

What will be the impact of legalizing medical cannabis on economic effects in Japan?; Analysis of case study in Germany and USA, Canada, Thailand.



Miss Yuki Matsushita

An Independent Study Submitted in Partial Fulfillment of the  
Requirements  
for the Degree of Master of Arts in Business and Managerial Economics  
Field of Study of Business and Managerial Economics  
FACULTY OF ECONOMICS  
Chulalongkorn University  
Academic Year 2020  
Copyright of Chulalongkorn University

-



สารนิพนธ์นี้เป็นส่วนหนึ่งของการศึกษาตามหลักสูตรปริญญาศิลปศาสตรมหาบัณฑิต  
สาขาวิชาเศรษฐศาสตร์ธุรกิจและการจัดการ สาขาวิชาเศรษฐศาสตร์ธุรกิจและการจัดการ  
คณะเศรษฐศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย  
ปีการศึกษา 2563  
ลิขสิทธิ์ของจุฬาลงกรณ์มหาวิทยาลัย

Independent Study Title      What will be the impact of legalizing medical cannabis  
on economic effects in Japan?; Analysis of case study in  
Germany and USA, Canada, Thailand.  
By                                      Miss Yuki Matsushita  
Field of Study                      Business and Managerial Economics  
Thesis Advisor                      SAN SAMPATTAVANIJA

---

Accepted by the FACULTY OF ECONOMICS, Chulalongkorn University in  
Partial Fulfillment of the Requirement for the Master of Arts

INDEPENDENT STUDY COMMITTEE

..... Chairman  
(RATIDANAI HOONSAWAT)  
..... Advisor  
(SAN SAMPATTAVANIJA)  
..... Examiner  
(PANUTAT SATCHACHAI)



จุฬาลงกรณ์มหาวิทยาลัย  
CHULALONGKORN UNIVERSITY

ชูกิ มัตสึชิตะ : -. ( What will be the impact of legalizing medical cannabis on economic effects in Japan?; Analysis of case study in Germany and USA, Canada, Thailand.) อ.ที่ปรึกษาหลัก : สันต์ สัมปิตะวานิช

-



สาขาวิชา	เศรษฐศาสตร์ธุรกิจและการจัดการ	ลายมือชื่อนิติ ..... ลายมือชื่อ อ.ที่ปรึกษาหลัก .....
ปีการศึกษา	2563	

# # 6284120029 : MAJOR BUSINESS AND MANAGERIAL ECONOMICS

KEYWOR medical cannabis, MMJ, Cannabis use

D:

Yuki Matsushita : What will be the impact of legalizing medical cannabis on economic effects in Japan?; Analysis of case study in Germany and USA, Canada, Thailand.. Advisor: SAN SAMPATTAVANIJA

In recent years, cannabis has been legalized all over the world. Countries around the world are turning into cannabis legalization. As a result, in 2018, the WHO Expert Committee on Drug Dependence recommended the redesignation of cannabis, taking into account evidence of medical use (Mayor, 2019). Until today, the medical cannabis (MMJ) program has started in both high- and middle-income countries, including Canada, Colombia, Chile, Germany, Israel, Italy, Jamaica, the Netherlands, Switzerland, Thailand, the United Kingdom, Uruguay, and more than 30 states in the United States. In this study, I will consider the advantages and disadvantages of accepting medical cannabis with several cases of each country. There also be advised how Japanese government on regulating medical cannabis. As a result, it is necessary to discuss the liberalization of cannabis and the use of medical cannabis separately to prevent social turmoil when implementing cannabis-related policies in Japan. States also need to assess how much cannabis use can be regulated to minimize risk.



Field of Study:	Business and Managerial Economics	Student's Signature .....
Academic Year:	2020	Advisor's Signature .....

## ACKNOWLEDGEMENTS

I would like to express my deep and sincere gratitude to my research supervisor, Asst. Prof. Dr. San Sampattavanija, Assistant professor, Economics, Chulalongkorn University, for giving me providing invaluable guidance throughout this IS research. His dynamism, vision, sincerity, and motivation have deeply inspired me. He has taught me the methodology to carry out the research and to present the research works as clearly as possible. It was a great privilege and honor to work and study under his guidance. I am extremely grateful for what he has offered me. I am extremely grateful to my parents for their love, caring, and sacrifices for educating and preparing me for my future.

Yuki Matsushita



# TABLE OF CONTENTS

	<b>Page</b>
ABSTRACT (THAI) .....	iii
ABSTRACT (ENGLISH).....	iv
ACKNOWLEDGEMENTS .....	v
TABLE OF CONTENTS.....	vi
LIST OF FIGURES .....	viii
Introduction.....	1
Section 1 Research Background .....	1
Section 2 Research Purpose.....	2
Section 3 Research Hypothesis.....	3
Chapter 1 Literature Research .....	3
Section 1 Definition of cannabis.....	3
Section 2 What is Medical Cannabis / Medical Marijuana (MMJ)? .....	4
Section 3 Differences between tetrahydrocannabinol (THC) and cannabidiol (CBD) .....	5
Chapter 2 Case Study .....	6
Section 1 International Trends.....	6
Section 2 Case study in Germany .....	7
1) Background of legalization .....	7
2) Regulations / laws .....	8
3) Economic benefits of legalizing medical cannabis .....	8
• Canopy growth (CGC = Canopy Growth Corporation).....	9
• Aurora Cannabis (ACB = Aurora Cannabis Inc.) .....	9
Section 3 Cases in the United States.....	10
1) Background of legalization .....	10
2) Regulations / laws .....	11

3) Economic benefits of legalizing medical cannabis .....	11
Section 4 Case Study in Canada .....	13
1) Background of legalization .....	13
2) Regulations / laws .....	14
3) Economic benefits of legalizing medical cannabis .....	15
Section 5 Case study in Thailand.....	17
1) Background of legalization .....	17
2) Regulations / laws .....	18
3) Economical benefits of legalizing medical cannabis .....	19
Chapter 3 Analysis.....	20
Section 1 Advantages and disadvantages based on each case .....	20
1) Benefits .....	20
2) Disadvantages .....	23
Section 2 Hypothesis verification.....	24
Chapter 4 Conclusion.....	27
REFERENCES .....	29
VITA.....	34



## LIST OF FIGURES

	<b>Page</b>
Figure 1. Exclusive: US retail cannabis sales on pace to rise 35% in 2019 and near \$30 billion by 2023 .....	13
Figure 2. the relative potential harms of drugs .....	23



## **Introduction**

### **Section 1 Research Background**

The use of cannabis is divided into "medical" and "entertainment", "industrial" sectors. In the last few years, the number of countries/regions that legalize medical cannabis has rapidly increased. Recently, instead of a strict prohibition on medical cannabis, legalization (Canada, Uruguay, some states of the United States, etc.), decriminalization and tolerance (Portugal, the Netherlands, some parts of India, etc.), and some other countries are considering permitting cannabis only for medical use. As a result, in 2018, the WHO Expert Committee on Drug Dependence recommended the redesignation of cannabis, taking into account evidence of medical use (Mayor, 2019). Until today, the medical cannabis (MMJ) program has started in both high- and middle-income countries, including Canada, Colombia, Chile, Germany, Israel, Italy, Jamaica, the Netherlands, Switzerland, Thailand, the United Kingdom, Uruguay, and more than 30 states in the United States) (Abuhasira, Shbiro & Landschaft, 2018).

The policy of cannabis is changing at a global level these days, and medical cannabis programs are also part of this change. These recent changes caused two main pressures which will be described based on the examples of two high-income countries (Canada, the early adopter of medical cannabis, and Germany, the late adopter) and one middle-income country (Thailand).

First, many patients in high-income countries use cannabis for self-medication, despite a lack of evidence of medical efficacy against the variety of illnesses. Second, the cannabis industry puts pressure on governments and decision-makers to allow the use of medical cannabis only with a prescription made by medical professionals and weak regulations that do not identify medical conditions (indications). As a result, the

demand for medical cannabis can increase even in low-utilization countries. The policymakers for cannabis need to consider a balance between the medical benefits with potential public health implications and costs.

Cannabis (marijuana) usage has been reported to increase in the world. These studies are often pointed out the negative health effects of overdose. The use of cannabis is associated with many psychological conditions, cardiovascular events, respiratory problems, and dementia symptoms.

Due to increasing pressure in many countries to change MMJ policies, the first consideration is whether to introduce medical cannabis only with strict medical indications that demonstrated in randomized controlled trials.

The overall prevalence of cannabis is low in most countries, compared with other legal substances (alcohol, tobacco) and illegal drugs (opioids, stimulants) (see GBD2017 Risk Factor Collaborators (2018) and Lachenmeier & Rehm (2015) for a comparison of risk assessments using different methodologies). This disease burden is not zero (Imtiaz et al.). In public health in this regard, the most relevant illness outcomes are due to traffic accident injuries and deaths, impaired cannabis use, and respiratory illnesses, including lung cancer. The latter is difficult to quantify because cannabis has traditionally been consumed with tobacco or was also a smoker. Nevertheless, contact with any type of flammable product is given a negative effect on the respiratory system.

## **Section 2 Research Purpose**

In this study, I will consider the advantages and disadvantages of accepting medical cannabis with several cases in each country. There also be advised how Japanese government on regulating medical cannabis.

### **Section 3 Research Hypothesis**

The hypothesis stated below:

H1: It is beneficial for Japan to legalize medical cannabis.

Japan has not yet legalized medical cannabis, thus this study will analyze how beneficial it is in the economic arena to legalize medical cannabis. 'Benefit' here means the impact on economic effects.

## **Chapter 1 Literature Research**

### **Section 1 Definition of cannabis**

The definition of the word "Cannabis" is as follows ;

"Cannabis" is a name that indicates the herbaceous plant, a genus of flowering in the family of Cannabaceae. However, when referring to the whole plant, the correct name is "Plantae cannabis". The law defines "Cannabis" as a drug that means only the leaves and spikes. It is roughly classified into two types: (1) a medicated type that contains a large amount of THC (tetrahydrocannabinol), which is the main medicinal ingredient, and (2) a fiber type that has a low THC content which is used for clothing and bags. There are three types of cannabis as a drug: (1) dried cannabis, which is processed by drying leaves and spikes, (2) cannabis resin, which is made by compressing the leaves and spikes into a solid resin, and (3) liquid cannabis, which is

made by dissolving dried cannabis and resin in a solvent. (Abe, 2016) Among them, dried cannabis accounts for 80% of the whole cannabis seized in the world. These are called "marijuana" or "ganja". The above is the main outline of cannabis.

## **Section 2 What is Medical Cannabis / Medical Marijuana (MMJ)?**

Medical cannabis, or medical marijuana (MMJ), is cannabis or cannabinoids that doctors prescribe for their patients. The use of cannabis as a medicine has not been strictly tested yet due to production and government regulations. As a result, clinical studies defining the safety and efficacy of treating diseases with cannabis have still been limited. As preliminary evidence shows that cannabis can help reduce nausea and vomiting during chemotherapy, improve symptoms of HIV / AIDS patients, and reduce chronic pain and muscle spasms. (Edward, 2008)

The short-term use increases the risk of mild and severe side effects. It causes several side effects such as increased heart rate, thirst, red-eye, decreased intraocular pressure, decreased concentration, and increased appetite as main physiological effects that appear immediately after dosing. Also causing changes in blood pressure, bronchial dilation, suppression of vomiting response, drowsiness, thirst, and increased appetite. (H.K, 1998)

The long-term effects of cannabis are not clear yet. It is concerned with the problems in memory and dementia, the risk of addiction, schizophrenia in young people, and the risk of accidental use by children. The plant cannabis has a history of being used as a medicine in many cultures for thousands of years. Some medical organizations in the US have requested to remove cannabis from the list of Schedule I of the Controlled Substances Act by the US federal government, followed by regulatory and

scientific reviews. Other groups, such as the American Academy of Pediatrics, oppose the legalization of medical cannabis.

Medical cannabis could be administered in a variety of ways, including capsules, lozenges, tinctures, skin patches, oral or skin sprays, cannabis edibles, or smoking dehydrated buds. In some countries, synthetic cannabinoids such as dronabinol and nabilone can be used as a prescription drug. Countries that allow medical use of plant-based cannabis include Australia, Canada, Chile, Colombia, Germany, Greece, Israel, Italy, the Netherlands, Peru, Poland, Portugal, and Uruguay.

### **Section 3 Differences between tetrahydrocannabinol (THC) and cannabidiol (CBD)**

Tetrahydrocannabinol (THC) is a type of cannabinoid, in addition to a psychotropic drug that has the effect of feeling euphoria. It is contained in cannabis resin at a few percent and is the main active ingredient in cannabis (marijuana) along with cannabidiol (CBD). It exerts its pharmacological action by binding to cannabinoid receptors that are present throughout the body. It is contained in cannabis resin at a few percent and is the main active ingredient in cannabis (marijuana) along with cannabidiol (CBD). It exerts its pharmacological action by binding to cannabinoid receptors that are present throughout the body.

Cannabidiol (CBD) is one of at least 113 cannabinoids found in cannabis. The main Phytocannabinoid, which makes up 40% of the total hemp extract. It was approved as a drug under the trade name of "Epidiolex" in the United States in 2018, also approved in Europe in 2019. Many studies have shown good safety features and tolerability hence, there is no action shown such as typical effects (mental effects),

overdose, abuse, dependence, physical dependence, and tolerance. According to clinical trial reports, CBD has few side effects but has no psychotropic effects and no impact on psychomotor learning or psychological function, therefore it has potential for medical use widely. Some have completed clinical trials as pharmaceuticals, and some countries have relaxed regulations. There are no regulations under international treaties regarding drug regulation. It is also distributed as raw material, for instance, health foods and cosmetics.

Each country has different regulations for the use of CBD and THC for medical purposes, it brings a further understanding of the differences between the use and regulations of each country, which will be described in Chapter 2.

## **Chapter 2 Case Study**

### **Section 1 International Trends**

Currently, many countries have legislation that regulates cannabis in principle. Drug treaties have been established and developed to strengthen international drug control. For instance, the Single Convention on Narcotic Drugs in 1961, the Convention on Psychotropic Drugs in 1971, and the Convention on Psychotropic Drugs in 1988 have been adopted and have been ratified by many countries (Japan has already ratified all three of the above treaties).

In some cases, domestic and local autonomy laws allow only medical uses, regulate the amount for entertainment purposes, and decriminalize simply by imposing a fine. (United Nations, 2019) Since cannabis has never been formally scientifically reviewed, the United Nations and the World Health Organization proceeded with the

scientific review in 2016, and a regulatory review vote was held through the United Nations in 2019.

Also, the United Nations Commission on Narcotics approved a recommendation to remove cannabis for medical and research purposes from the most dangerous drug classifications set out in international treaties on 2 December 2020. It expects to be applied in the early spring of 2021 after completing the procedure at the United Nations Headquarters. It may help legalize cannabis, such as to relieve patient pain. The 53 countries that make up the committee voted, with a majority of the votes. The World Health Organization (WHO) had recommended the removal. The United States and European countries agreed, and Japan voted against international treaties that regulate drugs include the "Single Convention on Narcotic Drugs" enacted in 1961. Single Convention on Narcotic Drugs divided drugs into four categories according to the strength of regulation, and cannabis is included in "drugs with strong dependence" and "especially dangerous". The dangerous drugs are required to take stricter regulations by each country, but cannabis will no longer be required.

In this section, examples of Germany, the United States, Canada, and Japan are explained in three aspects: "background of legalization", "regulation/law", and "economic effect of legalization of medical cannabis".

## **Section 2 Case study in Germany**

### **1) Background of legalization**

In Germany, the THC-based drug "Dronabinol" was re-designated for research purposes in 1994, and then it was prescribed under very specific circumstances by further deregulated in 1998. In 2008, seven patients in Germany have prescribed



cannabis-related treatments. Medical cannabis was legalized in Germany in 2017. (AFP, 2017)

Patients with severely painful cancer or serious illness are targeted in the case of another chemotherapy was not effective. But there is no need for defining or proving the illness and all treatments. A prescription is issued at the discretion of the doctor. However, illegal possession of cannabis is illegal and may result in fines and imprisonment. Nevertheless, if the police or the prosecution decides that the prescription is not applicable, or if it is a small amount for personal use, the prosecution does not need to prosecute if the judgment is minor. Cultivation for medical and academic purposes is exceptionally permitted.

## **2) Regulations / laws**



While cannabis for recreational use is prohibited in Germany, legislation governing penalties for possession varies from state to state. For example, in Hamburg, Lower Saxony, and Bavaria, citizens may avoid prosecution for possession of no more than 6g of cannabis, while in Rhineland-Palatinate and Thuringia, the permissible amount is up to 10g. Possession of up to 15g is effectively decriminalized in Berlin.

## **3) Economic benefits of legalizing medical cannabis**

With the legalization of medical cannabis, many pharmacies are out of stock due to more people wanting to use cannabis. (Newsweek, 2017) Although there are pros and cons, seeing that Germany has a strong tendency toward nature in food and daily necessities, medical cannabis has a high affinity with society. Thus, it said that medical cannabis was generally welcomed and accepted in Germany. Health

insurance also applies. Correspondingly, many Germans wanted cannabis treatment due there is no risk of death from overdose and no risk of suffering from the various side effects.

As for the economic effect, the cannabis business, which makes medicines, foods, and cosmetics with cannabis-derived ingredients, were boomed, and there were some economic effects. In 2017, the first year that medical cannabis was legalized in Germany, 1.200 kg of cannabis was imported, the number raised to 3.000 kg in 2018 and it was already about 2.500 kg in the first half of 2019. (DrugsInc, 2019)

Below, the growth of cannabis-related companies is examined.

- **Canopy growth (CGC = Canopy Growth Corporation)**

When the company called Canopy stopped growing during the domestic approval process in Germany, it had a huge impact on the market. At the time, Canopy was considered an industry leader and was expected to become a German production player. Unfortunately, that did not work as expected or planned, but the company entered the German market in another way by acquiring a German cannabinoid compound company. When the deal was announced, the company was servicing approximately 19,500 patients and revenue of 2018 million dollars through 41,5 years. (Drugs Inc, 2019)

The Canopy share had a lot of profit in 2019, and the opinions of stock analysts were whether to be more optimistic about stocks or not. Yet other people claimed just as challenging as the rest of the year.

- **Aurora Cannabis (ACB = Aurora Cannabis Inc.)**

One of Aurora's challenges is dealing with the lack of GMP-compatible cannabis that can be sold in the EU. It has been resolved by the recent completion of a Canadian facility that exports products to Germany and other EU markets. It was one of the areas where demand exceeded supply, and with the addition of EU-compliant cannabis, international sales of Aurora should increase significantly in the next quarter of the year.

Perhaps there are not many investors are considering the long-term potential of Germany. Aurora's export capacity and licensed facilities in Germany are controlled and expected long-term growth in the EU medical cannabis market.

It also reduces some of the market's oversupply when it arrives in the market. It needs to differentiate when the temporary restrictions occur on the Canadian market due to the slow permit approval process, and when oversupply occurs due to the overgrown cannabis plants that exceed demand temporarily in this article for discussing the oversupply topic. That moment will be soon to come.

### **Section 3 Cases in the United States**

#### **1) Background of legalization**

Until the 1970s, the US had a heavy crackdown on the use of cannabis. Most countries in the world including the US considered cannabis a criminal drug when cannabis use became a fad among hippies and young students in the 1960s. In the 1980s, the anti-cannabis trend began to change after medical research has confirmed the benefits of cannabis.

In states where the Medical Cannabis Act is enforced, cannabis can be obtained at medical cannabis pharmacies and medical cannabis clubs by having a doctor issue a

prescription and a medical cannabis license. However, even if they legally sell and possess medical cannabis under state law, they are illegal under federal law and are arrested by the DEA and FBI of the federal investigation agency. That continued until the end of the George W. Bush administration, but under the Barak Obama administration, in February 2009, a White House spokesman decided to end a DEA raid on medical cannabis-related facilities. In the announcement, DEA Director Michele Leonhart and United States Department of Justice Director Eric Holder have announced that they have ended a forced investigation into medical cannabis.

## **2) Regulations / laws**

The Medical Cannabis Act in the United States began in 1996 with a referendum in California. In 1998, it was passed by referendum in Alaska, Oregon, and Washington. Although the United States federal controlled substance law states that it has no medical use, state law has made medical cannabis available in the capital Washington, DC and 29 of all 50 states by the summer of 2017. Medical cannabis is available in all states except three states by December 2020. Guam, a territory, is considering accepting patients from abroad as well as approving the use of medical cannabis.

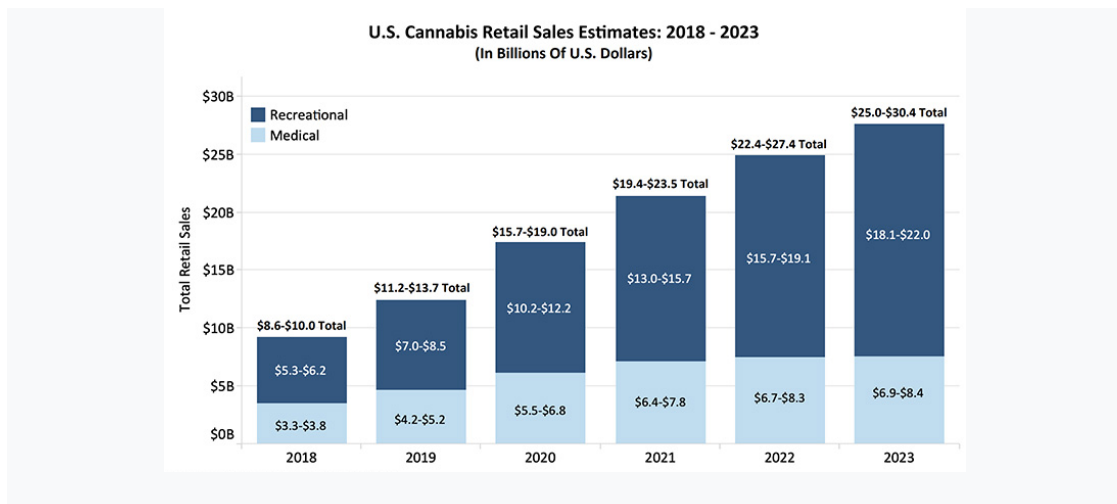
## **3) Economic benefits of legalizing medical cannabis**

According to Jetro (2019), the Hemp Business Journal, published by New Frontier Data, which provides research data on the cannabis industry and more, stated that the total sales of the legal cannabis industry in the United States, in 2017 were about 820 million dollars. Of these, CBD-based products were 190 million dollars (23%), cannabis-derived personal care products were 181 million dollars (22%), and

cannabis-based industrial products were 144 million dollars (18%). Cannabis-derived foods were 137 million dollars (17%) (see figure). Snacks were the mainstream of cannabis-derived foods, and their application to industrial products is often seen in the car industry.

According to the Hemp Business Journal, the average rate of annual growth of the legal cannabis market for the five years from 2018 to 2022 is estimated at 14.4%, which is projected to grow to 1.9 billion dollars by 2022. Whole Foods, the main grocery supermarket, announced on November 15, 2018, "CBD contained products" considered as one of the "10 major food trends in 2019." Foods that contain CBD are not only candy and snacks, but also a wide range of food which includes coffee, cooking oil, tea, beer, and pasta. In areas where it is legal to use cannabis for taste purposes, some bars serve cannabis cocktails. The rise of the cannabis contained foods, drinks, and cosmetics industry is called the "gold rush" or "green rush." (Jetro, 2019)

Meanwhile, according to the annual marijuana Business Factbook 2019 published by Marijuana Business Daily, cannabis retail sales in the United States in 2019 were estimated at 12 billion dollars, which is about 35 % growth expected in 2018 from 9 billion dollars to 10 billion dollars. As the long-term forecast, cannabis retail sales in the United States would reach 28 billion dollars by 2023. Also, the medical cannabis market has been projected to grow slowly as the market matures. (Marijuana Business Factbook 2019)



*Figure 1. Exclusive: US retail cannabis sales on pace to rise 35% in 2019 and near \$30 billion by 2023*

In addition, in the factbook summary, it was mentioned to bring the economic effect to the cannabis industry on the market, and the effect is expected to be added triples to the sales forecast, and the economy as a whole was predicted about \$12 billion by 2019 and \$30 billion by 2023. It was calculated that spending 1 dollar at a cannabis shop or dispenser will have an economic effect of 2.5 dollars for the city or municipality.

## **Section 4 Case Study in Canada**

### **1) Background of legalization**

In Canada, possession of cannabis was illegal in 1923, but the population who had heard or seen cannabis in Canada at that time was quite small. It was about the decade after the possession of cannabis was illegal that the case of being arrested for possession of cannabis occurred. In late 1990 it has stated in the trial that accesses to cannabis for medical purposes was required, and cannabis was legalized for only medical purpose

in 2001.

The Le Dain Commission of Inquiry (The Canadian government commission) was established in the 1970s. However, the proposals from those committees were not adopted and the law did not change for decades, but since the beginning of the 2000s, cases such as forgoing heavy punishment with a small amount of possession have become common.

Currently, Cannabis in Canada is legal for both recreational and medicinal purposes. Medicinal use of cannabis was legalized nationwide under conditions outlined in the Marihuana for Medical Purposes Regulations, later superseded by the Access to Cannabis for Medical Purposes Regulations, issued by Health Canada, and seed, grain, and fiber production was permitted under license by Health Canada. As of January 2019, online sales of cannabis for recreational use were well underway across Canada, via the provincial or territorial governments. It also has storefront operations selling cannabis, either operated by the government or private enterprise in most provinces. However, the number of retailers is likely to remain limited, due to an insufficient supply of legal cannabis from licensed producers.

## **2) Regulations / laws**

In 2001, Health Canada made prescription-based medical cannabis legal and within the scope of medical expense deductions. Also, in 2007, the Court of First Instance in Oshawa and Ontario ruled unconstitutional on the Cannabis Ban Act of 1923. The federal Cannabis Act came into effect on 17 October 2018 and made Canada the second country in the world, after Uruguay, to formally legalize the cultivation, possession, acquisition, and consumption of cannabis and its by-products. Canada is the first G7

and G20 nations to do so. Cannabis was prohibited in 1923 until regulated medical cannabis became legal on 30 July 2001. In response to popular opinion, the legislation to legalize cannabis for recreational use (Cannabis Act, Bill C-45) was passed by the House of Commons of Canada on 27 November 2017; it passed the second meeting in the Senate of Canada on 22 March 2018. On 18 June 2018, the House passed the bill with most, but not all, of the Senate's amendments. The Senate accepted this version of the Act the following day. The federal government announced that recreational use of cannabis would no longer violate criminal law as of 17 October 2018. This legalization comes with regulation similar to that of alcohol in Canada, limiting home production, distribution, consumption areas, and sale times. The process removed cannabis possession for personal consumption from the Controlled Drugs and Substances Act; while implementing taxation and stronger punishments for those convicted of either supplying cannabis to minors, or of impairment while driving a motor vehicle.

Also, the Cannabis Act promises to raise education and awareness about marijuana among citizens, especially young people, such as the health effects and risks of using marijuana. The federal government has announced that it will spend nearly \$ 46 billion over the next five years on public cannabis education and awareness-raising opportunities. Through this, it is possible to correct misuse and knowledge of cannabis and bring safety.

### **3) Economic benefits of legalizing medical cannabis**

The company based in Smiths Falls, Ontario named Canopy Growth Corporation is manufacturing cannabis. Now they are hoping to create a new tourism market built



around marijuana. Recently, the cannabis industry as a whole has reached \$ 80 billion, and there is an investment boom from around the world. "Canopy Growth Corporation", which works on cannabis research and product development, is worth \$ 15 billion on its own, and the international alcoholic beverage company "Constellation Brands Inc." has invested \$ 3.8 billion in them. Also, "Canopy Growth," Aurora Cannabis," and "Cronos Group" have succeeded in contracting to supply medical marijuana to countries such as Germany. Canadian cannabis companies are expected to become the center of the world's leading cannabis research and development companies.

In early 2019, the Canadian cannabis industry was in a frenzy with the lifting of the ban on narcotics. Cannabis sales were expected to surge in Canada as it became legalized, but that expectation was disappointing. Legal sales of legal cannabis products did not hit the market as expected, especially in Ontario, where retailer approval was delayed, as the Canadian Ministry of Health took time to approve licenses for cannabis cultivation, manufacturing, and sales. Statistics Canada report said that consumption of legal cannabis has not changed much. People living in Canada spent \$ 5.7 billion on medical and entertainment purposes in 2017. The amount per user is 1200 Canadian dollars, most of which goes to the black market. Due to legalization, the government has set a 10% excise tax, or \$ 1 per gram, whichever is higher. It also allows state-based taxes.

The legalization of cannabis in Canada, which the Trudeau administration has been focusing on for years, has received a great deal of attention around the world. Although there are negative factors in terms of health and social issues, there are certainly positive effects such as domestic economic and medical aspects, civil safety, and measures against illegal drug wars. Further research into the potential of cannabis and creating a

prejudiced society is the most sought after, especially in politics, industry, and medicine.

## **Section 5 Case study in Thailand**

### **1) Background of legalization**

In Thailand, if one was involved in the manufacture and sale of drugs, it may sentence to death or imprisonment even if it had simple possession. Also, even if there was insufficient evidence for the drug organization, the parson was extrajudicially killed without going through legal procedures. In 2003, the Thaksin administration killed 2,500 suspected drug offenders in three months. In 2017, the policy was changed to prevent the execution of the death penalty, and treatment of addiction began. At the end of 2018, Thailand became the first Asian country to legalize medical cannabis. This move was a big surprise for almost all the neighboring countries where daily impose severe penalties for drugs which include cannabis.

In February 2019, cannabis for medical purposes was legalized in Thailand. It was globally paid attention as a rare country in Asia, and in 2020, a medical cannabis clinic was opened in Nonthaburi Province, and an indoor cannabis plats farm was opened at Phra Nakhon Institute of Technology. Research institutes and farms under the jurisdiction of the Ministry of Health were set up in several locations, centering on Sakon Nakhon Province.

The cultivation of hemp with a THC content of less than 1% for medical purposes was permitted and enforced in 2018.

In July 2020, the Thai Traditional Medicine and Alternative Medicine Development Bureau announced the introduction of medical cannabis at 152 health promotion hospitals (HPH), and its development is accelerating.

Medical cannabis has been legalized in Thailand, however, the use of cannabis for entertainment use is illegal under traditional Thai criminal law, and possession of marijuana is subject to imprisonment of up to five years. Also, it is a crime that carries imprisonment for up to 15 years for sale or possession in large quantities, and up to 10 years for cannabis use for non-medical purposes.

## **2) Regulations / laws**

The Narcotics Act enacted in 1979, specifies cannabis as an illegal substance, which can result in heavy imprisonment and fines.

Depending on the type of cannabis illegal activity (fines and penalties detailed below):

- Manufacturing, import / export crimes: life imprisonment and fines between 1 million baht to 5 million
- Manufacturing, import / export crimes for disposal purposes: death penalty
- Possession for disposal or disposal: Life imprisonment and fines between 1 million baht to 5 million baht, or death penalty

(1) Draft Ministerial Regulation Re: Request and Grant of Permission for Production, Importation, Exportation, Distribution and Possession of Narcotics Category 5 (Specifically Cannabis) B.E. ....; and

(2) Draft Ministerial Regulation Re: Request and Grant of Permission for Production, Distribution and Possession of Narcotics Category 5 (Specifically Hemp) B.E....

(Thailand's Ministerial Regulation,2020)

At current, the 2 draft Ministerial Regulations are still pending revision before the

Council of State and is subjected to certain changes. If enacted, such regulations would separately regulate the hemp and cannabis industry in Thailand and replace the requirements set out in the existing Ministerial Regulation on Hemp and the Ministerial Regulation on Narcotics 4 & 5.

### **3) Economical benefits of legalizing medical cannabis**

Only two years have passed since medical cannabis was legalized in 2019, so there has not been much impact or research studies on medical cannabis in Thailand.

However, cannabis research and medical drug development have also been freed. It is expected to become a major source of revenue that can support the Thai economy, such as exports to overseas markets. In particular, South Korea and Australia have already allowed the import and export of medical cannabis. Therefore, if the drug laws in Asia changes, there would be a high expectation to allow Thailand to develop medical tourism for patients seeking medical cannabis as well as exporting business of cannabis products.

On the other hand, businesses that are likely to benefit from legalization can be divided into two groups. (See below)

1) Plantation and purification companies

2) Manufacturers of beverages, food supplements, cosmetics that contain hemp extract as an ingredient

Listed plantations and purification are likely to be assigned to the first group to be licensed to grow and extract cannabis, thus company stock prices can be expected to rise.

KTBST choose DOD Biotech and R & B Food Supply. Other stocks include beverage stocks such as the Carabao Group, Osotsp, and Sappe, dietary supplement stocks such as RS, JKN Global Media, and MEGA Life Sciences, and cosmetics stocks such as Do Day Dream and the Beauty Community.

DBS Vickers Securities is also focusing on product lines such as disease prevention and treatment, anti-aging, and functional foods, which are expected to be high in demand in an aging society at a global level seeing the relaxation of cannabis usage restrictions in MEGA Life Sciences. (ANNGLE, 2021)

### **Chapter 3 Analysis**

#### **Section 1 Advantages and disadvantages based on each case**

From the cases mentioned above chapters, medical cannabis has been legalized all over the world in recent years. Countries around the world are turning into cannabis legalization. Perhaps there are some benefits to each country by legalizing cannabis. Due to the many benefits of cannabis, countries are moving to legalize cannabis.

On the other hand, there are possession, cultivation, import, and export of cannabis are regulated under the Cannabis Control Law in Japan, and cannabis is treated as an illegal drug. However, following the world trend, the day may come when medical cannabis will be legalized in Japan as well. Hence, in this study, there will be the advantages and disadvantages of legalizing medical cannabis in Japan described next.

#### **1) Benefits**

Currently, the most popular alternatives to cannabis in Japan are "liquor" and "tobacco." These luxury items are taxed and are an important source of income for the

country. "liquor" and "tobacco" accounted for about 4% of the national tax revenue in 2016. In this 4% of the national tax revenue, there were 2.2% of liquor tax and 1.7% tobacco tax. Calculating these percentages of taxes, the cost of the liquor tax was 1,359 billion yen, and the cost of the tobacco tax was 1,065.8 billion yen. As considered, legalizing cannabis can impose large taxes seeing the fact that high taxes can be levied on luxury items in Japan. Cannabis is illegal at the moment but it could outperform alcohol and tobacco if it is legalized.

On the other hand, in Colorado, where cannabis was legalized in 2012, cannabis tax revenues increased from 67 million dollars in 2014 to 266 million dollars in 2018.

If cannabis is subsequently legalized in Japan, medical institutions will be able to prescribe cannabis as a "medicine". Medical cannabis is known to have various effects such as analgesic effect, sedative effect, anticancer effect, and increasing appetite effect. And it is reported for its effectiveness for epilepsy, Alzheimer's disease, cancer, allergies, depression, glaucoma, and many others which many patients in Japan are suffering from. In addition to its benefits, medical cannabis has many other positive effects, including:

- E possibility that cures diseases which there is currently no cure.
- Fewer cost and easily manufactured since cannabis does not cost a lot of time and money compared with other medicine development
- Less side effects (i.e., dependence and addiction), so there is no need to worry about side effects.
- Many varieties of cannabis, therefore prescribed cannabis species are changeable depending on the symptoms of illness.

- Suitable for children to adults, since ingestion is the same as other medicines such as inhalation and oral medication

First, medical cannabis has the possibility of helping cure or improves previously incurable illnesses thus it is expected to help many patients.

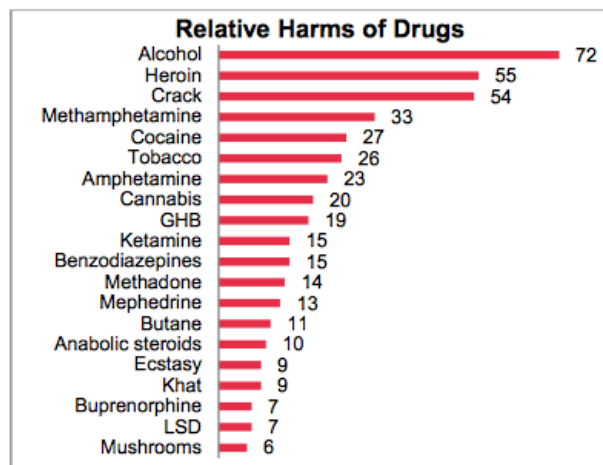
Second, criminal organizations such as gangsters and the mafias are mainly engaged in the smuggling and trafficking of cannabis. If cannabis is legalized in Japan, criminal organizations would have difficulty making profits as the current situation (cannabis as an illegal item) by using cannabis as an illegal business. If it happens, the criminal rate related to cannabis would be reduced, which may eventually lead to the destruction of criminal organizations. Moreover, cannabis has a sedative effect, which reduces emotions such as anger to cause impulsive behavior. It has been reported that crimes such as murder and sexual crimes have decreased in Colorado after cannabis has been legalized. By legalizing cannabis, it may become a safer world.

Finally, if cannabis is legalized, the number of tourists who want to use cannabis will be increased. This would bring more tourists to Japan in search of cannabis, therefore Japan can hold more foreign currencies and cash. Consequently, if the number of tourists increases, it will benefit not only from the cannabis business but also restaurants, cafes, hotels, entertainment facilities/ industries, and other business possibilities. As a result, the legalization of cannabis would be predicted to create new job opportunities, for the reason that allowing cannabis needs a manufacturing plant, a sales office, a suction place, and other facilities. If that happens, some people may have jobs at the facilities.

## 2) Disadvantages

The benefits of legalizing cannabis are stated previously, but then there are also disadvantages to legalizing cannabis. Cannabis is generally known to be less dependable, but it is not entirely addictive.

A well-known study, published in the prestigious medical journal called “The Lancet”, compares the dependence and harm of various drugs. According to “The Lancet”, the most addictive drugs in order were heroin, cocaine, tobacco, alcohol, sleeping pills (barbiturates), stimulants, and cannabis. Regarding the use of harm in order was heroin, cocaine, sleeping pills, alcohol, stimulants, tobacco, and cannabis. (Nutt et al. Lancet 2010)



*Figure 2. the relative potential harms of drugs*

Next, in cannabis-legalized countries such as the United States, accidental ingestion by children has become a major problem. Recently, cannabis is often processed and sold as cookies, brownies, and beverages, so children can mistakenly eat. As a result, the number of children who are being transported by emergency due to accidental ingestion is increasing. Many of the symptoms are serious, such as dyspnea and coma, and this



problem can sadly be life-threatening. The use of cannabis by children who are not fully mature can also cause other illnesses to themselves. The effects of cannabis on an immature brain are also known to harm memory loss and concentration. It seems that the risk of getting mental illness will also increase in the future.

## **Section 2 Hypothesis verification**

Considering mainly the United States as an example where the economic effect of lifting the ban on cannabis has been confirmed. Colorado, for example, has sold more than 6.56 billion dollars and has generated a total of about 1 billion dollars in tax revenue since its legalization in 2014. Cannabis-related tax revenues can be returned to a variety of public services. It is said that it will allocate tax revenue related to cannabis in each state where cannabis was legalized in November 2020, not only the state's general financial resources but also community colleges, police, sheriffs, fire departments and other community services, veterans' services and special revenues for substance abuse treatment, etc.

In the United States, the legalization of cannabis is seen as effective in increasing tax revenues even at the federal level. According to a New Frontier Data report, there would be more legitimate companies will enter the market and more consumers will enter the legitimate market, so more employees will be on public salary with full legalization. Total income tax would reach 8.4 billion dollars and the salary deduction amount is suspected to increase about a billion dollars by 2025.

Assuming that a federal sales tax is 15%, total revenue from 2018 to 2025 is estimated to reach 73.7 billion dollars. Currently, there is no federal sales tax or

excise tax on cannabis-related goods, so cannabis-related tax revenues are a completely new income for the US Treasury.

From the above, it is predicted to reach the total amount of cannabis-related tax revenue under full federal legalization to be 175.8 billion dollars between 2018 and 2025, including business tax, salary withholding based on estimated employment, and sales tax.

There is also a view that the legalization of cannabis could bring an economic recovery in the face of the recession caused by the COVID-19 pandemic, just like the prohibition abolished during the great depression. In fact, local government expectations for the cannabis market are high, as the Governor of Pennsylvania has announced that legalization of cannabis would play a major role in the plan to activate the state economy from a COVID-19 pandemic.

However, in Canada, as the price of cannabis has risen due to taxes, the growth of the legal market has slowed down, and in some cases, consumers have flowed into the illegal market. Therefore, in order to both revitalize the legal market and increase tax revenue, considering a balance between market prices and taxes is important.

How effective the job creation by cannabis-related industries is knowing its influence on related industries.

With the escalation of the cannabis market, related industries are also seen booming. For instance, cannabis inhaler makers, from start-ups to major companies, are increasing sales under the situation of the COVID-19 pandemic and there were high-grade products ran out.

Cannabis-related start-ups are also showing their rapid growth, in fact, cannabis distribution platformers increased to 5 million dollars in Series A, and funding in seed rounds raised to 3.1 million dollars.

Existing industries are also embarking on the development of the cannabis market. For example, the Altria Group, known for its tobacco brands such as Marlboro, has invested greatly in a cannabis-related company called Kronos. Also, companies that manufacture and sell lawns, gardens, and pest control products are rushing to expand their existing industries and enter new markets, such as by funding a legalization promotion campaign in New Jersey.

In response to the success of these new industries, employment is being created. As of January 2020, nearly 244,000 people were employed full-time for legal cannabis jobs in the United States. From 2018 to 2019, the cannabis industry was creating about 82,000 job opportunities.

It is estimated to create more than 1.46 million jobs and it could possibly increase to 1.63 million jobs by 2025 if cannabis is legalized fully in all 50 states in America.

Also, if the domino effect of the legalization of cannabis in New Jersey occurs, which mentioned at the beginning, not only cannabis manufacturers and distributors but also local real estate, merchants, and the construction industry that creates these offices in the surrounding states, lawyers, and accountants are expected to have financial opportunities.

In this way, new cannabis-related industries are contributing to creating job opportunity which would make the place wealthier, and further effects are expected in the future. Also, the reform of social justice through the legalization of cannabis has economic benefits.

The legalization of cannabis can reduce the cost of arresting cannabis-related crimes and the financial loss by social disadvantages. For instance, about 660,000 people were arrested for cannabis-related crimes in the United States in 2018, of which about 600,000 were arrested for simple possession. The average cost of such an arrest is set between 1,000 dollars to 5,000 dollars.

Also, the history of arrests and criminal records could lead to an economic loss of human capital caused by ending scholarship, dismissal, loss of employment, and loan credit opportunities. These costs and economic losses could be curbed by legalization.

The above is a predicted case on economic effects mainly considered the United States, yet it has a high possibility that a certain bring the same situation to Japan by the legalization of cannabis, even though not all of these apply.

#### **Chapter 4 Conclusion**

In summary, from the considerations above, it can be concluded that the hypothesis of this paper is not rejected. Research cases from other countries have shown that there are various levels of "liberalization" in the use of cannabis. Direct use of cannabis (using flowers and leaves) by cannabis extracts for medical purposes has been eased since the start of research and development of pharmaceuticals. In this regard, many government agencies have consistently encouraged the research and development of medical cannabis. However, that was not only the liberalization of cannabis use in this regard. There was still a conflict about the liberalization of cannabis use. Comprehensive research has not been finished, and even today's legal "drugs" such as tobacco and alcohol are not yet well controlled. Therefore, the liberalization of cannabis use increases the risk of developing social problems as well

as the economic boost. Alternatively, no matter how well it becomes medical cannabis, the Ministry of Public Health may limit its right use.

The problem is a lack of focus on the benefits and harms of using medical cannabis.

(1) Being aware of the control, especially how ready to regulate the use of cannabis by the Ministry of Public Health

(2) How much the current law "shelves" or "prevents" cannabis research

(3) Discovery of medical cannabis patterns to amend the law

(4) The purpose of medical cannabis use must resolve larger problems. How patients can access to the drug safely and without unnecessary cost

When implementing cannabis-related policies in Japan, it is necessary to discuss the liberalization of cannabis and the use of medical cannabis separately to prevent social turmoil. Each state also needs to assess how much cannabis use can be regulated to minimize risk.



## REFERENCES



จุฬาลงกรณ์มหาวิทยาลัย  
**CHULALONGKORN UNIVERSITY**

- 1) Rehm, J., Elton-Marshall, T., Sornpaisarn, B., & Manthey, J. (2019). Medical marijuana. What can we learn from the experiences in Canada, Germany and Thailand?, *International Journal of Drug Policy*, 74, 47-51.
- 2) KROLL, P. (1975). Psychoses associated with marijuana use in Thailand. *The Journal of Nervous and Mental Disease*, 161(3), 149-156.
- 3) Tipparat, P., Natakankitkul, S., Chamnivikaipong, P., & Chutiwat, S. (2012). Characteristics of cannabinoids composition of Cannabis plants grown in Northern Thailand and its forensic application. *Forensic science international*, 215(1-3), 164-170.
- 4) Li, M. C., Brady, J. E., DiMaggio, C. J., Lusardi, A. R., Tzong, K. Y., & Li, G. (2012). Marijuana use and motor vehicle crashes. *Epidemiologic reviews*, 34(1), 65-72.
- 5) Thaikla, K., Pinyopornpanish, K., Jiraporncharoen, W., & Angkurawaranon, C. (2018). Cannabis and Kratom online information in Thailand: Facebook trends 2015–2016. *Substance abuse treatment, prevention, and policy*, 13(1), 15.
- 6) Abuhasira, R., Shbiro, L., & Landschaft, Y. (2018). Medical use of cannabis and cannabinoids containing products—regulations in Europe and North America. *European journal of internal medicine*, 49, 2-6.
- 7) Sawler, J., Stout, J. M., Gardner, K. M., Hudson, D., Vidmar, J., Butler, L., ... & Myles, S. (2015). The genetic structure of marijuana and hemp. *PloS one*, 10(8), e0133292.
- 8) Zuskin, E., Kanceljak, B., Pokrajac, D., Schachter, E. N., & Witek, T. J. (1990). Respiratory symptoms and lung function in hemp workers. *Occupational and Environmental Medicine*, 47(9), 627-632.

- 9) Ebbert, J. O., Scharf, E. L., & Hurt, R. T. (2018, December). Medical cannabis. In *Mayo Clinic Proceedings* (Vol. 93, No. 12, pp. 1842-1847). Elsevier.
- 10) Lucas, P., & Walsh, Z. (2017). Medical cannabis access, use, and substitution for prescription opioids and other substances: a survey of authorized medical cannabis patients. *International Journal of Drug Policy*, 42, 30-35.
- 11) MacCallum, C. A., & Russo, E. B. (2018). Practical considerations in medical cannabis administration and dosing. *European journal of internal medicine*, 49, 12-19.
- 12) Hall, W., & Degenhardt, L. (2009). Adverse health effects of non-medical cannabis use. *The Lancet*, 374(9698), 1383-1391.
- 13) Wada, K. (2011). The history and current state of drug abuse in Japan. *Annals of the New York academy of sciences*, 1216(1), 62-72.
- 14) Backes, M. (2014). *Cannabis pharmacy: the practical guide to medical marijuana*. Hachette UK.
- 15) Pisanti, S., & Bifulco, M. (2017). Modern history of medical cannabis: from widespread use to prohibitionism and back. *Trends in Pharmacological Sciences*, 38(3), 195-198.
- 16) Hall, W., & Degenhardt, L. (2009). Adverse health effects of non-medical cannabis use. *The Lancet*, 374(9698), 1383-1391.
- 17) Kazuho Abe(2016) 「Dangerous Drug Encyclopedia」 Musashino University Press, 1-256.
- 18) Edward J Cone 1, Yale H Caplan, David L Black, Timothy Robert, Frank Moser(2008). Urine drug testing of chronic pain patients: licit and illicit drug patterns: *J Anal Toxicol* 32(8), 530-43



- 19) H.K. Kalant & W.H.E. Roschlau (1998). Principles of Medical Pharmacology (6th edition ed.). pp. 373-375
- 20) United Nation (2019) :  
<https://www.mofa.go.jp/mofaj/gaiko/mayaku/index.html> accessed by March 13, 2021
- 21) AFP(2017) : <https://www.afpbb.com/articles/-/3114740> accessed by March 13, 2021
- 22) Newsweek(2017) : <https://www.newsweekjapan.jp/stories/world/2017/09/post-8557.php> accessed by March 13, 2021
- 23) DrugsInc(2019) : <https://drugsinc.eu/en/3-cannabis-aandelen-die-sterk-profiteren-van-de-stijgende-vraag-naar-medische-wiet-in-duitsland/> accessed by March 13, 2021
- 24) Marijuana Business Daily (2019) .Marijuana Business Factbook 2019: *ISBN-13 : 978-1938219276*
- 25) Jetro(2019) :  
<https://www.jetro.go.jp/biz/areareports/2019/b8d83bbb6e70770a.html>  
accessed by March 13, 2021
- 26) Thailand's Ministerial Regulation(2020) :  
<https://globalcannabiscompliance.bakermckenzie.com/2020/02/25/ministerial-regulation-concerning-the-production-distribution-or-possession-of-hemp-approved-by-the-cabinet/> accessed by March 13, 2021

27) ANGGLE(2021) : [https://anngle.org/newsclips/hemp\\_licence.html](https://anngle.org/newsclips/hemp_licence.html) accessed

by March 13, 2021

28) The Lancet (2010) , 376(9752), 1558-1565,



## VITA

**NAME** Yuki Matsushita

**DATE OF BIRTH** 14 October 1994

**PLACE OF BIRTH** Tokyo, Japan

**INSTITUTIONS  
ATTENDED** School of Political Science and Economics, Meiji  
university

**HOME ADDRESS** Lumpini park view 1026/201, 28F Rama IV Rd, Thung  
Maha Mek, Sathon, Bangkok 10120



จุฬาลงกรณ์มหาวิทยาลัย  
CHULALONGKORN UNIVERSITY