Zeppelin's Real Estate Tech

3Q 2016: A Real Estate Newsletter by Zeppelin Real Estate Analysis Limited

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The Brits did it! They voted for getting out of the EU by a tight margin; 52% for leaving and 48% for staying. Financial markets reacted negatively (but stabilized afterwards at the time of writing this) amid tons of commentaries, be these pro-leaving or pro-staying. Someone even suggested a re-referendum (are you serious?). The land famous for WWII phrases like "keep calm and carry on" or "this was their finest hour" exhibits neither calm nor finesse after the vote…what a pity…nor does the EU. Is this Act I of an anti-establishment play?

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- **The Brexit Bet: short bad long good, and pain even if remain**
- **Next: contemplate a probable doctrinal change in US global engagement**
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- **Hong Kong residential real estate: returns drop but risks stay the same**

"Let's not kid ourselves: we are not saving the Earth but our own skin."

We would also like to hear from prospective readers / writers who wish to share their real estate experience with us.

This quarterly (generally published in January, April, July and October) newsletter is circulated freely via email to over thousands of readers comprising 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 the **South China Morning Post, China Daily**, **Hong Kong Economic Journal**, **21st Century Business Herald**, **Apple Daily**, **Sing Tao**, **Quamnet Magazine**, **The Standard**, **MITCRE Alumni Newsletter**, **Surveying Newsletter**, **Reidin.com, Centanet.com, Netvigator.com, Hongkong.com, E-finet.com, Red-dots.com, PacificProperties.net**, **Soufun.com** and **House18.com**. We had also been quoted in the **Asian Wall Street Journal** and interviewed by **USA Today**, **i-Money**, **Ming Pao, Radio Hong Kong**, **Cable TV (Money Café), DBC Radio,** and **Commercial Radio**. We also publish monthly articles and analyses in the months in between. This newsletter is now into its **20th year** and **80th** issue.

We also operate a website **www.real-estate-tech.com** through which we intend to share some of our real estate knowledge and ideas with interested parties. There are close to 1,000 content items, in English or Chinese, including analyses, articles, charts, and tables, plus spreadsheets, tutorials, e-books, and the like, the majority of which is free with some requiring a token fee. The website is regularly visited by thousands from all over the world and focuses on China / Hong Kong real estate markets.

Zeppelin Real Estate Analysis Limited is involved in real estate development, investment, and management with a focus on **independent real estate analysis**. Together with Zeppelin Partners Limited, we offer services related to real estate asset management [analysis, investment strategy, and portfolio allocation], project management [architectural design, cost control, and contract administration], and facility management [facility utility assessment, facility strategy, and building maintenance]. We are part of the Zeppelin Group headquartered in Hong Kong with associated offices in Mainland China and we also have access to professional networks covering Asia, North America, and Europe.

Who? Me?

Stephen Chung
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Creator and Writer, Real Estate Tech Quarterly Newsletter
Real Estate Website Developer, www.Real-Estate-Tech.com

Stephen is an independent real estate analyst – number cruncher and chartered surveyor and has been involved in real estate development, investment, and management in Hong Kong / China / Asia and North America.

Stephen provides relevant real estate market insights and macro-micro assessments to real estate developers, investors, owners, financiers, funds, and civic organizations, and possesses many years of experience in building economics, project management, facility strategy, marketing, and research.

Stephen is also a regular real estate writer - columnist and his articles have been published in both English and Chinese media including the following:

- China Daily
- Hong Kong Economic Journal
- South China Morning Post
- Apple Daily
- Quamnet Magazine
- Real estate and finance websites such as Soufun.com, Finet.com etc
- Journals of professional institutes such as the Hong Kong Institute of Surveyors

Stephen is an honorary adjunct professor of the University of Hong Kong and has been invited to speak to audiences from:

- Universities: such as the University of Hong Kong, City University of Hong Kong, York University
- Professional Institutes: such as the Hong Kong Institute of Surveyors, Canadian Institute of Quantity Surveyors, Royal Institute of Chartered Surveyors
- Business Associations: such as the Rotary Clubs

Stephen has written 4 real estate books in Chinese to date as follows:

Online book = Easy Real Estate Lectures
Hard copy = Real Estate Investment Know-How above 101
Hard copy = The Real Estate Market Turning Point
E-Report = USA Residential Real Estate Analysis

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Our services can be obtained and delivered via a) tailor-made professional consultation; b) online report purchases; c) emailed discussions and advice; and / or d) phone discussions.

The Brexit Bet: short bad long good, and pain even if remain

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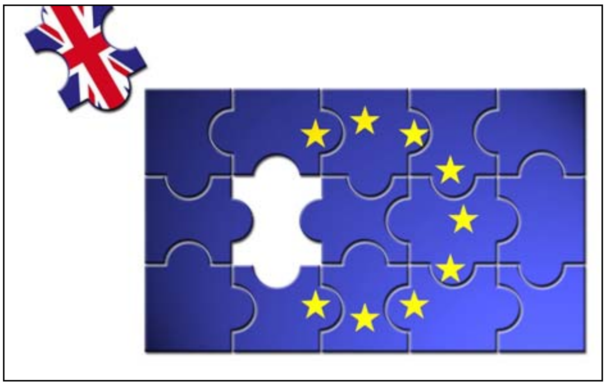

Driving away (Courtesy of Pixabay.com)

Your humble author had prior to the 23rd June 2016 Brexit vote entered into a couple of wagers with college pals who thought the UK would vote to stay within the EU. That is, yours truly won the bets. He now looks forward to being treated to bottles of fine wine.

Wagers and wine aside, your humble author encountered a few surprises too. That the UK voted to leave? No, no, if staying had been my hunch, I would not have made the bets, would I? The surprises are:

1) Many of the friends and acquaintances in Hong Kong got very angry at Cameron = saying it was idiotic (putting it mildly) of him to call a referendum on the issue. But then again many in Hong Kong have been investing in UK properties and the pound sterling. Perhaps this should not have been a surprise after all.

2) The UK 'establishment', or loosely the power elite, did not seem to have sensed the undercurrent beneath them = what undercurrent? An anti-establishment undercurrent, that is. How could one sense it? One way is to read the readers' responses in the media websites, be they left, right, center, up, down, middle, core or peripheral. These responses are nothing new or recent but have existed for years. While the spectrum of reasons given for leaving harbor their own validity, there is an underlying and deeper denominator: dissatisfaction with and anger toward the establishment. To some extent, one may also speculate that the core issue was not the EU itself, but as long as the establishment had wanted to stay, many would then vote to leave. And the scary thing is that the leavers appear to realize times will be tougher ahead than if stayers had won the day.

Note this undercurrent applies not just to the UK or even EU, but generally to the developed economies and countries. Watch out, Hilary!

3) The lack of calm and finesse = not just in the UK or EU, but globally. Technically, UK parliament has to go through with the referendum. Then apply to the EU to leave. Then negotiate with the EU. These will take years. No need to get too worked up. Even after leaving, the EU geographies, demographics, geopolitics, and the like, will largely remain the same i.e. leaving EU does not automatically imply the UK will close doors and start growing its own food. UK will still do business with EU and vice versa. As for London unbecoming a financial center, well, tell me another. And EU disintegrating in the broadest sense is no secret and many analyses in recent years have been expecting it, though perhaps few expected the UK would be the first to exit. In any event, the deal is done, and as one of our tycoons Mr. K. S. Li put it: "It's not the end of the world".

A pity though to see some in the land famous for WWII resolve like "calm down and carry on" or "this was their finest hour" exhibiting just the opposite nowadays. Learn your history well, please. But let's move on:

A) Short bad long good = short here is actually not quite short and long is very x 3 long, and your humble author speculates that eventually both the UK and EU will be better off with Brexit than without, though much pain will come before the dawn. To investors, these painful nights could be golden opportunities. But won't remaining give you the same pain (as suggested by this article's title)? Yes but such pain is associated with dying a long (yet unnecessary) death whereas pain from leaving means at least hope and a better prospect. Your humble author does not have any solid numbers and forward looking predictive models to show for this angle. Yet looking back at history, whenever someone collected enough guts and spine to say 'enough is enough' (especially to unsustainable-unworkable-idiotic narratives, policies, and practices), something good would eventually emerge in many instances.

B) EU is a rather noble idea = it started after WWII and was / is an attempt to enhance longer and better peace among European nations who collectively had quite a violent past. Europeans, at least the older ones, have learned their lesson and from their lesson. But like all 'coming together' processes, teething problems are bound to arise. Brexit reflects not all members like to use the (bureaucratically) imposed same standards and sizes of nuts and bolts, at least not yet. Dropping the insistence, leaving the issue for a while, or even a breaking up might actually help in the longer run to reach a more workable 'coming together' goal than staying together for pretense.

But isn't Brexit a reflection of certain closed mindsets, even including ones based on ethnicity, religion, and birthplace? Yes, there are such elements. However, your humble author tends to think these are not the main drivers though loud noise they did make especially with some obliging media. 52% supporting voters in a high voting turn out is unlikely to be formed only by poorer people, past glory seekers, racists, and so on. It cuts across the social-ethnical-economic spectrums. For instance, your humble author has a few middle class relatives living in the UK and they told me they liked Brexit.

C) UK is actually the one with the stronger advantage = Many use marriage and divorce as an analogy to describe the UK and EU breakup. But your humble author rather sees it as one gutsy son leaving a big name household whose dominant patriarch is getting too stuck in certain old ways. Punitive rhetoric from the EU bureaucracy aside, the EU statement after Brexit does acknowledge that not every member country shares the same conditions for across the board application of rules and regulations.

And the gutsy son is usually the better of all the sons.

Next: contemplate a probable doctrinal change in US global engagement

Real Estate Tech, 3Q 2016

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Changing colors? (Courtesy of gopusa.com)

2016 will be an exciting and fun year. Brexit was the 1H 2016 big show. The US presidential election will be the 2H 2016's. Oh, by the way, there is the Olympics in between.

Regardless of who finally ends up as the next White House resident, we can look forward to a good show, and Trump, whether you like him or not, is the star attraction. Sorry, Hilary. Note your humble author isn't even American but still finds this race intriguing. Interestingly, both Trump and Clinton seem to share one trait: they pose an agonizing choice to <u>some</u> supporters in the Republican and Democrat camps respectively. Perhaps switched-absent votes are keys.

Fun aside, and based on some analyses which your humble author has come across, it would not be a surprise if there were to be a (doctrinal) change in the way the US engages the world. Not saying it is certain, just probable. You mean Trump? Not exactly, even Clinton who professes to maintain largely the global status quo would still have to confront the realities, both internal and external. Note also a few casually observed trends (via the US media, texts, newspapers, comedian-satirist shows, and the like):

A) Many Americans do question why the US seems to be present and meddling everywhere especially when the US already has a large deficit of its own to handle.

B) Many Americans do feel that resources should now be geared more toward developing and fixing the US, highways (probably not so much with walls) included.

C) Many Americans do think the other countries should be the first to confront their own challenges and bear the costs including but not limited to military protection.

By no means is this isolationism but the guess is most Americans want to fix American problems first, trade when advantageous, and let others fend for themselves, at least initially. In short, engaging the world is fine but not at big costs, resources, and expenses. To date, Trump appears to have been capitalizing on these sentiments more than Clinton does.

Perhaps it's time to assess if one's investment portfolio would be affected by this probable change, and if so, whether gainfully or adversely.

Canada residential real estate: Risky? Yes! Everywhere? No!

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Toronto condos sky high prices? (Courtesy of your humble author)

In recent years there have been much debate about the Canadian real estate market e.g. whether there is a house price bubble, and if so when and where it may pop. Pundits on both (the Yes there is and will pop, and No there isn't and thus won't pop) sides of the aisle spare no effort in putting forward their respective cases. Even some Americans – investment analysts, investors, economists etc – have joined the fray. They mostly tend to argue for a pop and recommend shorting the Loonie i.e. the Canadian dollar.

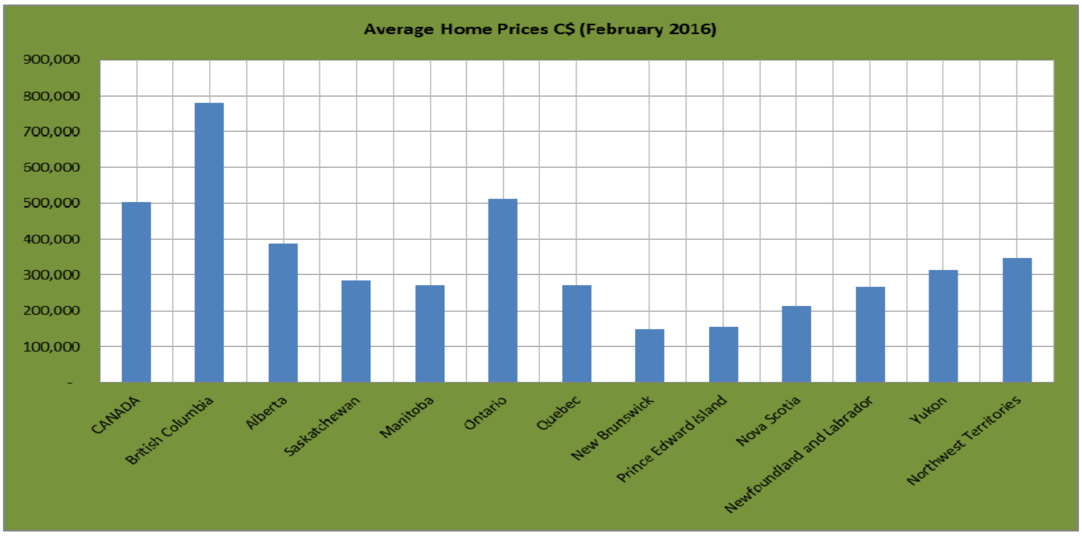
The Yes there is a bubble camp generally cites the increasing Canadian household debt and thus the increasing debt to income ratio, which seems to be a result of increased mortgage debts due to increased home prices (or is it the other way round? Sort of a never-ending cause-and-effect-and-cause loop…higher home prices lead to more mortgage debts which in turn fuel higher home prices which then command homebuyers to ask for more mortgage debts…?). In particular, some Americans are convinced that Canadians are now treading where they had treaded not too long ago i.e. being too enthusiastic of real estate and borrowing too much in order to get a piece of it. Indeed, the loose money a.k.a. quantitative easing (QE) in whatever format and scale, and which central bankers from all over the world are embracing, provides much of the needed fuel firing up the real estate market.

The No there is no bubble and thus no pop camp argues that Canadian banks are holding the (mortgage approving) line very well i.e. no or very few unqualified homebuyers can obtain a mortgage. That means subprime lending is almost non-existent and so there is unlikely to be the same kind of pop which the US had undergone before. Besides, with the lower exchange rate (versus the US$) of the Canadian dollar, Canadian assets, real estate included, look quite appealing to global investors – a situation of which many Canadians might not be totally aware, save for perhaps those residing in the larger metropolitans such as Vancouver or Toronto. Your humble author might add lowering the Canadian dollar further as one more possible means to prop up real estate prices if and when the latter is deemed desirable, although a weakened Loonie may bring other, sometimes unintended, consequences.

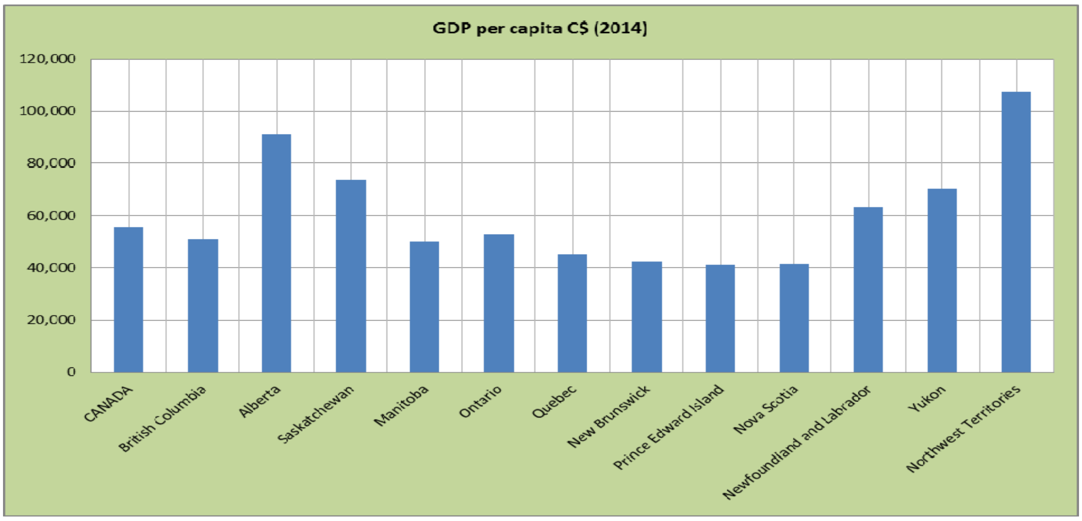
Both sides have their points. But still begs the question: is Canadian real estate bubbly and will it pop at some point? Your humble author has no crystal ball but he takes an interest in Canadian real estate, that of Toronto in particular. Why? He has invested in a bit of it. But then again, being outside of Canada and thousands of miles away, he is unable to see and feel firsthand the micro day to day actions taking place in the real estate market (reading about them is reading, not action gauging). He however can collect some macro numbers and do some macro calculations with a view to getting a rough assessment (a feel for) of the market risk, if any.

The following represents some of the calculations done and guesses to date. Data and information have been abstracted from various web-published sources including but not limited to Statistics Canada, Canadian Real Estate Association, major banks, news media etc. Here we deal mostly on the provincial level – plus an overall Canada-federal average - and do note the home prices are dated early 2016 while the income data are based on 2013 or 2014*:

A) Average home prices in CAN$ by province or territory (with Canadian average)

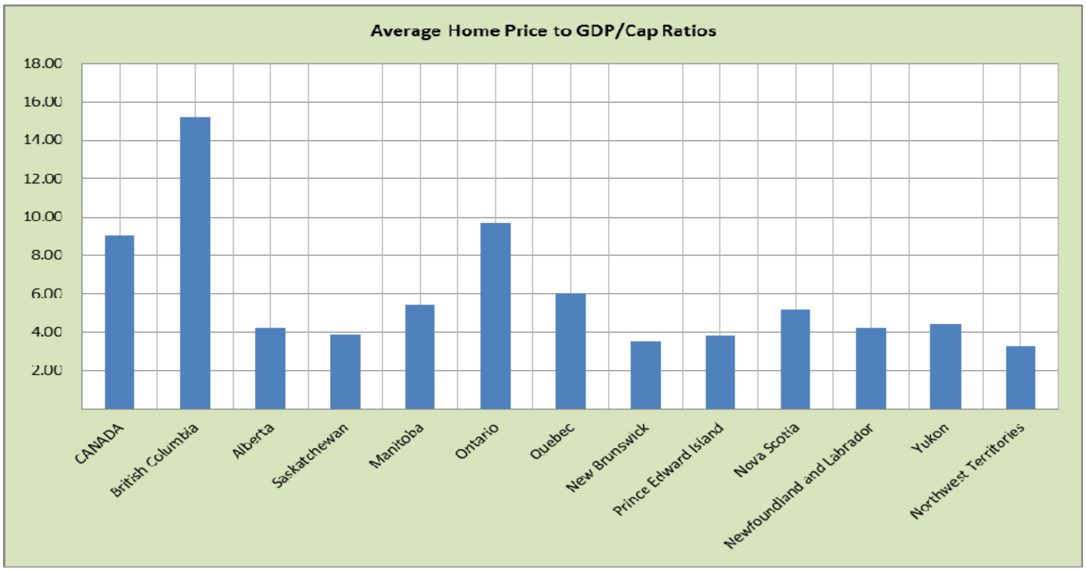


B) Average GDP per capita in CAN$ by province or territory (with Canadian average)



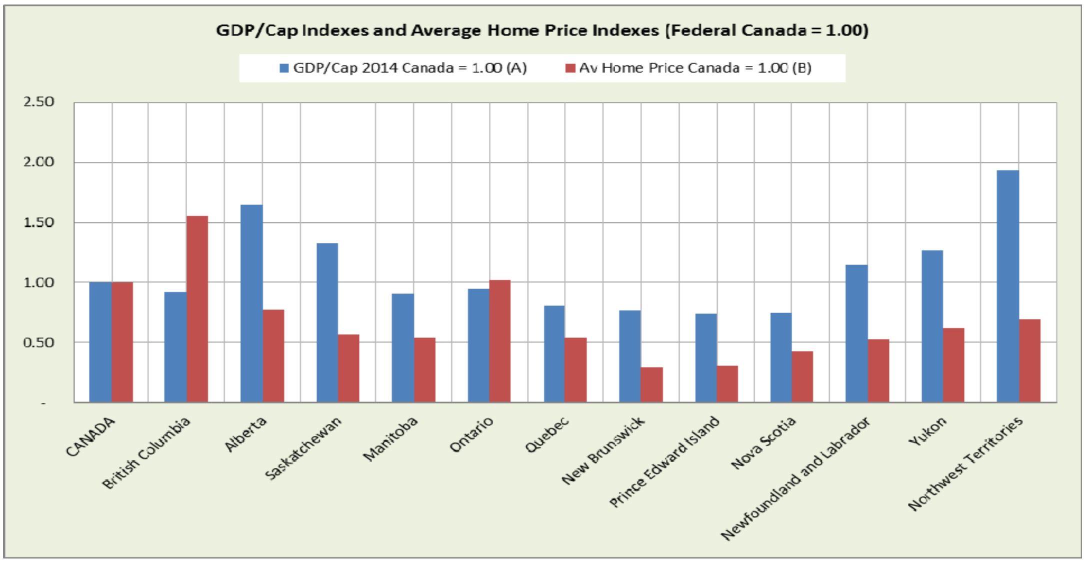
Dividing the figures in Chart A by Chart B produces the Home Price to GDP per capital Ratios in Chart C below. This gives a sense of relative ease or difficulty in purchasing a home in Canada and in the provinces and territories. A higher ratio generally means higher difficulty and a lower ratio indicates relative ease.

C) Average Home Price to GDP per capita Ratios by province or territory (with Canadian average)



British Columbia has the highest difficulty or hurdle to home buying followed by Ontario, while the rest of the country offers easier home buying.

D) Average Home Price Indexes and GDP per capita Indexes (Federal Canada deemed as the index basis of 1.00)



This chart is similar to Chart C, albeit presenting the idea in a different manner. The provincial GDP per capita and Home Price are divided by the respective Federal averages thus yielding 2 ratios for each province / territory. Whenever the GDP per capita ratio is higher than the Home Price ratio of the same province / territory, this may imply a relative ease in home buying. On the contrary, when the GDP per capita ratio is lower than that of the Home Price ratio of the same province / territory, this would generally mean a higher degree of difficulty in home buying. Two provinces belong to this second scenario: British Columbia and Ontario.

The foregoing harbors no major surprises. Most Canadians are perhaps aware of the two priciest provinces, even though some might not know exactly how pricey they are or the degree of relative difficulty in home buying there versus the other provinces and territories. Technically, while these two provinces have higher than most home prices, this alone does not (automatically) mean – nor does a higher than usual price to GDP/Cap ratio for that matter - their real estate are riskier than most, or for that matter, over-valued than most. In particular, these two provinces do contain two of the most populous and sophisticated metropolitans in Canada. They also attract to varying degree global capital. And such metros usually do not come inexpensive.

To ascertain whether such pricier than most provinces, and the rest of the other seemingly less pricey provinces, harbor certain real estate market risk (thus making them potential bubbly candidates for a future pop down the road), your humble author decides to estimate (make a guess on) the percentage of household income required to meet the mortgage expense of homeownership in all these provinces and territories. As such, he has collected provincial household income numbers and made certain home financing level and mortgage rate assumptions. The following summarizes his guesswork to date:

1) 75% Mortgage to value level, 30 year term, 2.50% mortgage rate

	75% Mortgage	Annual Payment	Annual Payment
	2.50% Rate 30yr	% of household	of after 25% tax
C$	Annual Payment	income 2015	hshd income
Canada	17,892	22.77%	30.36%
British Columbia	27,720	36.42%	48.55%
Alberta	13,800	13.80%	18.40%
Saskatchewan	10,164	11.93%	15.91%
Manitoba	9,696	13.01%	17.35%
Ontario	18,216	23.19%	30.92%
Quebec	9,708	13.09%	17.45%
New Brunswick	5,340	7.72%	10.30%
Prince Edward Island	5,580	7.74%	10.31%
Nova Scotia	7,632	10.62%	14.16%
Newfoundland and Labrador	9,516	12.55%	16.74%
Yukon	11,124	11.36%	15.15%
Northwest Territories	12,420	11.03%	14.71%

The first column is self-explanatory; it lists the names of the provinces and territories. The second column represents the annual principal and interest mortgage payments in each province or territory – based on their respective average home prices [not shown in this table] - to be made based on having a 75% loan to value mortgage, 30 year term, and 2.50% mortgage rate. The third column shows the percentage this annual mortgage payment would occupy of the household income [also not shown in the table] before tax for each province or territory. The fourth column is similar to the third but after deducting 25% off the household income for tax i.e. this is the after tax scenario.

Observation: on the whole there is not much to be too concerned of save for British Columbia which mortgage payment % of household income before tax stands at around 36%, more than 1/3. And when compared to household income after tax, the mortgage payment as a percentage of household income shoots up to 49%, almost half. This should be worrisome. Ontario is border line. The rest of the provinces and territories appear reasonable.

2) 75% Mortgage to value level, 30 year term, 5.00% mortgage rate

C$	75% Mortgage 5.00% Rate 30yr Annual Payment	Annual Payment % of household income 2015	Annual Payment of after 25% tax hshd income
Canada	24,312	30.94%	41.25%
British Columbia	37,668	49.48%	65.98%
Alberta	18,756	18.76%	25.01%
Saskatchewan	13,812	16.21%	21.62%
Manitoba	13,176	17.68%	23.57%
Ontario	24,744	31.50%	42.00%
Quebec	13,188	17.78%	23.71%
New Brunswick	7,248	10.48%	13.98%
Prince Edward Island	7,584	10.51%	14.02%
Nova Scotia	10,368	14.42%	19.23%
Newfoundland and Labrador	12,924	17.05%	22.73%
Yukon	15,108	15.43%	20.58%
Northwest Territories	16,872	14.99%	19.98%

This is very similar to (1) above except the mortgage rate is increased to 5.00%. Naturally the mortgage expense rise across all provinces and territories, however, most places still offer reasonable (tolerable) percentages of household income, even if after tax deductions. The exceptions are again British Columbia and Ontario, the former in particular. Even at before tax, practically half of the household income needs to go toward the mortgage expense. This rises to 2/3 after tax. Ontario is slightly better going from 32% of household income before tax to 42% after tax.

Naturally it is impossible or unnecessary here to research into each and every combination of mortgage level, term, and mortgage rate to arrive at some form of risk curves, and certainly the choices above of the mortgage level, term, and rate are somewhat arbitrary, and they are not likely to fit into every reader's circumstance. Granted, it is reported that Canadian home-owners as a group have more home equity than real estate debt, which is comforting to know, though a normal distribution of equity and debt would imply some home-owners, especially the younger / first timer ones, would probably have a small equity, say 10%, or even less, in their homes in the first few years. Any economic downturn might impact them more than other categories of households, and their numbers and percentages can vary from province to province, or metro to metro.

By no means is any of the foregoing content to be viewed as a future prediction or for that matter, even an estimate. They simply serve as “what if” scenarios for gauging how risky – or not – the Canadian residential real estate market is. Besides, household income can fluctuate down or up too. From the above, one can speculate:

a) The mortgage rate trend is the key = if the mortgage rates remain (historically) low, the real estate market might continue to survive or even thrive, notwithstanding other factors – including non-financial ones - may also affect the market. Put it another way, watch out for QE trends and changes, if any.

Your humble author would admit and add that he is NOT a big fan of QE (though it has helped boosting up Canadian real estate prices) which he thinks would eventually lead to some big negative eventualities, worldwide. Suffice to say that economies-markets-assets which have benefited immensely from QE will suffer more when the QE saga blows up, someday.

b) The risk is there but not evenly distributed [thus the title of this analysis] = British Columbia and Ontario occupy the 1st and 2nd top risky spots, with the former leading by a mile – metaphorically - over the latter in terms of riskiness. Nonetheless, the BC market – where Vancouver is dominant in scale – attracts comparatively more external** investment capital resulting reportedly in having certain sectors of the market being quite flooded with such incoming capital. That is to say, simply assessing its risk in terms of household affordability and mortgage payment to income ratio might not tell the full picture. One needs to assess the steadiness and the future flow of such incoming capital too, and their related factors. The other provinces appear to be in tolerable range.

c) But Ontario matters more = because Ontario not only has more people (around 1 in 3 Canadians live there), its economy – being larger – matters more too. According to Wikipedia, its share of the national GDP is around 37% whereas British Columbia is only 12%. ON is 3x BC. Any home price collapse in Ontario will cause a bigger ripple across Canada than British Columbia will. One can also read it, in a broad brush manner, as Toronto versus Vancouver.

Are there risks in Canadian real estate market? Yes, but not everywhere and not homogenously distributed either where it exists.

For symbol readers, when the real estate market of a province other than ON or BC blows up = ☹, BC real estate blows up = ☹☹, and ON real estate blows up = ☹☹☹☹☹☹.

*Home prices are dated February 2016, GDP per capita data are dated 2014, and household income data are dated 2013 albeit brought up to 2015 by multiplying a rough annual growth rate to it. Notwithstanding the differences in terms of data dates, it is felt they could still throw a light, albeit a rough reference only, on home price affordability and risk.

**External: includes capital from both foreign investors and immigrants-residents

Important Disclosure: the author has invested in Canadian real estate

Note: Part of the foregoing has been published in the South China Morning Post in 2Q 2016.

Hong Kong residential real estate: returns drop but risks stay the same

Real Estate Tech, 3Q 2016

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The skyline gyrates just like a price curve (Courtesy of your humble author)

Your humble author shall let the charts speak for themselves on this particular topic. Nonetheless, some technicalities require explanation:

1) These charts are return to risk charts = Risks are all on the horizontal X-axis i.e. the more right-sided they are, the riskier they become, and thus generally investors would prefer them to be as left on the X-axis as possible. Returns are all on the vertical Y-axis i.e. the higher they are, the higher the returns, and thus generally investors would prefer them to be as high as possible.

2) Data comes from the website of Centaline Agency = and these are weekly price per gross square foot data for 98 popular private housing estates in Hong Kong, dating from June 2008 to the various end periods – March 2014, November 2015, and June 2016 – as shown.

3) Returns and Risks calculations = Returns assume June 2008 as the base period which is assigned a price index of 1.00 and the price data in the various end periods are respectively compared to the price data on June 2008. This is done for each of the 98 estates. For instance, an estate having an ending index of 1.50 in March 2014 means the price has risen on average by 50% (1.50 – 1.00) since June 2008. Risks are represented by a price volatility measure which involves calculating the standard deviation of the price data stream during any of the time periods for each of the 98 estates.

4) Chart interpretation = given (1), investors would generally love to see one or more housing estates exhibiting a high return (high on the Y-axis) for a very low risk factor (very left-sided on the X-axis). However, such an estate is usually unseen. To date, the charts conform mostly to the “high return high risk” profile though the relationship (correlation) between return and risk is not 1 either. Some estates exhibit not so high returns but very high risks instead, while some might offer a good (better) return to risk ratio.

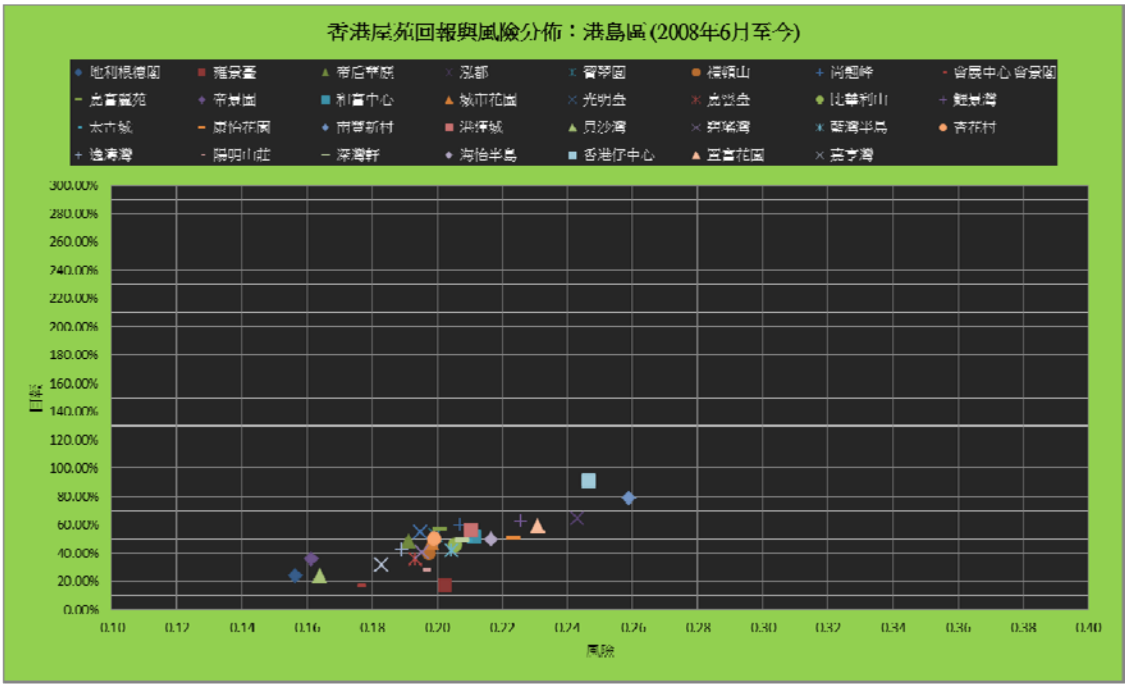
5) March 2014 to November 2015 to June 2016 = essentially you will see prices and the related risks increasing from March 2014 to November 2015, and from November 2015 to June 2016, you will observe prices dropping while the related risks staying more or less the same. In short, the return to risk ratios have on average been decreasing, not exactly a desirable outcome.

6) Hong Kong Island (HKI) – Kowloon (KLN) – New Territories East (NTE) – New Territories West (NTW) = the charts are grouped under these 4 regions and you will also observe that returns and risks are overall lower on Island side (HKI), a bit higher on Kowloon side (KLN), and highest in the New Territories with the west portion of it (NTW) being > than the east portion of it (NTE).

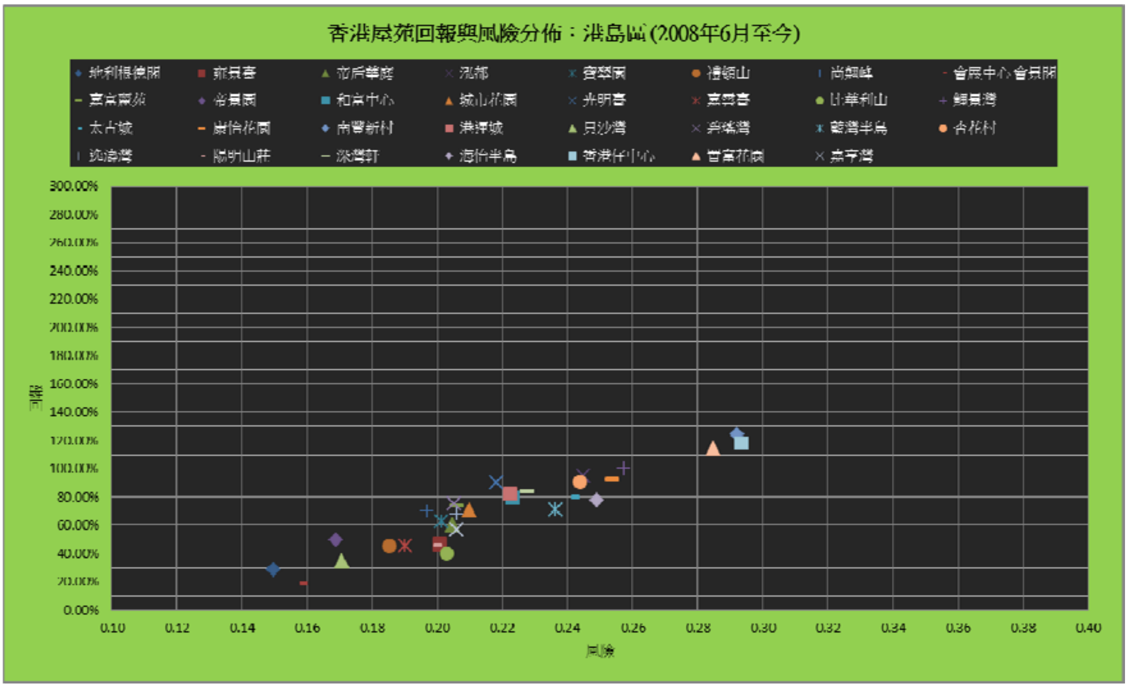
Have fun with the charts.

A) Hong Kong Island (HKI)

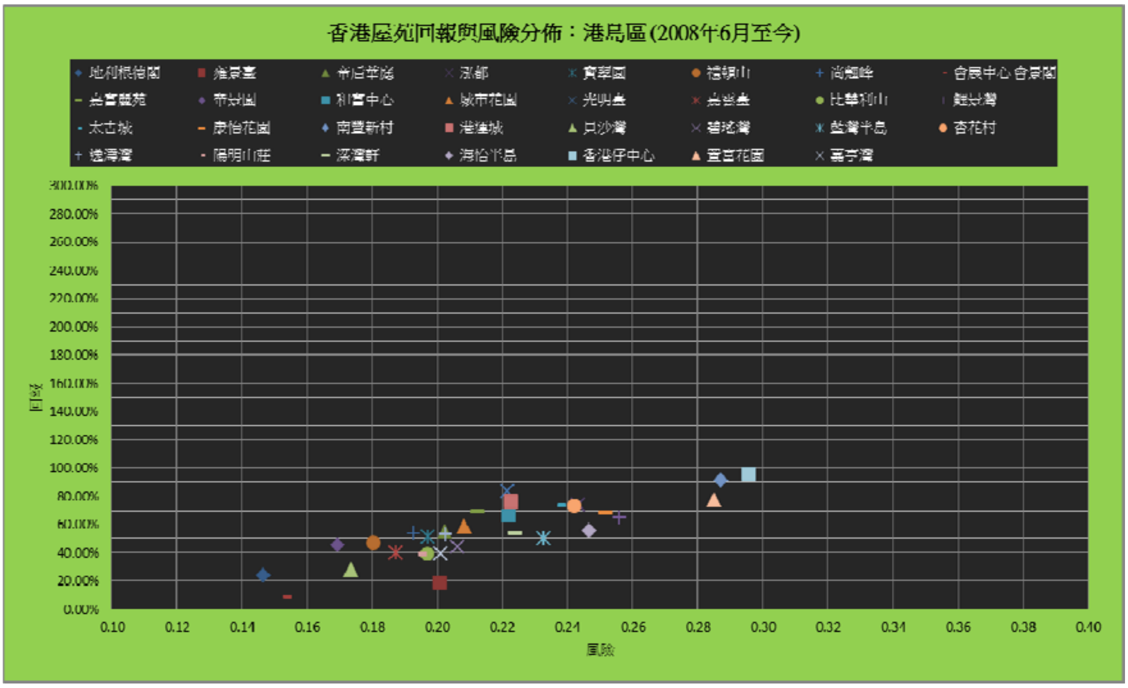
1) HKI June 2008 to March 2014



2) HKI June 2008 to November 2015

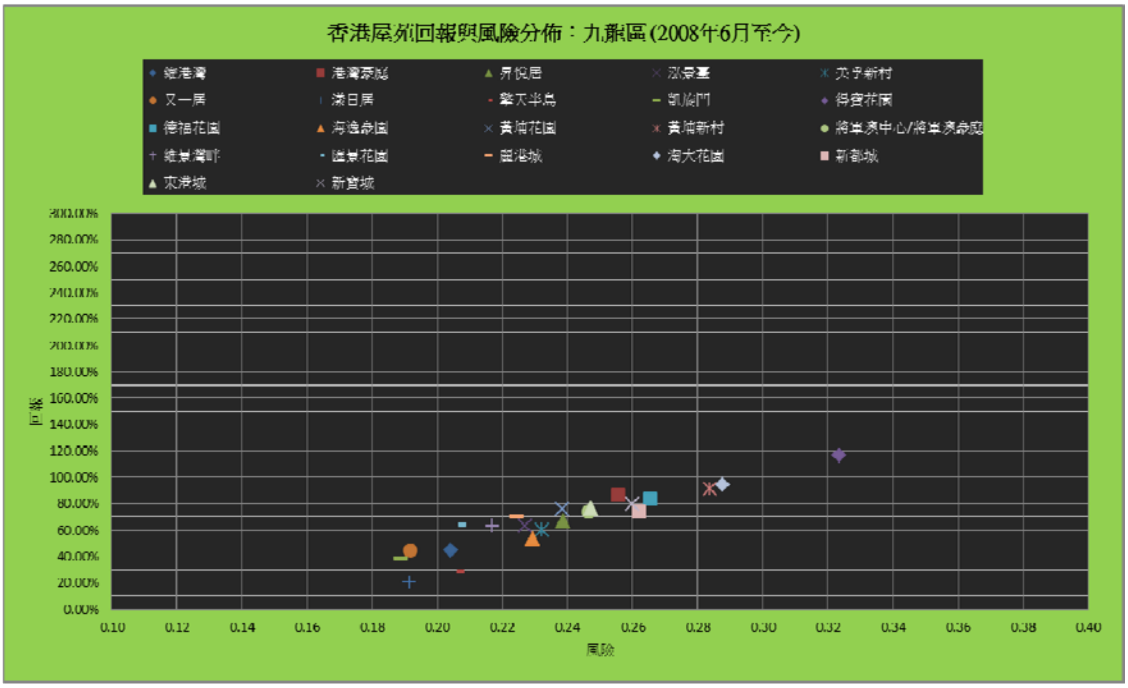


3) HKI June 2008 to June 2016

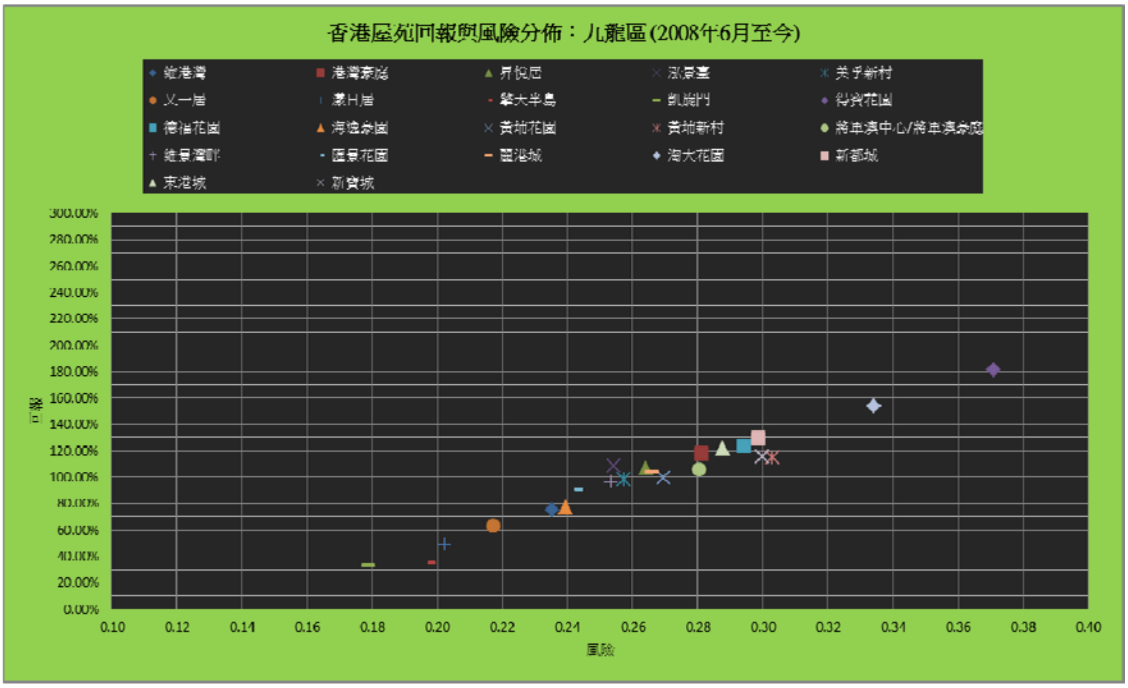


B) Kowloon (KLN)

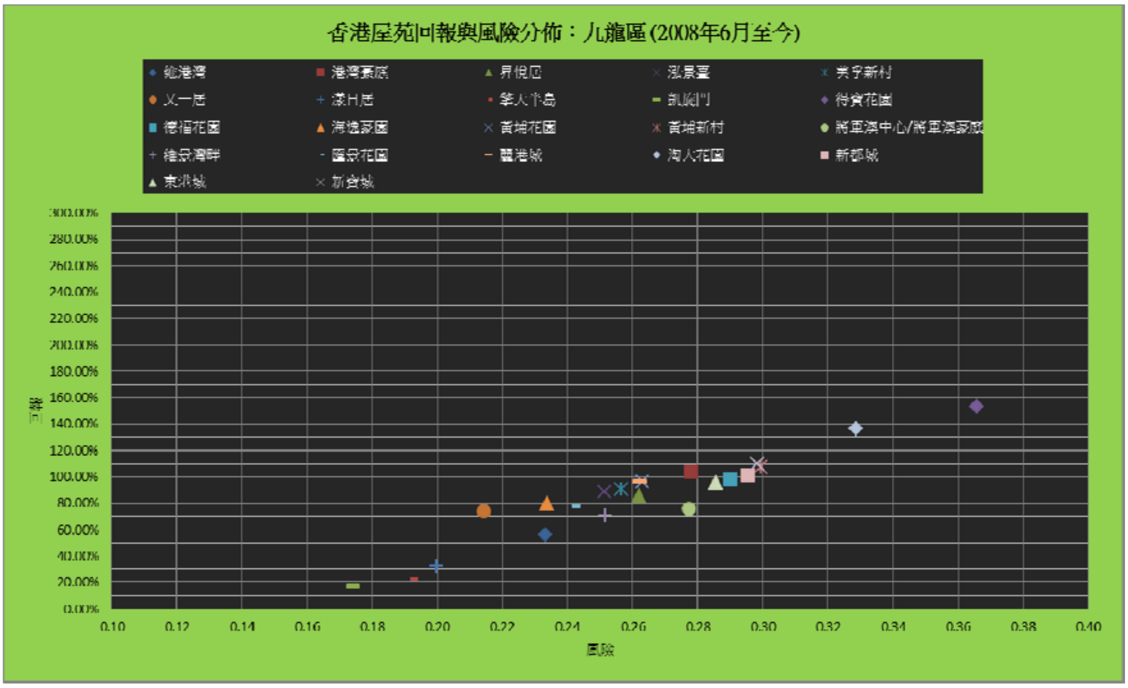
1) KLN June 2008 to March 2014



2) KLN June 2008 to November 2015

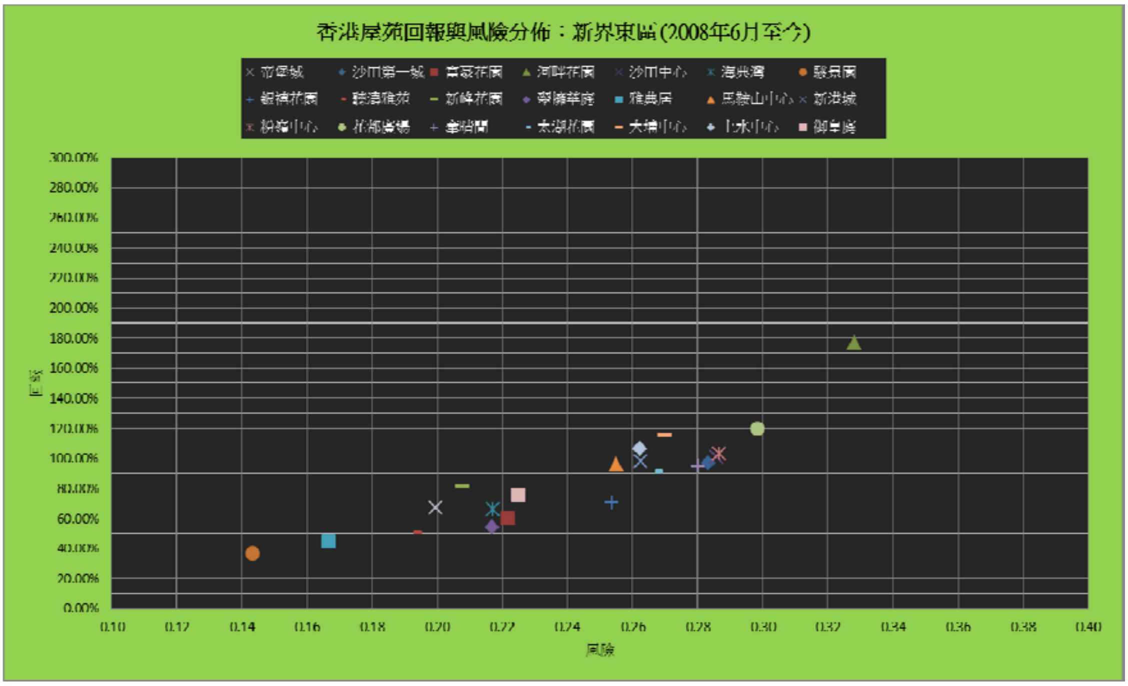


3) KLN June 2008 to June 2016

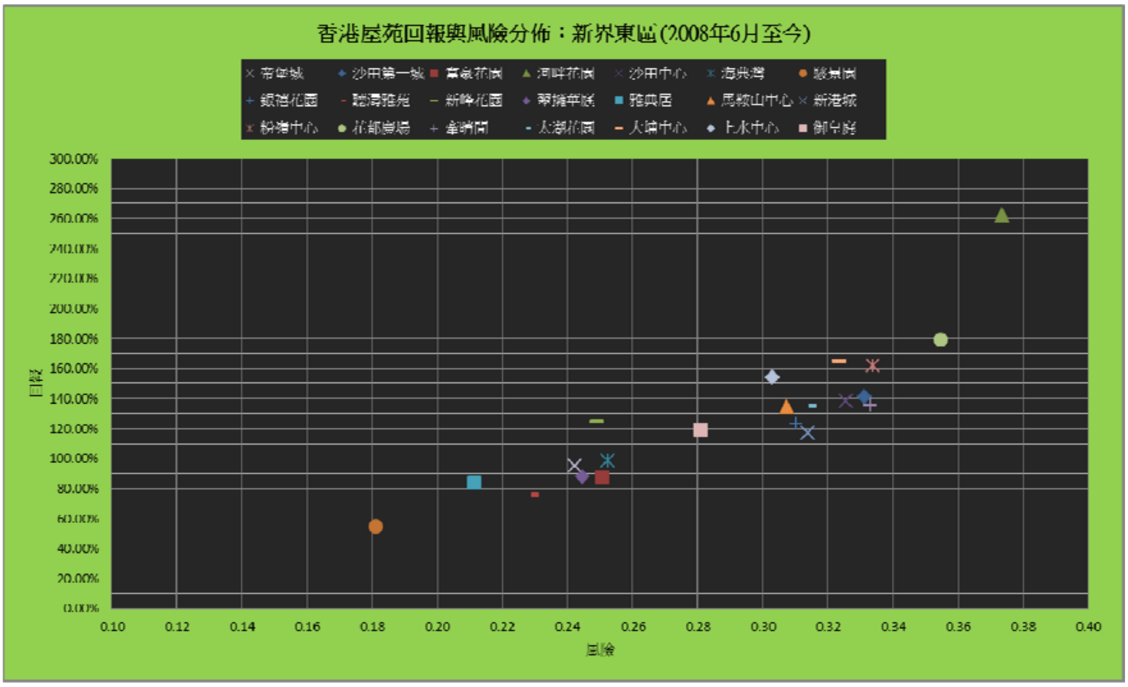


C) New Territories East (NTE)

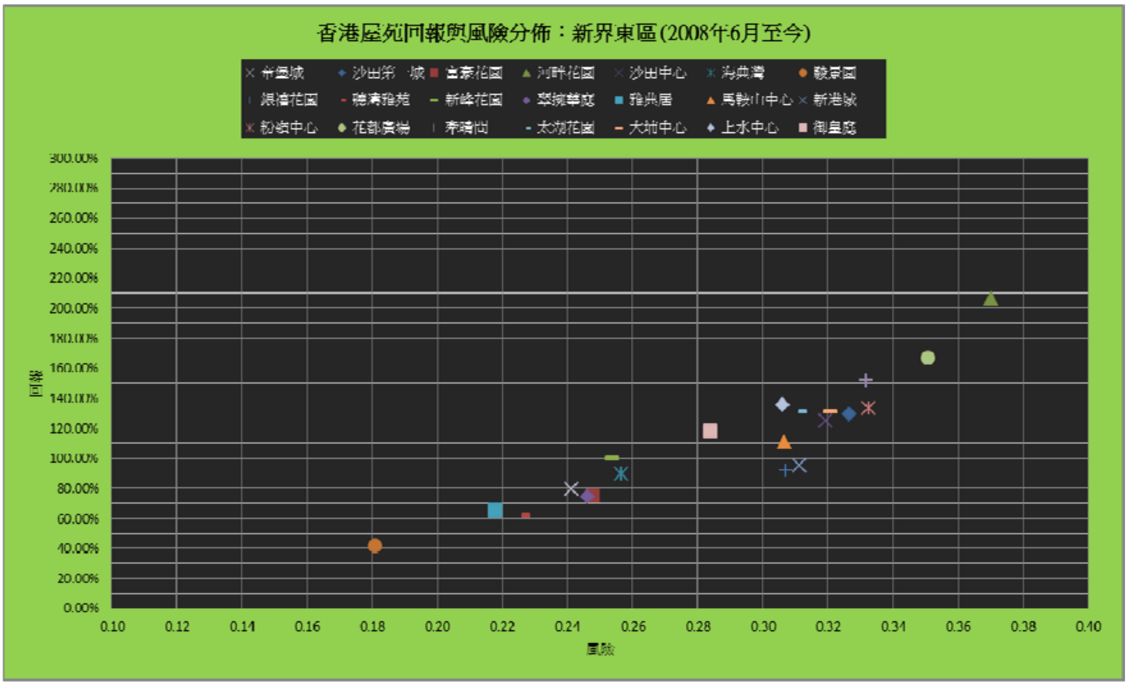
1) NTE June 2008 to March 2014



2) NTE June 2008 to November 2015

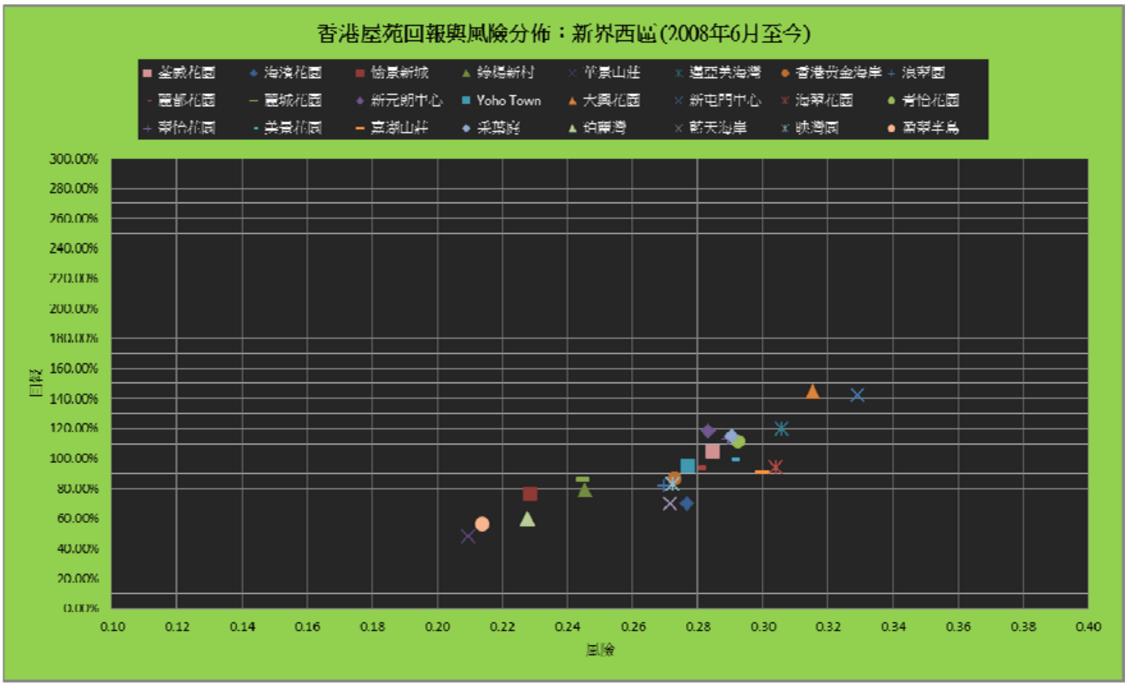


3) NTE June 2008 to June 2016

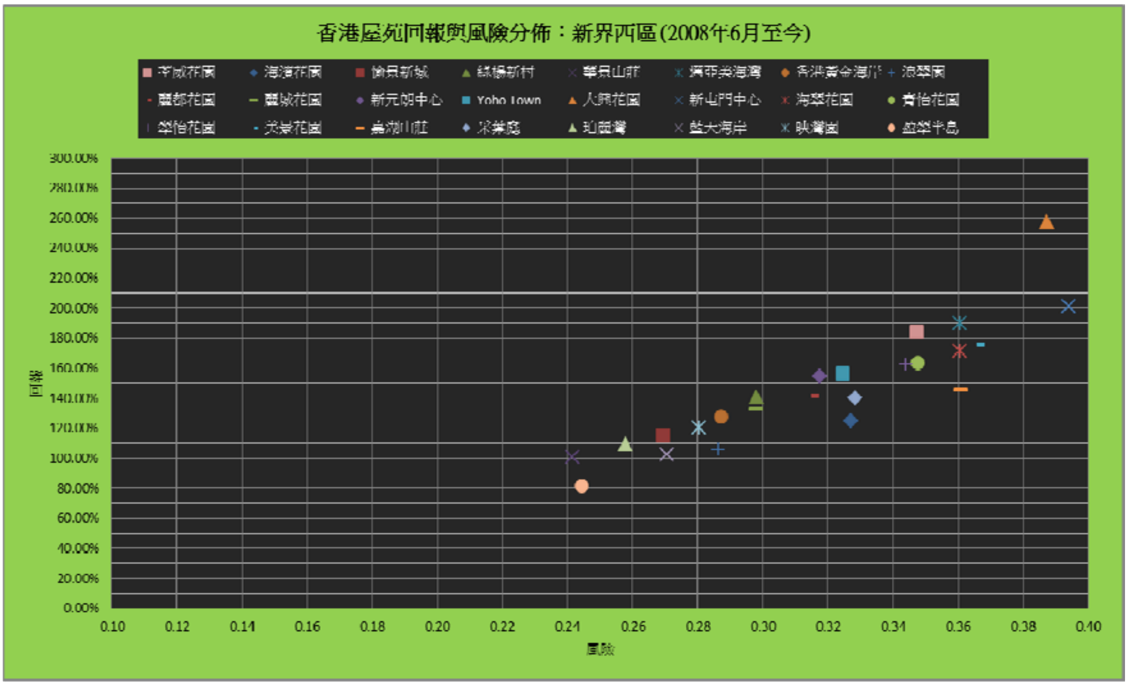


D) New Territories West (NTW)

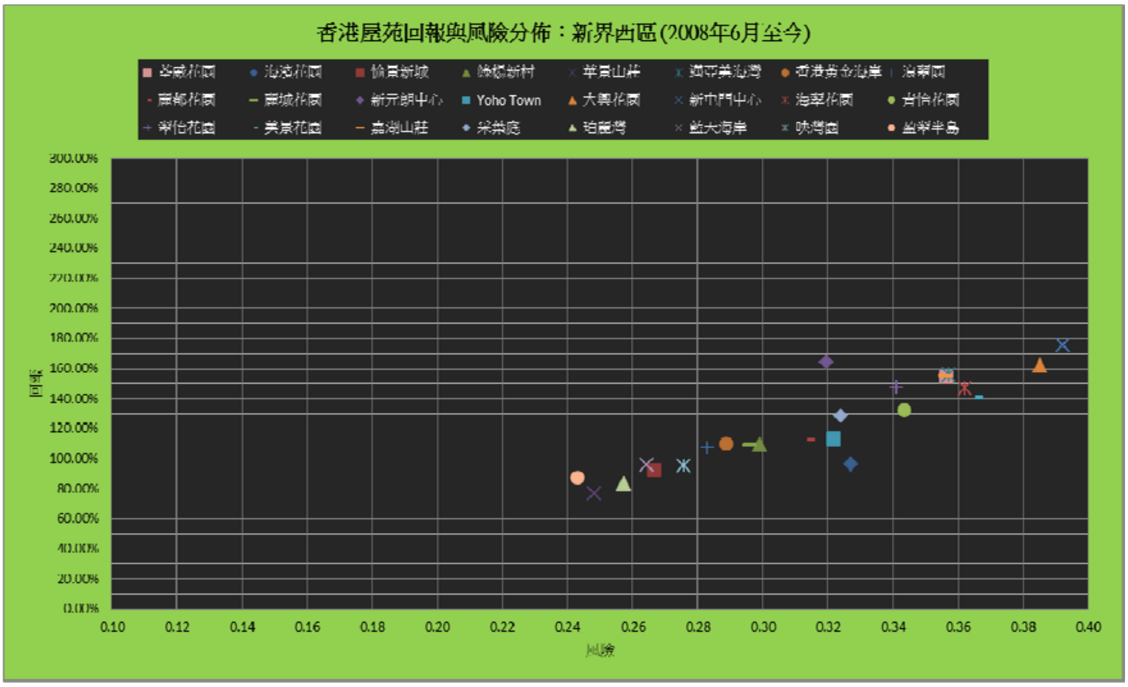
1) NTW June 2008 to March 2014



2) NTW June 2008 to November 2015



3) NTW June 2008 to June 2016



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