

Cahiers des Amériques latines

99 | 2022

Commodities: un nouveau cycle?

A long and winding road: making cannabis black markets legal

Convirtiendo mercados negros en mercados legales: el largo y sinuoso camino del cannabis

Une route longue et sinueuse : la transformation des marchés noirs du cannabis en marchés légaux

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Electronic version

URL: https://journals.openedition.org/cal/14569 DOI: 10.4000/cal.14569 ISSN: 2268-4247

Publisher

Institut des hautes études de l'Amérique latine

Printed version

Date of publication: 15 December 2022 Number of pages: 59-80

ISBN: 978-2-37154-154-2 ISSN: 1141-7161

Electronic reference

Jeremias Lachman, Andrés López and Sebastián Gómez-Roca, "A long and winding road: making cannabis black markets legal", *Cahiers des Amériques latines* [Online], 99 | 2022, Online since 01 March 2023, connection on 19 March 2023. URL: http://journals.openedition.org/cal/14569; DOI: https://doi.org/10.4000/cal.14569



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A long and winding road: making cannabis black markets legal

In recent years, many states have legalized cannabis, either for recreational ("adult") use, or for medical or industrial purposes [Zarhin, 2020; Rehm et al., 2019; Carnevale et al., 2017]. This has spurred optimistic forecasts about growth in the global cannabis market, which in turn have attracted the interest of investors. A number of countries have joined this wave, not only for the purpose of creating regulated domestic markets and displacing existing black markets, but also to attract investments aimed at exporting cannabis and its derivatives based on cost advantages (e.g., Colombia and Jamaica) or scientific capabilities (e.g., Israel). In the case of Latin America, cannabis is also perceived as an opportunity to further diversify agricultural production and exports beyond each country's traditional staples, as well a source of employment and productive linkages along the value chain.

However, several years after the wave of legalizations began, with companies and governments rushing to take advantage of opportunities in the emerging cannabis market, reality has lagged behind the initial forecasts. This is reflected, for example, in the drastic fall in stock prices of the main global cannabis companies over the last years. Likewise, the expectations of countries such as

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Colombia or Uruguay to become strong cannabis exporters have not yet been met, since export activity in those countries is still very weak.

The aim of this paper is to understand why growth expectations in the cannabis industry have not been validated. In fact, a) there was already solid demand for cannabis, both real and latent; b) cannabis firms had access to capital required to finance their investments; c) the basic technologies for the cultivation and processing stages were available; and d) there were regulatory and tax models for psychoactive substances prone to cause individual or social harm (e.g., tobacco and alcohol) that could be adapted to cannabis. So what was behind the above-mentioned disappointment of expectations?

One possible explanation relates to simple forecasting errors (e.g., overly optimistic hopes regarding the pace at which legalizations would advance in various parts of the world). However, there are other elements behind such disappointment. Our argument is that constructing the "institutional infrastructure" of a new market is a complex process, which faces pressures from multiple sources, particularly in cases in which this new market was already operating in an illegal (and very often criminal) framework.

In fact, building up a legal market for cannabis consumption involves many challenges, given the background to the way in which cannabis supply and demand has operated since the middle of the 20th century [Dills et al., 2017; Enamorado et al., 2016]. In the first place, this product was banned in almost all parts of the world as it was included in Schedule I (substances that are highly addictive and likely to be abused), and Schedule IV (substances with little or no therapeutic value) of the United Nations Single Convention on Narcotic Drugs (1961). The restrictions posed by this convention, jointly with the negative stance towards cannabis adopted by UN organizations in charge of its administration, severely limited available policy options at the national level in this area [Jelsma & Armenta, 2015]. In the second place, the use of cannabis has been affected by moral concerns and social criticism [Sviatschi, 2018], resulting in hindrance to scientific and technological progress around this product. This had strong impacts in the medical area,2 preventing a more rapid advance of scientific research regarding cannabis potential applications for treating diverse health conditions. Thus, given the existence of a cannabis ban for many decades, the persistence of social rejection and concerns about its use, and the so far inconclusive results about its medical use except for a few health conditions [Rehm et al., 2019], it could be expected that making this black market legal might not be a straightforward task.

^{1.} However, there is still a wide range of issues to address in terms of improving knowledge about plant genetics, as well as enhancing the understanding of its potential medical and industrial uses.

^{2.} Cannabis has been used for medical purposes for thousands of years [Guerra-Doce, 2015].



A LONG AND WINDING ROAD: MAKING CANNABIS BLACK MARKETS LEGAL

This study is based on a review of publicly available sources of information about the regulatory frameworks implemented in the various states that have legalized cannabis (Argentina, Canada, Colombia, Israel, Paraguay, Peru, United Kingdom, United States and Uruguay), as well as on fieldwork carried out between May and July 2020. This involved conducting interviews and organizing virtual meetings with around 30 academics, former and current public officials, and experts and businesspeople from Argentina, Colombia and Uruguay. These interviews were based on semi-structured questionnaires which addressed various sets of questions for each group of interviewees.³

We conclude that progress towards creating a legal cannabis market has been hampered by the following factors: a) the problems associated with the transition from a black market to a legal market, in a context in which economic, health and security objectives must be reconciled; b) decoupling and different speeds of progress in the various regulatory dimensions involved in the creation of a cannabis industry at the national level (e.g., administration and delivery of licenses and authorizations for investments in each stage of the value chain, approval processes for medicines and other products for human consumption); and c) conflicts and lack of coordination in cannabis laws at the international level.

Although we identify the presence of these three factors in all the countries analysed, we were able to document their impacts with more detail in those cases in which we conducted field research and interviewed the main stakeholders around the cannabis value chain (Argentina, Colombia, and Uruguay). Hence, our findings may not be easily generalized to other experiences, given the diversity of institutional and social contexts, the different baselines and the fact that each country has its own incentives and aims when making cannabis black markets legal (e.g., taking advantage of commercial opportunities, fighting criminal organizations, protecting consumers, etc.). All these differences have a strong impact on the chosen regulatory pathway and its evolution over time.

The different obstacles identified in our research emerge with more or less intensity in the various national experiences depending on the type of regulations implemented in each case. In this regard, the policy models governing recreational cannabis in the United States (US), Canada⁴ and Uruguay differ widely in terms

^{3.} During the recorded interviews informants were asked to identify and characterize the domestic regulatory framework and its evolution over time, the main stakeholders involved in that framework and their relationships and interactions, the opportunities for the cannabis sector, the strategies of private investors, the perception of civil society organizations and the main obstacles faced by legalization, among other issues.

^{4.} Within these two countries, various regulatory models coexist. In the first case, each state has adopted different legalization models, while at federal level, the product remains illegal. In Canada, adult cannabis is legal at national level, while each province has a degree of freedom to decide how to implement the federal law.

of the degree of control and direct state presence in cannabis production and sales, and therefore the available space for private business. Medical cannabis legislation also shows often remarkably different features across countries, both in terms of the greater or lesser acceptance of medical cannabis derivatives, and in the ways in which these products are regulated.⁵

The remainder of the paper is organized as follows. The next section briefly describes the recent evolution of regulations on recreational and medical cannabis. Section 3 presents the basic trends in cannabis markets and the main players. Section 4 analyses the factors that have prevented faster growth in the cannabis industry. Section 5 concludes.

Towards the legalization of cannabis

Cannabis was included in Schedule I (substances that are highly addictive and likely to be abused), and in Schedule IV (substances with little or no therapeutic value) of the United Nations Single Convention on Narcotic Drugs (1961). These substances are subject to a series of strict controls that limit their production, trade and use, although their use for scientific and medical research purposes is allowed. Likewise, the cultivation of the cannabis plant (fibre and seeds) for industrial or horticultural purposes is authorized.

In spite of this restrictive context, many states have legalized cannabis markets for recreational and medical purposes. This trend is explained, among other things, by three factors: a) increasing consensus about the failure of the prohibitionist model as it exists today [Werb, 2018; LSE Ideas, 2016]; b) growing interest in medical applications of cannabis [Rehm *et al.*, 2019]; and c) the search for new sources of incomes and jobs [Carnevale *et al.*, 2017].

In 1996 California became the first state to legalize medical cannabis. In later years, other states followed this move (initially with quite restrictive measures, which eventually were relaxed some years after implementation). The last decade has seen recreational cannabis being legalized first in Colorado and Washington States (US) in 2012, and then in other states of the US, as well as in Uruguay (2013) and Canada (2018).

At present, with different modalities and scopes, medical cannabis is authorized in more than 40 countries and in more than 30 states in the US, while recreational cannabis is legal in Canada, Uruguay and 11 US states, plus Washington D.C.⁶ In some countries, regulations have legalized the cultivation

^{5.} See, for instance, Marijuana Business Daily [2020a] and Marijuana Business Daily [2020b].

^{6.} In recent history the most famous case of government "tolerance" of drug use is that of coffee shops in the Netherlands. While they have been selling cannabis since the 1970s, the cultivation, production and import of the substance is still prohibited, meaning that the coffee shops obtain the product from illegal sources. At the end of 2019 the Dutch government launched a pilot



of cannabis with low or non-existent THC⁷ content, commonly known as hemp, for industrialization purposes. For example, a federal law was passed in the US (2018 Farm Bill⁸) that authorizes the cultivation of cannabis with less than 0.3% THC content. This has a direct economic impact since this type of cannabis can be used not only for medical purposes, but also to manufacture various derivatives (e.g., fibres, cosmetics, paper, construction materials), as well as for the production of different types of edibles, drinks and infusions.

The legalization of recreational cannabis in countries such as Canada or Uruguay conflicts with current international regulations. The US situation in this regard is not entirely clear since cannabis is still illegal at the federal level.9 Meanwhile, as mentioned above, nothing prevents countries from legalizing medical cannabis markets, provided they establish adequate control measures, implement a licensing system and create specialized agencies in charge of supervising the industry. In fact, one of the functions of the International Narcotics Control Board (INCB), a United Nations Organization, is to assign quotas to regulate the production, trafficking and use of psychoactive substances included in Schedules I and II of the aforementioned 1961 Convention, in order to ensure control over these substances and their exclusive use for medical and scientific purposes. Thus, countries must present their annual production and consumption forecasts for validation to the INCB, which then assigns maximum quotas at the national level, including imports and exports. It is important to note that the a priori position of the INCB regarding medical cannabis legalization programmes is rather cautious, to say the least, and in fact it has expressed open criticism with regard to many of them.¹⁰

Finally, although clinical research on the medical effects of cannabis is still incipient, and basic unsolved debates remain in this area, ¹¹ there is already scientific evidence regarding the effectiveness of cannabis-based medicines for the treatment of some ailments. This has led to the approval of drugs based on

programme in 10 cities where 79 coffee shops are supplied by private growers chosen by the government. The results of this pilot could be the basis for the establishment of a legal production chain of cannabis for recreational use in the Netherlands. See: https://harrisbricken.com/cannalawblog/the-netherlands-and-cannabis-legal-supply-chain-experiment-continues/

^{7.} THC is the main psychoactive component of the cannabis plant.

^{8. &}quot;The Farm Bill, hemp legalization and the status of CBD: An explainer". Available at: https://www.brookings.edu/blog/fixgov/2018/12/14/the-farm-bill-hemp-and-cbd-explainer/

^{9.} See Bennett and Walsh [2014] for a discussion on the subject.

^{10.} See https://mjbizdaily.com/incb-medical-cannabis-violate-treaties/

^{11.} For example, there is scope for research to determine whether the main cannabis compounds, i.e., CBD, THC, have effects *per se* (in isolation), or whether such effects depend on interaction with the other components of the plant (e.g., other cannabinoids and terpenes). In the latter case, we talk about "full spectrum" preparations, based on what is often called the "entourage" effect. See Cogan [2020].

active compounds extracted from cannabis plants by some of the most demanding health agencies, including the US Food and Drug Administration (FDA).

Markets and cannabis companies

As mentioned above, the recent wave of legalizations has occurred in a context in which strong demand for cannabis already existed and was being satisfied through illegal channels (and in the case of recreational cannabis, supply was usually provided by criminal organizations¹²). Illegal consumption existed in both the recreational and the medical segment. Whether rightly or wrongly, a growing number of people believe in the medical properties of cannabis (or at least think that cannabis can alleviate specific problems, such as lack of sleep, anxiety, etc.). In fact, in some cases (e.g., in the United Kingdom or Peru), the legalization of medical cannabis was driven, among other factors, by the dissemination of news in the media about families searching for clandestine treatments based on CBD products for their children.¹³

The interest of investors in this new market emerged early on, and in the 2010s many companies specializing in cannabis went public. In 2013, the Global Cannabis Stock Index (GSCI) was created: the GSCI currently includes 37 companies, mainly from Canada and the US, several of which are listed on the NASDAQ. Many of these companies have become multinational corporations making productive investments worldwide. In the case of investments in emerging markets, the main interest lies in cost advantages¹⁴ (due to both soil and climatic conditions as well as to labour costs); an estimate for Colombia indicates that the cost of producing a gram of cannabis flower amounts to USD 0.5-0.8, against more than USD 2 in Canada [Martínez Rivera, 2019]. Another driver is the possibility of counter-season production for the Northern Hemisphere [Uruguay XXI, 2020].

In general, these corporations are vertically integrated, from the cultivation stage to the processing of raw materials and the manufacturing of derivatives, either for other companies or for end users. Vertical integration may be the result of regulatory requirements and/or of the attempt to reduce transaction costs (trading with independent parties in a market dominated by certifications and standards can consume time and scarce resources and may be a source of contingent risks).

^{12.} Although in many countries there is a market for medical cannabis that operates through illegal channels, it is not a business in which large drug trafficking networks participate, as is the case of the recreational segment. As far as we know, supply comes from small independent producers who rarely resort to violent methods in order to operate.

^{13.} CBD (cannabidiol) is a component with little or no psychoactive effect and is currently the most commercially exploited cannabinoid in global medical cannabis markets.

^{14.} See https://www.investors.com/news/marijuana-stocks-eye-south-america-cannabis-production/



A LONG AND WINDING ROAD: MAKING CANNABIS BLACK MARKETS LEGAL

Regarding the availability of technologies for cultivation, three models already in use for other agricultural products (i.e., outdoor, greenhouses and indoor) were readily available. Hundreds of cannabis strains were also available around the world (the vast majority of them had been developed illegally). The characteristics of these strains vary depending on aroma, plant size, chemical composition, cultivation practices and characteristics of the soil and weather; the strains may also have different yields, applications and properties [Palmieri et al., 2019]. Although the task of identifying these properties is still in full swing, the availability of a broad set of cannabis varieties provided an initial basis for the development of legal production. The equipment required in the cultivation stage (e.g., irrigation systems, nutrient management, drying equipment, sensors for monitoring crops, filtration and air circulation systems, lighting systems, etc.) was also readily available since it was already used for other agricultural activities. The same occurred with the processing stage (e.g., extraction equipment) and the analysis stage (e.g., chromatographs). Existing good agricultural and manufacturing practice certifications (e.g., EU/Global GAP and EU/Global GMP¹⁵) could also be easily adopted.

However, even in the new favourable regulatory context and with the fundamentals—demand, supply, technology—already in place, growth in the legal cannabis market has not yet met the expectations of investors and of those governments that aimed at becoming international hubs for producing and exporting cannabis. Note should be taken that it is not the case that legal markets have failed to grow. According to the latest report by the INCB, world's legal production of cannabis climbed from 1.1 tons in 1999 to almost 651 tons in 2020 (INCB, 2022).¹⁶

Private reports also suggest that markets have been steadily growing in recent years. For instance, Arcview Market Research and BDS Analytics [2019] estimated that global legal consumption grew from USD 3.4 to USD 10,8 billion from 2014 to 2018. Another source estimates that global cannabis sales reached USD 23.7 billion in 2020, 57% of which belongs to the adult market. North America concentrates 97% of total sales, while Latin America's share is barely 0,01% [New Frontier Data, 2021].

Nevertheless, in spite of the growing trends of sales, cannabis stock prices have collapsed in the last years, reaching historical lows in 2020 and again in 2922. The largest cannabis companies have invested in various countries, but their income is still concentrated in North America. For example, Canopy

^{15.} EU and Global refer to the stamps of approval that are granted for the European Union (in the case of the EU) and for the rest of the world (in the case of Global).

^{16.} These figures are estimated on the basis of authorization requests for quotas received by the INCB from different countries. Thus, they do not include the production of psychoactive cannabis for recreational use, since this conflicts with current international conventions.

Growth operates in more than 10 nations outside that region, but according to the company's accounting information only 4% of its total revenues come from those operations. Aurora Cannabis Inc., another Canadian firm, reports activity in 16 countries outside North America, but only 5% of its revenue comes from those sources. Hence, so far the multinationalization strategies of the largest cannabis ventures have failed to generate significant incomes either in terms of exports to their home region or in terms of sales in domestic markets abroad.

Likewise, Colombia and Uruguay, which pioneered cannabis legalization in Latin America (2016 for medical purposes in Colombia, and 2013 for recreational and medical use in Uruguay) have not managed to generate significant exports, despite having attracted investments from several of the largest cannabis companies in the world. In fact, it was only in 2020 that the first export of seeds to the US was authorized in Colombia, while in Uruguay only three export operations of flowers had been made by the time our research was concluded. In turn, growth rates in the domestic medical cannabis market in both countries (as well as in the rest of Latin America) have been low [Marijuana Business Daily, 2019; New Frontier Data, 2021]. The next section presents a framework to improve comprehension of the causes behind the mismatches between expectations and reality in this sector.

The slow construction of an institutional infrastructure for the cannabis market

For the successful development of a new market, it is not enough to have a real or latent demand, firms willing to satisfy that demand, and access to the technical knowledge and the inputs and equipment required at the various stages of the value chain. Markets operate in regulatory and social contexts which are sector and country specific. In our case, the relevance of this institution-building process is even larger due to two factors: a) the largest cannabis markets focus on human consumption products, which may have harmful effects for those who use them (e.g., high THC content cannabis) and/or which claim therapeutic effects (and hence there is a need to learn about their efficacy and safety); b) many of these goods are not new, but were already being traded on black markets. Hence, an institutional apparatus for cannabis was already in place (both at the national and the international level), but geared to repressing production and consumption, rather than regulating them.

In this context, as we shall see, the states that legalized cannabis had to make a series of decisions and choices in order to meet their objectives, while balancing

^{17.} See: https://www.ica.gov.co/noticias/ica-nuevo-mercado-cannabis-colombiano

 $^{18. \,} See: \, https://mjbizdaily.com/uruguay-exports-record-breaking-shipment-of-cannabis-flower-to-europe/$



openings with controls and restrictions in a context of uncertainty as regards the reaction of market agents—and society in general—and the impacts of the new regulations. For instance, in the case of recreational cannabis the objective was to gradually reduce, and eventually eliminate, the illegal market. This implied, among other things, the establishment of tax systems that would not lead to very large price differentials between the legal and black markets, as well as mechanisms that would facilitate the expansion of supply and the access to retail stores.

However, those elements that favour growth in the legal market can have adverse effects in other dimensions. Thus, low prices and ease of access can lead to "excessive" increases in the consumption of potentially harmful substances. For these same reasons, regulations can be adopted to restrict the advertising of these substances and/or limit the marketing strategies around them. In turn, even if the use of cannabis derivatives that claim to have therapeutic effects is proven to be safe, their availability could lead some patients to consume products without certified properties and abandon treatments whose efficacy has been tested by competent authorities. This explains why health agencies, as described below, have often been reluctant to authorize cannabis products for medical use. Against this background, since the goal of reaching equilibrium between conflicting objectives leads to the adoption of regulations favouring the persistence of a black market, further controls must be introduced to prevent legal cannabis production being diverted to the illegal markets.

In fact, constructing the institutional infrastructure of a cannabis market is a complex process, for which different types of government organizations (at the international, national and local level) might claim responsibility. At the national level, agencies in charge of public safety and security, money laundering, narcotics control, agriculture and health are often involved in the legalization processes. Additionally, institutions that deal with the registration of seeds, and the authorization of products intended for human or animal consumption, including medicines, must also be involved. The authorities in charge of productive development policies or of exports and investment promotion may also be part of the regulatory framework, especially when cannabis legalization has economic objectives. All these institutions have different agendas, functions, activities, routines, capabilities, etc., and their views on the cannabis markets may differ, both in the relevance they assign to the subject and in their attitude towards legalization. Furthermore, national regulations (particularly in federal countries, such as Argentina, Canada or the US) must be adapted and transferred to the provincial/municipal level, where diverging visions and strategies regarding cannabis markets may also prevail. In this scenario, the various agencies involved in the regulatory framework governing cannabis within a country can operate with different sets of incentives and objectives that are not always mutually consistent.

On the other hand, as mentioned in the introduction, the specific goals and aims pursued when making cannabis black markets legal had a strong influence on the process of building the new institutional infrastructure. For instance, one interviewee in Uruguay mentioned that "at the beginning of the legalization process here, the main objective was focused on fighting the 'narco' world, rather than fostering the establishment of a formal market. For this reason, our legal framework took a positive approach to cannabis self-cultivation and cannabis clubs while limiting the opportunities for profit-oriented private ventures". In turn, one interviewee in Argentina mentioned that "our legal framework for cannabis consumption was aimed at enhancing the access to medical cannabis for those patients suffering from some specific diseases and promoting academic and technical research for cannabis medical use only". Both interviewees agreed that these first steps set the course of action for later decisions and events, which were to a large extent the outcome of a trial and error process launched on the basis of the initial regulations adopted in each country.

Finally, national cannabis regulations should conform, in principle, to current international conventions on the subject. However, as seen above, some countries have adopted laws that openly violate these conventions (and the INCB also objects to many national medical cannabis programmes due to the lack of appropriate controls and/or their lax regulations). Therefore problems arise in international trade between nations with adjusted vs. decoupled systems vis-à-vis global norms. Additionally, in the absence of an international coordination framework, each country may set different thresholds regarding maximum THC contents for different varieties of cannabis, or they may establish specific quality or safety standards, also limiting the possibilities of exchange between countries. We will illustrate below how these different factors have operated in the case of the nascent cannabis industry.

From black markets to legal markets

The persistence of illegal markets

The legalization of recreational cannabis not only seeks to generate new business opportunities or sources of tax collection, but also to eliminate the black market, a source of crime, violence, and corruption. The same applies to the case of medical cannabis, since the existence of a black-market exposes consumers to products whose safety, quality and composition are untested (these risks also apply to illegal recreational cannabis), although it may not necessarily be associated with crime and corruption. However, for various reasons, achieving that goal has not been easy.

In the case of recreational cannabis, we have already mentioned that from the perspective of health authorities the very same factors that favour the elimination of



the black market actually enhance the possibility of generating "excessive" increases in consumption levels. Thus, laws that enable recreational cannabis markets have usually resorted to various restrictive measures. Depending on the case and the policy models adopted, these include: a) the mandatory registration of consumers in public records; b) limitations on the offer of differentiated products (e.g., flowers containing different levels of THC, edibles with THC content, etc.) and on the advertising of cannabis products; and c) specific taxes, calculated according to the price, weight and/or THC content of the products. Additionally, *de jure* or *de facto*, the authorization of retail stores has often been limited. All these factors have allowed the persistence of illegal channels of production and sale of recreational

In Uruguay, for example, just over 20% of cannabis consumers use the legal market [IRCCA, 2020]. Although this proportion is in fact higher, principally because registered consumers often share the product with other unregistered consumers, the data suggest that a thriving black market continues to exist. Apparently, this is largely due to the fact that access through pharmacies (one of the three variants allowed, along with home cultivation and cannabis clubs) involves signing a consumer register, something that many users prefer to avoid [Queirolo, 2020]. Likewise, there are limits to the maximum quantities that can be purchased per month (40g. per person) or per week (no more than 10g. per person).

cannabis, even in the new scenario of legalization.

Meanwhile, the Uruguayan State authorized the sale in pharmacies of only two varieties of cannabis for recreational use, both with low THC content (7 and 9%). The granting of licenses to produce psychoactive cannabis for recreational use was also very gradual, and the State is solely responsible for providing the genetic material for cultivation. In addition, the sale of this type of cannabis is only authorized in flower form to be consumed in cigarettes, while other types of presentations (e.g., resins, edibles) are not legal. Furthermore, the authorities were very cautious when authorizing pharmacies as points of sale; in 2019 there were merely 17, while in many regions of the country no pharmacy was allowed to sell cannabis. All this explains why pharmacy sales have shown no sustained growth since the moment the legal market started to operate in 2017. In fact, transaction records at the end of 2019 and the beginning of 2020 were significantly below those observed a year previously [IRCCA, 2020]. One Uruguayan stakeholder mentioned that "these limitations for the legal production and commercialization of cannabis for recreational use ended up feeding the black market".

In the case of Canada, on the one hand, local authorities were reluctant to open many points of sale. On the other, the legal product (at the moment this paper was written) is much more expensive than that obtained on the black market¹⁹

69

^{19.} In the third quarter of 2019, official sources indicated that the difference was 2 to 1 [Prohibition Partners, 2019].

due to the tax burden and regulatory costs that the latter avoids (this is seemingly also the case in California²⁰). Thus, in 2019, according to official statistics, 40% of Canadian consumers claimed to have sourced from an illegal supplier. Although the figure was lower than the previous year (more than 50% down),²¹ it illustrates that the transition is a long process, the speed of which depends, among other things, on having enough points of sale and on legal production gaining scale so that prices approach those on the black market, among other factors. This kind of transition was observed in some states in the US, such as Washington, one of the pioneer states in legalizing recreational cannabis in 2012, where currently only 15% of total consumption is supplied by the black market. More recent data shows that this is also taking place in Canada, where consumers were significantly more likely to purchase this substance from legal retailers in 2020 in relation to 2019 [Hammond, 2022]. The key factors behind this evolution are retail accessibility, prices, and perception of product quality.

The persistence of black or illegal markets can also be observed in the case of medical cannabis. In the next section, we will show that in countries such as the US or the United Kingdom (UK), cannabis derivatives are advertised and sold for human consumption without legal authorization, although these products can be easily found by visiting e-commerce platforms, social networks or web pages. This is due to the above-mentioned reluctance of regulatory agencies to authorize cannabis products for medical use. Given the difficulty of accessing cannabis-based medicines through legal channels, many consumers resort to clandestine suppliers.²² Another variant of this situation occurs in Argentina, where a law legalizing the production and use of medical cannabis was approved in 2017, but its extremely restrictive nature has in practice blocked all production initiatives. In this context, several municipalities, and even some provinces, have authorized forms of community cultivation or home cultivation to meet local demand for medical cannabis derivatives, in open conflict with federal legislation on narcotics.

The problems of transition

Here we focus on two issues that have emerged as obstacles in the transition to the legal market, one regarding access to the financial and insurance system and the other regarding the registration of seeds.

In the first case, the main problem stems from the fact that at the federal level cannabis is still an illegal substance in the US. This means that banks generally refuse to operate with companies linked to the cannabis business (the same is true for many institutional investment funds), since they have to present reports

^{20.} See: https://signalscv.com/2020/06/why-does-california-still-have-a-black-market-for-cannabis/

^{21.} See: https://www150.statcan.gc.ca/n1/pub/82-003-x/2020002/article/00002-eng.htm

^{22.} See: https://prohibitionpartners.com/2020/02/07/back-to-black-is-the-slow-pace-of-legalisation-fuelling-the-black-market/



A LONG AND WINDING ROAD: MAKING CANNABIS BLACK MARKETS LEGAL

guaranteeing that their clients are not suspected of engaging in illicit activities.²³ Some sources claim that only one in thirty banks in that country (mainly small, local banks) accept clients from this industry.²⁴ Given that the US is a global financial hub, the same reluctance extends to banks in other countries that interact with US banks. In Uruguay, for instance, banks have not only refused to accept cannabis companies as clients, but they have even refused to operate with pharmacies authorized to sell cannabis produced under government license [Garat, 2017]. Although over the years, companies in Uruguay have found alternative forms of accessing financial services, this is still an obstacle for the expansion of the industry. Similar problems are found in Colombia [Ramírez *et al.*, 2019], where an interviewee stated that "just from the very beginning of the legalization of medical cannabis in the country, it was clear that the institutional framework did not take into account all the changes required in the new scenario. In fact, the persistence of regulations associated with the prohibitionist approach was an obstacle for the take-off of the legal market."

Regarding the insurance system, the same objections apply as in the case of banking (cannabis is legal in some states, but not at the federal level), and US insurers are generally reluctant to accept cannabis companies as clients. In this context, in 2019 a sector-specific organization, the US National Cannabis Risk Management Association (NCRMA), announced that it would create an insurance organization of its own for the industry [New Dawn Risk, 2019].

Regarding seeds, when the cannabis market is legalized and the possibility of registering cannabis seed varieties in the respective official registries is opened—either to protect intellectual property or to request authorization for commercial use—it is evident that pre-existing domestic varieties which are presented for registration are the product of previously illegal activities. In the case of Colombia, for example, this was solved in 2018 with the creation of a mechanism called "fuente semillera" (seed source), which allowed pre-existing seed varieties in that country to be registered and legalized before the end of that year. ²⁵ A CEO from a local company mentioned in the interview that the "fuente semillera" was a key instrument, particularly at the beginnings of our venture, as it allowed us to take advantage of the innovation in cannabis genetics that had been happening for decades. Without this mechanism, we would have lost years in testing and adapting foreign seeds.

^{23.} At the moment of writing, a legislative reform is under discussion in the US Senate that could remove this obstacle, namely the so-called SAFE Banking Act.

^{24.} See: https://edition.cnn.com/2019/03/14/perspectives/cannabis-businesses-banking/index.html

^{25.} According to information in the press, a total of 1115 requests were received. See: https://www.portafolio.co/economia/el-ica-ha-otorgado-337-registros-de-semillas-de-cannabis-en-colombia-534472

Coordination failures and regulatory obstacles at the national level

Business development vs. sanitary regulations

As expected, companies operating in the medical cannabis market advertise the potential benefits of the plant for the treatment of various ailments or health problems, or its positive effects on the well-being of users (from mood to personal care). On the other hand, institutions in charge of authorizing medicines and other products for human consumption have more often than not been very cautious regarding cannabis derivatives.

As far as we know, although hundreds of clinical trials on cannabis compounds have been undertaken around the world, only two natural cannabis-based medicines have been approved by national health authorities in Europe and the US. These are Epidiolex and Sativex (only the former was granted approval in the US), both developed by the same company (the British firm GW Pharmaceuticals). This time-lag between trials and approvals is mainly the natural result of the fact that these agencies impose strict, long-term testing and analysis procedures before approving a new drug.

However, these organizations, which are often also responsible for authorizing non-medical products such as food and beverages, dietary supplements, phytotherapy products, etc., have also in many cases shown a hostile, or at least a reluctant attitude towards the approval of the latter kind of goods, even when it comes to varieties with low or no THC content. This may be due to precautionary reasons insofar as those agencies assume that: a) more research is needed to show that those products cause no harm; b) the perception that low THC cannabis varieties are "safe" and legally available may indirectly promote the recreational consumption of psychoactive varieties; c) their availability, as mentioned before, may induce some patients to abandon sound therapies for products whose efficacy has not been tested.

This was the attitude of the Ministry of Public Health of Uruguay, which explains why, despite the fact that the cultivation of hemp was authorized several years ago, the domestic market for cannabis-based products has so far been practically nil.²⁶ In turn, although a decree was passed in 2015 aimed at fostering medical cannabis exports, in practice it had the opposite effect, as it required the products to be registered first as medicines in the country, while at the same time health authorities had not established any procedure for meeting this requirement. This decree also made exports of raw materials impossible, as these commodities cannot be registered as medicines. In this context, it comes

^{26.} Only one company sells two CBD-based oils, plus an over-the-counter cream [Marijuana Business Daily, 2019]. Paradoxically, the cannabis extracts used as inputs are imported from Switzerland. Two varieties of yerba mate—a kind of herbal infusion—containing CBD are also sold.



as no surprise to find that while 40 establishments were authorized to produce non-psychoactive cannabis in 2019 (Uruguay XXI [2020]), virtually none of the production in Uruguay that year (from 600 cultivated hectares) could be sold.²⁷

The same goes for the FDA in the US. As the agency admits on its website, in that country a large number of CBD-based products claiming to have therapeutic effects are sold without legal authorization (despite the fact that several states have removed all barriers to the sale of products of that kind, again reflecting the conflicts between federal and state legislation). On the other hand, according to current regulations, those substances that are under medical investigation in clinical trials, e.g., CBD and THC, cannot be considered to be dietary supplements or incorporated into food. This would prohibit the authorization of cannabis-based products for human consumption, ²⁸ although those products are already openly sold on the market. Something similar occurs in Canada, where a legal gap exists for cannabis-based products that can be sold without the supervision of a registered physician.²⁹ In Great Britain, meanwhile, a wide range of cannabis products are available on the market without being properly registered, or even exceeding the maximum permitted THC levels. For example, in accordance with the standards of the Food Standards Agency (FSA) a Novel Food License is required for food derivatives.³⁰ However, this process is costly and requires time and resources, which explains why non-certified products are usually sold. In any case, these examples of regulatory decoupling not only hinder the establishment of a formal cannabis industry but also allow, *de facto*, products for human consumption to circulate without adequate quality and safety controls.

Bureaucracy in action

As mentioned before, the development of a regulatory infrastructure governing cannabis usually involves several agencies operating at different levels of government. A key aspect in this regard is that, given the need for traceability and security controls throughout the value chain, in all countries that have legalized medical and/or recreational cannabis, the authorities have established a set of licensing mechanisms for the different activities, from research to transport and distribution, including cultivation and processing. The implementation of this regulatory apparatus has, predictably, been slow and cautious, and has been

^{27.} Information obtained during our fieldwork. See also: https://www.elobservador.com. uy/nota/gobierno-flexibilizo-condiciones-para-exportacion-de-cannabis-medical-y-canamo--202086152718

^{28.} In March 2020, the FDA announced that changes in this regulation were under analysis for the case of CBD based products, although little progress had so far been made in that regard up to the date this research was concluded. See: https://www.thecontinuumofrisk.com/2020/04/cbd-in-food-and-dietary-supplements-what-is-the-legal-status/

^{29.} See: https://hempindustrydaily.com/health-canada-moves-towards-cannabis-products-for-health/

^{30.} See: https://www.theextract.co.uk/cbd-edibles/#Are CBD edibles legal in the UK

hampered in practice by delays (mainly motivated by risk-avoidance behaviours) due to lower-level control agencies being slow to grant permits for production or commercial facilities requested by cannabis companies, despite the latter having already obtained licenses from the respective competent authorities (this situation has been observed, for instance, in Colombia, ³¹ Uruguay, ³² California, ³³ Massachusetts ³⁴ and Canada ³⁵). The same is true in cases when local governments limit the number of points of sale, in an attempt to find the aforementioned balance between developing the legal market while not facilitating an "excessive" growth of consumption rates. ³⁶

Coordination failures at the international level

Here, two types of obstacles emerge. On the one hand, problems derived from the inconsistency between certain national regulatory models and the provisions enshrined in international treaties. For example, exports of high-THC cannabis flowers from Uruguay to Germany (the largest market for medical cannabis in Europe) were blocked for some years because the former did not comply with international drug conventions as it had legalized the production of recreational cannabis.³⁷ One interviewee from Uruguay mentioned that other exports were effectively almost blocked as the Uruguayan Ministry of Health required exporting companies to have a certificate from the health authority of the receiving destination approving the import. However, many companies struggled to get this certification abroad as these foreign health authorities might not have the competencies to issue this certificate.

The second type of obstacles is related to the fact that national laws set maximum THC levels for different segments of the cannabis market. In some cases, these laws distinguish between psychoactive and non-psychoactive cannabis. This is true, for example, in Uruguay, Colombia and Peru, where the threshold is 1% of THC, while in Paraguay it is 0.5%. Other countries also apply limits on industrial hemp. In the UK, for instance, it is 0.2% of THC, while in the US and Canada it is 0.3%. The divergence of national standards on THC may be a barrier for international trade since a producer of a variety that is considered to be hemp in a certain country may find himself unable to export to another country that has set a lower maximum THC limit.

^{31.} Ramírez et al. [2019] and information collected in interviews with companies and experts.

^{32.} Information collected in interviews with businesspeople, officials and experts.

^{33.} Prohibition Partners [2019].

^{34.} See https://mjbizdaily.com/massachusetts-marijuana-retailer-sues-state-over-licensing-delays/

^{35.} See: https://www.healtheuropa.eu/what-happened-to-cannabis-stocks/101329/

^{36.} See: https://www.bbc.com/news/world-us-canada-50664578

^{37.} Apparently, this obstacle was removed in 2020 when Germany's authorities interpreted that Uruguay has an independent regulatory system for both types of cannabis [Marijuana Business Daily, 2020b].

Recent developments in cannabis regulations in Argentina, Colombia and Uruguay

In this section we present an update of the major regulatory changes in Argentina, Colombia and Uruguay that took place after our fieldwork was concluded. These changes are to a large extent motivated by the previously mentioned shortcomings of the initial regulations adopted in each country which constrained the expansion of the cannabis industry.

Argentina's shift in cannabis related policies began in 2020 when a decree was passed modifying some of the most restrictive features of the previous regulation as it facilitated access to medical cannabis, broadened the allowed research areas and enabled self-cultivation of medical cannabis, among other things. A proposal of a new law which significantly expands the opportunities for investments, production and commercialization in the hemp and medical cannabis markets was approved in 2021 by the Senate and is awaiting approval by the House of Representatives (it is worth mentioning that this law was promoted by the Ministry of Productive Development). In turn, agencies in charge of seeds registration and of authorizing products for human consumption have seemingly abandoned their reluctance towards cannabis, and have adopted new regulations aimed at facilitating registration of previously existing seeds and authorizing cannabis based products to be sold in pharmacies.

In August 2020, Uruguay's President signed two new decrees aimed at fostering exports of medical cannabis and hemp. The major change was to allow companies to export psychoactive cannabis flower—defined in Uruguay as having 1% THC or more—as well as non-psychoactive plant material not requiring registration as a medicine in Uruguay. These decrees only apply to products harvested between 2018 and 2020 (which had not found a market due to the above-mentioned restrictions). According to the interviewees and other information collected for this research, it is not clear if these new rules would also be applied to products harvested after the above-mentioned years. Likewise, other previous requirements would still apply in any case, such as a certification from the health authority of the receiving destination approving the import.

Despite Colombia having approved a legal framework for cannabis exports in 2016, foreign sales of dried cannabis flower were banned with the objective to foster local industrialization. However, several Colombian interviewees highlighted that foreign demand for industrialized products was still very low, making it almost impossible to meet the objectives of the law. In response to these concerns, in July 2021, through decree 811, the Colombian authorities approved the export of dried flowers.

Conclusions

The development of a legal cannabis market has been slower than originally envisaged by many governments and private agents. Despite the existence of strong, sustained demand, as well as the availability of critical supply resources, e.g., firms willing to invest in the sector, access to capital, knowledge and equipment, and regulatory and tax models used for other psychoactive substances that could be adapted to the case of cannabis, the building of the institutional infrastructure required to regulate this new sector has been a long and complex process. This is the mainly the result of the need to meet different and often conflicting economic, health and public safety objectives in order to guarantee a sound transition from the previous black market to the emerging legal market.

In this scenario, the mismatch between expectations and reality concerning the growth rate of cannabis markets is not surprising. We have identified three main sources of obstacles, namely:

- -those arising from the process of transition from illegal to legal markets
- -those that emerge due to the lack of coordination within each country
- -those resulting from the lack of coordination at the international level.

The combination of these factors has led to slower than expected growth in cannabis markets due to the emergence of often unexpected obstacles in different areas, e.g., availability of retail channels, access to the financial and insurance system, difficulties in the process of setting new standards and regulations, bureaucratic delays related to licences and permits, barriers to foreign trade. We identify the impact of these factors in Argentina, Colombia, and Uruguay, countries in which we conducted deep research by interviewing different key stakeholders, although we also have secondary evidence pointing in the same direction for other countries which have legalized cannabis. In spite of this secondary evidence, we are not able to generalize our findings, which is one of the limitations of our research. In this vein, we have highlighted that the evolution of the institutional framework around cannabis is strongly influenced at the national level by the initial objectives of cannabis legalization, and the first regulatory frameworks adopted on the basis of those objectives, which may vary widely among countries.

It is not possible to predict the future evolution of the legal cannabis markets. It will depend, among other factors, on the results of the legalization experiences (and the comparative analysis of the impacts of the various regulatory models in force), the advances in research on cannabis uses and effects, and the changing social and political attitudes regarding consumption. In turn, the cases of Argentina, Colombia and Uruguay show that the policy framework may evolve in response to the identification of unexpected obstacles for the development of

A LONG AND WINDING ROAD: MAKING CANNABIS BLACK MARKETS LEGAL

the cannabis sector. In any case, we can conclude that the process of building this new market will keep evolving at a gradual pace, by trial and error, and along idiosyncratic paths in different countries and regions.

The cannabis industry in its different segments offers ample opportunities for Latin American countries wishing to diversify their productive and export patterns, going beyond traditional commodities. Is also gives room for the generation of upstream and downstream productive linkages as well as for undertaking innovation activities in the different stages of the sectoral value chain (e.g., genetics, yields, industrial processes, applications). Those nations that are just taking the initial steps towards the legalization of cannabis in order to tackle these opportunities should closely monitor the evolution of already existing legalization processes to make better-informed policy decisions.

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ABSTRACT

A LONG AND WINDING ROAD: MAKING CANNABIS BLACK MARKETS LEGAL

In recent years, cannabis legalization has made progress in different countries. Legalization aims at generating new business opportunities and tax revenues as well as reducing or eliminating the illegal market. Some Latin American governments which joined this wave also had the objective of promoting investments and exports. However, these expectations have yet to be fully validated. Although investments have arrived, so far export activity is very weak and domestic markets are still small. The objective of this paper is to show that even when the demand, the entrepreneurship and the technical knowledge needed to develop a cannabis industry were available, the creation of the institutional infrastructure required for guaranteeing a sound transition from black to legal markets has been a slow process of trial and error, which has curbed growth rates in this new industry. While cannabis offers an opportunity for productive diversification in the region, the design of the appropriate institutional setting for seizing that opportunity demands time and strong interactions among the sector's stakeholders.

RESUMEN

CONVIRTIENDO MERCADOS NEGROS EN MERCADOS LEGALES: EL LARGO Y SINUOSO CAMINO DEL CANNABIS

En los últimos años la legalización del cannabis ha avanzado en diferentes países. La legalización tiene como objetivo generar nuevas oportunidades comerciales e ingresos fiscales, así como reducir o eliminar el mercado ilegal. Algunos gobiernos latinoamericanos que se sumaron a esta ola también tenían el objetivo de promover inversiones y exportaciones. Sin embargo, estas expectativas aún no se han validado por completo. Aunque han llegado las inversiones, hasta ahora casi no ha surgido ninguna actividad exportadora y los mercados domésticos son todavía pequeños. El objetivo de este trabajo es mostrar que incluso cuando la demanda, el espíritu empresarial y los conocimientos técnicos necesarios para desarrollar una industria del cannabis estaban disponibles, la creación de la infraestructura institucional necesaria para garantizar la transición del mercado negro al mercado legal ha sido un proceso lento, de prueba y error, lo cual ha limitado el ritmo de crecimiento de esta nueva industria. Si bien el cannabis ofrece una oportunidad para la diversificación productiva en la región, el diseño del entorno institucional apropiado para aprovechar esa oportunidad requiere tiempo y fuertes interacciones entre los principales agentes del sector.

RÉSUMÉ

Une route longue et sinueuse: la transformation des marchés noirs du cannabis en marchés légaux

Ces dernières années, la légalisation du cannabis a évolué dans plusieurs pays dans le but de générer de nouvelles opportunités commerciales et des recettes fiscales, ainsi que de réduire ou d'éliminer le marché noir. Les gouvernements latino-américains qui ont rejoint cette vague ont également cherché à promouvoir des investissements et des exportations. Toutefois, ces attentes n'ont pas encore été pleinement satisfaites. Bien que des investissements aient été réalisés, presque aucune activité d'exportation n'a encore vu le jour, et les marchés intérieurs restent limités. L'objectif de cet article est de montrer que même lorsque la demande, l'esprit d'entreprise et le savoir-faire nécessaire au développement de l'industrie du cannabis étaient disponibles, la création de l'infrastructure institutionnelle nécessaire pour assurer

la transition du marché noir au marché légal s'est avérée lente, par tentatives et erreurs, ce qui a limité le rythme de croissance de cette nouvelle industrie. Même si le cannabis offre l'occasion pour une diversification productive dans la région, la conception de l'environnement institutionnel approprié pour tirer parti de celle-ci nécessite encore du temps et des interactions fortes entre les principaux acteurs du secteur.

Article reçu le 25 juin 2021, accepté le 20 juin 2022

KEYWORDS

- drug policy
- cannabis
- legalization
- · illegal markets
- economic development

PALABRAS CLAVE

- · política de drogas
- cannabis
- regulaciones
- mercados ilegales
 desarrollo económico

MOTS-CLÉS

- · politique des droques
- · cannabis
- réglementation
- · marchés illégaux
- développement économique