Zeppelin's Real Estate Tech

1Q 2020: A Real Estate Newsletter by Zeppelin Real Estate Analysis Limited
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The US and China concluded the first phase of the trade deal and the UK is set to Brexit. Australia has multiple bushfires while China has coronavirus. Meanwhile, the Hang Seng Index went below 27K amid up and down home prices. Commotions continue in Hong Kong.

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- **Canada: population estimates on ten cities**
- **Toronto construction costs: across use, quality, scale, and structure**
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- **Same IRR, different income streams**

"If time is perpetual, what can happen will happen."

We also like to hear from readers wishing to share their real estate experience with us.

This quarterly (generally published in spring, summer, fall, and winter) 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 **24th** year and **94th** 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 based in Hong Kong with associated operations in Mainland China and we also have access to regional and global professional networks.

Who? Me?

Stephen Chung
Managing Director, Zeppelin Real Estate Analysis Limited
Founder 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, Sing Tao 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

We welcome enquiries from interested parties and could be reached as follows:

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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.

Canada: population estimates on ten cities

Real Estate Tech, 1Q 2020

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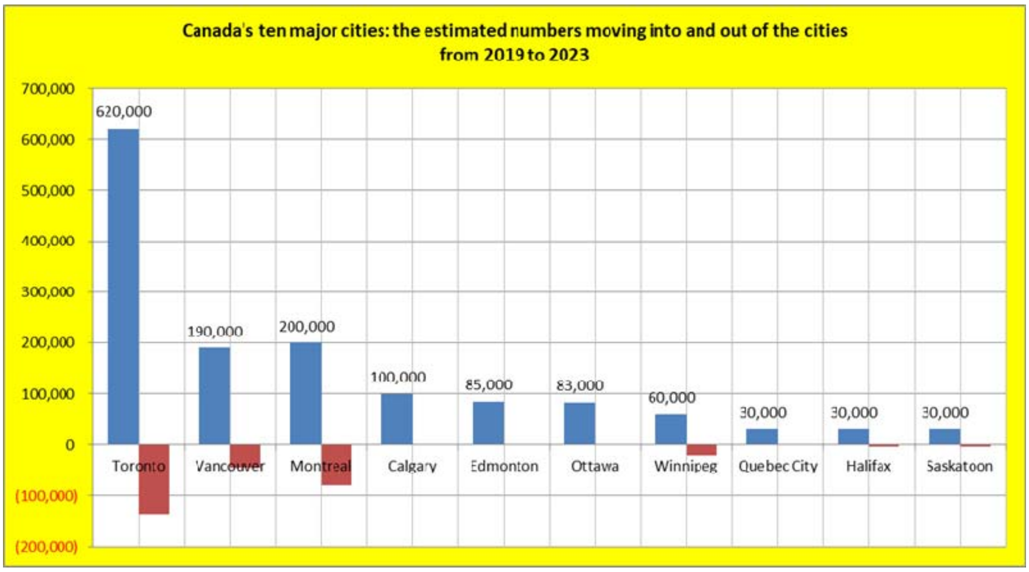
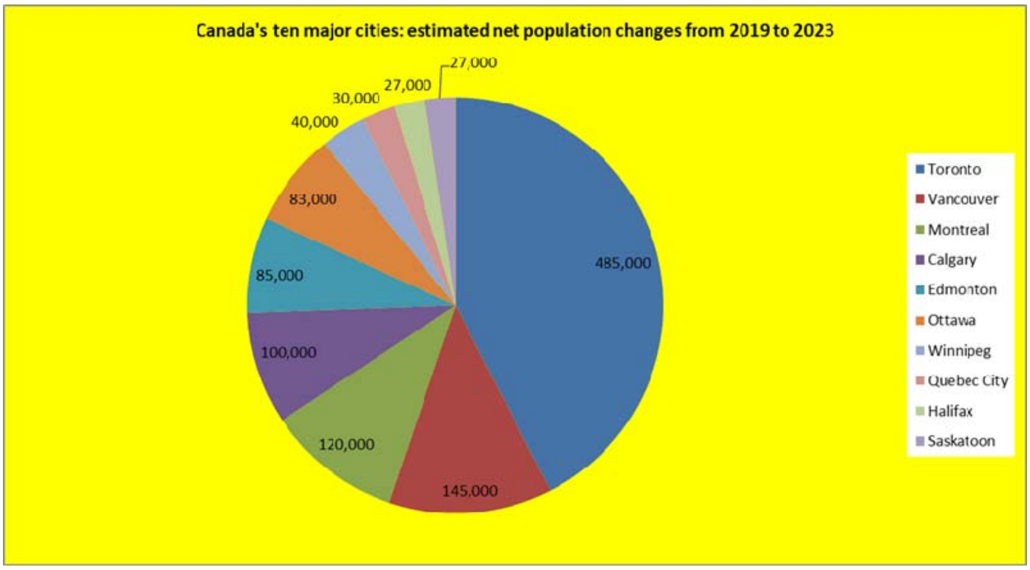
Up and uneven (Courtesy of www.talkofthetown.ie)

Population increases tend to heighten the need for more housing, yet whether prices and rents would do the same depends on the economy, supply, interest rate, and a host of other factors.

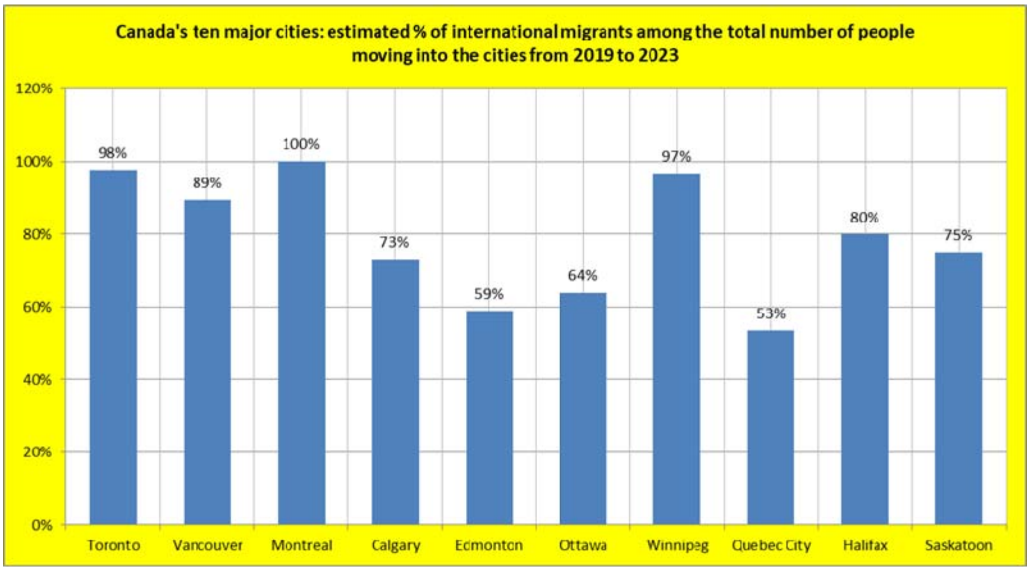
Here we share some of the population estimates and related data abstracted from a reported named “Emerging Trends in Real Estate 2020” published jointly by PWC and ULI:



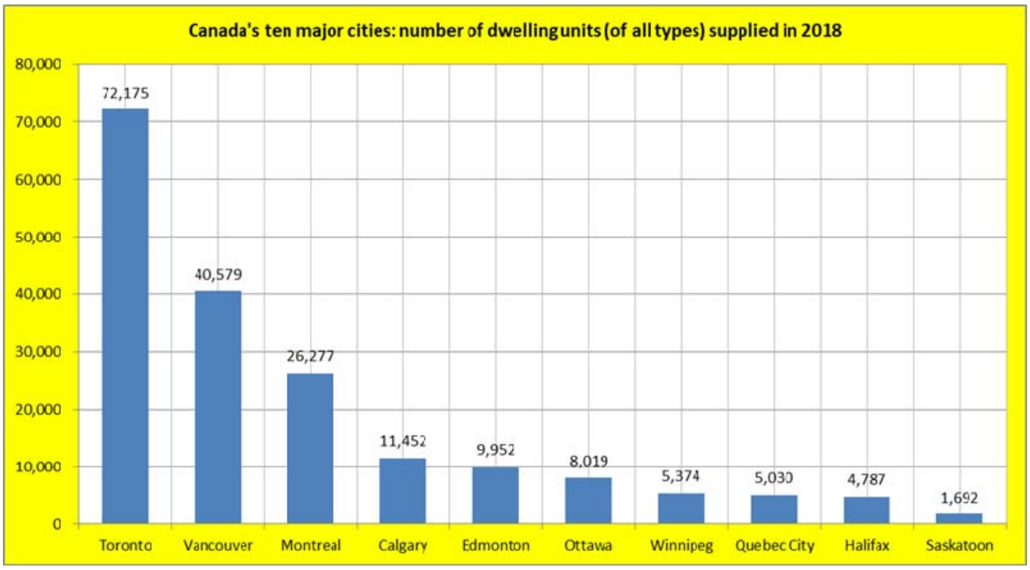
Graph 1: the ten cities’ migrating in and out numbers



Graph 2: the ten cities' net population changes



Graph 3: the ten cities' international migrant percentages of total migrants



Graph 4: the ten cities' supply of new dwellings

A few observations: a) cities which have more migrants coming in also have more people moving out; b) cities with higher net population increases tend to build more dwellings, well, what do you expect?; and c) international migrants do correlate a bit to net population growths, yet just a bit.

Another observation is that if ranked by the number of people moving out, the top four cities, namely Toronto, Vancouver, Montreal, and Winnipeg, also have the higher percentages of international migrants among their migrant pools.

Coincidence or what? This requires further research on another day, perhaps.

Toronto construction costs: across use, quality, scale, and structure

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Seven times the size of Hong Kong (Courtesy of Wikipedia.org)

A simple rule of thumb is whenever the market price of real estate is similar to or even below the 'replacement cost', an investment opportunity might be in the cards although this does not imply jumping into the deal right away simply because it is below its replacement cost.

Here we have abstracted some of the cost data contained in the 2019 Canadian Cost Guide published by the Altus Group, and we focus on the residential (apartment), office, retail, and hotel sectors in the Greater Toronto Area (GTA):

Greater Toronto Area: typical range of (hard) construction cost per buildable ft2 (CAD$/ft2)			
Data Source: Altus Group 2019 Canadian Cost Guide			
Real estate types	Specifications / Subtypes	Range CAD$/ft2 Min	Range CAD$/ft2 Max
Apartments / Condominiums (excluding parking)			
Up to 6 Storeys		180	250
Up to 12 Storeys		185	265
13-39 Storeys		190	255
40-60 Storeys		200	260
60+ Storeys		225	280
Premium for High Quality		75	200
Offices (excluding parking)			
Under 5 Storeys (Class B)		185	255
5 - 30 Storeys (Class B)		190	265
5 - 30 Storeys (Class A)		220	290
31 - 60 Storeys (Class A)		235	340
Interior Fitout (Class B)		60	95
Interior Fitout (Class A)		90	200
Retail			
Strip Plaza		115	185
Supermarket		155	215
Big Box Store		145	200
Enclosed Mall		215	295
Hotels (excluding parking)			
Budget		160	210
Suite Hotel		245	305
4 Star Full Service		255	330
Premium for Luxury		95	160

A few things to note: a) the above figures are in Canadian dollars per ft2 of construction / buildable floor area; b) the construction floor area is calculated differently to the net floor area commonly used in real estate transactions i.e. the former generally covers more floor area and as such, the above construction cost figures in the chart will become higher IF expressed in the (real estate) net floor area basis; c) the construction cost figures contained herein include only the ‘hard’ costs e.g. the concrete, the timber, the steel but not the ‘soft’ costs such as development taxes, professional fees etc.; d) the construction cost figures assume ‘normal’ or common site conditions; and e) land costs have not been included.

Briefly, looking at the above numbers, opportunities might involve subject to further research and analysis: 1) some of the older residential properties, condo apartment units included, in the better or sought after neighborhoods, given today’s condo apartment developments sometimes require close to CAD1000 per net ft2, inclusive of construction and land; 2) some of the office properties as their asking prices are not much higher than the construction costs, meaning the land portions may almost be acquired for free.

Toronto real estate: what you get for different budgets, buy or rent

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Toronto: where the Blue Jays are (Courtesy of Wikipedia.org)

Buying

We like to think the higher the real estate budget, the more choices there will be. Intuition would have you nod your head in agreement. Deeper thoughts might question this because someone with a C$10M budget and who wants that category of homes, even a C$5M home won't fit the bill! Not to mention a half million one.

Here we have collected some residential real estate listed for sale data dated early January 2020 (this year) from www.realtor.ca on the Greater Toronto Area (GTA) comprising the basic residential styles i.e. detached, semi-detached, condo townhouse, and condo apartment. These data are then categorized into various price ranges (refer to the table 1 below):

Snapshot of Greater Toronto Area (GTA) Residential Listings categorized by price ranges						**Jan 2020**			
Price ranges in Canadian dollars unless otherwise noted								Remarks	Listings per
Above C$	To C$	Increment C$	City of Toronto	GTA Suburbs	**Total GTA**	%City of Toronto	% GTA Suburbs	Choices	$100K increment
-	300,000	300,000	24	9	**33**	73%	27%	Limited	11.00
300,000	400,000	100,000	46	31	**77**	60%	40%	Limited	77.00
400,000	**500,000**	100,000	152	141	**293**	52%	48%	Reasonable	293.00
500,000	600,000	100,000	239	188	**427**	56%	44%	Reasonable	427.00
600,000	800,000	200,000	487	465	**952**	51%	49%	Reasonable	476.00
800,000	**1,000,000**	200,000	331	384	**715**	46%	54%	Reasonable	357.50
1,000,000	1,200,000	200,000	210	260	**470**	45%	55%	Reasonable	235.00
1,200,000	1,400,000	200,000	147	198	**345**	43%	57%	Reasonable	172.50
1,400,000	1,600,000	200,000	124	149	**273**	45%	55%	Reasonable	136.50
1,600,000	1,800,000	200,000	70	153	**223**	31%	69%	Reasonable	111.50
1,800,000	**2,000,000**	200,000	68	136	**204**	33%	67%	Reasonable	102.00
2,000,000	2,500,000	500,000	163	140	**303**	54%	46%	Reasonable	60.60
2,500,000	3,000,000	500,000	133	112	**245**	54%	46%	Reasonable	49.00
3,000,000	4,000,000	1,000,000	157	83	**240**	65%	35%	Reasonable	24.00
4,000,000	**5,000,000**	1,000,000	47	45	**92**	51%	49%	Limited	9.20
5,000,000	7,500,000	2,500,000	37	35	**72**	51%	49%	Limited	2.88
7,500,000	**10,000,000**	2,500,000	22	12	**34**	65%	35%	Limited	1.36
10,000,000	**20,000,000**	10,000,000	17	5	**22**	77%	23%	Limited	0.22
20,000,000	Unlimited		4	4	**8**	50%	50%	Limited	-
Overall			2,478	2,550	**5,028**	49%	51%		
Notes:	1) Reflective of the overall listing situation in early January 2020 only, not necessarily representative of and at all times								
	2) Some listings might not have been included owing to the online mapping scale and frame								
	3) No responsibility or liability is taken up for any errors, omissions, and mistakes contained herein								

Table 1

If we were to define, subjectively no doubt, sufficient choices as having no less than "100" listings (in the various price range levels), then a budget of less than C$400K would face little choices. This shouldn't be surprising. What might skip one's mind is that for a budget over C$4M, the choices are also rather limited. And if one factors into the equation the preferred locations, neighborhoods, quality of construction, design, amenities and so forth, the actual choices could be fewer still. Do note the C$400K or less category would include (condominium related) parking space and even locker listings.

We have also divided the listings into a) those located within the City of Toronto; and b) those located outside the City i.e. the suburbs in the GTA. On the macro angle, there were around 5000 plus residential sale listings in the GTA with most asking prices being within C$400K to C$4M. The split between the City and suburbs is roughly half and half.

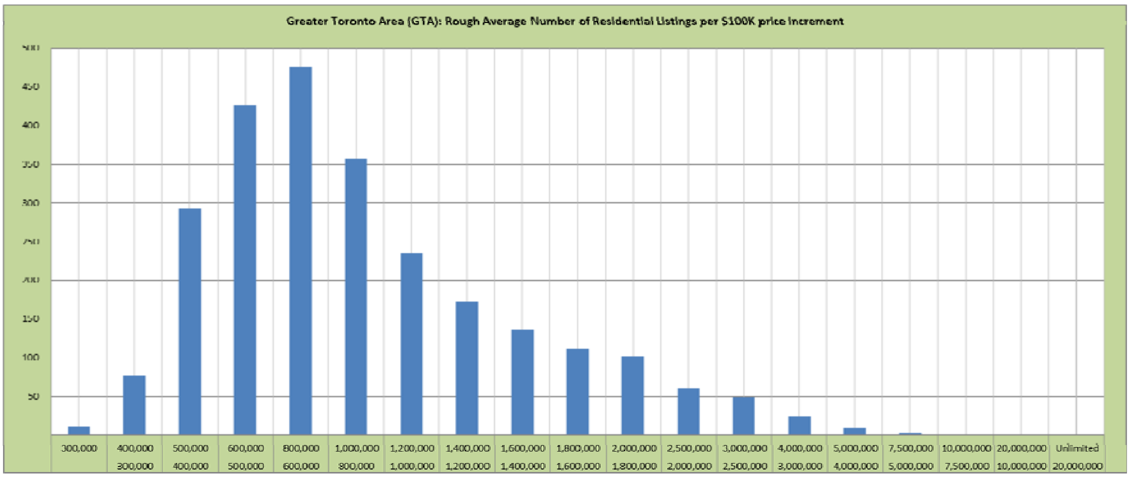

Chart 2

The meticulous readers would notice our price ranges do not share the same price gap i.e. some of them are a C$100K range, others could be in the millions. As such, we have come up with Chart 2 above which shows the number of listings per C$100K within any price range. This is of course only a rough indicative measure. It shows a budget of C$400K minimum to C$2M maximum will (potentially) have plenty of listings from which to choose.

Again do note that plenty of choices do not necessarily mean fewer competing buyers. On the contrary, competition for these C$400K to C$2M listings may be keen especially in a hot market. Conversely, fewer listings in the more than C$4M categories may not imply keener buyer competition and it is not uncommon for such listings to be sold months after being listed for sale.

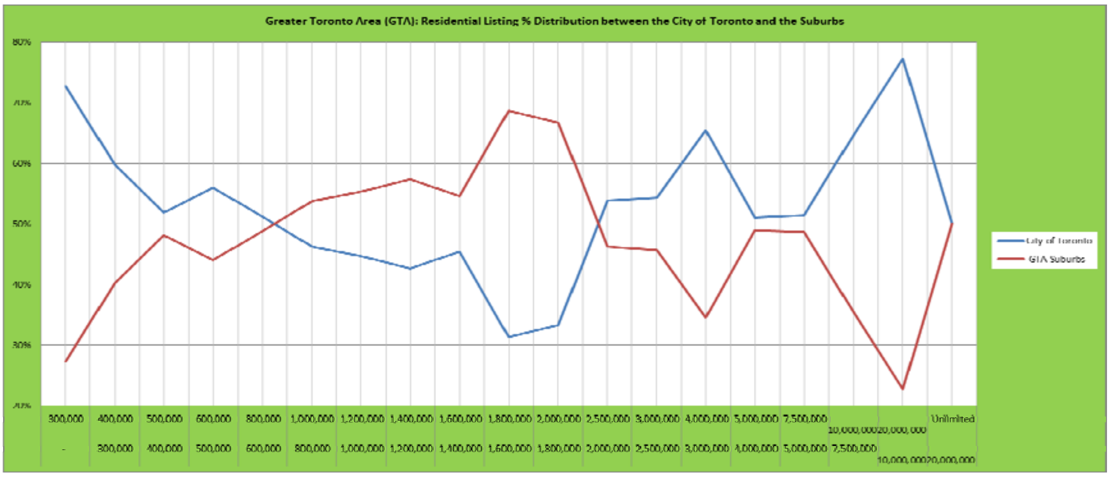

Chart 3

Chart 3 is interesting. While the macro statistics show almost a 50/50 split between City of Toronto listings and the GTA suburb listings, the distribution in most of the price ranges is almost “either or” i.e. either the City listings are fewer while the suburbs have more, or vice versa.

Digging deeper, there are more City listings when below C$800K and more suburb listings when the asking prices are above C$800K and below C$2M. Beyond C$2M, the City listings dominate again.

The foregoing generally jives with the market situation; prices lower than C$800K may mean either the townhouses or apartments and usually these are plentiful within the City. Those above C$800K and below C$2M would involve more detached and semi-detached homes and in the past 20 years or so, many have been built in the suburbs. Once you get into the several million dollar homes, especially the tens of million ones, the City becomes a vital source of offerings again.

What about renting?

Using the same data source in buying above, we have collected the rental listings in the GTA comprising the basic home styles and classified them into different monthly rental ranges (refer to table 4 below):

A few observations: a) most listings range from C$1400 to C$4500 per month, thus anything below or above this broad range would face fewer choices; b) note those renting for below C$1400 per month may include sharing a bedroom within an apartment or house, or the basement in a house, or even the parking and locker rentals; and c) around 70% of the rental listings are located in the City of Toronto.

Snapshot of Greater Toronto Area (GTA) Residential RENTAL Listings categorized by rental ranges						**Jan 2020**			
Price ranges in Canadian dollars unless otherwise noted								Remarks	Listings per
Above C$	To C$	Increment C$	City of Toronto	GTA Suburbs	**Total GTA**	%City of Toronto	% GTA Suburbs	Choices	$200 increment
-	1,000	1,000	37	20	**57**	65%	35%	Limited	11.40
1,000	1,200	200	14	42	**56**	25%	75%	Limited	56.00
1,200	1,400	200	48	83	**131**	37%	63%	Reasonable	131.00
1,400	1,600	200	69	132	**201**	34%	66%	Reasonable	201.00
1,600	1,800	200	153	89	**242**	63%	37%	Reasonable	242.00
1,800	2,000	200	466	161	**627**	74%	26%	Reasonable	627.00
2,000	2,500	500	1989	846	**2835**	70%	30%	Reasonable	1,134.00
2,500	3,000	500	1508	551	**2059**	73%	27%	Reasonable	823.60
3,000	4,000	1,000	871	347	**1218**	72%	28%	Reasonable	243.60
4,000	5,000	1,000	255	46	**301**	85%	15%	Limited	60.20
5,000	6,000	1,000	109	20	**129**	84%	16%	Limited	25.80
6,000	7,000	1,000	83	8	**91**	91%	9%	Limited	18.20
7,000	8,000	1,000	49	5	**54**	91%	9%	Limited	10.80
8,000	9,000	1,000	20	2	**22**	91%	9%	Limited	4.40
9,000	10,000	1,000	20	4	**24**	83%	17%	Limited	4.80
10,000	Unlimited		33	4	**37**	89%	11%	Limited	
Overall			5,724	2,360	**8,084**	71%	29%		
Notes:	1) Reflective of the overall listing situation in early January 2020 only, not necessarily representative of and at all times								
	2) Some listings might not have been included owing to the online mapping scale and frame								
	3) No responsibility or liability is taken up for any errors, omissions, and mistakes contained herein								

Table 4

Looking in more detail, most listings above C$1600 per month are located in the City, and it seems the higher the rentals, the more likely it would be located in the City. Perhaps this implies those who buy homes in the suburbs generally buy for their own use i.e. investors tend to buy City units for renting out, which in turn may mean tenants are mostly in favor of City locations for convenience and getting to and from work (refer to Chart 5 below).

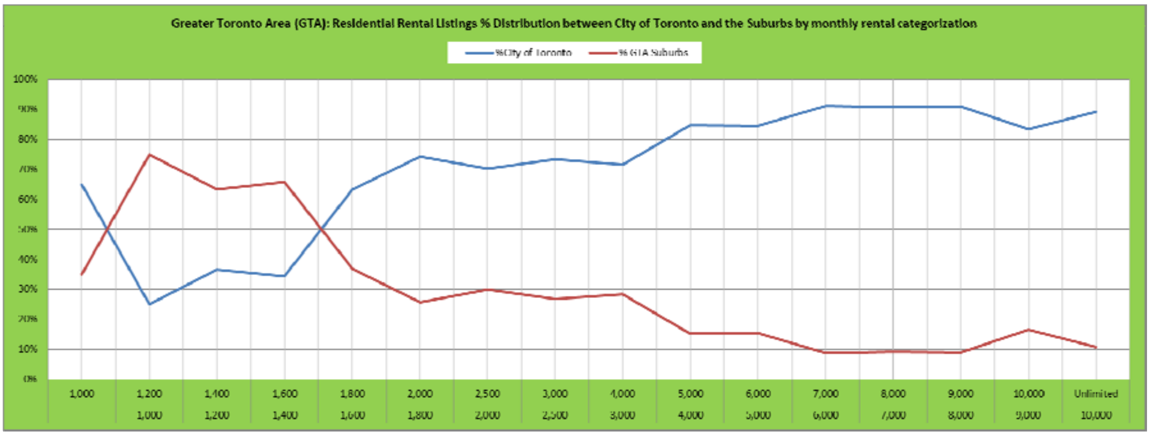

Chart 5

Char 6 shows the rough distribution of rental listings per C$200 rental increment and generally there are more choices when rentals are within the C$1400 to C$4500 or so range. Note however renter competition could be keen within these ranges.

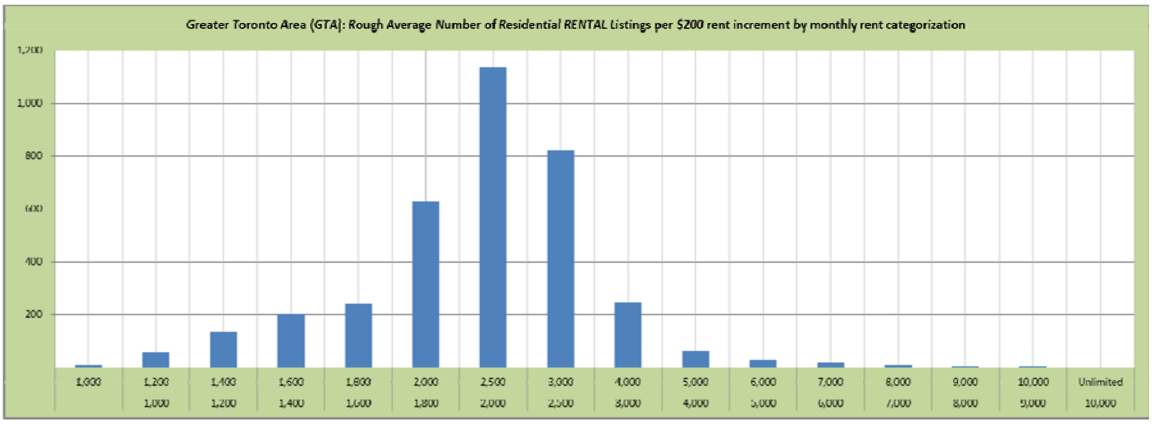

Chart 6

Overall, the GTA has only a 1.50% vacancy rate and perhaps the City's vacancy is even lower. Your humble author has a bit of investment there and generally speaking, as long as the asking rentals are within the market range, the units would be leased within a couple of weeks.

By the way, if one has a rental budget of C$10K or more per month, one can be looking at 'mansions' and 'estates'.

Same IRR, different income streams
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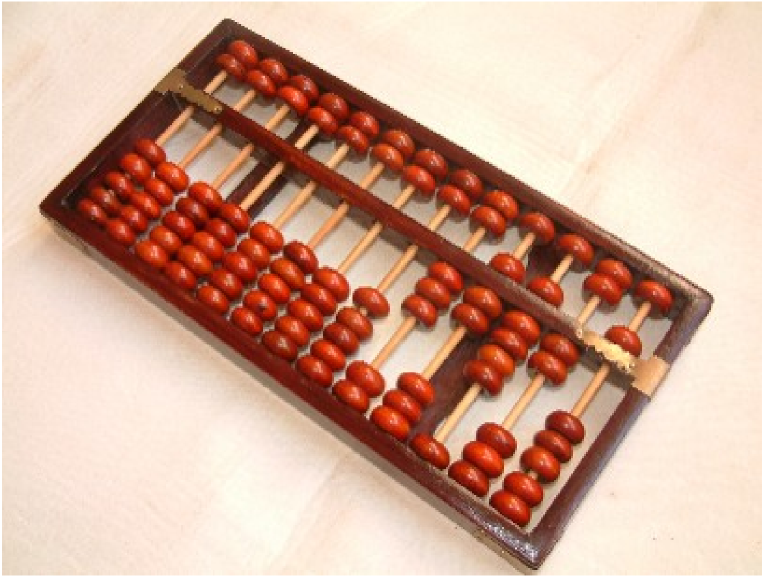

Can this do DCF? (courtesy of Wikipedia.org)

Quantifiable returns in real estate generally come from two broad sources, namely the rental income stream and price appreciation. Which source is more important could be a circumstantial consideration e.g. someone requiring regular income may focus on the rentals while a bright young emerging real estate developer would wish for huge market price appreciation. There is no hard and fast answer to every situation, nor a 'balanced' (like half the return from rental and half from price appreciation) approach suits every investor.

Here we look at the implications of accepting lower (net) rental yields for higher price appreciation expectations by comparing the DCF (NPV and IRR) results of various such situations to a base scenario where the (initial) net rental yield is, say, more generous:

Investment $	1,000,000	Net rental yield%	5.00%	Increment%	3.00%	Cap rate%	4.00%	
Year:		1	2	3	4	5	6	Remarks
Activity:		Acquisition	Holding	Holding	Holding	Holding	Disposition	
Acquisition $		(1,000,000)						
Net rental $		50,000	51,500	53,045	54,636	56,275	57,964	323,420
Disposition $							1,449,093	1,772,513
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Net total $		(950,000)	51,500	53,045	54,636	56,275	1,507,056	
NPV		141,733						
IRR		13.71%						
Disposition $ / Acquisition $		1.45						

Base scenario

The base scenario involves investing $1M into a property which yields 5% net in the 1st year, 3% rental increment per year, and in the exit 6th year the cap rate has gone down to 4% implying a relatively hotter market after six years. The disposition price divided by the acquisition price is 1.45, that is, the property price has grown 45% during the six year period. The discount rate used in the excel file (not shown) is arbitrarily chosen at 10%. Obviously, this is a very much simplified format compared to real life calculations.

The various lower (entering) net rental yields scenarios are as follows:

Investment $	1,000,000	Net rental yield%	2.50%	Increment%	3.00%	Cap rate%	2.50%	
Year:		1	2	3	4	5	6	Remarks
Activity:		Acquisition	Holding	Holding	Holding	Holding	Disposition	
Acquisition $		(1,000,000)						
Net rental $		25,000	25,750	26,523	27,318	28,138	28,982	161,710
Disposition $							1,159,274	1,320,984
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Net total $		(975,000)	25,750	26,523	27,318	28,138	1,188,256	
NPV		(138,286)						
IRR		6.14%						
Disposition $ / Acquisition $		1.16						

Scenario A

The net rental yield is 2.50% and the same rate is assumed to be the cap rate after six years. Rental increment is the same at 3% per year. Naturally, this scenario compares poorly to the base scenario as the rentals are not only smaller but there is no significant change in the market price environment. Not even fair too.

Investment $	1,000,000	Net rental yield%	2.50%	Increment%	3.00%	Cap rate%	2.00%	
Year:		1	2	3	4	5	6	Remarks
Activity:		Acquisition	Holding	Holding	Holding	Holding	Disposition	
Acquisition $		(1,000,000)						
Net rental $		25,000	25,750	26,523	27,318	28,138	28,982	161,710
Disposition $							1,449,093	1,610,803
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Net total $		(975,000)	25,750	26,523	27,318	28,138	1,478,074	
NPV		25,309						
IRR		10.65%						
Disposition $ / Acquisition $		1.45						

Scenario B

This is the same as scenario A with only the cap rate being changed to 2% i.e. signifying a hotter market price environment after six years. Still, both the NPV and IRR do not match those in the base scenario.

Investment $	1,000,000	Net rental yield%	2.50%	Increment%	3.00%	Cap rate%	1.73%	
Year:		1	2	3	4	5	6	Remarks
Activity:		Acquisition	Holding	Holding	Holding	Holding	Disposition	
Acquisition $		(1,000,000)						
Net rental $		25,000	25,750	26,523	27,318	28,138	28,982	161,710
Disposition $							1,675,252	1,836,962
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Net total $		(975,000)	25,750	26,523	27,318	28,138	1,704,233	
NPV		152,969						
IRR		13.71%						
Disposition $ / Acquisition $		1.68						

Scenario C

This is comparable to the base scenario (at least) in terms of NPV and IRR. Note though the cap rate is now 1.73% implying a much hotter market than six years ago. Instead of a total of 45% increase in the property price, this scenario requires 68%.

Investment $	1,000,000	Net rental yield%	2.00%	Increment%	3.00%	Cap rate%	1.35%	
Year:		1	2	3	4	5	6	Remarks
Activity:		Acquisition	Holding	Holding	Holding	Holding	Disposition	
Acquisition $		(1,000,000)						
Net rental $		20,000	20,600	21,218	21,855	22,510	23,185	129,368
Disposition $							1,721,268	1,850,636
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Net total $		(980,000)	20,600	21,218	21,855	22,510	1,744,454	
NPV		155,660						
IRR		13.72%						
Disposition $ / Acquisition $		1.72						

Scenario D

If the entering net rental yield is 2%, and in order to generate an IRR comparable to the base scenario, the disposition cap rate has to go down to around 1.35% (1.347% to be exact) meaning a 73% price appreciation in the six years. 73% price increase isn't a big deal if a hot market is assumed. However, under the scenario (and perhaps the foregoing A B C too in some ways) it is an already heated market becoming hotter still.

The above scenarios do not point to any particular real life markets though your humble author is certain many of the readers can relate them to a few of the markets they know. Suffice to say the figures used are arbitrary. It is hoped that this simple scenario comparisons would serve to have readers contemplate the following:

a) Assuming any particular required or desired NPV and / or IRR, one might seek to achieve them via various combinations of rental income and price appreciation.

b) There is no need to be 'too stuck' to focusing on either rental stream or price appreciation.

c) Acquiring a property for a very low net rental yield would mean requiring higher price appreciation sometime in the future to make up for the NPV and / or IRR, plus relatively merger rental income stream in the process. To some extent, this practice requires the broader market to perform well (get hotter) which isn't always within one's control.

d) Acquiring a property for comparatively a more generous net rental yield could mean less pressure to seek for higher price appreciation (best of course if this occurs too) to derive similar NPV and / or IRR, plus usually better rental income stream in the process.

In some circumstances, particularly if the acquired property is deficient in terms of 'curb appeal' and building amenities, the property could be renovated and upgraded in order to bring forth its optimal value, thus lessening the need for improved market performance.

e) Assuming all things being equal, markets going from a 5% cap rate to say 2.50% are generally preferred to markets going from a 2% cap rate to 1%.

And there are risk concerns too but that's a topic for another day.

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