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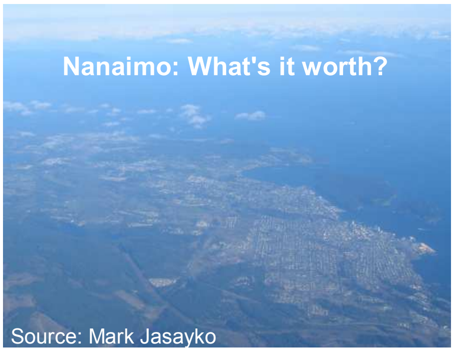
TD Wealth Private Investment Advice
The Charter Group, Langley, BC

Economic & Market Update

Everybody ♪ must ♪ get ♪ stoned ♪



Source: Mark Jasayko

And yet, Bob Dylan's musical refrain may not even be enough in order to justify some of the recent cannabis company valuations.

With the approach of cannabis legalization in Canada on October 17th, speculators across North America are bidding up the price of cannabis shares towards the stratosphere.

The enthusiasm as cannabis legalization in Canada approaches has resulted in billions of dollars of increased valuations for cannabis companies.

How much cannabis will people have to consume to justify these valuations?

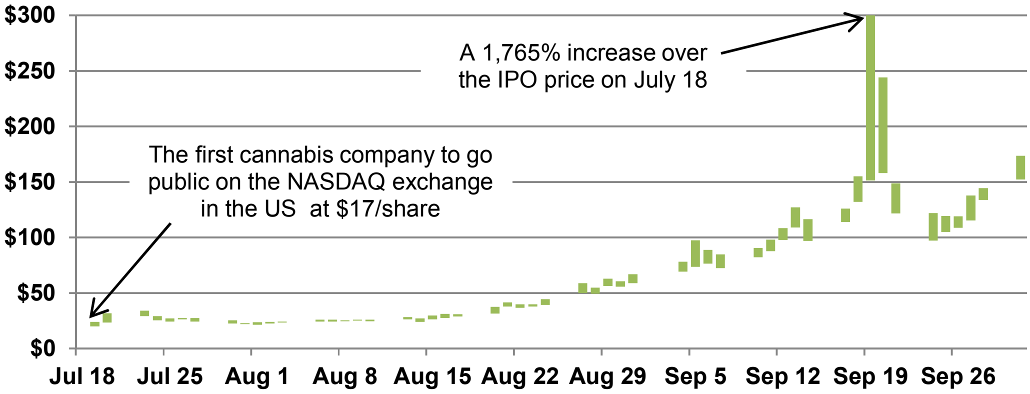
On September 19th, the shares of the Nanaimo-based cannabis producer Tilray Inc.

briefly touched $300 USD (U.S. dollars) (**Chart 1**) which gave the company a total valuation of over $39 billion CAD (Canadian dollars).[1] To put that into perspective, census figures estimate that there are 41,902 private dwellings in Nanaimo[2] with an average price of $546,200 according to the Vancouver Island Real Estate Board for a total of about $23 billion CAD.[3] So, some back-of-the-envelope math indicates that in certain respects for a brief moment, Nanaimo-based Tilray was worth more than Nanaimo itself! The euphoria faded somewhat as Tilray's valuation has recently dwindled to around a measly $17 billion CAD.[4]

At one point, Tilray Inc. was apparently worth more than all the residential real estate in Nanaimo, the city in which it is based.

Chart 1:

Tilray Inc. - Symbol TLRY on NASDAQ in US dollars - Intraday Range



Source: Bloomberg Finance L.P. as of 10/1/2018

Enough about Nanaimo. Let's look at things on an industry and nationwide basis. The five largest holdings in the Horizons Marijuana Life Sciences ETF (**Chart 2**) are Canopy Growth Corp., Aurora Cannabis Inc., Tilray Inc., Aphria Inc., and Cronos Group Inc. which have a current combined market valuation of just over $50 billion CAD. If we include all 42 Canadian-based companies represented in the ETF, that figure tops out at over $65 billion CAD.[5]

42 prominent Canadian cannabis companies are worth a total of $65 billion in Canadian dollars.

So, how much cannabis needs to be consumed in Canada in order to justify the industry being valued at $65 billion? For comparative purposes, we'll use the cigarette industry as a proxy in order to estimate the relative costs of production, distribution, marketing,

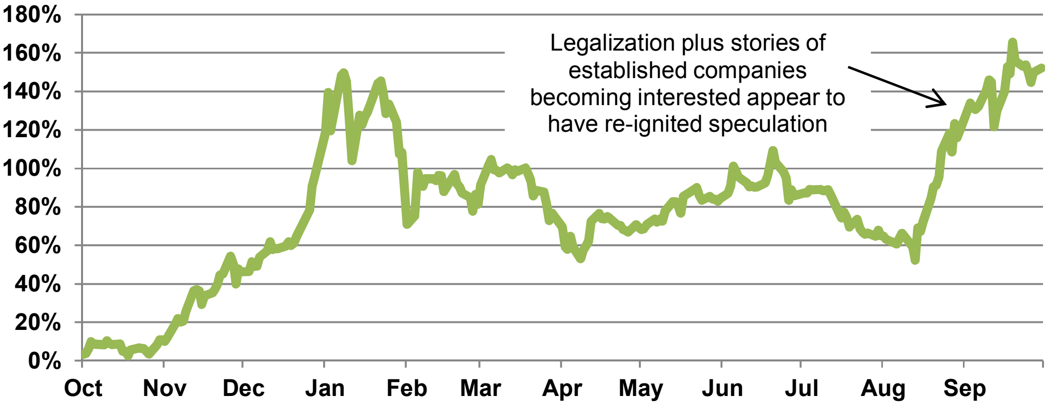
How much cannabis needs to be consumed in order to justify an industry worth $65 billion?

[1] Bloomberg Finance L.P. as of 10/1/2018.
[2] Statistics Canada, Census agglomeration of Nanaimo, B.C.
[3] Mike Gregory. "Nanaimo, Duncan see lowest yearly gains in single-family home prices." *Nanaimo News Bulletin*, September 7, 2018.
[4] Bloomberg Finance L.P. as of 10/1/2018.
[5] Ibid.

and sales. A common Price-to-Earnings ratio in the cigarette industry is 15.[6] So, if we divide the $65 billion total of market valuation by 15, the Canadian cannabis industry will need to generate $4.3 billion in earnings per year.

The good news is that cigarettes are a relatively high margin business. About 30% of all the cigarette sales revenue flows down to net income.[7] In our example, this would imply that $4.3 billion in earnings will require total cannabis sales revenue of $14.3 billion.

Chart 2:
Horizons Marijuana Life Sciences ETF



Source: Bloomberg Finance L.P. as of 10/1/2018

A reasonable estimate of the price per gram of legal cannabis in Canada is about $10.[8] If we need $14.3 billion in revenue, 1.43 billion grams will need to be sold.

Next, we need to standardize a unit of consumption. Apparently, one might be able to roll about three joints from a single gram. As a result, 1.43 billion grams would translate into 4.29 billion joints per year. Now, some people will likely ingest cannabis rather than smoke it. But in order to get the desired effects, we will assume that they will still have to consume an amount of cannabis found in an average joint. So, we will boil things down to "equivalent joints" to capture people who prefer to ingest it.

If every legal age Canadian decides to consume cannabis, they will need to consume the equivalent of almost three joints a week to justify current cannabis company valuations.

Currently, according to Statistics Canada, there are 30,200,000 Canadians who will be old enough to legal purchase cannabis on October 17.[9] As a result, *every* legal age Canadian will have to consume 142 "equivalent joints" per year. To expand on Bob

[6] Ibid.
[7] Bloomberg Finance L.P. as of 10/1/2018.
[8] Vanmala Subramaniam. "What Will a Gram of Legal Weed Cost in Canada." *Vice News*, July 30, 2018.
[9] Tavia Grant and Jeremy Angus. "Census 2018." *The Globe and Mail*, November 12, 2017.

Dylan's musical refrain, *everyone* must get stoned almost three times a week.

If only 6 million Canadians choose to consume cannabis, they will need to go through the equivalent of about two joints every day to justify valuations.

However, a lot of people are not going to listen to Bob Dylan and won't partake. Average estimates are that there are 4,750,000 Canadians who currently consume cannabis at least once every three months.[10] Let say a reduction of the stigma increases the cannabis consuming population to 6,000,000 (incidentally, Statistics Canada estimates that there are 5,800,000 tobacco smokers in Canada).[11] So, if the entire legal age population in Canada won't participate, those 6,000,000 projected cannabis consumers are going to have to pick up the slack. Each of those individuals will have to consume 715 "equivalent joints" per year, or about two joints *every* day.

If the market does not expand beyond existing users, those users will need to spend an extra $1,800 per year each to justify valuations.

Another angle of comparison would be to look at how much Canadians spent on cannabis in 2017. That totalled $5.7 billion according to Statistics Canada.[12] Remember, I estimated that total sales will have to be $14.3 billion in order to justify current cannabis stock valuations. This implies about a 150% increase in the amount that users will need to spend. Last year the average user (again, defined as someone who consumed at least once every three months), spent $1,200.[13] In the future they are going to have to spend *an additional* $1,800 each per year to justify valuations!

This analysis leaves out the detrimental impact of the black market and those who decide to legally grow it at home.

The estimates above might constitute a very good case scenario as I omitted the potential of lost business resulting from cheaper cannabis found in the black market. I also omitted the fact that Canadians will be able to maintain four cannabis plants at home. Under the right conditions, four plants might produce five kilograms of cannabis[14], or the equivalent of about 1,600 joints.

In the end, if valuations are reduced, big tobacco firms may see an opportunity to consolidate the cannabis industry.

As far as the long-term prognosis for the Canadian cannabis industry, if the growth pattern resembles those of other industries in the past, it might be the case that large tobacco companies that have long ago solved the problems of production and distribution, and have learned to manage liability issues, will be the eventual consolidators of the original cannabis companies that survive. That might be the end-game. To many cannabis industry enthusiasts and speculators, such a conclusion could be a huge buzzkill.

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[10] Statistics Canada and Evans, Pete. "Canadians spend $5.7B on marijuana last year." *CBC News*, January 25, 2018.
[11] Teresa Janz. "Health at a Glance: Smoking Trends." Statistics Canada, November 27, 2015.
[12] Evans, Pete. "Canadians spend $5.7B on marijuana last year." *CBC News*, January 25, 2018.
[13] Ibid.
[14] Frisk, Adam. "Growing 4 cannabis plants for recreational use is no a 'grow-op,' experts say." *Global News*, May 1, 2018.

Model Portfolio Update[15]

The Charter Group Balanced Portfolio
(A Pension-Style Portfolio)

	Target Allocation %	Change
Equities:		
Canadian Equities	15.0	None
U.S. Equities	35.7	None
International Equities	9.3	None
Fixed Income:		
Canadian Bonds	23.8	None
U.S. Bonds	2.5	None
Alternative Investments:		
Gold	7.5	None
Commodities & Agriculture	2.5	None
Cash	3.7	None

There were no changes to the asset allocation or the individual holdings in The Charter Group Balanced Portfolio model during September.

No changes were made to the Balanced Portfolio model during September.

The cash balance continued to be higher than its strategic target of 2% as we continued to leave the proceeds of a bond maturity from August 8th in cash. The bond market has been unattractive over the past two months as interest rates moved higher. The iShares Core Canadian Universe Bond Index is down over 1% since August 8th.[16] We will continue to look for an attractive entry point in order to add a new bond position.

The allocation to cash is a little higher until we add another bond to the Portfolio.

The biggest negative contribution to portfolio performance was the strengthening of the Canadian dollar. Two factors drove that strength during September: rising oil prices and the prospects of a new North American trade agreement.

A stronger Canadian dollar detracted from the results during September.

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[15] The asset allocation represents the current *target* asset allocation of the Balanced Model Portfolio as of 7/16/2018. The asset allocations of individual clients invested in this Portfolio will differ because of the relative performance of the asset classes since the last rebalancing and because of differences in the timing of deposits and withdrawals. The Balanced Model Portfolio is part of a sequence of five portfolios ranging from conservative to aggressive: Conservative, Balanced Income, Balanced, Balanced Growth, and Growth.
[16] Bloomberg Finance L.P. as of 10/1/2018.

Oil prices were lifted on the news of an impending embargo on Iranian crude and signs of supply cooperation between Saudi Arabia and Russia. Those developments will certainly help. However, the oil market will still have to wrestle with slowing global economic growth which could reduce demand.

The Canadian dollar was stronger because of rising oil prices and a new North American trade agreement.

The new US-Mexico-Canada agreement, or USMCA for short, provides some much needed clarity. However, it is also clear than the new agreement is slightly less favourable to Canada than the NAFTA accord which it replaced. That might temper some of the initial enthusiasm in the Canadian dollar.

It might be a challenge for the Canadian dollar to hold onto gains made in September.

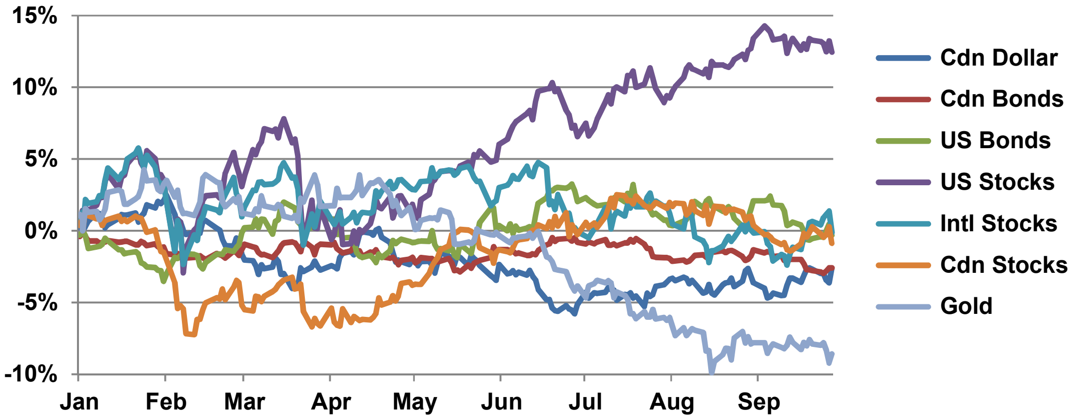
Otherwise, the US federal government continues to spend at a feverish pace, helping to maintain a rather impressive economic growth rate and keeping the US unemployment rate negligible. As mentioned in previous issues, the main risk involves interest rates rising faster than the market expects. Other than that, there does not appear to be many fiscal obstacles in the near term. However, we will be keeping an eye on the political contests running up to the U.S. midterm elections on November 6th nonetheless.

Government spending continues to keep the US economy growing. Fast rising interest rates are the main potential spoiler.

Below is the Year-to-Date 2018 performance of the asset classes that we have used in the construction of The Charter Group Balanced Portfolio (**Chart 3**).[17]

Chart 3:

2018 Performance of the Asset Classes (in Canadian dollars)



Source: Bloomberg Finance L.P. from 1/1/2018 to 9/30/2018

[17] Bloomberg Finance L.P. – The Canadian dollar rate is the CAD/USD cross rate which is the amount of Canadian dollars per one US dollar; Canadian bonds are represented by the iShares Canadian Universe Bond Index (XBB); US bonds are represented by the iShares Core US Aggregate Bond Index (AGG); U.S. stocks are represented by the iShares Core S&P 500 Index (IVV); International stocks are represented by the iShares MSCI EAFE Index (EFA); Canadian stocks are represented by the iShares S&P/TSX 60 Index (XIU); Gold is represented by the iShares Gold Trust (IAU).

Top Investment Issues[18]

Issue	Importance	Potential Impact
1. China's Economic Growth	Significant	Negative
2. Long-term U.S. Interest Rates	Moderate	Negative
3. Canadian Dollar Decline	Moderate	Positive
4. U.S. Fiscal Spending Stimulus	Moderate	Positive
5. NAFTA & Global Trade Wars	Moderate	Negative
6. East Asian Geopolitics	Moderate	Negative
7. Short-term U.S. Interest Rates	Medium	Negative
8. Massive Stimulus in China	Medium	Positive
9. Canada's Economic Growth (Oil)	Light	Negative
10. Middle East & Russia Geopolitics	Light	Positive

[18] This is a list of the issues that we currently deem to be the ten most important with respect to the potential impact on our model portfolios over the next 12 months. This is only a ranking of importance and potential impact and *not* an explicit forecast. The list is to illustrate where our attention is focused at the present time. If you would like an in-depth discussion as to the potential magnitude and direction of the issues potentially affecting the model portfolios, I encourage you to email me at mark.jasayko@td.com or call me directly on my mobile at 778-995-8872.

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The Charter Group is a wealth management team that specializes in discretionary investment management. For an annual fee, we manage model portfolios for private clients and institutions. All investment and asset allocation decisions for our model portfolios are made in our Langley, B.C. office. We do not outsource any of the decision-making for our model portfolios – there are no outside actively-managed products or funds. We strive to bring the best practices and the calibre of investment management normally seen in global financial centres directly to the Fraser Valley and are accountable for the results.

Accountability is further enhanced by the fact that we commit our own investable wealth to the same model portfolios in which our clients are invested.

The information contained herein is current as of October 1, 2018.

The Charter Group is part of TD Wealth Private Investment Advice, a division of TD Waterhouse Canada Inc. which is a subsidiary of The Toronto-Dominion Bank.

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