Norwegian School of Economics

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The Fundamental Valuation of Canopy Growth Corporation

Finding value in the haze of legalization

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Master thesis, MSc Economics and Business Administration, Finance

NORWEGIAN SCHOOL OF ECONOMICS

Contents

1. Executive Summary

The purpose of this Master's thesis is to perform a fundamental analysis of Canopy Growth Corporation (TSX: WEED), analyse the Canadian cannabis industry and provide a valuation of the company as at the 31.03.2018, and ultimately offer an investment recommendation for a hypothetically well-diversified investor.

The Canadian government has announced that it will be opening the recreational marijuana industry by the summer of 2018. The prospect of legalization has cause a gold rush towards the industry, leading to high levels of investment and market consolidation. Licensed producers have been racing to increase capacity to both compete in the market and become least cost producers. Canopy has followed the trend, conducting M&A transaction and building several new production facilities that will ensure they are the largest producer. The company presented strong growth in the medical market however the upside prospects of the recreational market far out weigh those of their current operations. The analysis also included I a study the cannabis market in the state of Colorado as a proxy for determining growth patterns following legalization of cannabis. A central component to the market analysis was determining the overall market size, which still remains ambiguous as most data comes from self-reported, and biased sources. Furthermore, I found that IFRS accounting standards lead to miss representation of financial statements and pose problems to identifying value for the uninitiated.

The valuation of the company was primarily based on two DCF models, one Enterprise Cash Flow model and the other a Adjusted Present Value analysis. Based on a potential 20% market share assumption and an estimated price per gram of $7. The company can be valued at approximately $6B CAD, I have identified a target price of $32.64. This ultimately leads us to offer an investment thesis recommendation of Hold or cautious Buy for a well-diversified risk liking investor.

1.1 Acknowledgements:

The completion of my academic work at NHH would not have been possible without the guidance and support of my friends and family. I would like to take a moment to thank my thesis supervisor Prof. Carsten Bienz as well as my colleague and dear friend Sebastiano Pescarolo, who I had, somewhat unfruitfully, attempted to write several other academic works with.

1.2 Author's note:

This Master's thesis does not present any stance on the moral and legal implications of the sale, and or consumption of Cannabis as it remains prohibited in many parts of the world. Any or all indications of the contrary do not reflect the views or policies of the Norwegian School of Economics, and or my supervisor. The goal of this academic work was to present an objective valuation of a publicly listed company in a novel and poorly documented industry, as well as contribute to academic research on the topic.

1.3 Preface

This paper represents the culmination of my academic career. With it, I hope to provide a comprehensive work that leverages all aspects of my education to date. In my Master's program at NHH I have specialized in finance, and I believe that the best way for me to synthesize what I have learnt over these past years is to conduct an in-depth fundamental valuation of a public corporation.

The reason why I have chosen Canopy Growth Company, as the topic of my thesis is simple. Being both a Canadian and someone that is extremely interested by niche markets, the medical marijuana industry presented a unique opportunity to explore an under studied industry and the impact of legalization on valuations in capital markets. An important home country bias and Canopy being the largest player in the market made the choice quite simple.

This being said, there are many factors that must be addressed relating to this academic work. Due to the developing nature of the legal framework surrounding cannabis producers in Canada, some of the points presented in this paper may have evolved by the time you are reading this. For this reason I will be basing my research on all public information available as of March 31st, 2018.

Montreal, Canada

June 20th, 2018

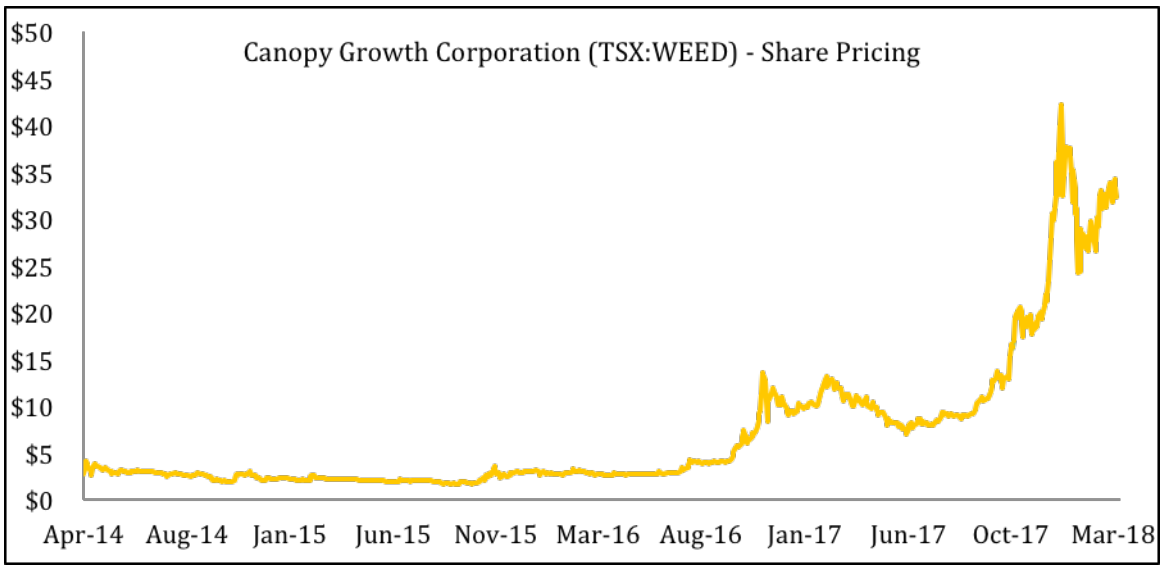
Olivier Côté

2. Introduction:

2.1 Company Profile:

Canopy Growth Corporation, "Canopy" or the "Company", formerly named Tweed Marijuana Inc., is one of Canada and the world's leading producers of medical cannabis. The Company was the first licenced producer in Canada to go public in 2014 and is currently traded on the Toronto Stock Exchange ("TSX"), listed under the symbol WEED. Since its creation, Canopy has grown from a producer of simple medical marijuana into a vertically integrated company with operations ranging from growing of cannabis plants, to the transformation and processing of the plants into various consumer goods. The Company currently only sells medical marijuana products as the recreational consumption for weed is still prohibited in Canada, as the new Canadian Cannabis Act has yet to come into force (expected date of July 1st, 2018). As at the 28th of March 2018, the company had a market capitalization of $6.8B CAD and a price per share of $33.66 CAD.

Fig1: Canopy stock price between April 1st, 2014 and March 28th, 2018



Source: Capital IQ

In the past year, Canopy's share price has increased by more than 300% in the wake of the end of cannabis prohibition.

Fig2 : Operating Subsidiaries

Controlled or jointly controlled subsidiaries		
Name	**% Ownership**	**Accounting**
Tweed	100.0%	Consolidated
Tweed Farms	100.0%	Consolidated
Bedrocan	100.0%	Consolidated
Spectrum Cannabis	100.0%	Consolidated
Tweed Grasslands	100.0%	Consolidated
Mettrum Hempworks	100.0%	Consolidated
Group H.E.M.P.	75.0%	Consolidated
Spektrum Cannabis	100.0%	Consolidated
Vert Cannabis	100.0%	Consolidated
Bodystream	100.0%	Consolidated
"Apollo"	100.0%	Consolidated
Spot Therapeutics	100.0%	Consolidated
Spectrum Chile	85.0%	Consolidated
Tweed JA	49.0%	Consolidated
Canopy Rivers	34.1%	Consolidated
Spectrum Cannabis Denmark	62.0%	Consolidated
Vert Mirabel	66.7%	Consolidated
BC Tweed	66.7%	Jointly operated

Source: Canopy Q3, 2018 Financial Statements

Canopy currently has 18 distinct subsidiaries or affiliated business ventures, mainly concentrated in Canada. Currently, the bulk of Canopy's production is retained for the Canadian market, as the export of cannabis and its derivatives remains extremely difficult. However, the Company has been able to establish agreements to export medicinal products to Australia, Germany and Brazil, and several of their subsidiaries are also located abroad (Canopy Growth Corporation, a 2018).

Canopy Growth Corporation aims to become the leading cannabis company in the world and is relatively agnostic in which form the Company will sell it. Canopy's core brand remains Tweed, which offers dry, easy to consume and soft-gel products. The Company is looking to expand Tweed into a lifestyle brand through aggressive marketing and an innovative social media presence. Canopy has also developed a premium brand, Black Label, as well as other brands whose product lines will remain focused solely on medical markets.

Canopy has grown its production both organically, with growing facility expansions, and through acquisitions in the last four years. In fact, since it's listing on the Toronto Stock Exchange, Canopy has acquired 17 other firms for a total value of $514M CAD[1]. The company currently operates 7 facilities totalling 728,000 square feet and currently have 8 development projects, slated to come into operations by 2019, that would add another 4,932,000 square feet of production space

[1] Capital IQ data retrieved April 21st

[2]Macroeconomic analysis report on Cannabis.

Fig3: Canopy Growth Operating Facilities

Facility	Type	Approximate size (Sq ft)	Status	Anticipated completion
Smith Falls, ON	Indoor	450,000	168,000 sq ft licensed + Development Project Underway	CY 2018
Niagara-on-the-Lake, ON	Hybrid Greenhouse	1,000,000	168,000 sq ft licensed + Development Project Underway	CY 2018
British Columbia, site 1	Hybrid Greenhouse	1,300,000	Development Project Underway	CY 2018
British Columbia, site 2	Hybrid Greenhouse	1,700,000	Development Project Underway	CY 2018
Mirabel, QC	Hybrid Greenhouse	700,000	Development Project Underway	CY 2018
Newfoundland	Indoor	150,000	Potential Sites Being Evaluated	CY 2019
Edmonton, AB	Indoor	100,000	Development Project Underway	CY 2019
New Brunswick	Indoor	50,000	Development Project Underway	CY 2018
Yorkton, SK	Indoor	60,000	Licensed	
Bowmansville, ON	Indoor	75,000	Licensed	
Creemore, ON	Indoor	15,000	Licensed	
St. Lucien, QC	Indoor	10,000	Licensed	
Scarborough, ON	Indoor	50,000	Licensed	
Total		**5,660,000**		

Source: Canopy Q3, 2018 Financial Statements

In February 2018, Canopy announced that it successfully completed an over-subscribed treasury share offering on the Toronto stock exchange, raising $250M CAD. The proceeds of this stock offering will be primarily be used to fund financing growth projects over the next

18 months, according to Jordan Sinclair, the Company's communications director. Canopy's current strategy is to focus both on domestic and international expansion through acquisitions and development of production sites. The funds raised are central to Canopy's continued operations, as the Company remains highly unprofitable to this day.

2.2 Cannabis Industry:

Firstly, one must define the industry in which Canopy Growth Corporation falls into. Considering Canada is the first G20 nation to be legalizing recreational marijuana use on a national scale, the industry finds itself at a crossroads, and essentially in uncharted territory. For this reason, the majority of this analysis shall be based on the assumption that marijuana producers will naturally diversify their operations and expand to the recreational market. As such, the cannabis industry can be composed of two distinct segments: Medical and Recreational, both part of a single overarching industry. Secondly, defining what kind traditional market cannabis producers most resemble can be difficult, as they present characteristics of several current industry sectors.

At their inception, marijuana producers, also know as "Licenced Producers" or "Growers", have been categorized as "Pharmaceutical" companies, given their end product is in fact a form of medication and is controlled similarly to a restricted substance. This classification is mostly used by the financial industry. However, these businesses do not operate as normal pharmaceutical producers and resemble much more agricultural firms with high levels of perishable inventories and large, physical infrastructure. As such, marijuana producers have different reporting standards under IFRS that have cause much confusion in the market (Owram 2018) than a pharmaceutical company and cannot be valued as such. In essence, marijuana producers in Canada are the creators of a new market segment with the distinct characteristic of several industries, which is why cannabis should be considered its own specific industry.

The strict production standards and regulatory environment closely mirror the pharmaceutical industry. Their operations can only be classified as being an agricultural commodity business as dry bulk cannabis is grown, harvested and processes like any other crop business would be. Where licenced producers differ from agricultural firms is in the processing of their crops. In essence, dried cannabis is a commodity crop with low costs of

production and a relatively low value. This is why producers have branched out into the production of value added products and the design of new derivatives of the cannabis plant. The extraction of the chemical compounds tetrahydrocannabinol (THC) and cannabidiol (CBD) have allowed companies to infuse food, cosmetics, supplements and a wide array of other value added products with the desired cannabinoid properties. Producers have recognized this reality and have diversified their operations to take full advantage of these opportunities. They have, over the past several years, gone through an acquisition spree and made forays into the consumer goods segment. While these products are currently considered controlled substances and are only sold to patients holding a medical prescription, they will be available to the general population and the adult consumer market following the opening of the broader Canadian market. This explains why vertically integrated marijuana producers should be categorized as their own industry within the consumer staple sector, similarly to tobacco, food or alcohol companies.

Understanding how these firms operate is crucial to determining the companies overall operating risks and their idiosyncratic risk with regards to financial market. This analysis will be touched upon during financial modeling as it is key to determining the company and industry's over all beta.

The Canadian Government has determined that the operations of cannabis producers warrant their own industry classification and that this new cannabis industry should be included in the country's national accounts. The cannabis industry will now feature in the Canadian System of Macroeconomic Accounts and contribute to the country's Gross Domestic Product. (Statistics Canada 2018).

2.3 Historical perspective of the Medical Marijuana segment:

The use of cannabis, varietals of hemp containing psychoactive ingredients such as THC and CBD, has been outlawed in Canada since the 1920's following the creation of the Narcotics Drug Act Amendment Bill. This specific piece of legislation prohibited the used of most major drugs such as marijuana, cocaine, opium, heroine, etc (Rough 2017).

During the tail end of the 1960's, the Canadian federal government commissioned the Dain Commission to study the effects of Non-Medical drug use. The commission's findings

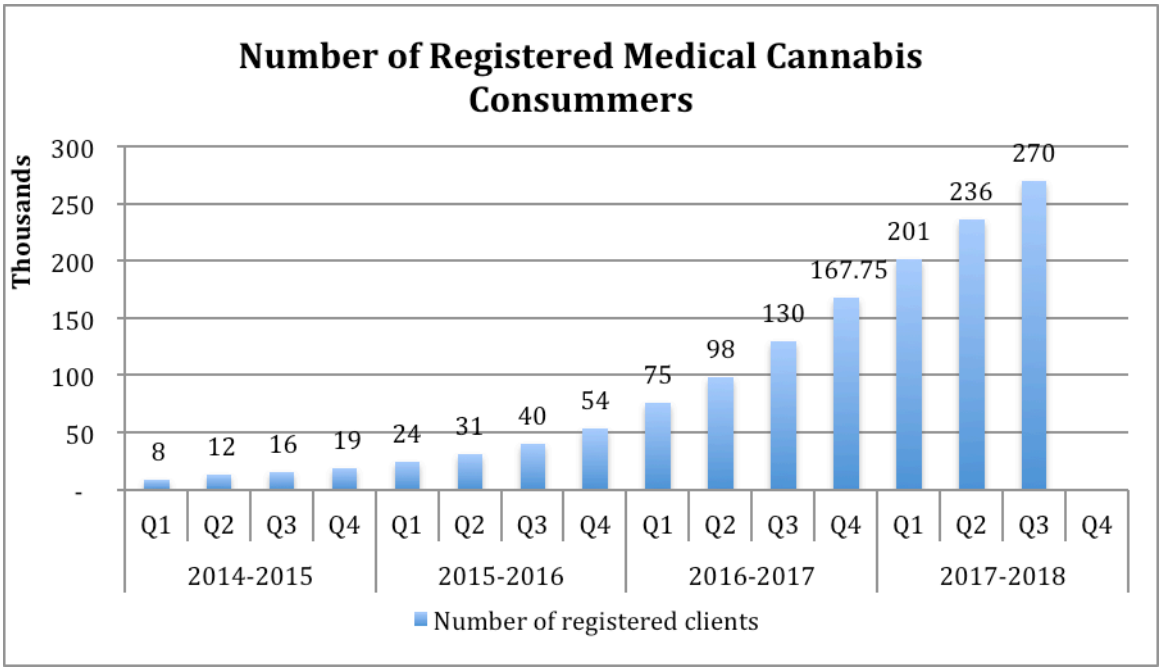
pointed towards the possible benefits of decriminalization of cannabis; however no legislative actions were undertaken. In 2000, a court ruling from the Ontario court of appeals overturned a previous decision and rendered the prohibition of cannabis unconstitutional, as it constituted a form of medical treatment for the respondent, and in such limiting the drug's access infringed upon the claimant's constitutional rights to healthcare. In 2001, the Canadian Government enacted the Marijuana for Medical Access Regulation, which in short granted medical patients access to grow their own medical marijuana or to purchase it from licenced growers. And so, a new industry was born.

Since then, medical use of cannabis has also grown throughout the European Union, Israel, Australia and a majority of US States. The industry has grown to a thriving industry (Canopy a 2018).

In the 2013, the Canadian government allowed private enterprises to participate in the production of cannabis for medical purposes leading the way to the founding of companies such as Canopy, Aurora and the other major players in the newly formed industry.

As of the end of the calendar year 2017, the number of Canadians using medical marijuana may represent less than 1% of adult Canadians, however the industry has seen strong growth according to research conducted by the Canadian government. In December 2017, there were 269,502 registered consumers, compared to 174,503 at the start of the year, an increase of 54%. The Associated Press (2012) reported that Health Canada estimated the market will eventually grow to 450,000 people by 2024.

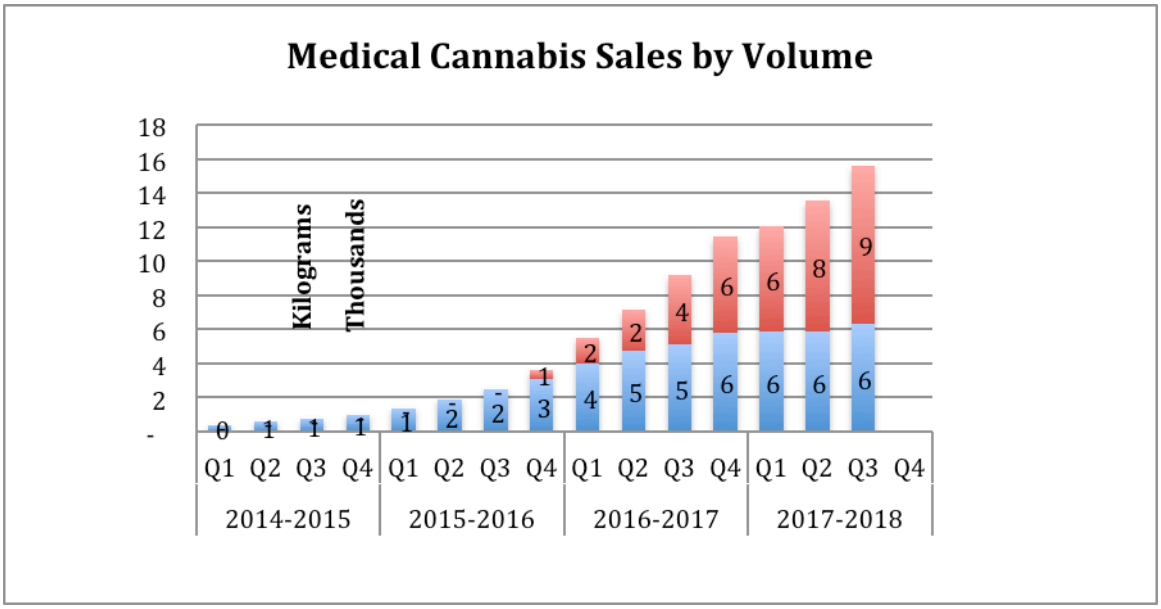
Fig4: Number of Registered Medical Cannabis Consumers



Source: Data compiled from Health Canada reports.

By volume, sales of medical dried cannabis increased 614%, growing from 2,772kg to 19,780kg between 2014-2015 and 2016-2017. Furthermore, Health Canada reports 2017-2018 is also poised to outpace previous years as medical marijuana sales for the first 9 months were 18,143kg. The volume of cannabis oil has seen an even more astounding growth going from 584kg in 2015-2016 to 13,702kg in 2016-2017, with sales for the first 9 months of the present reporting year passing volumes of dried cannabis at 23,137 kg. At an average price of $7.6 per gram of dried weed and weed equivalents, that put the value of the Canadian market around $400M CAD for 2017-2018 Health Canada's estimates the total market size to grow to $1.3B CAD by 2024 according to the Associated Press (2017).

Fig 5: Medical Canabis Sales by Volume



Source: Data compiled from Health Canada

2.4 Legalization of Cannabis and Capital markets:

The Liberal government of Canada, in 2016, announced its plan to legalize marijuana for recreational use. This legislation has been in the works for the last 2 years, and if all goes to plan, the consumption, production and transformation of cannabis for recreational purposes will be legal in Canada by July 1st 2018, just in time for the 151st Canadian national day. This deadline may be rather optimistic given the current progress the aforementioned regulation in the Canadian Senate.

The proposed new law, The Cannabis Act, would change the status of plants of the Cannabis genus from controlled substances under the Canadian Controlled Substances Act (CDSA) and would permit the sale, possession and consumption of pot, and marijuana derived products by people over the age of 18. The current medical marijuana regulation would remain unchanged (Government of Canada 2017).

2.5 Sale of Recreational Cannabis

The sale of dry cannabis buds, oils, and various other derivatives and infused products will be permitted to all Canadians over the age of 18, or 19 depending on the province of sale, similarly to alcohol. The organization of the sales infrastructure and regulation will be attributed to the different provinces and territories of Canada. This, in theory, means the Canadian market is opened to roughly 28 million consumers scattered from one ocean to another. Asserting that the market for cannabis is composed of the entire adult population is rather misleading. A survey conducted by the Canadian Government (c 2018) found that roughly 12% of the population consumes cannabis for recreational purposes already. This statistic however, should present several issues, including the fact that it was based on self-identification surveys, which inherently include high levels of bias. The legalization of these products should lead this number to increase significantly but one should not include the entire population in this estimate.

Through provisional provincial legislation, we now know that most Canadian provinces will be regulating the sale of cannabis through government run enterprises, most of which are linked to their provincial liquor boards. These provincial crown corporations will be responsible for purchasing cannabis products from the Licenced Producers and will then distribute it throughout their respective jurisdictions. Both Quebec and Ontario, Canada's most populous provinces have limited the sale of cannabis through their government run stores and capped the number of initial stores to ensure orderly roll out of the new products. In Alberta and BC, however, the provincial boards will allow the sale of cannabis in private stores but will still retain their role of distributor to these stores according to the CBC (2018).

What this indicates is that currently, the most important growth factor for Licensed Producers is their ability to win purchasing agreements with provincial regulators. This implies two things, the first of which is that high levels of compliance with regulators are in everyone's best interests. And two, being a least cost supplier is crucial to growth strategies, as most governmental contracts are attributed according to strict rules, which fundamentally ends up being tied to price. This being said, each province will be allocated and controlling their purchasing separately will make it even harder to estimate sales growth for any given player within the market. It is also possible that provinces will support LPs with local production facilities, which would help to support local economies. This can favour larger

producers who have the resources to build greenhouses across the country. Furthermore, all sales by licensed producers are going to be on a wholesale basis, which translates to significantly lower margins for the Licensed Producers than if they had the option to have their own retail locations.

Fig 6: Provincial Cannabis Regulation Breakdown

	Population	Legal age	Number of retail outlets	Governmental outlets	Private Outlets	Online Sales
Alberta	4,300,000	18	no limit	Yes	Yes	Yes
British Columbia	4,800,000	19		Yes	Yes	
Saskatchewan	1,200,000	18				
Manitoba	1,300,000	19		Yes	Yes	
Ontario	14,200,000	19	40 and 150 by 2020	Yes	No	Yes
Quebec	8,400,000	18	15 and 150 by 2020	Yes	No	Yes
New Brunswick	760,000	19	20	Yes	No	Yes
Nova Scotia	954,000	19		Yes	No	Yes
Prince Eduard Island	152,000	19		Yes	No	Yes
Newfoundland	529,000	19		Yes	Yes down the line	Yes
Yukon	39,000	19	1	Yes	Yes	Yes
Northwest Territories	45,000	19		Yes	Yes	Yes
Nunavut	38,000	Expected to be prohibited	N/A	N/A	N/A	N/A

(Data from: Associated Press & BNN)

The Province of Quebec has come out as one of the first provinces with a real purchasing strategy. They will be allocating nearly 62,000kg of Cannabis to 6 different LPs. The stipulations of these agreements have not all been made public however, recurring information seems to indicate that the LPs have agreed to base purchase quantities and fixed durations of possibly 3 years (Rendell 2018). This can give us a base indication as to the possible initial size of the Canadian Cannabis market as the province of Quebec does represent nearly a quarter (22,87%) of the Canadian population. This would put the total volume of the Canadian market around 271,000kg. Industry analysts (Shenfeld 2016 p.7), however estimate the market to be somewhere in the rage of 770,000 kg.

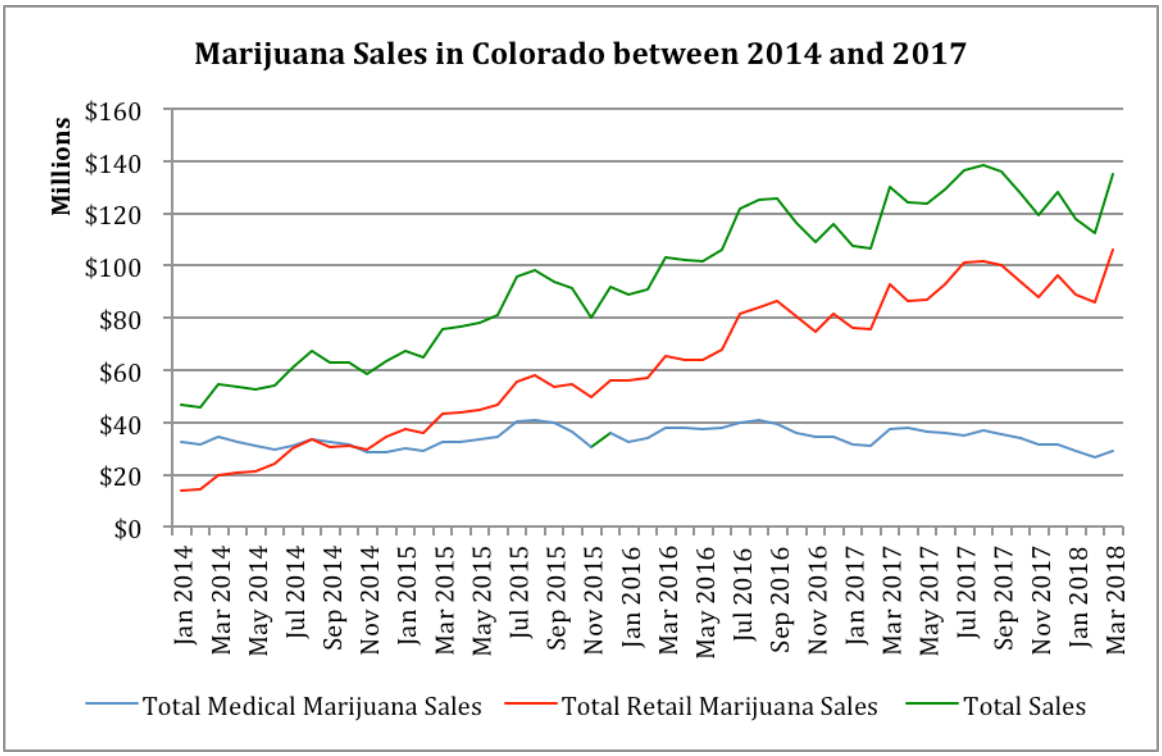
It is important to note that all products will have to be sold in generic packaging, similarly to tobacco products, to dissuade young consumer and minors from smoking. However, this regulation will be less stringent than it is for the tobacco industry. This will have an important impact on how firms differentiate themselves from the rest of the industry (see competitive landscape section). With regards to dry bulk cannabis, as previously mentioned, is a commodity product, meaning firms will need to either invest in R&D to develop specific new varietals with different properties, or will need to become least-cost to win over the recreational consumers. In fact Ouellet, Macdonald, Bouchard, Morselli & Frank (2017) found that cannabis consumers displayed price sensitivity. Their results demonstrated that the Canadian market has price elasticity of demand between -0.42 and -0.60, meaning that a 10% variation in price would lead to an inverse movement of demand between 4% and 6%. When considering this and the fact that marketing initiatives are will be limited due to Bill C-45, on cannabis packaging, the risk of substitution is quite high.

The Canadian Government conducted a comprehensive study in 2017, and estimated the total value of the cannabis industry in Canada to be worth roughly $5.7B CAD. Others place the value of the market between $4.9B and $8.7B (depending on average price per gram) and that the economic windfall considering all ancillary industries linked to cannabis production (infrastructure construction, testing labs, security services) would be in the range of $12B to $22B CAD (Deloitte 2017). To put things into perspective, these estimates place the cannabis industry on par with the Canadian spirits market. A gold mine of sorts for both government revenues and market potential.

Another proxy for estimating the direction of the Canadian market could be to analyse the recreational market in US states that have legalized cannabis. In the Public Safety Canada

report “Price of Cannabis in Canada”, the authors (Ouellet, Macdonald, Bouchard, Morselli & Frank 2017) base themselves heavily on data collected by US governmental agencies to establish market trends and characteristics that could be applicable to the Canadian market. Therefore a relevant example could be Colorado, the first state to fully legalize recreational cannabis in 2014. Despite having a population of approximately 5.6M people, (Government of Canada d 2017) it represents one of the only sample market that has collected enough information on the industry to present actual trends. Data compiled by the Department of Revenue of Colorado shows that the recreation sales presented a 53% annual compounded growth rate between 2014 and 2017 (Government of Colorado 2017). Furthermore, their data indicated that medical sales had started to stabilize and even decrease throughout the observed period. This is indicative that perhaps, medical users switched to legal cannabis due to its higher availability and the increased variety of products in the market.

Fig 7: Marijuana Sales in Colorado



Source: Colorado Department of Revenue

2.6 Market Dynamics:

The cannabis industry today has two distinct types of licenced producers within the market. The first model being the large licensed producer. LPs will be vying for the main share of the market, producing a wide range of products in high volumes with the goal of being least cost producers. Their product being a commodity, their growth depends on the growth of sales as a whole and the reduction of their operating costs. These producers face risks linked to steep competition and price volatility, as well as contract attribution by the provincial governments who will buy the products.

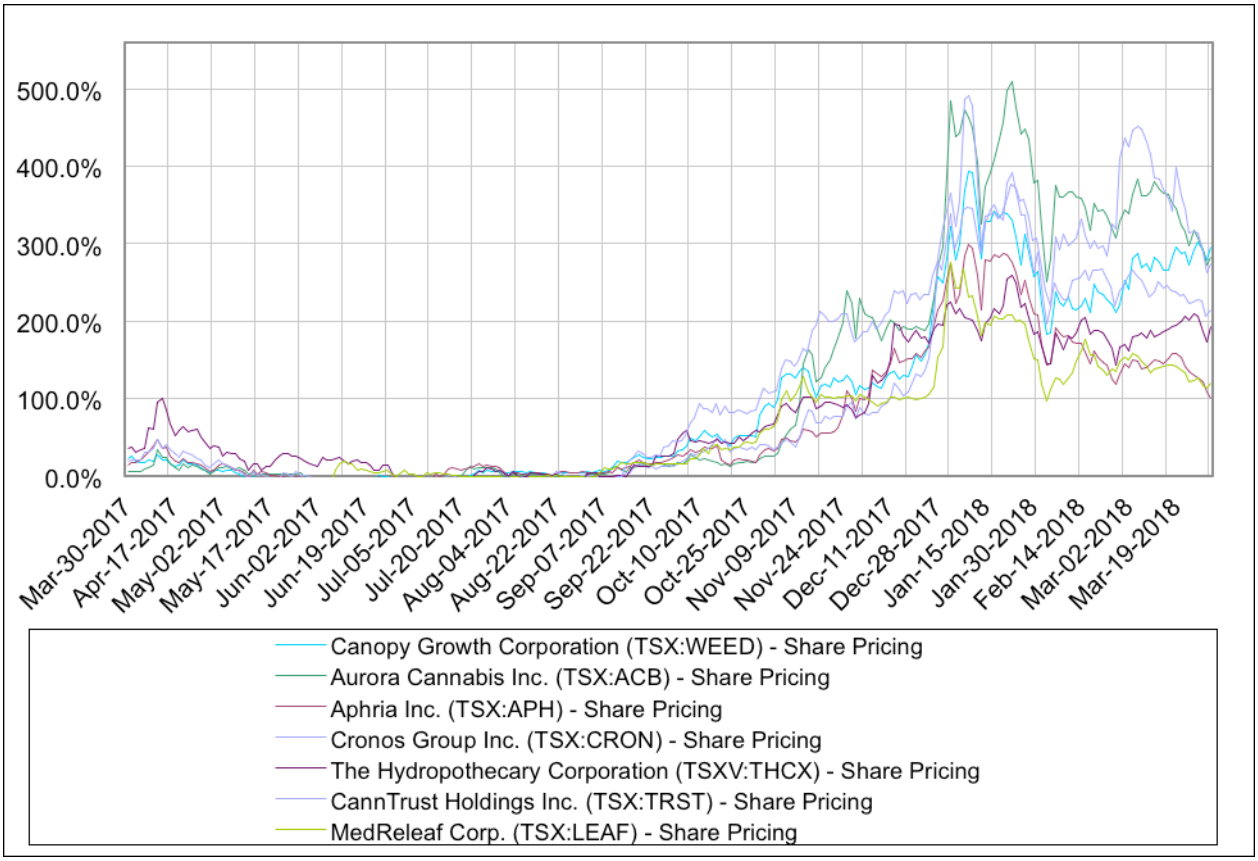
The second model is that of the niche or specialized producer. These are LPs that cannot compete on scale but look to differentiate themselves through specialized products, which would garner high sales prices. These niche producers, face many risks through competition and also face the risk of being acquired by their larger competitors.

Canopy falls under the Large LP category. Their main competitors within the market are Aurora Cannabis Inc. (TSX: ACB), Aphria Inc. (TSX:APH), MedReleaf Corp. (TSX:LEAF), CannTrust Holdings Inc. (TSX:TRST), Organigram Holdings Inc. (TSX:OGI), The Hydropathecary Corporation (TSX:THCX), and Cronos Group Inc. (TSX: CRON).

The prospect of full legalization has sent an incredible influx of investment into the market. Cannabis producers have seen considerable growth in market value over the past year, with an average increase in share price of 211.8% among the largest producers. Once a novel investment vehicle, weed stocks, as they are colloquially known, have gained investor support and are more popular than ever[2].

[2]Macroeconomic analysis report on Cannabis.
ttps://www.baystreet.ca/articles/research_reports/fundamental_research/Canadian-Marijuana-Industry-Overview-Final.pdf

Fig 8: Stock returns of the top 5 listed Licenced Producers, by market capitalization, between March 30th, 2017 and March 29th, 2018:



Source: CapitalIQ – compiled by Author

2.7 Market consolidation:

These large players have also adopted the strategy to grow through acquisitions. In fact, Canopy's largest competitor, Aurora, has conducted 7 acquisitions since its original listing on the TSX (a reverse take-over of Prescient Mining Corp in 2014) totalling $1.49B CAD. The most notable of which was the take-over of CanniMed Therapeutics, Inc. valued at $1.11B CAD, the largest acquisition in the market to date, according to CISION Newswire (2018). This shows that even some of the largest LPs are not safe from take-over bids. Aurora is positioning itself to be the largest producer in the market. This not only allowed them to acquire an established customer base of medical cannabis clients but also to increase their production capacity.

3. Methodology

There exist several ways many ways to evaluate the value of a publicly traded company. These techniques theoretically take into account all publicly available information to determine a fair value for an enterprise currently traded on a stock exchange. Financial theory identifies two major approaches to stock valuation: fundamental valuations and relative valuations.

3.1 Absolute Value approach:

Absolute or intrinsic value approaches take into account the firm's distinct financial performance and characteristics such as dividend rates, growth, cash flows, retained earnings, etc. Through this approach one can use several other models to arrive at a valuation estimate for the shares of the company. The most common techniques include the dividend discount model (DDM), discounted cash flow model (DCF) and asset based valuations.

3.1.1 Dividend Discount Model

Dividend Discount Models quite simply discounts the future dividends paid out by the firm to determine its fundamental value to an investor. The accuracy of this model is predicated on the analyst's ability to predict future dividend policies for the firm and the appropriate discount rate to use. DDMs are rather unreliable as not every company pays out dividends nor can future dividend policies be forecasted. This model should not be utilised given the current exercise.

In the case of Canopy and marijuana producers, DDMs would prove highly ineffective seeing as they are companies focused on growth. Firms in that stage of the lifecycle, such as Canopy and its peers, are highly unprofitable, as well most of them are still raising capital to fund their on going operations. Koller, Goedhart and Wessels (2015)[3], indicate as well that Dividend policies are also a signalling mechanism to investors that management no longer

[3] Koller, Goedhart and Wessels, "*Valuation, Measuring and Managing the Value of Companies"University Edition",* Mickensey & Company, USA, page 98.

believes in its ability to conduct value-creating projects. DDMs should therefore not be used with regards to valuing a growth stock such as Canopy.

3.1.2 Discounted Cash Flow Model

The DCF looks to calculate the present value of future cash flows. The reasoning behind this being that a firm's value is the Net Present Value (NPV) of its future cash flows. This methodology allows for detailed modeling of cash flows, which represent the key value driver when determining the value of a firm. There are however some limitations to these absolute valuation models. A company's current lifecycle stage may not lend itself to a discounted cash flow method. For example, early stage, pre-revenue companies or even distressed firms will not necessarily report positive financial results, which when applied within a DCF return negative valuations, and which is categorically incorrect. DCFs represent the most concrete and accurate representation of a firm going forward as you are able to model out cash flows, and set clear and precise estimates and assumptions. This would be the ideal method used to determine absolute value for a firm. The granularity that this method provides may, however, also lead to significant risk of human error linked to assumption selections.

There exist several types of DCF models, which will use different performance measurements as well as different discount factors. Koller, Goedhart and Wessels (2015), outline the various in the most common models used by academics and industry professionals alike, in their reference text "Valuation" sixth edition. (See table)

Fig 9: Framework for DCF-Based Valuations

Model	Measure	Discount factor	Assessment
Enterprise discounted cash flow	FCF	WACC	Works best for projects, business units, and companies that manage their capital structure to a target level
Discounted Economic Profit	Economic profit	WACC	Explicitly highlights when a company creates value
Adjusted Present Value (APV)	FCF	Unlevered cost of equity	Highlights changing capital structure more easily than WACC-based models
Capital Cash Flow	Capital cash flow	Unlevered cost of equity	Compresses free cash flows and the interest tax shield into one number, making it difficult to compare operating performance across companies and over time
Equity cash flow	Cash flow to equity	Levered cost of equity	Difficult to implement correctly because capital structure is embedded within the cash flow. Used when valuing financial institutions.

Legend: WACC = Weighted Average Cost of Capital, FCF = Free Cash Flows, Economic profit = Invested Capital x (Return on Invested Capital – WACC)

3.1.3 Frameworks of DCF Valuation:

To be concise and not regurgitate previous academic reference materials, I have chosen to compare the implications of WACC and APV methods and forgo Capital cash flow and equity cash flow models as they do not fit the realities of the present exercise.

3.1.4 Weighted Average Cost of Capital (WACC – methods)

One of the main methods used in a DCF model is to use a Weighted Average Cost of Capital method to discount future cash flows to the present date. (ie Enterprise Discounted Cash Flow or Discounted Economic Profit models). The WACC discount factor does require certain assumptions to hold for the model to function correctly.

Firstly, the model assumes cash flows are perpetuities, an often-unrealistic prediction. Secondly, it assumes a fixed corporate tax rate and lastly it follows the assumption that the firm maintains a constant leverage ratio. As firms progress through their life cycles, their capital structures are destined to change as well.

In the case of Canopy, the company is currently in a growth phase and are part of an industry that is still developing. The industry being in its infancy and seing as legalization has yet to come there is not clear that there is an optimal capital structure or debt to equity ratios for the industry. Using a static model with a constant leverage ratio therefore poses a problem.

3.1.5 Adjusted Present Value (APV – Method)

The Adjusted present value approach utilizes the same free cash flow approach as an enterprise DCF; however, the Firm can be valued in two sections, the Enterprise Value of the unlevered as well as the Present Value of Tax shields generated from financial leverage.

$$APV = Vu + PVTS$$

This method utilises a different discount factor for each section. The EV for an all equity-financed firm is calculated as the NPV of free cash flows discounted by the cost of unlevered cost of equity (Ku) and a discount factor relative to the present value of the interest tax shield (Ktx). This method as outline above in the table better suits valuing companies with changing capital structures.

In the case of Canopy, it is clear that the company's capital structure will change in the short-run. At the moment the company has little to no debt and continues to raise equity through share offerings. A public debt offering is surely in the cards for Canopy. This is why an APV valuation would make sense for the company. It is important to note however that modeling a news debt levels would be a nothing more than a guessing game.

3.2 Relative Value approach:

The second approach is a comparative evaluation of the stocks value based on key metrics called a multiple-valuation. By following this approach one must look at key ratios and performance multiples of comparable firms or of the industry as a whole to determine the fair value of the stock.

A significant risk linked to comparative valuations is the peer selection criteria. One must identify firms with similar risk, growth and cash flows. This being said, relative valuations can be useful in certain situations such as for early stage firms, as they might have negative operating income. This method is used in Private Equity and Venture Capital markets where you don't have share prices. Comparative valuations also use far fewer assumptions than a DCF, which ultimately in a certain way limits the risk of including faulty or biased parameters within the financial model.

In public markets, analysts principally use the price-to-earnings ("P/E") multiple as their key ratio, however this may be an over simplification of the model for our purposes. This methodology does not include many of the subtle intricacies required for a fundamental valuation of a company in the context of making an investment decision and establishing a share price. A more realistic approach would be to use Net Enterprise Value ("NEV") divided by Earnings before interest taxes, depreciation and amortization ("EBITDA") or by Net operating profits less adjusted taxes ("NOPLAT").

$$Equation\ 2: \frac{NEV}{EBITDA}$$

$$Equation\ 1: Price\ to\ Earnings = \frac{P}{E}$$

$$Equation\ 3: \frac{NEV}{NOPLAT}$$

3.3 Model Selection:

The choice between fundamental or relative valuation is a no brainer. Although multiple-valuations could be effective for the early stages of an industry, the immaturity of the newly minted Cannabis industry and lack of consensus in the market relative to cannabis producers' valuations and capital structures allows us to determine it would be impossible to establish an accurate peer group with consistent ratios necessary for using a relative valuation. Furthermore, multiple based valuations do not offer the granularity required for the nature of this paper. At this stage in the industry's life cycle a relative valuation would be similar to a scatter shotgun and the DCF would be an accurate riffle.

Question remains, which DCF to use. The enterprise cash flow methods, which uses FCFs discounted by the firm's WACC, or the Adjusted Present Value model, which uses the cost of unlevered equity as a discount factor. Canopy will be evaluated using both methods and the results will then be compared.

4. Canopy Growth Corporation Company Analysis

4.1 Competitive environment:

Canopy Growth Corporation was one of the first licenced producers to enter the medical marijuana market in 2014. Since then they have grown extremely quickly. At the moment there are approximately 100 Licensed Producers in Canada.

4.2 SWOT Analysis:

4.2.1 Strengths:

- Canopy's greatest strength remains its size. Canopy currently has the largest production footprint amongst its peer group, allowing them to achieve significant economies of scale and allows them to be one of the least cost producers in the space. This is paramount in a commodity product environment.
- The second strength of Canopy is their positioning as a vertically integrated company, with operations from genetic diversification all the way to the production of cannabis derived consumer staples. This allows them to control the entire production chain and to offer higher margin, value added products.
- Canopy also was one of the best-established brands in the cannabis space. Tweed, its former namesake has positioned itself as one of the most recognisable brands in the cannabis market. Tweed has been trying to transcend the pharmaceutical market to establish itself as a lifestyle brand as well.
- On October 30th, 2017, Canopy entered into a strategic partnership with Constellation Brands (NYSE:STZ) a producer and marketer of alcoholic beverages. In return for a 9.9% equity stake at the time (valued at $245M CAD), Constellation Brands would provide analytical support, branding expertise and strategic help with the consumer beverage markets. Furthermore, Canopy has also been able to foster important relationships with public figures such as the rapper Snoop Dogg, through his business Merry Jane, a cannabis lifestyle company and information network. These initiatives drive Canopy's brand image, which can hopefully increase consumer engagement and build fidelity.

- Canopy has been able to establish itself across the country with several production facilities. This facilitates transportation, increases capacity and facilitates distribution but also gains favour with provincial government who are responsible for the wholesale purchasing of recreational cannabis for their regions.
- Canopy has established a very responsible financial position. During its rapid growth period, the company has been able to access capital extremely easily by raising equity. This has allowed them to limit their leverage, and reduce their financial risk.
- Canopy has developed a strong R&D portfolio, which has the capacity to develop new strands of cannabis to fit the diverse needs of its clients.

4.2.2 Weaknesses:

- Canopy has grown extremely quickly thanks to large scale funding rounds. In total Canopy has issued nearly $1B CAD in equity. This has lead to rapid growth, and low financial risk, however this has also lead to the significant dilution of original shareholders within the firm.
- The firm seems to rely heavily on stock based compensation to attract and compensate their top management. In fact, stock based compensation represents nearly 50% of total revenue (first 9 months, ending December 31, 2017). Even though this does not represent actual cash based expenditures, it does present a clear signal to the market that Management is perhaps over compensated or too focused on paying themselves out versus ensuring the success of the firm.

4.2.3 Opportunities:

- Canopy is well positioned in the market to continue to grow through organic sales but also through acquisitions. Smaller producers will have a harder time competing at scale with Canopy, making them easy targets for corporate takeovers. This is coupled with low interest rates in the Canada, which means that there is both an abundance of cheap capital and opportunities for consolidation. Furthermore, Canopy's aversion to debt and strong cash reserves will facilitate potential acquisitions in the future.
- Its position and recognition worldwide means that should new markets open to the recreational cannabis sector, and that Canopy's expertise should give it a clear

advantage in the international market. Furthermore, the Company is already operating through subsidiaries in Europe and Australia.

4.2.4 Threats:

- Canopy's largest competitor continues to grow organically but most importantly through acquisitions. The current M&A environment means there is an inherent risk of take-overs in the market. A consolidation also translates to higher price competition within the market as producers look to bring down production expenses through scale.
- Uncertainty surrounding the official regulation in Canada and the official legalization still casts doubts over the market. The start date for selling recreational cannabis, initially July 1st, 2018 seems to be rather optimistic at the moment.
- International regulation ambiguity, such as in the US, lead to more difficult financing through debt and American banks, and limits the overall shareholder pool as institutional investors shy away from the sector. Furthermore, difficult regulatory environment in the USA make it impossible for Canadian LPs to enter in the US market due to strict securities laws. These however preclude licensing of intellectual property.
- The relatively low barriers to entry in the market, and large upside potential mean that more and more players will look to enter the cannabis market, which will ultimately lead to increased supply and a lower market price of their final product.
- Low product differentiation steaming from plain product packaging regulations means that consumers will be highly influenced by price.

4.3 Purchase orders

To date, Canopy has reached several agreements with provincial regulators for the wholesale of cannabis products. As mentioned in the market dynamics section these provincial sales represent the future revenue streams for Licenced Producers in the recreational market. As of the 31st of March 2018, Canopy had received four letters of Intent or Memorandums of Understanding (MoU) from provincial cannabis associations (Canopy a 2017).

Though the purchase price for these agreements has yet to be disclosed, we do know the volumes that Canopy will be supplying. The province of Quebec has stated its intent for purchase 12,000kg, and up to 25,000kg per year over a period of 3 years. The province of Newfoundland and Labrador will look to purchase a minimum of 8,000kg per year. The province of Prince Edward Island (PEI) issued an MoU for 1,000kg, and New Brunswick has issued an MoU of 4,000kg.

Fig 10: Provincial Purchase Orders

Provincial Purchase Orders		
Provinces	**Quantity Supplied (Kg)**	**Length of contract (Years)**
New Brunswick	4000	3
Newfoundland & Labrador	8000	2
PEI	1000	2
Quebec*	12000	3
Total	25000	

Source: Canopy Q3 Financials and Capital IQ

These agreements represent the foundation for our modeling of recreational cannabis operations revenue going forward. However, there still remain questions as to the status of Canopy's sales in the remaining Canadian provinces and territories. At an average price of roughly $6.5/gram, these 4 provinces alone would represent yearly sales of $162.5M CAD, more than four times its current medical sales for the financial year 2017 and roughly three times its sales for the first 9 months of FY2018. This demonstrates the exponential growth that Canopy and its competitors are expected to experience over the next few years.

The central difficulty remains in estimating their sales in the other Canadian provinces as there are really no way to assign sales volumes to contracts that have not been attributed. This being said, as the largest licensed producer in Canada, Canopy's ability to secure

agreements is rather probable. This is thanks to their long-standing cooperation with regulators and their broad network of growing facilities across the country.

4.4 Financial Summary

Canopy's sales have increased exponentially since it started its operations in 2014, going from $1.9M in 2015 to $39.9M in 2017. The company's year-to-date Q3 2018 results show that they were able to grow sales by 130.6% compared FY 2017 results. This increase is indicative of the strong growth within the medical marijuana sector, as these figures have yet to include any sales of recreational products.

Fig 11: Financial Highlights

Key Financials (Millions of CAD)				
For the Fiscal Period Ending	**FY 2015**	**FY 2016**	**FY 2017**	**Q3 2018**
Total Revenue	**1.9**	**12.7**	**39.9**	**55.1**
Growth Over Prior Year	*NA*	*569.5%*	*214.2%*	*130.6%*
Gross Profit	**2.3**	**19.0**	**38.7**	**67.0**
Margin %	*119.2%*	*149.5%*	*97.0%*	*121.5%*
EBITDA	**(6.1)**	**0.9**	**(0.7)**	**(13.6)**
Margin %	*NM*	*7.3%*	*(1.7%)*	*(24.7%)*
EBIT	**(6.6)**	**(1.3)**	**(6.7)**	**(28.8)**
Margin %	*NM*	*(10.4%)*	*(16.8%)*	*(52.2%)*
Net Income	**(7.5)**	**(3.5)**	**(7.5)**	**(8.8)**
Margin %	*NM*	*(27.5%)*	*(18.9%)*	*(16.0%)*

Source: Canopy Q3 Financials and Capital IQ

An interesting observation is that the company's gross margin figures are nearly 99.6%. This is solely due to IFRS reporting standards. Seeing as their products are technically agricultural produce, accounting rules oblige companies to account for changes in fair value of biological assets[4] when computing their gross margin. By capitalizing fair value changes in biological assets and inventory, companies are essentially counting their chickens before they hatch. These changes fluctuations in fair value are linked to increased production and inventory size, which will eventually be smoothed out when cannabis companies reach stable production levels. However for now, these line items have the effect of seriously overstating the financial performance of the firm in question. This problem is in fact endemic to the industry, and will require further adjustments when modeling revenues. (See financial adjustments).

Furthermore, Canopy is currently unprofitable; with the company presenting a negative Net Income figure since its inception. Losses in 2018 are particularly high due to several factors, but most notably from stock-based compensation to employees, which amounted to nearly $34.3M, or, more than 50% of sales during the LTM ending Q3 2018. This was due to Canopy using stock based incentives linked to acquisition milestones. This compensation structure allows them to ensure that management's interests are aligned with Canopy's long-term goals. This being said, they do represent a concerning portion of their total expenditures. However, stock based compensation is not a cash expense and will therefore need to be adjusted for when assessing the company's intrinsic value. (see financial adjustments).

4.4.1 Balance Sheet:

The company has grown its balance sheet significantly over the last year; its numerous acquisitions and investments have led them to increase their assets 7.4x since March 31st, 2016, reaching $1,091M. A large portion of it consists in new facilities with Property, Plant and Equipment having grown to $108M from just 46M in 2016. The largest portion of the increased assets is attributable to goodwill, which represents 24.9% of the company's total assets. The increase in goodwill is attributable to Canopy's strong M&A activity and their preference for acquiring targets with strong brands.

[4]Castaldo, J. (2018) "Canadian Weed Stocks have a serious Accounting problem" *MAcleans Magazine,* retrieved from: https://www.macleans.ca/economy/canadian-weed-stocks-have-a-serious-accounting-problem/ (March 25th 2018)

Fig 12: Presentation of Canopy's Assets

Balance Sheet Balance Sheet as of:	Restated Mar-31-2015	Mar-31-2016	Restated Mar-31-2017	Dec-31-2017
ASSETS				
Cash And Equivalents	21.4	15.4	101.8	237.7
Total Receivables	0.8	1.5	5.8	9.1
Inventory	6.4	27.5	60.7	108.3
Prepaid Exp.	0.8	0.5	3.7	5.6
Other Current Assets	0.0	-	6.7	13.5
Total Current Assets	**29.4**	**44.8**	**178.8**	**374.2**
Net Property, Plant & Equipment	18.1	44.3	96.3	154.0
Long-term Investments	-	-	24.0	141.6
Goodwill	-	20.9	241.4	272.3
Other Intangibles	0.3	32.6	162.3	127.9
Other Long-Term Assets	-	0.8	-	25.1
Total Assets	**47.8**	**143.4**	**702.7**	**1,095.1**

Source: Canopy Q3 Financials and Capital IQ

The Company was able to fund its growth thanks to multiple equity offerings, which has limited their need for financial leverage. This has translated into the firm having total liabilities equal to only $75M, with only $8.8M being interest-bearing loans.

Fig 13: Presentation of Canopy's Liabilities

Balance Sheet as of:	Restated Mar-31-2015	Mar-31-2016	Restated Mar-31-2017	Dec-31-2017
LIABILITIES				
Accounts Payable	4.1	5.9	15.1	24.6
Accrued Exp.	0.2	0.3	0.3	0.5
Curr. Port. of LT Debt	0.2	0.6	1.7	1.5
Unearned Revenue, Current	-	0.5	0.6	0.7
Other Current Liabilities	-	-	-	1.9
Total Current Liabilities	**4.5**	**7.2**	**17.7**	**29.2**
Long-Term Debt	1.7	3.5	8.6	7.3
Def. Tax Liability, Non-Curr.	-	7.4	35.9	38.8
Other Non-Current Liabilities	0.2	1.5	0.8	-
Total Liabilities	**6.4**	**19.6**	**63.0**	**75.3**

Source: Canopy Q3 Financials and Capital IQ

The overall capital structure of Canopy minimizes any chance of financial risk. In fact, the firm has a coverage ratio of 10x. This places Canopy in a strong position to optimize its capital structure down the line and take on debt when financial institutions fully embrace the cannabis industry.

4.5 Key performance Indicators

4.5.1 Average Price per gram:

Ouellet, Macdonald, Bouchard, Morselli & Frank (2017) outlined in "the Price of Cannabis" that the main price determinants for marijuana were quality, transaction volume and

proximity to harvest sites.[5] The average price per gram sold by Canopy reached $8.30/gram in Q3 FY 2018, a 12% increase from the average price for the same period in FY 2017. The average price per gram includes the price of cannabis derivative products, ie oils, and gel capsules. The sale of oils accounted for 23% of the company's total revenue, up from 14% during the same period of the 2016 financial year. Oils and capsules were the main driving factors in the increased average price per gram due to their higher margins. Canopy assumes a conversion ratio of 8ml of oil per gram of dry cannabis. Going forward however, purchase prices will be negotiated by the provinces and will likely fall throughout the industry. This will be due to the fact that LPs will be selling at wholesale prices to the government agencies; which is why companies will need to ensure they can produce at a lower cost then their competitors.

4.5.2 Cash Cost of Production per gram:

The main performance indicator that differentiates large producers has to be the cash cost of production of a gram of cannabis. The major players in the market all seem to report a version of this non-standard, non-IFRS metric slightly differently. However, it remains the best way to evaluate their production efficiency. They have chosen to report the cash expenses linked to the product and adjust for any non-cash provisions that are normally required under IFRS reporting.

Canopy reported in their Q3 2017 financial statements that they had reached a level of $1.03/gram cost before shipping and fulfillment. This is compared to $1.41/gram for Auroraduring the same period and Aphria presented the lowest cost per gram at $0.95/gram for the period ending August 31st, 2017 (their last period reporting this figure) according to data compiled by Cornerstone Investments (2018). Canopy finds itself in the middle ground when compared to its largest competitors.

Over the last year, Canopy has been able to decrease its cash cost of production by roughly 26.9%. The savings were attributable to both their pre and post-harvest expenses. Increased utilization of their facilities, improved plant yields and more efficient oil extraction all were the main contributing factors to the company's cost savings. These production costs are

likely to continue to fall as Canopy's newer facilities come online and they can generate larger economies of scale.

Fig 14: Cash Cost Per Gram of Cannabis

	Q3 2017	Q4 2017	Q1 2018	Q2 2018	Q3 2018
Cost per gram to harvest	0.87	0.86	0.76	0.72	0.59
Post harvest cost per gram	0.54	0.6	0.51	0.53	0.44
Cost per gram before fulfilment	**1.41**	**1.46**	**1.27**	**1.25**	**1.03**
Cost per gram for shipping and fulfilment	1.17	1.44	1.5	1.48	1.5
Weighted average cost per gram	**2.58**	**2.9**	**2.77**	**2.73**	**2.53**

Source: Canopy Q3 Financial Report

Canopy has however seen its weighted average cost per gram remain relatively constant over the same period due to increased investments into their packaging and marketing, which they accounted for in the cost per gram for shipping and fulfilment. Canopy's focus on developing a certain brand image through their packaging has ultimately driven up production costs and affects their bottom line. These costs are likely to remain constant going forward as Canopy's strategy is very brand centric.

4.6 Adjustments to financial statements

As mentioned previously, the cannabis industry presents many intricacies that must be addressed to properly evaluate the financial performance of a firm. Due to reporting standards, the young nature of the industry and a lack of research on the topic, weed stocks' financial reporting do not give the uninitiated investor a clear picture of how well they are doing.

4.6.1 Non-Cash Expenses – Fair Value measures of Biological Assets

Firstly, one must address the issue of miss representative gross margins. In the previous section, it became apparent that publicly listed companies such as Canopy, were obligated to report gross margins exceeding 100%. A value that is both beyond the scope of logic and reason. Under IFRS reporting rules, set out by the International Accounting Standards Board (IASB) and which Canada has adopted, the IAS 41 rule outlines how one should report revenue and expenses related to agricultural operations. Rule IAS 41 (see Annex) indicates that if the company believes that their biological asset will likely be sold then they can capitalize the said asset as revenue prior to the being being harvested. I the case of Canopy, agricultural assets include plants that have yet to be harvested, seeds, and mature plants both harvested and not.

The standard indicates that these assets should included at their fair value, less their cost of harvest, as an unrealized gain on variations in biological assets, as outlined in Canopy's income statement. These changes in fair value can be quite substantial as demonstrated in the table below. These unrealized gains are due to 2 distinct factors, firstly the increased growth of the biological assets from period to period, and the second is the overall change in the number of biological assets. Therefore considering Canopy's major increase in site utilization, ie the number of plants grown increased in its current facilities, plus the increase in production area available, ie the number of production sites, and finally the increase in the overall market price for its biological assets have all lead to Canopy reporting unrealized gain on changes in fair value of biological assets significantly higher than its actual revenue for the given period. As these gains are in fact defined as unrealized, therefore not actually cash in flows, they should be removed from our actual gross margin calculations.

Fig 15: Revenue breakdown & Biological Assets

Income Statement					
For the Fiscal Period Ending (in Thousands)	**Restated 12 months Mar-31-2015**	**12 months Mar-31-2016**	**Restated 12 months Mar-31-2017**	**Last 9 Months Dec-31-2017**
Currency	***CAD***	***CAD***	***CAD***	***CAD***
Revenue	2,371	12,699	39,895	55,142
Total Revenue	2,371	12,699	39,895	55,142
Revenue Growth %		436%	214%	38%
Cost Of Goods Sold	2400	19,722	22,747	23,501
Gross Profit	**(29.00)**	**(7,023)**	**17,148**	**31,641**
Margin %		**-55%**	**43%**	**57%**
Fair value changes in biological assets included in inventory sold and other inventory charges	5721	12,796	39,577	46,339
Unrealized gain on changes in fair value of biological assets	-8576	(38,805)	(61,143)	(81,713)
Gross Margin after fair value impact	**2,826**	**12,060**	**38,714**	**67,015**
Margin %	**119%**	**95%**	**97%**	**122%**

Source: Canopy financial statements 2015-2018 Q3

When adjusting for these unrealized gains we can observe that gross profit margin are in fact more realistic and only include direct cash flows to the firm.

4.6.2 Operating Expenses – Employee Stock Options

The second adjustment to be addressed in the income statement for modeling purposes is relating to operating expenses. The company has attributed significant amounts of employee stock options (ESOPs) as part of managers' compensation packages and as incentives to reaching acquisition performance targets. In Q3 2018, the total ESOP payout represented a non-cash expense to the firm of 28M CAD, or 52% of sale. This can represent a serious red flag for investors as having such important levels of compensation related to M&A activity could lead managers to pay more attention to their milestones and ultimately disregard the long term profitability of the firm.

Fig 16: Employee Stock Option expenses

For the Fiscal Period Ending (in Thousands)	12 months Mar-31-2016	Restated 12 months Mar-31-2017	Last 9 Months Dec-31-2017
Currency	*CAD*	*CAD*	*CAD*
Share based comp.	3,497	8,046	17,708
Growth %		130%	120%
Share Based comp linked to acquisition milestones	-	690	11,228
Growth %			1527%
Total	**3,497**	**8,736**	**28,936**
Percentage of sales %	28%	22%	52%

Source: financial statemets 2015-2018 Q3

4.6.3 Adjustments to Net Working Capital

As defined by Ross, Westerfiel, Jordan and Roberts in "The Fundamentals of Corporate finance", Net Working Capital (NWC), is the difference between current assets and current liabilities of a company. This is a measure of financial performance for the firm as it allows us to observe the company's financial health and future prospect. A positive NWC indicates the company's ability to pay short term liabilities with its current assets. When conducting a DCF, we find Free Cash flows by subtracting Changes in NWC and expenditures from NOPLAT.

The delta NWC indicate cash outflows linked to increases in short-term assets such as inventory or marketable securities, etc. However it also includes Cash and cash equivalents, this poses a problem for Canopy has from year to year, the company has raised substantial amounts of capital, which have partly remained in cash. These cash reserved are earmarked for M&A activity down the line and will ultimately be used to pay for capital expenditures as well. So the changes in Cash reverses will likely skew delta NWC rather significantly which poses a problem for financial modelling. I have decided because of this to consider NWC as a proportion of sales going forward and not include cash inflows resulting from changes in capital structure IE stock sales, or debt financing.

5. Forecasting

I will be preparing and presenting several valuation models and comparing them to determine which presents the best method for valuing a weed stock. AS mentioned in the methodology section, the APV and Enterprise Cash flow models will be the central focus for the analysis however, a brief relative value analysis has also been prepared to have a diverse comparison.

Regardless of which time of DCF used one must first calculate the Free Cash Flows. In the following section, I will run through the major components that make up the FCF and outline my model's assumptions based on the company's financial reports, external sources and academic material.

To arrive at free cash flows, you must identify the Company's Net Operating Profits Less Taxes (NOPLAT), which is compose of Gross Profits, less operating expenses and Cash taxes adjusted for non-cash expenses. From the NOPLAT, we then obtain FCFs by subtracting capital expenditures and changes to net working capital.

5.1 Revenue – Recreational market

To determine the overall revenue for the firm going forward we require 2 key figures: number of grams or gram equivalents sold and the average revenue per gram generated.

To find the number of grams sold, one would have to know which provinces have committed to purchase products from Canopy as well as estimate the future growth of medical marijuana sales. For the moment, Canopy has only reached understanding with the government of Quebec, New Brunswick, Prince Edward Island (PEI) and Newfoundland. These MoUs and LOIs will form the basis of the revenue forecast.

As mentioned previously, Quebec's LOIs can help us estimate a total market size for recreation marijuana. Considering that the province of Quebec represents approximately 22% of the population and it has committed itself to purchasing a minimum of 62,000kg of cannabis products, we can estimate that the Canadian recreational market would be in the area of 271,000 kg of cannabis. Like this we can allocate sales in the market proportionately based on population size.

Fig 17: Sales forecasting by Region

Recreational Market Estimates							
	Population	**Population %**	**2019**	**2020**	**2021**	**2022**	**2023**
Quebec	8,400,000	22.88%	62,000	93,000	139,500	195,300	253,890
New Brunswick	760,000	2.07%	5,629	8,443	12,664	17,730	23,049
Prince Eduard Island	152,000	0.41%	1,126	1,689	2,533	3,546	4,610
Newfoundland	529,000	1.44%	8,000	9,333	10,889	12,341	13,575
ROC	26,876,000	73.20%	194,252	291,378	437,067	611,894	795,462
Canada total	**36,717,000**	**100%**	**271,006**	**403,843**	**602,653**	**840,811**	**1,090,586**
Growth rate				50%	50%	40%	30%

Source: data compiled from Statistics Canada, & Canopy press releases

I estimated that the recreational market would grow by 50% in its first two years, and then by 40% and 30% the subsequent years. In Colorado, the cannabis industry grew 90% in its second year of operations, and by 50% and 30% the following years. Considering the market participants in Colorado were mainly small private enterprises, and not large crown corporations, these small, nimble dispensaries that could increase purchase orders rapidly and fill the growing demand. In the case of Canada, provincial entities will not have the same flexibility to increase their purchases as well as their neighbours to the south. Furthermore, there is a risk that Canadian licensed producers are not able to meet the overall demand in the market due to lag in the production capacity availability. This is why I have limited the market growth to 50% in the first two years of legalization.

Newfoundland, however presents a problem to this methodology. It seems that the youngest Canadian province that accounts for only 1.44% of the population has committed itself to purchase, from Canopy, 8000 kg of marijuana for its recreational market, or almost 3% of the total market. The province is clearly punching over its weight class with regard to its recreational cannabis purchases, for this reason I have decided to throttle its projected growth to a third of the rest of the country (ie. $Xt = X(t-1) * (1+(g(t)/3))$). This being said,

Canopy should hold almost the entirety of the market, as it is the sole producer to be building a growing facility in Newfoundland. Considering shipping and fulfillment already represent 50% of the weighted average cost per gram as per Canopy's Q3 2018 financial results. Canopy should therefore be the cheapest supplier of the province.

Canopy's sales were then split into 5 categories, Quebec, New Brunswick, PEI, Newfoundland, and the Rest of Canada ("ROC"). The four provinces with purchase orders set base sales, and for the ROC we assume that Canopy, being one of the largest producers, and having the most widespread production sites, could secure between 15% and 25% of the remaining market. For simplicity, I assume they will capture 20% market share. Canopy is well positioned to win contract thanks to its production network but also because of its focus on governmental compliance and cooperative research. Following the duration of the 4 purchase agreements, we assume that Canopy's sales will be the higher value between a 20% proportion of the market's cannabis sales, and the size of their previous years sales plus 20% of the market's growth. Quebec is assumed to reach its 25,000kg by the end of the contract.

Fig 18: Key Scenario Presentation

20%	FY 2019F	FY 2020F	FY 2021F	FY 2022F	FY 2023F
Quebec	12,000	18,500	25,000	44,680.12	58,084.16
New Brunswick	4,000	4,000	4,000	5,013.15	6,076.97
Prince Eduard Island	1,000	1000	1,168.86	1,371.49	1,584.25
Newfoundland	8,000	8000	8,311.11	8,601.48	8,848.30
ROC	38,850.41	58,275.62	87,413.43	122,378.80	159,092.44
Canada total	**63,850.41**	**89,776**	**125,893**	**182,045**	**233,686**

5.2 Revenue – Medical Market

Regarding medical marijuana revenue, I modeled 2019 – 2021 with the same growth parameters as the medical market in Colorado, in other words 13%, 7% and -7% growth respectively. This is the main reference available on how the market will react to a recreational alternative. I assert that sales should continue growing but that ultimately patient registration will stall as people seeking treatment will be able to self medicate thanks to a market with fewer barriers to purchases. Following the decline in the third year, I assume growth would be at constant at roughly 3% per annum.

5.3 Revenue – Consolidated

One of the central factors to estimating future cash flows generated by Canopy is to setting a price per gram metric. Now we know that over time, the cannabis market will be flooded with new entrants who have been attracted by the industry's impressive potential. This and the added production capacity in the market will drive down the price per gram of cannabis. As of the 31st of December 2017, Canopy was selling their products at an average price per gram of $8.3 CAD. That is, however, before it will be selling its products wholesale, which will be at a significant discount to the sheer volumes that Canopy will be supplying. Statistics Canada found that in February of 2018, the average price per gram of pot was $6.83 CAD, with the average price for a single gram being $8.36 CAD per gram. I have supplied the assumption that the average price per gram will be starting at $7 and will decrease by 5% per year over 5 years Similarly to the price outlined by Statistics Canada (b 2018). The decrease in price will be to reflect both price competition caused by new entrants in the market and pressure from provincial buyers. This represents a 15% discount on the current price per gram. Large-volume purchase-orders are essential to Canopy's operations, as they help allow reduce the overall risk of the company. It allows Canopy to determine its production volumes, limits the production of perishable inventory, and ensures reliable cash flows.

Fig 19: Revenue Forecasting

Revenue(Thousand)	FY 2016A	FY 2017A	First 9 Months, FY 2018A	FY 2018F	FY 2019F	FY 2020F	FY 2021F	FY 2022F	FY 2023F
Currency	*CAD*	*CAD*	*CAD*	*CAD*	*CAD*	*CAD*	*CAD*	*CAD*	*CAD*
Price per Gram	-	-	-	-	7.00	6.65	6.32	6.00	5.70
Rec. Sales (kg)	-	-	-	-	63,850	89,776	125,893	182,045	233,686
Rec. Sales ($)	-	-	-	-	446,953	597,008	795,332	1,092,566	1,332,372
Med. Sales ($)	12,699	39,895	55,142	68,928	75,820	81,128	75,449	77,712	80,044
Total Revenue	**12,699**	**39,895**	**55,142**	**68,927.50**	**522,773**	**678,136**	**870,780**	**1,170,278**	**1,412,415**
Revenue Growth %		*214%*	*38%*	*73%*	*658%*	*30%*	*28%*	*34%*	*21%*

Given a rapidly growing recreational market, a constant market share of 20%, steady growth rates in the medical sector and an initial, declining, price per gram of 7$, Canopy should achieve total revenue in excess of $1B CAD by the end of FY 2022.

5.4 Cost of Goods Sold

5.4.1 COGS – Recreational

Considering we know the current weighted average cost per gram (“WACGs”) in Q3 FY2018 was $2.53/gram. The cost of production and harvesting amounted for roughly a $1/gram where as the costs associated with the shipping and fulfilment amounted to $1.5/gram. As Canopy continues to expand its production capacity and their new facilities

come online it is reasonable to assume that Canopy will be able to diminish its overall cost per gram thanks to operation efficiencies, economies of scale on packaging and shipping costs, it is fair to assume that they will be able to reduce their WACGs by at least 5% per year. COGS are based on the product of WACGs and the volume of recreational sales. The change 5% annual operating efficiency is very reasonable considering that Canopy has been able to reduce its cost per gram pre fulfilment by 27% between Q3 2017 and Q3 2018.

5.4.2 COGS – Medical

Regarding the costs associated to the Company's medical marijuana sales, we assume that Canopy will be able to reduce its expenses through operating efficiencies, consolidated purchasing, and economies of scale. We assume that COGS of medical cannabis will shrink by 5% a year assuming an initial medical cannabis gross margin of 40%.

Fig 20: Cost of Goods Sold Forecasting (Consolidated)

Cost of Sales *(in Thousands)*	**FY 2016A**	**FY 2017A**	**First 9 Months, FY 2018A**	**FY 2018F**	**FY 2019F**	**2020F**	**2021F**	**2022F**	**2023F**
Currency	***CAD***	***CAD***	***CAD***	***CAD***	***CAD***	***CAD***	***CAD***	***CAD***	***CAD***
Weighted Average Cost per gram	-	-	-	-	2.40	2.28	2.17	2.06	1.96
Recreation Sales (kg)	-	-	-	-	63,850	89,776	125,893	182,045	233,686
COGS (Rec)	-	-	-	-	153,464	204,987	273,083	375,140	457,479
COGS (Med)	19,722	39,577	23,501	29,639	30,328	29,287	25,875	25,319	24,774
Cost Of Goods Sold	**19,722**	**39,577**	**23,501**	**29,639**	**183,793**	**234,274**	**298,958**	**400,459**	**482,254**

Source: Capital IQ, Canopy Financials and compiled by the author

We of course do not include any non-cash expenses as mentioned previously in the section regarding non-cash adjustments.

5.5 Operating Expenses

5.5.1 Sales & Marketing Expenses

This account represents all of Canopy's expenditures related to brand initiatives, sales forces, as well as outreach initiatives for the medical market. Considering that most of these costs have already been ramped up in anticipation of legalization, it is hard to tell how to model this expense going forward. Forecasting Sales and Marketing using a historical average percentage of sales would lead to ridiculously high expenditure as well. I used the assumption that Sales & Marketing expenses will double as from their 2018 levels and would then be a calculated as a proportion of total sales (11%). At this level it makes much more sense to consider it a constant ratio of sales. Furthermore, marking expenses are generally closely linked to sales so it represents a good fit.

5.5.2 R&D Expenses:

The historical average R&D expenditure represented amounted to 2% of sales. Going forward R&D expenses will be set to 1% of sales, this represents a 400% jump, over the FY 2018 expenditures. Canopy is currently developing novel IP regarding plant genetics and growing patterns.

5.5.3 General & Administrative Expenses:

Canopy states that they are presenting higher than usual G&A expenses due to the regulatory framework surrounding the legalization of pot. In fact, they state that these expenses are linked not only to internal expenses but also to compensate operations consultants, compliance advisors as well as normal operating expenditures linked to Canopy's facilities. Yet again this indicates that most of the cost linked to the recreational market has already been included. That being said, G&A expenses also include overhead linked to production sites. Considering Canopy will be expanding its total production capacity 9 fold, a substantial increase in expenditures would be advisable. We assume that G&A expenses will

grow by 300% and represent 19% of sales going forward. This will be caused by the new facilities coming online and because over all G&A expenses at they're previous levels were not sustainable.

5.5.4 Acquisition expenses:

Lastly we have acquisition expenses. Given the particular situation that Canopy find's itself in, the Company's M&A expenses should in fact be included in operating expenses as acquisitions are common place both in the industry and on a company level. Buyouts are the most effective way to add production capacity in the short run. As there is an all out race between the largest producers to acquire the most capacity, it is reasonable to assume that Canopy's related expenses will increase over the observed periods.

Fig 21: Net Operating Expenses

Operating Expenses *(in Thousands)*	**FY 2016A**	**FY 2017A**	**First 9 Months, FY 2018A**	**FY 2018F**	**FY 2019F**	**2020F**	**2021F**	**2022F**	**2023F**
Currency	***CAD***	***CAD***	***CAD***	***CAD***	***CAD***	***CAD***	***CAD***	***CAD***	***CAD***
Sales & Marketing	5,653	12,960	23,452	29,315	58,630	76,054	97,660	131,249	158,405
% of Sales	*45%*	*32%*	*43%*	*43%*	*11%*	*11%*	*11%*	*11%*	*11%*
R & D Exp.	721	810	914	1,143	4,657	6,042	7,758	10,426	12,583
% of Sales	*6%*	*2%*	*2%*	*2%*	*1%*	*1%*	*1%*	*1%*	*1%*
General Admin.	8,177	16,858	26,936	33,670	67,340	87,353	112,168	150,747	181,937
% of Sales	*64%*	*42%*	*49%*	*49%*	*13%*	*13%*	*13%*	*13%*	*13%*
Acquisition related costs	1,155	7,369	2,491	2,491	3,672	4,763	6,116	8,219	4,960
% of Sales	*9%*	*18%*	*5%*	*4%*	*1%*	*1%*	*1%*	*1%*	*0.4%*

Total Op. Exp.	**15,707**	**37,998**	**53,794**	**66,619**	**134,299**	**174,211**	**223,701**	**300,641**	**357,886**

Source: Capital IQ, Canopy Financials and compiled by the author

5.6 NOPLAT

Lastly, to obtain our NOPLAT values, you must calculate the cash taxes from operating revenue. Canopy currently has a marginal corporate tax rate of 26.5%.

Fig 22: Breakdown of NOPLAT

NOPLAT *(in Thousands)*	**FY 2016A**	**FY 2017A**	**First 9 Months, FY 2018A**	**FY 2018F**	**FY 2019F**	**2020F**	**2021F**	**2022F**	**2023F**
Currency	***CAD***	***CAD***	***CAD***	***CAD***	***CAD***	***CAD***	***CAD***	***CAD***	***CAD***
Taxes	**(6,023)**	**(9,985)**	**(5,871)**	**(7,243)**	**16,196**	**59,883**	**77,390**	**104,358**	**127,546**
Corporate Tax rate	**27%**	**27%**	**27%**	**27%**	**27%**	**27%**	**27%**	**27%**	**27%**
Net Operating Profit Less Adjusted Taxes (NOPLAT)	**(16,707)**	**(27,695)**	**(16,282)**	**(20,088)**	**154,815**	**166,091**	**214,647**	**289,446**	**353,761**
Margin %	-132%	-69%	-30%	-29%	30%	24%	25%	25%	25%

Source: Capital IQ, Canopy Financials and compiled by the author

5.7 Free Cash Flows:

Now that we have established NOPLAT we can calculate the free cash flows by subtracting Capital Expenditures and changes in Net Working Capital from the tax adjusted operating profits.

5.7.1 Delta Net working Capital:

As outline in the pervious section, we have adjusted net working capital on a cash free basis because the cash on hand artificially inflated NWC values and that the cash reserves were in fact earmarked for acquisition purposes. The main determinant in NWC is therefore inventory. Historically Canopy has had NWC far superior to their sales due to holding large inventories. This can be attributable to the fact that the Company would have had to keep large amounts of product on hand as the medical market is much more fragmented and that individual sales are quite small, making it harder to plan and organize production. With the arrival of sales of recreational pot, Canopy should be able to hold less inventory by comparison as they can better organize their production, thanks to large regular purchase orders. The change in NWC was therefore deemed to increase by one fourth of the company's sales' growth factor for the first year. This is due to the fact that the expected life cycle of cannabis plants is roughly 90 days, meaning you can have 4 harvests a year according to Bergman (2018)[6]. The higher the harvest frequency, the more easily you can justify having a lower relative inventory levels. Thanks to their new builds Canopy will have enough capacity and space to be able to stager production runs to ensure continuous harvesting throughout the year. Following FY 2019, NWC is set to grow at the same growth rate as sales.

5.7.2 Capital Expenditures

The second part of the equation is the capital expenditures. Similarly to NWC, CapEx is difficult to model for Canopy, as there does not seem to be any historical patterns. We do know however that they still have facilities under construction most of which should be completed within the next year, accord to the Q3 2018 MD&A report. We can therefore assume a spike in CapEx in 2019, followed by a lull in investments and finally in year 2021

to 2023 we assume a constant level of CapEx, which is lower than levels prior to the legalization as Canopy should be more focused on optimization of their production than adding too much capacity. The increase will be used to complete the existing projects.

We can observe that given our assumptions, Canopy presents strong FCF following an initial loss in FY 2019.

Fig 23: Free Cash Flow Breakdown

For the Fiscal Period Ending (in Thousands)	FY 2016A	FY 2017A	First 9 Months, FY 2018A	FY 2018F	FY 2019F	FY 2020F	FY 2021F	FY 2022F	FY 2023F
Currency	*CAD*	*CAD*	*CAD*	*CAD*	*CAD*	*CAD*	*CAD*	*CAD*	*CAD*
Net Operating Profit Less Adjusted Taxes (NOPLAT)	**(16,707)**	**(27,695)**	**(16,282)**	**(20,088)**	**154,815**	**166,091**	**214,647**	**289,446**	**353,761**
Margin %	-132%	-69%	-30%	-29%	30%	24%	25%	25%	25%
Less - Capital Expenditures									
Delta PPE	26,149	51,989	57,712	57,712					
Plus Amortization	1,900	4,700	7,300	7,300					
CapEX	**28,049**	**56,689**	**65,012**	**65,012**	**100,000**	**-**	**50,000**	**50,000**	**50,000**
Less - Changes in Net Working Capital									
NWC	37,653	161,121	345,011	345,011					
Less Cash and Equivalents	15,397	101,800	237,708	237,708					
Adjusted NWC	22,256	59,321	107,303	107,303	203,457	263,922	338,897	455,458	549,695

Delta adjusted NWC	**18,851**	**37,065**	**47,982**	**47,982**	**96,154**	**60,465**	**74,975**	**116,561**	**94,237**
Free Cash Flow (FCF)	**(63,607)**	**(121,449)**	**(129,276)**	**(133,082)**	**(41,339)**	**105,626**	**89,672**	**122,885**	**209,524**

Source: data compiled by the author

6. DCF Valuation

6.1 Discount Rate

When conducting a DCF we use the Capital Asset Pricing Model (CAPM) to help calculate the appropriate discount factor for the firm's cash flows. The CAPM gives us the cost of equity for a given stock, which can then be used in several permutations when conducting a stock valuation. For example, APV models will utilize an unlevered cost of capital to discount free cash flows, where as an enterprise cash flow model will use the WACC to set the discount factor.

The CAPM states that the expected rate of return of a security is the result of :

$$E(r) = r_f + \beta\ (E(r_m) - r_f)$$

To use the CAPM on must first find the stock's Beta value. The Beta represents the covariance of returns between a stock and the given benchmark market index divided by the overall variance of the market. The beta allows us to determine the market risk linked to a stock, i.e. if the market were to present+ 1% returns, the beta would indicate the amplitude of the effect this would have on the stock.

$$\beta = \frac{Covariance\ (r_i, r_m)}{Variance\ (r_m)}$$

The selection of the market benchmark is quite important, as the reference point cannot help us calculate expected returns afterwards. I conducted several studies to identify which benchmark to use. Damodaran (2018) suggests using monthly returns data over a period between 2 and 5 years, as monthly returns provide less noise than daily returns for example and that period of time should produce enough data to analyse and is recent enough to accurately represent the company's current activities. That being said 2 years of monthly data represents a very small sample of observations. He also asserts that one should use large diverse indexes as benchmarks to more accurately replicated the "Market" index, which would theoretically encompass every possible investment opportunity.

I conducted several test on benchmark indexes and time periods and found that both the MSCI World index and the NASDAQ were poor reference points to use. Regressing Canopy's returns with either one of the indexes' presented both extremely low Beta values as well as also low R squared results. Given the stock's volatility, using those beta outputs would be a mistake, as they would clearly misrepresent Canopy's expected returns. Furthermore, the low R squared value indicates that the beta shows low levels of correlation with the market returns. (see Annex 2)

The optimal index tested was the TSX Composite Index as it yielded results more in line with financial references such as CapitalIQ, (3.1) MarketWatch (0.8), YahooFiance (3.59), etc. This is inline with Damodaran's (2018) assertion that when calculating Betas in practice, the theoretical "Market Portfolio" is in fact the investor's "home country" stock exchange.

The TSX Composite Index yielded a 2-year daily returns Beta of 1.33. The index will also serve as the basis for calculating the market risk premium, which put simply, is the difference between the benchmarks return and a risk free security, most commonly being a long-term US treasury bond, however this should be interchangeable with any sovereign debt from a nation with low default risk. The 10-year Canadian Treasury Bond rate was 2.11% on the 28th of March 2018 and will be the risk free rate. The market return was 6.49%[7]. Using the CAPM formula, the find the expected cost of Capital to be 7.94%.

To conduct an APV we must calculate the unlevered cost of equity, using an unlevered Beta. The Unlevered beta is calculated as follows:

$$\beta_u = \frac{\beta_l}{(1 + (1 - T) \times \left(\frac{D}{E}\right))}$$

Given Canopy's current Capital structure the unlevered Beta, β_u, is 1.26. Removing debt reduces some financial risks from the equation, hence the unlevered Beta being smaller than the levered beta calculated before. The new cost of equity is then 7.64%. There is only a slight difference due to the fact that canopy has little debt.

[7] TSX market data compiled from CapitalIQ – using 9 years of daily returns.

To conduct an enterprise cash flow valuation, one must use the weighted average cost of capital. As at December 31st, 2018, or the last public earnings disclosure, Canopy had a marginal corporate tax rate of 26.5% and debt to equity ratio of 7.75%. To find the WACC we also require the company's cost of debt. Canopy has a very small amount of interest bearing debt, as outline above. Their current interest bearing debt is listed as follows:

Figure 24: Canopy's Cost of Debt

Type	Principal Due (CAD)	Coupon/Base Rate
Capital Lease	1.1	5.900% - 17.100%
Term Loans	3.0	4.800%
Term Loans	1.3	5.300%
Term Loans	3.2	4.900%
Revolving Credit	-	NA
Term Loans	1.7	10.000%

Source: CapitalIQ

Assuming that the capital leases bear an interest rate of 11.51% (the mean of the town rates), then Canopy's weighted average cost of debt is approximately 6% and the marginal corporate tax rate is 26.5%. Now we can calculate the company's WACC.

$$WACC = K_e(\frac{E}{V}) + K_d(\frac{D}{V}) \times (1 - t_c)$$

The Company's WACC is therefore 7.69%.

6.2 Enterprise Cash Flow DCF Valuation:

The model is composed of 5 periods that have been mapped out in the sections above. Following the 5th period, I have set the assumption that the firm will have established a foothold in the market and it had entered a steady state growth period. We assume growth to be 5% going forward. To obtain the company's equity value we look at it on a we then adjust the results found from the DCF for debt and add back cash.

The enterprise cash flow model arrives at an equity value of $5.84B, or $29.54 per share. I conducted a sensitivity analysis to consider the impact varying potential market share and the initial price per gram metrics. The analysis showed that in most scenarios, Canopy seems to be overvalued. In fact, the model shows that Canopy only present actionable upside for an investor if they are capable of securing 25% market share across Canada and sell their pot for at least $6.7/gram or at least $7.5/gram if they can only secure 20% of the market.

Fig 25: Scenario Analysis Enterprise Cash Flow DCF

Market Share / $ per Gram	15%	20%	25%
6.5	$9.31	$20.65	$31.05
6.7	$11.96	$24.20	$35.25
7	$15.95	$29.54	$41.57
7.5	$22.63	$38.47	$52.12
8	$29.33	$47.43	$62.70

Source: Compiled by the Author

That being said, these parameters are still in the realm of possibility and all in all the enterprise cash flow model seems to resemble analyst expectations for price. The company's upside is also significant considering the price per share at March 31st 2018.

6.3 APV Method

Similarly to the Enterprise DCF, the APV method discounts the FCFs back, however, the APV uses the unlevered cost of equity to do so and also includes the present value of tax shields. This metric allows for us to examine a company with a changing capital structure. From a macro point of view, Canopy should fit that criterion. The company continues to raise capital to fund its operations and acquisitions. Debt is readily available, yet the company has shied away from it. Leveraging the company would allow the management to keep a steady cash reserve while preventing any further dilution to the shareholder base.

To apply valuation methodology, leverage would have to be added to the firm. I assume in this case that Canopy would raise $200M CAD in year 1, FY 2019, which they could pay down at a future date. Regardless, capital repayment of loans does not fit into the parameters of the model, however the corporate tax shield, which the debt created, does. Raising the debt may face issues as American financial institutions still face restrictions regarding investments relating to the sale of substances deemed to be illicit in the US. Given their current cash reserves and projected revenue the debt, does not serve any purpose apart from granting a tax shield benefit. In March of 2018, the Canadian Corporate bond yield for long term maturities between 6-15 years was approximately 3.25%. I would be fair to assume that Canopy would obtain slightly less favourable terms, as they are still in growth phase and cash flow negative, thus inherently more risky then a standard corporate debt issuer. I will use an assumption that the cost of debt will be 8% interest, as their current weighted average cost debt was approximately 6%, in increased leverage leads to higher default risk and should warrant a higher rate. Lastly let us assume the debt will have a maturity of 10 years.

Given the same base scenario of 20% market share, and an initial average price per gram sold of 7$, and anticipated steady state growth rate of 5%, the Enterprise value of the firm reached $6.01B, with Equity amounting to a price per share of $30.29. With a current stock price of $33.66, Canopy would be over valued at this point.

Fig 26: Scenario Analysis APV

Market Share / $ per Gram	15%	20%	25%
6.5	$9.62	$21.21	$31.83
6.7	$12.33	$24.84	$36.13
7	$16.41	$30.29	$42.58
7.5	$23.23	$39.42	$53.37
8	$30.08	$47.43	$64.18

Source: Compiled by the Author

Scenario table shows however, that there is significant upside potential for Canopy if they are capable of securing a 25% market share in the recreation cannabis market.

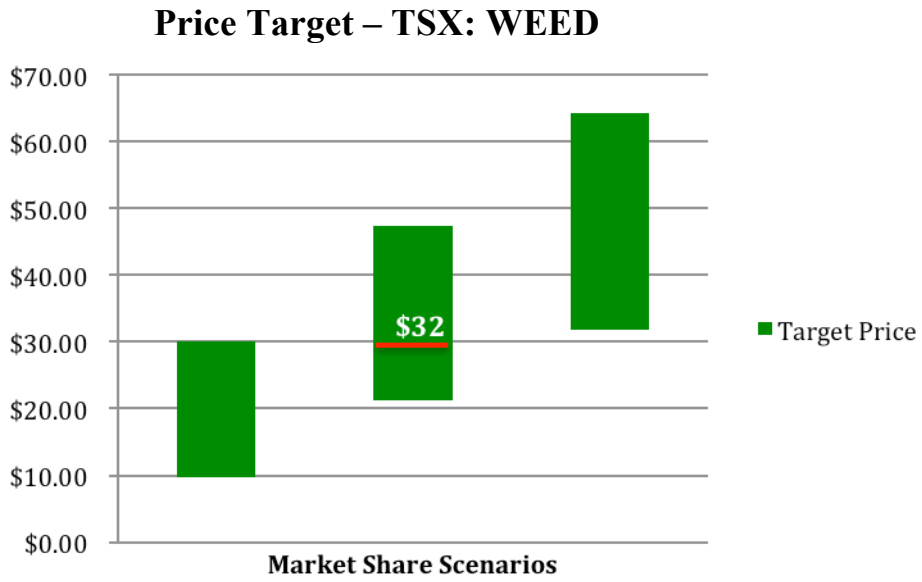
6.4 Analysis

When comparing the two model's outputs we find that they produce very similar results given base assumptions. That being said, the APV model does take into account the company's current life-cycle stage as well as propose a marginally more optimistic outlook for Canopy. The APV method did however present forecasting issues such as determining new debt levels, estimating the costs of debt and establishing relevant debt maturity. Despite those difficulties I will base my recommended target price on the APV valuation.

Based on the assumption that Canopy can secure 20% of the total market share, I estimate that the price per share of the company should fall within the range of $21.21 CAD and $47.43 CAD. The short-run target price is $32.64 per share (calculated as the average price estimate given 20% market share).

This being said, it is clear that pot producer are still in their infancy which does pose problems for the overall nature of the present exercise. Without reliable long-term data, assumptions are often based on empirical knowledge or other industries.

Furthermore the current exercise posed important problems related to availability of information. The truly is a void when it comes to research on the cannabis industry from a financial perspective. Hopefully this work will provide a first step towards filling that gap.



Source: Compiled by the Author

6.5 Recommendation

Given this price target of $32.64 and the current share price as at March 31st, 2018 of $33.66. I would give a Hold recommendation or a cautious Buy recommendation for an average risk liking investor. The company presents a large upside potential and strong competitive advantages within the market. Canopy is one of the most probable winners in the Cannabis industry due to its size, its strong regulatory compliance team and its global expansion strategy.

One should note however that there are risks associated to their operations. Including the possibility of not signing new sales agreements with provincial stores, increased competition, as well as higher regulatory requirements that would impede upon growth.

The Canadian Cannabis industry presents substantial opportunities for investors, who should not shy away from the hazy results but embrace the future of cannabis as a growing industry.

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8. Annex 1: IAS 41 Regulation

Summary of IAS 41

Objective

The objective of IAS 41 is to establish standards of accounting for agricultural activity – the management of the biological transformation of biological assets (living plants and animals) into agricultural produce (harvested product of the entity's biological assets).

Scope

IAS 41 applies to biological assets with the exception of bearer plants, agricultural produce at the point of harvest, and government grants related to these biological assets. It does not apply to land related to agricultural activity, intangible assets related to agricultural activity, government grants related to bearer plants, and bearer plants. However, it does apply to produce growing on bearer plants.

Note: Bearer plants were excluded from the scope of IAS 41 by Agriculture: Bearer Plants (Amendments to IAS 16 and IAS 41), which applies to annual periods beginning on or after 1 January 2016.

Key definitions

[IAS 41.5]

Biological asset A living animal or plant

Bearer plant* A living plant that:

is used in the production or supply of agricultural produce is expected to bear produce for more than one period, and has a remote likelihood of being sold as agricultural produce, except for incidental scrap sales.

Agricultural produce The harvested product from biological assets

Costs to sell The incremental costs directly attributable to the disposal of an asset, excluding finance costs and income taxes

* Definition included by Agriculture: Bearer Plants (Amendments to IAS 16 and IAS 41), which applies to annual periods beginning on or after 1 January 2016.

Initial recognition

An entity recognises a biological asset or agriculture produce only when the entity controls the asset as a result of past events, it is probable that future economic benefits will flow to the entity, and the fair value or cost of the asset can be measured reliably. [IAS 41.10]

Measurement

Biological assets within the scope of IAS 41 are measured on initial recognition and at subsequent reporting dates at fair value less estimated costs to sell, unless fair value cannot be reliably measured. [IAS 41.12]

Agricultural produce is measured at fair value less estimated costs to sell at the point of harvest. [IAS 41.13] Because harvested produce is a marketable commodity, there is no 'measurement reliability' exception for produce.

The gain on initial recognition of biological assets at fair value less costs to sell, and changes in fair value less costs to sell of biological assets during a period, are included in profit or loss. [IAS 41.26]

A gain on initial recognition (e.g. as a result of harvesting) of agricultural produce at fair value less costs to sell are included in profit or loss for the period in which it arises. [IAS 41.28]

All costs related to biological assets that are measured at fair value are recognised as expenses when incurred, other than costs to purchase biological assets.

IAS 41 presumes that fair value can be reliably measured for most biological assets. However, that presumption can be rebutted for a biological asset that, at the time it is initially recognised, does not have a quoted market price in an active market and for which alternative fair value measurements are determined to be clearly unreliable. In such a case, the asset is measured at cost less accumulated depreciation and impairment losses. But the entity must still measure all of its other biological assets at fair value less costs to sell. If

circumstances change and fair value becomes reliably measurable, a switch to fair value less costs to sell is required. [IAS 41.30]

Guidance on the determination of fair value is available in IFRS 13 Fair Value Measurement. IFRS 13 also requires disclosures about fair value measurements.

Other issues

The change in fair value of biological assets is part physical change (growth, etc) and part unit price change. Separate disclosure of the two components is encouraged, not required. [IAS 41.51]

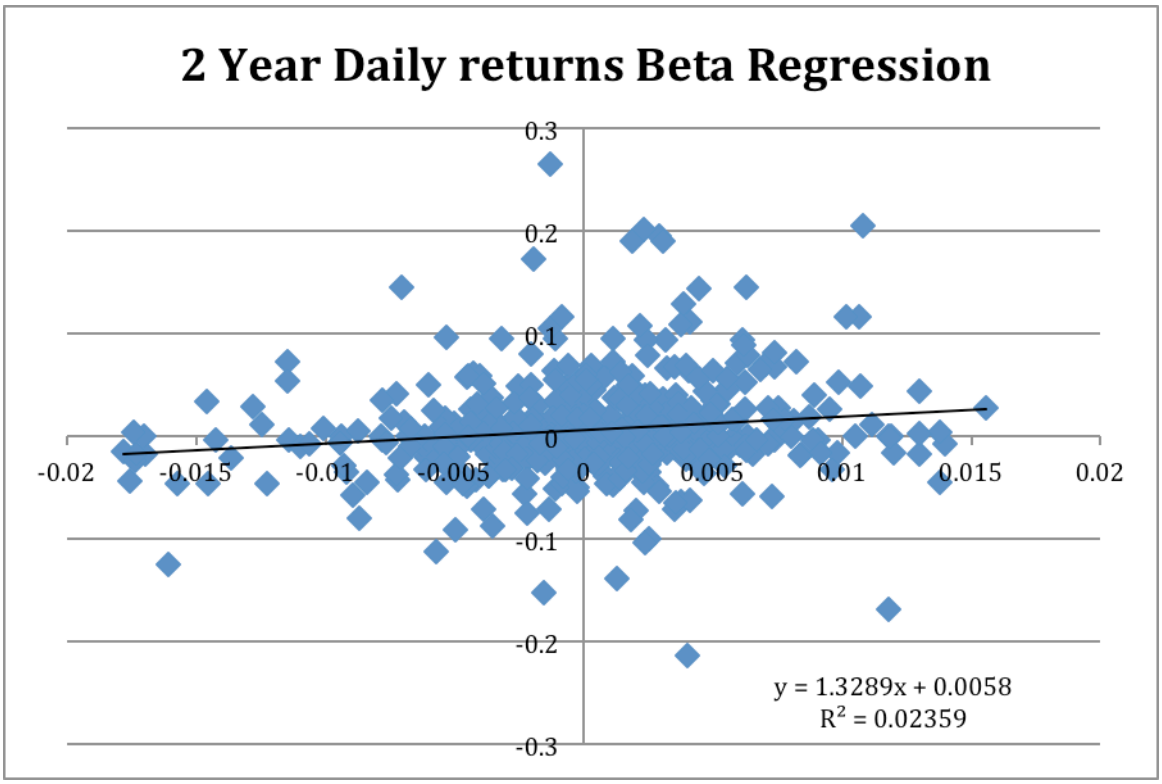
Agricultural produce is measured at fair value less costs to sell at harvest, and this measurement is considered the cost of the produce at that time (for the purposes of IAS 2 Inventories or any other applicable standard). [IAS 41.13]

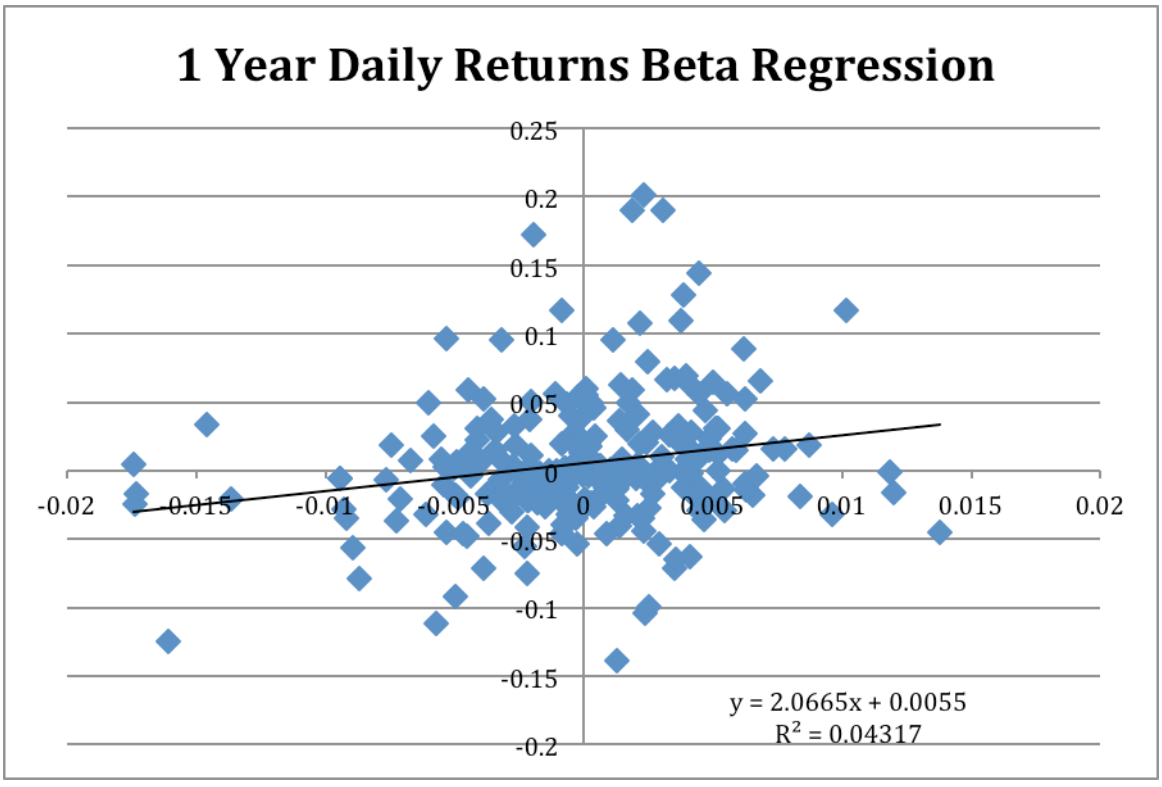
Agricultural land is accounted for under IAS 16 Property, Plant and Equipment. However, biological assets (other than bearer plants) that are physically attached to land are measured as biological assets separate from the land. In some cases, the determination of the fair value less costs to sell of the biological asset can be based on the fair value of the combined asset (land, improvements and biological assets). [IAS 41.25]

Intangible assets relating to agricultural activity (for example, milk quotas) are accounted for under IAS 38 Intangible Assets.

8.1 Annex 2

Beta Regression TSX & WEED:





8.2 Annex 3 Base of Financial Models

For the Fiscal Period Ending (in Thousands)	FY 2016 A	FY 2017 A	First 9 Months, FY 2018 A	FY 2018F	FY 2019 F	FY 2020 F	FY 2021F	FY 2022F	FY 2023F
Currency	*CAD*	*CAD*	*CAD*	*CAD*	*CAD*	*CAD*	*CAD*	*CAD*	*CAD*
Price per Gram	-	-	-	-	7.00	6.65	6.32	6.00	5.70
Recreation Sales (kg)	-	-	-	-	**73,563**	**104,345**	**147,867**	**213,136**	**275,580**
Recreational Sales ($)	-	-	-	-	514,941	693,891	934,148	1,279,164	1,571,232
Medical Cannabis Sales($)	12,699	39,895	55,142	68,928	75,820	81,128	75,449	77,712	80,044
Total Revenue	**12,699**	**39,895**	**55,142**	**68,927.50**	**590,761**	**775,019**	**1,009,597**	**1,356,876**	**1,651,275**
Revenue Growth %		*214%*	*38%*	*73%*	*757%*	*31%*	*30%*	*34%*	*22%*
Weigthed Avergae Cost per gram	-	-	-	-	2.40	2.28	2.17	2.06	1.96
Recreation Sales (kg)	-	-	-	-	73,563	104,345	147,867	213,136	275,580
COGS (Rec)	-	-	-	-	176,809	238,252	320,746	439,210	539,494
COGS (Med)	19,722	39,577	23,501	29,639	30,328	29,287	25,875	25,319	24,774
Cost Of Goods Sold	19,722	39,577	23,501	29,639	207,137	267,540	346,622	464,529	564,268
Gross Profit	**(7,023)**	**318**	**31,641**	**39,289**	**383,625**	**507,479**	**662,975**	**892,347**	**1,087,007**
Margin %	**-55%**	**1%**	**57%**	**57%**	**64.94%**	**65.48%**	**65.67%**	**65.76%**	**65.83%**
Operating Expenses									

Sales & Marketing	5,653	12,960	23,452	29,315	58,630	76,917	100,197	134,663	163,881
% of Sales	45%	32%	43%	43%	10%	10%	10%	10%	10%
R & D Exp.	721	810	914	1,143	5,263	6,905	8,995	12,088	14,711
% of Sales	6%	2%	2%	2%	1%	1%	1%	1%	1%
General Admin.	8,177	16,858	26,936	33,670	101,010	132,515	172,624	232,002	282,340
% of Sales	64%	42%	49%	49%	17%	17%	17%	17%	17%
Acquisition related costs	1,155	7,369	2,491	2,491	3,672	4,817	6,275	8,433	5,131
% of Sales	9%	18%	5%	4%	1%	1%	1%	1%	0%
Total Op. Exp.	**15,707**	**37,998**	**53,794**	**66,619**	**168,575**	**221,153**	**288,090**	**387,187**	**466,063**
Operating Income	**(22,730)**	**(37,680)**	**(22,153)**	**(27,331)**	**215,050**	**286,326**	**374,885**	**505,160**	**620,944**
Op. Margin%	**-179%**	**-94%**	**-40%**	**-40%**	**36%**	**37%**	**37%**	**37%**	**38%**
Cash Taxes	**(6,023)**	**(9,985)**	**(5,871)**	**(7,243)**	**27,866**	**75,876**	**99,345**	**133,867**	**164,550**
Corporate Tax rate	**27%**	**27%**	**27%**	**27%**	**27%**	**27%**	**27%**	**27%**	**27%**
Net Operating Profit Less Adjusted Taxes (NOPLAT)	**(16,707)**	**(27,695)**	**(16,282)**	**(20,088)**	**187,183**	**210,450**	**275,541**	**371,293**	**456,394**
Margin %	-132%	-69%	-30%	-29%	32%	27%	27%	27%	28%
Less - Capital Expenditures									
Delta PPE	26,14	51,98	57,71	57,71					

	9	9	2	2					
Plus Amortization	1,900	4,700	7,300	7,300					
CapEX	**28,049**	**56,689**	**65,012**	**65,012**	**100,000**	**-**	**50,000**	**50,000**	**50,000**
Less - Changes in Net Working Capital									
Adjustments to NWC									
NWC	37,653	161,121	345,011	345,011					
less Cash and Equivalents	15,397	101,800	237,708	237,708					
Adjusted NWC	22,256	59,321	107,303	107,303	229,917	301,628	392,923	528,080	642,656
Delta adjusted NWC	**18,851**	**37,065**	**47,982**	**47,982**	**122,614**	**71,711**	**91,295**	**135,157**	**114,577**
					1	*2*	*3*	*4*	*5*
Free Cash Flow (FCF)	**(63,607)**	**(121,449)**	**(129,276)**	**(133,082)**	**(35,431)**	**138,739**	**134,246**	**186,136**	**291,818**