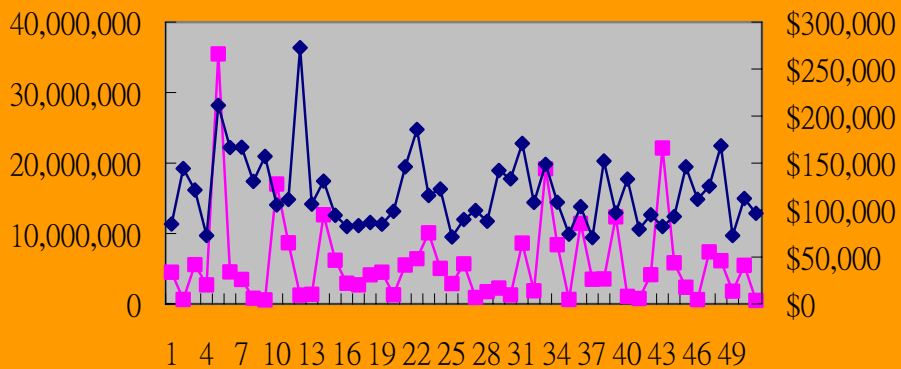
College or above% (square) & Income per capita (diamond)

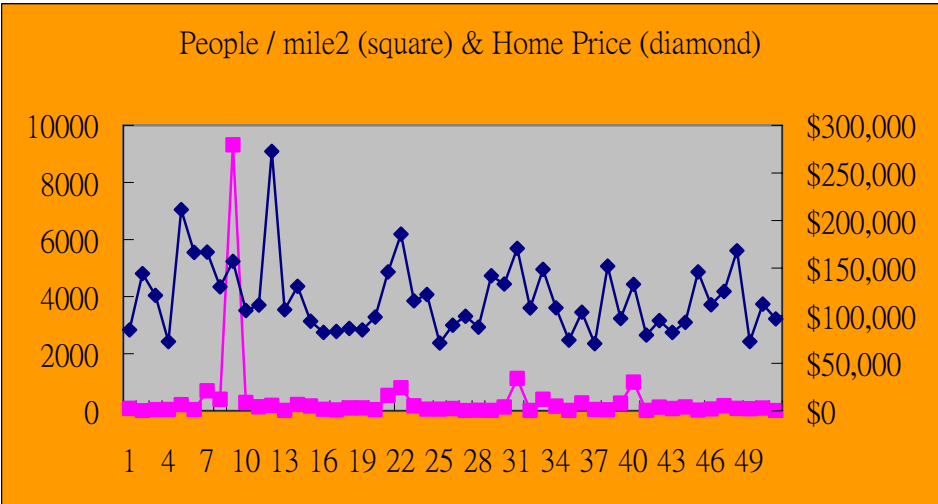
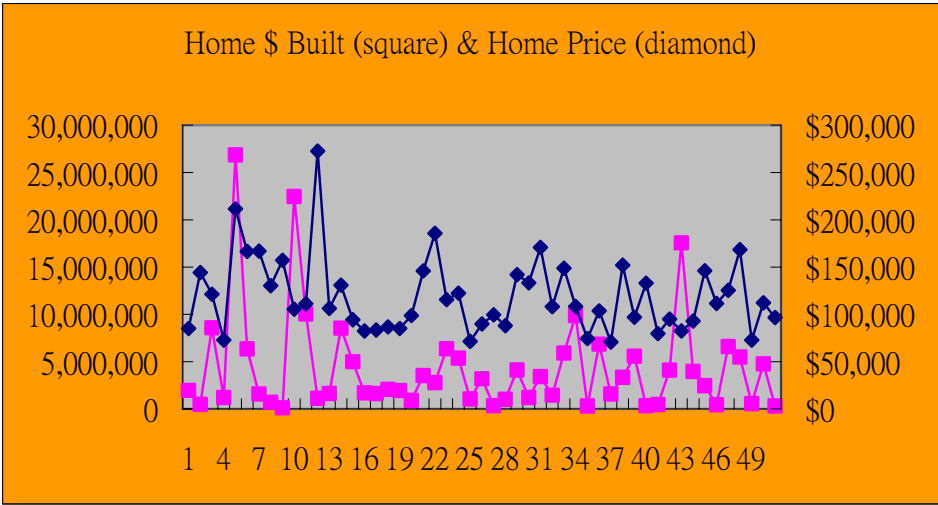


Foreign Born % (square) & Home Price (diamond)



Population By State (square) & Home Price (diamond)





Background: There are 50 States of the USA and 1 District (of Columbia) involved in the data (mostly from year 2000) above and their numbering in the charts contained herein is based on alphabetical order starting from Alabama to Wyoming. These are simple (uni-variate) correlations only and hence further studies and more complex methodologies are required for better accuracy and interpretation. Hawaii on the state level had the highest median home price in 2000.

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## Genetics & Neuroscience Changing Ways of Analysis

Real Estate Tech, April 2005

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Based on recent DNA-genetic mapping, brain scanning technology, and psychology discoveries, as reported by the media including prominent journals, text, and TV channels, the more abstract and less tangible human traits such as behaviors and characters seem also linked to the DNA-genes contained in the 23 pairs of chromosomes. For instance, there was a report that said some people have a 'charitable' gene in the 11<sup>th</sup> pair of chromosome, and bearers of this gene tend to donate more, help people more voluntarily, and even risk their own lives in order to save others. While it may be overly presumptuous to say that people are destined to take a certain path of life (a pre-deterministic mode that implies humans really have no or little choice in what they become), there may be some truth in the Chinese saying that "what is formed at age 3 in terms of character dictates one's behavior even at 80".

Such genetics researches and discoveries have only begun recently, as the whole human gene mapping was not done until a few years ago. Interesting, scientists were surprised that there are only around 30,000 genes in humans and of these, only around 300 are human-distinct i.e. the rest can also be found in some other animals etc. Well, so much for our being different. In any event, there are likely to be more discoveries in future, and sooner or later, such discoveries may bring a (wholly) new dimension to business and market analyses, real estate ones included. Here are a few speculations:

- A) **Blurring of what are now considered 'rational' and 'irrational' market behaviors** = while there could be numerous definitions and variations of what rationality and irrationality are, most people consider a market to be irrational when prices of assets are at extreme highs or lows, which if left to function without much interference, would usually tend to drop or rise to arrive at a more rational equilibrium. However, this division may be less obvious based on these recent genetics and neuroscience discoveries, as both rational and irrational (market) behaviors can now probably be observed, examined, traced, and explained via the various brain-chemistry interactions and genetic set up.
- B) **Not being a scientist, your humble author nonetheless seeks to elaborate on the above point:**
- 1) A market behavior is observed in that people are now keen to buy real estate assets thus pushing prices up and this in turn encourages more to join the bandwagon.
  - 2) A first level explanation is that people wish to make money / a profit, based on traditional economics principles, and when prices do go up, more people will buy.
  - 3) A next level of explanation may involve psychology, perhaps saying that people feel safer when others (friends) also invest (herd instinct), and at the same time they also fear being left behind (others making a profit while he / she does not), with some exhibiting exceptional optimism via buying more than their share so to speak, which may be called greed.
  - 4) A further level may dwell into senses of security and / or insecurity which in turn lead to concepts of respect, recognition, and self-fulfillment-actualization (Maslow) etc. In short, some form of 'feel-good' factor emerges.
  - 5) A deeper observation may indicate that there are certain brain-chemical actions and interactions associated with these various emotional cravings. Your humble author does not know which leads to which, i.e. whether the craving for a certain emotion-feeling comes first thus generating the required brain-chemistry, or vice versa.
  - 6) An even deeper observation now relates all these brain-chemistries to genetics set-up e.g. a person with gene A54BOP39S0C0KKD048XYDYK (very much like a long software code number) will tend to have a certain brain-chemistry which means a certain feeling which in turn fulfills a certain craving

which in turns implies taking a certain market strategy or position which may be (described as) pessimistic / optimistic, conservative / aggressive, and so on.

- C) **Probably analysis will become more accurate and 'scientific' in the broadest sense of the word** = assuming if certain genetics set up will definitely lead to a certain range of brain-chemistries which in turn will lead definitely to a certain range of psychology and market behaviors.
- D) **Probable issue of privacy etc** = if one's address and phone numbers are sometimes considered very private, then let alone one's genetics and brain-chemistries.

In summary, if the above speculative scenario is to materialize, then current analytical methodologies and even their theorems behind may need to change and adapt. While accuracy may improve, certain analytical fun will be taken out as quasi-pre-deterministic mode sets in.

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## China: Bubbly Debates on Real Estate Bubbles

Real Estate Tech, April 2005

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Your humble author had recently watched a TV program speculating why some large-size pre-historic animals / mammals became extinct. Different anthropologists gave different reasons, collectively boiled down to “kill [over-killed by our ancestors], chill [climate becoming colder], and ill [virus attacks]”. The program narrator said perhaps it was all three acting together.

By the same token, real estate experts on the China markets have been having bubbly debates on whether there are real estate bubbles (the central authority seems to think so as various cooling down measures have been contemplated). Some used the home price to household income ratio, some looked at the rates of home price increase, and some dwelled into the vacancy rates, among other angles. Naturally, as with any market, there are supporters for both the ‘bubble’ and ‘no bubble’ camps. It is not the aim here to determine if there are bubbles or not, but to highlight a few details instead:

- A) **Affordability angle needs to take ‘mortgage culture’ into account** = it is very fine to refer to other countries or cities for guidance on what constitutes a reasonable home price to household income ratio. Nonetheless, apart from adjusting such ratios to account for tax effects etc, the overall societal-cultural inclination to continue honoring mortgages (keep on repaying or redeeming) even when the assets in question are no longer worth as much should also be part of the analysis. For instance, the mortgage delinquency rate is quite low in Hong Kong even during the 1997 to 2003 period when average home prices dropped by nearly 70%. If this had occurred in other places, the default rates would probably be several times what Hong Kong experienced. In short, having an affordability ratio higher or lower than other places studied does not automatically imply higher or lower risks. One needs to dig deeper.
- B) **Unreasonable pricing does not always mean a bubble** = and prices are generally ‘unreasonable’ in varying degree when one draws a regression line between the ups and downs of price cycles in any given period of time assuming the regressed values are the ‘should have been’ prices. Naturally, it is also difficult to determine what is ‘reasonable’ and what is not, and different people tend to have different interpretations. In addition, such pricing / valuation can also be affected by the intended investment holding period, and longer-term investors may price the same asset differently from shorter-term investors.
- C) **A high vacancy rate can be frightening, yet needs to involve the economy / income / financing aspects to make it a fright** = a vacant but debt-free property is usually not an unbearable burden (a big misallocation of resource maybe but not too much a threat to one’s financial health) unless the carrying costs including realty taxes and government rates etc are utterly high. Hence, hypothetically, an economy of 100 households owning 150 properties (50 of which are not occupied) without debt is not about to collapse, though arguably it can utilize its resource better. Naturally, in the real world, real estate markets cannot thrive without financing (mortgages) implying repayment (redemption). This in turn depends on the economic performance / household-borrower-mortgagor income to sustain repaying (redeeming) such mortgages, and vacant but mortgaged properties cast doubts in the very least on this ability to repay (redeem).

In summary, there are various angles to ascertain if real estate (home) prices are somewhat too high or too low given certain assumptions, though none of the angles is unlikely to provide a comprehensive or compelling picture, let alone helps in determining if a bubble exists. As in the TV program on pre-historic extinct mammals, real estate bubbles occur perhaps when several factors act in synch.

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