

Posouzení rizik plynoucích pro uživatele konopí z posunu k indoor vypěstovaným odrůdám – případ České republiky



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VÝCHODISKA: Rozvoj trhu s konopím probíhal v České republice ve třech etapách: (i) pěstování ve venkovních podmínkách (outdoor) a jeho netržní nabídka (1980–1994); (ii) trh s dovezeným konopím vypěstovaným ve vnitřních podmínkách (indoor) (1995–2005); (iii) indoor pěstování konopí ve velkém i v malém a následný pokles jeho ceny (2005–současnost). **CÍLE:** Cílem této práce je analýza rizik, jimž jsou uživatelé konopí vystaveni ve vztahu k užívání indoor a outdoor konopných produktů, při pořízení drogy na volném trhu v porovnání s jejím nákupem od pěstitele a ve vztahu k vlastnímu pěstování konopí. **DESIGN:** Analýza vzorců marihuanových trhů v České republice byla provedena na základě studie mezi uživateli marihuany a jejími drobnými prodejci a pěstiteli za využití kombinace metod. Výběrový soubor byl sestaven prostřednictvím techniky respondent-driven sampling (61 polostrukturovaných rozhovorů a dvě ohniskové skupiny). Rozhovory trvaly v průměru 69 minut a zaměřovaly se na ověření konceptů z ekonomické teorie drogového trhu. Kvalitativní analýza byla doplněna o výsledky kvantitativního výzkumu (reprezentativní populační stu-

die obnášející specifický soubor otázek zaměřených na opatřování si marihuany u osob, které užily konopí v průběhu posledních 12 měsíců). **VÝSLEDKY:** Ve vztahu k outdoor konopným produktům označili uživatelé konopí jako riziko jejich nadměrnou konzumaci, u produktů pocházejících z konopí vypěstovaného v indoor podmínkách pak existuje riziko jejich kombinování s tabákem a používání jiných nežádoucích příměsí. Mezi riziky souvisejícími s pořízováním drogy na trhu byla uváděna absence informací o odrůdě a kvalitě, přičemž zmiňovány byly také vysoké zisky plynoucí distributorům. Při nákupu od pěstitele respondenti postrádali větší rozmanitost produktů. Venkovní pěstování obnáší větší riziko krádeže, zatímco indoor pěstování s sebou nese značné fixní náklady a riziko trestního stíhání. **ZÁVĚR:** Rozvoj trhu s konopím za posledních deset let vedl ke snížení rizik pro uživatele konopných drog. Příslušná státní politika však připouští pouze produkci konopí pro vlastní potřebu. Větší shovívavost by měla být uplatňována také ve vztahu k obstarávání si konopných drog prostřednictvím distribučních řetězců, které přinášejí nízká společenská rizika.

KLÍČOVÁ SLOVA: PĚSTOVÁNÍ KONOPÍ – PROTIDROGOVÁ POLITIKA – RIZIKOVÉ PROSTŘEDÍ UŽÍVÁNÍ NÁVYKOVÝCH LÁTEK

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Assessing the Users' Risks in the Shift towards Indoor Cannabis Cultivation – the Case of the Czech Republic



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BACKGROUND: In the Czech Republic, the cannabis market has developed in three stages: (i) outdoor cultivation, non-market, and free of charge distribution (1980–1994); (ii) market in imported indoor cannabis (1995–2005), and (iii) large-scale and small-scale indoor cannabis cultivation leading to a price decrease (2005–present). **AIMS:** The aim of the paper is to analyse the risks cannabis users face in terms of using indoor and outdoor cannabis products acquired on the market in contrast to buying from a grower, and in terms of self-supplying with cannabis. **DESIGN:** Marijuana market patterns in the Czech Republic were analysed via a mixed-methods study among marijuana users, retailers, and growers (61 semi-structured interviews with interviewees recruited via respondent-driven sampling and two focus groups). The interviews took 69 minutes on average, and investigated concepts from economic theory of illicit drug market. The qualitative analysis was complemented with quantitative research findings (a representative population survey with a specific set of questions on marijuana acquisitions for

the users of cannabis in the last 12 months). **FINDINGS:** The cannabis users identified the risks of outdoor product to be its excessive consumption; indoor products involve the risk of combination with tobacco and the use of adulterants. The risks related to market acquisitions were that no information on the strain and quality is known, and the profits of the distributors are large, but when purchasing from the grower, there is no variability. When growing outdoors, there are risks of theft, while indoor growing has high fixed costs and risks of prosecution. **CONCLUSIONS:** The cannabis market has reduced the risks to users in the past decade; the cannabis policy in the Czech Republic still only acknowledges the self-supply of cannabis. Acquisitions through other chains with low risks should be privileged.

KEY WORDS: CANNABIS – CULTIVATION – DRUG POLICY – RISK ENVIRONMENT OF SUBSTANCE USE

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● 1 INTRODUCTION

The cannabis market in the Czech Republic has developed in three stages: (i) outdoor cultivation and non-market, free-of-charge exchanges (1980–1994) (Gabrhelík, Kubů, Miovský, & Zábanský, 2008; Miovský, 2006); (ii) commercial market in imported indoor cannabis (1995–2005), and (iii) large-scale and small-scale domestic indoor cannabis cultivation with a highly competitive market and price decreases (2005–present); see Běláčková & Zábanský, 2014. The size of the cannabis market has been estimated to amount to 18.2 tonnes produced annually, out of which 16 tonnes were consumed domestically in 2010 (Mravčík et al., 2011). In 2008, the size of the commercial cannabis market was estimated as being 108,260 thousand EUR; the value of the cannabis that was, in fact, received for free was estimated as being 60,144 thousand EUR (Mravčík et al., 2009).

The current situation is in line with trends in cannabis cultivation in Europe, referred to as the “green avalanche” (Potter, 2008; Potter, 2010). In the Czech Republic, this has been accompanied by a pragmatic cannabis policy that excluded small-scale cannabis possession and cultivation from the criminal code, and by a significantly high prevalence of cannabis use indicators in the European context. This paper aims to describe the risks and benefits of the (partial) change of product from outdoor to indoor cannabis, of acquisition on the market and from the growers, and of the growing of cannabis per se, as these patterns evolved on the Czech cannabis market. The paper uses the theoretical framework of institutional economics and of a risk environment.

● 1 / 1 Illicit drug markets and institutional economics – the case for entrepreneurial shift

Illicit drug markets impose a number of risks (costs with a probability nature) on their participants – the risk of violent assault, the risk of the theft of both money and product, and the overall risk of low product quality as a result of the lack of enforcement of property rights (Caulkins, Johnson, Taylor, & Taylor, 1999; Caulkins & Reuter, 1998; Reuter & Kleiman, 1986). These risks are incurred because there is no central authority to call upon for conflict resolution or in connection with the seller-customer relationship. The acknowledgement of risk has an association with the concept of the risk environment of substance use (Rhodes, 2002, 2009), which identifies the multifaceted risks linked to the different social settings under which psychoactive substances are acquired and used. Bearing this in mind, the risks considered in this paper will include health risks to the users and to society.

Any market that cannot guarantee centralised protection of property rights is considered to function sub-optimally, and increases the risks to its participants (North, 1995; Soto, 2003; Williamson, 2000). The risks could be la-

belled as “transaction costs” – the negotiation, pricing, and administrative costs of any transaction conducted on the market (Coase, 1937). On an illegal market, the “transaction” costs are simply much higher than on other markets, because of the above-mentioned risks, and can sometimes be reflected in illicit drug prices being higher than they would be otherwise (Miron, 2003; Běláčková, Maalsté, Zábanský, & Grund, 2014).

The term “transaction costs” was introduced in one of the most cited papers in the economic literature, Ronald Coase’s “The Nature of the Firm” (Coase, 1937). In Coase’s work, transaction costs have specific implications for entrepreneurial behaviour – as a result of their occurrence, individuals choose to avoid the market and rather contract employees, instead of purchasing their output in transactions. Through this, Coase explained the existence of firms, labelled as “islands of autocratic decisions” on the market, which is otherwise full of bargaining – which always has its costs (transaction costs).

His thoughts have significant implications for an illicit market too, given how high the transaction costs imposed on its participants are. This is why, on one hand, highly autocratic units of organised crime sustain the market, and why, on the other hand, many users try to self-supply and thus to avoid the risks of the illicit market completely. The latter would be the case for cannabis, whose bulkiness per square metre of crops, if hidden from law enforcement bodies, can sustain the entire consumption needs of its grower. The cannabis market can thus be characterised by a high proportion of entrepreneurial activities.

The aim of the paper is to analyse the risks cannabis users face in terms of using indoor and outdoor cannabis products through market acquisition in contrast to buying from a grower, and in terms of the growing of cannabis per se. The risks described by cannabis users represent the “*transaction costs*” incurred by them in different cannabis acquisition situations.

● 2 METHODS

In order to provide a detailed account of the user-perceived risks (transaction costs) of various means of cannabis acquisition, qualitative methods were used. Additionally, analysis of the available quantitative data was performed in order to cross-validate the findings of the qualitative study.

Qualitative data was collected in the Czech Republic with the use of a semi-structured interview guide. The interview guide for the study was constructed using sensitising concepts that include loosely operationalised notions providing some initial direction to a study (Patton, 2002). General concepts in economic theory were used to construct the interview questions. First, the economic theory of drug markets under prohibition (Caulkins & Reuter, 1998; Reuter & Kleiman, 1986) guided the questions directed at

explaining the price of drugs, in which the respondents were asked to describe the place and circumstances of their marijuana acquisition (e.g. *How was the price negotiated?*). Second, deterrence theory was used to guide questions about the perceived risks of involvement in marijuana markets (MacCoun & Reuter, 2002), (e.g. *Did you perceive any risks in the setting?*). Within the framework of game theory, the respondents were asked to estimate the trade-offs and game repetitions involved in sharing marijuana (Williamson, 2000). The questions about the relationship between the buyer and the seller were the subject of the research based on assumptions of institutional economics (Wilkins, 2001), (e.g. *Can you describe your relationship with the person you purchased cannabis from?*). The last sensitising concept was related to the economics of altruism and regard, and the rationale for giving away goods for free, in contrast to monetary exchange deals, was questioned (Offer, 2003), (e.g. *Why do you think you got it for free instead of paying?*). In general, the incentives and constraints (Rasmussen & Benson, 2003) of participants in marijuana markets were investigated.

● 2 / 1 Data collection

The collection of the qualitative data was performed using the method of semi-structured interviews that took place in the period from October 2009 to January 2010 on the territory of the Czech Republic. The recruitment of the participants for the study followed a two-pronged approach which included elements of purposeful and snowball sampling (Patton 2001; Heckathorn, 1997). The study was anony-

mous, and approved by the Ethical Committee of the Czech National Monitoring Centre for Drugs and Drug Addiction. The respondents were compensated for the time the study took them (CZK 600) and for recruitment of their fellow-users (CZK 200 per recommendation, max. CZK 600).

● 2 / 2 Sample description

In total, semi-structured interviews with 61 study participants were conducted, and two focus groups with extra 18 participants in total took place. 78% of the respondents were men. The lowest age among the study participants was 17 years old, the oldest respondent was 46. The average duration of the interviews was 69 min. The study participants were primarily (recreational) cannabis users. Almost half of the sample had experience in growing marijuana (44%), while one fifth had sold it or bought it for friends at some point (21%).

● 2 / 3 Methods of analysis

Inductive analysis of the data was performed, using the grounded theory methods. First, the respondents' accounts were sorted until a coherent picture of the risks and benefits of the Czech cannabis market emerged. The analysis process lasted until each category was saturated. A total of 16 categories of risks was created, and these were merged into six higher-order categories, structured according to the different market situations. This process helped a coherent theoretical picture of the risks of the cannabis market to be constructed.

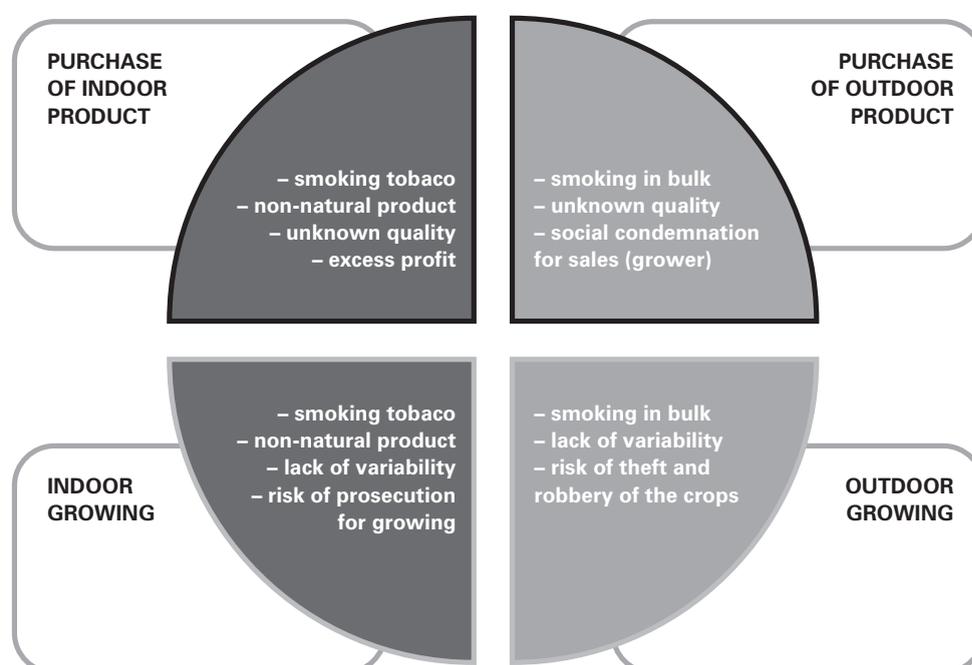


Figure 1 / Obrázek 1

Users' risks related to different product types and acquisition patterns

Uživatelská rizika ve vztahu k jednotlivým typům produktů a vzorcům jejich pořizování

With respect to the quantitative data, a simple frequency analysis was performed.

● 3 STUDY FINDINGS

The findings were built up into a description of the risks and benefits of the historical evolution of the cannabis market with respect to the changing types of cannabis used and the means used for their acquisition (namely indoor growing, outdoor growing, and market purchases).

The historical evolution of the Czech cannabis market, as described in section 1, in practice, meant a shift in the composition of the product on the market, as well as a shift in supply channels. More in particular, the Czech cannabis users gradually experienced an influx of indoor cannabis. At the same time, they learnt to purchase this cannabis on the market, instead of receiving it for free. As the market developed, they managed to source their cannabis directly from growers, or from a near broker. Last but not least, they have continued on the tradition to grow their own, newly in both outdoor and indoor settings. The paper breaks down the risks and benefits in both these dimensions, as presented in *Figure 1*.

● 3 / 1 Assessing the users' risks from outdoor marijuana towards indoor products

As of 2008, three basic categories of products were present on the marijuana market in the Czech Republic. The first was represented by outdoor marijuana grown in natural conditions, which, according to the general population survey on substance use and attitudes towards it (GPS 2008), accounted for 26.8% of the marijuana acquired during the last transaction. By outdoor cannabis, the respondents understood such that was grown: (i) in a garden or on other private land; (ii) on a balcony, or (iii) in the countryside, e.g. in a meadow, in a forest, or in a cornfield.

The second (37.1% of that obtained during the last acquisition) was represented by indoor marijuana grown using adjusted light cycles to achieve the highest possible THC content in the conditions of: (i) a growbox at home; (ii) a large-scale growing facility – in general attributed to organised groups of Vietnamese nationals, or (iii) indoor marijuana imported from abroad – the decreasing share of this product was described above.

Third, users had access to cannabis resin (hashish) – in 2.7% of the last acquisitions – either (i) imported from North Africa or Central Asia or (ii) hand-made under local conditions. About one third of the GPS 2008 respondents were not able to state what type of cannabis they had last acquired. The survey thus shows that despite the tradition of non-commercial, outdoor-grown marijuana, it is likely that the majority of users on the Czech market were using indoor cannabis in 2008. The analysis of the qualitative data that follows will analyse the risks, as well as the benefits, of this shift.

Risks associated with using outdoor cannabis – smoking in bulk

For many of the respondents, the benefit of smoking indoor marijuana was related to the higher THC content, mainly with regard to the dosage. In fact, for regular, long-term marijuana users who had developed a tolerance towards the drug, the consumption of marijuana with a higher THC content represented subjectively lower health risks. Zdenko put it clearly: “Well, of course skunk is better, 'cos it's stronger and in fact you need less to get the same results,” as did Kevin (24): “For me, the disadvantage of outdoor ganja is that I really do kill my lungs before I feel stoned.”

Risks associated with using indoor cannabis – “artificiality” and tobacco “adulteration”

Outdoor marijuana, most often called “grass”, “ganja”, or “weed” by the respondents, usually had a lower THC content, as, in general, they did not use the seeds or cuttings of specially cultivated breeds. Despite the low potency, it was the first choice for many respondents, mainly because of its organic nature: “Marijuana grown outside is just a hundred times better than some skunk that you grow artificially at home, under some artificial light, with artificial fertilisers, artificially speeded up to have it ready in three months.” (Standa, 31).

Since the dominant method of marijuana use in the Czech Republic, especially in the Bohemian region, was smoking joints (a marijuana cigarette with tobacco), for certain respondents, outdoor marijuana offered the advantage of not using that amount of tobacco with their marijuana. “What I like is that I can make a joint of the same size, but there can be more ganja and less tobacco, even if I use the strong stuff.” (Daniel, 28).

To summarise, despite a common understanding that outdoor marijuana is an inferior product in terms of its potency, many users still have a preference for it. It is important to acknowledge that for these reasons on the demand side of the market, the rise of indoor cannabis production in the Czech Republic probably has not had the potential to replace the “traditional” outdoor production.

● 3 / 2 Assessing the users' risks associated with cannabis acquisition from the market and from the grower

According to GPS 2008, about 18% of cannabis users in the Czech Republic had bought it the last time they used it, about 74% received it for free or by sharing, and 8.5% grew their cannabis themselves (out of whom 62% had grown it outdoors and 32% indoors). This shows that the sharing-and-giving culture prevails on the marijuana market; however, twice as many users have been purchasing cannabis rather than growing it. It is not clear how many users bought their cannabis directly from a grower (however,

about 70% of the users bought their cannabis from a friend or a relative, and only 29% bought it from someone they did not know or had just met).

Risks associated with market acquisition – unknown quality and excess profit margins

When it comes to buying cannabis on the market rather than growing one's own, a pattern observed since the 1990s, the users acknowledged their uncertainty about the origin and quality of the product. This represents a more pragmatic explanation of the preference for growing. As Kevin said, when he was offered marijuana in addition to other products by a dealer who didn't know anything about the source, he preferred not to buy it. "He didn't really know what genetic base was used and I didn't know the person that was growing it... and I was afraid that I don't know where it comes from, sometimes it really gives you headaches, which I blame on the fertilisers." The fact that marijuana sold on the black market did not have any indication of its origin could represent a risk with regard to its potential harmful effects on health. On the contrary, if the user had contact with the grower, or at least some reference to him, he could receive a guarantee of quality developed on the basis of personal relations; see also Belackova & Vaccaro (2013). The recent developments on the Czech cannabis market in terms of the influx of small-scale growers supplying the market have acted in favour of reducing the users' health risks.

Apart from information on cannabis quality, reducing the number of channels between the grower and user could also contribute to more variable pricing; the price of the product did not necessarily depend on the market, but rather on the grower's yield and the variety. This means that the seller's surplus profit would be avoided. In small-scale operations, if there were fluctuations in the harvest, this could be a reason for the grower to adjust his prices. Vladan explained the practice of the grower he knew: "Depending on the variety, one plant can give you 100 g, another one just 50, then it must be more expensive, 'cos of all the work you did, and the lights." On the other hand, when dealing with a secondary seller, it would rather be up to the market to set the prices. Zdenko commented on his experience as a seller: "Nobody asks about the price, that's set," and Kevin had his own explanation: "The demand is still much greater than the supply, so it is the seller that sets the price." Thus, the closer the user was to the grower, the better the price that could be achieved, and the less the profit margin would occur on the supply side of the market.

Risks associated with grower-originated acquisition – lack of variability

For many respondents, it was important to have the opportunity to alternate different types of marijuana, because using just one type on a long-term basis might mean it could stop having an effect on them, regardless of how strong the type was. Users would then use rather excessive amounts of cannabis, while with a slightly different strain less would be needed. Certain sellers therefore offered more strains of cannabis, which was a competitive advantage. This was described by Bruno, who often experienced a situation in which he would get the same product from the dealer despite a clear wish for a different one. "I can get different types from him, I know that it won't be like "Yeah, but it's the same stuff I had last time"." This, on the other hand, would be harder to achieve for individual indoor growers, since one single yield would tend to contain the same variety of plants (which is not necessarily the case with outdoor production).

● 3 / 3 Assessing the user's risks in terms of growing their own cannabis outdoors and indoors

Growing marijuana, rather than buying it, is associated with strong positive values among Czech marijuana users. For a number of users, growing marijuana to a large extent represented a hobby and entertainment they enjoyed doing. Tomas (22) described his attitude towards growing: "I already had my first plants when I was in middle school. I enjoyed growing. People would plant radishes and suchlike, I was lucky with this [marijuana], so I was happy there can be something out of it... I like doing it, growing, playing with the plants." Outdoor cannabis, which has no clear production costs, is proudly shared by its owners, rather than being sold. Vladan (29) provides a casual example: "Recently he stopped to see me at work, but I wasn't there, and he left a huge bud there for me, his stuff, as a present, for me to try it, I guess."

In the Czech Republic, as a result of the historical tradition, many cannabis users consider growing their own as a positive value per se, and disagree with marijuana being the subject of a business. This results in the reluctance of many growers to sell their own product; as Zdislav (46) put it: "Only ...only if someone is in real trouble, but I was never in such a situation where I would have to sell my own product." To this it should be added that the notable proportion of "free-of-charge" transactions has many linkages to marijuana growing. Standa (31) explained: "I see buying and selling grass as a big mortal sin; I think the plant should not be sold, it should be given. I am totally against selling or buying." Zdislav recalled where this attitude originated in the Czech Republic: "It's 'cos we are the old generation of

smokers from the end of the '80s, we really couldn't take it that it was becoming a business in the '90s."

Risks associated with outdoor cultivation – theft and robbery

The risks of growing per se, on the other hand, were those related to theft in the case of outdoor growing, and the risk of police detection in the case of indoor growing. The risk of outdoor-grown marijuana being stolen did not differ according to the location of the growing operation, as the respondents mentioned thefts from gardens, greenhouses, and from fields too. Many outdoor growers would grow in the countryside outside their own land, e.g. in meadows, in forests, and in cornfields where the crop was sufficiently high to hide even mature marijuana plants, and this was actually a better safeguard against theft than growing it in their gardens. The danger posed by law enforcement bodies to outdoor production mentioned by some respondents may have diminished, from the user's perspective, since 2010 (however, a post-test after the legislative change is needed, in order to evaluate its outcomes).

Risks associated with indoor cultivation – prosecution and bearing fixed costs

With indoor growing, the respondents considered it especially risky to grow in rented apartments and premises that could be visited by the owners at any time. Such disclosure could lead to criminal prosecution.

According to the respondents, indoor marijuana growing had substantial fixed costs that could be reduced through economies of scale. Some respondents considered it obvious that since smoking marijuana was a collective activity, therefore they also thought it was normal to grow cannabis together. Lastly, some respondents, for instance Jiri, wanted to contribute to the growing process so that they would not have to pay for the final product (again, removing profits from the market): "I pay for the seeds and he gives me a part of the harvest. And when we go somewhere, to the festivals, then I pay for the petrol, we take my car and he takes care of the marijuana."

However, when this "collective" method of marijuana growing was confronted with what was, at the time of the data collection, the upcoming 2010 legislation, the persons were in general persuaded that in the event of criminal sanctions, they could divide their final number of plants into several portions and present the argument that each of them was growing fewer than five plants. This could, however, lead to substantial consequences in terms of the criminal law, such as being charged for "growing a greater than small number of plants", plus involvement in a criminal organisation.

● 4 DISCUSSION

The cannabis users in the study identified the risks of the excess consumption of outdoor products, while indoor products have the risk of combination with tobacco and the use of adulterants. The risks related to market acquisitions were that no information on the strain and quality is known, and the profits to the distributors are large, but when purchasing from the grower, there is no variability. When growing outdoors, there are risks of theft, while indoor growing has high fixed costs and risks of prosecution.

Although small-scale cannabis growers experience several risks related to product loss, and those that offer their product on the market or through social acquisition also face the risk of criminal prosecution, they seem to offer a market alternative that minimises the risks to public health. This study has shown a substantial reduction in the risks to cannabis users who have the opportunity to acquire their cannabis through self-supply, as well as from sources that are close to small-scale indoor cannabis growers (known strain and quality, strain variability, and dose titration) or from outdoor cannabis growers (natural product, lack of tobacco adulteration). The ratio of cannabis users that have direct or indirect access to product originating from small-scale growers is, however, unknown.

Our study design did not specifically target marijuana growers, or aim at their classification, as other authors did. See Potter (2008) for the diversification of growers according to their motivations, or Weisheit (1991) for their classification according to market participation. The findings of these studies show that most marijuana growers also have other, non-monetary incentives for their illicit activities. This is especially true for the so-called personal use growers (self-suppliers) and "social suppliers", who are considered to be "separate from the established black market" by Potter (2008). The growing body of literature focused on small-scale cannabis growers shows, for instance, that there is a number of structural barriers that prevent these entrepreneurs from shifting to large-scale operations and adopting the attitudes taken by their counterparts with a less benign background (Hammersvik, Sandberg, & Pedersen, 2012).

To date, no estimate exists of the share of self-supply and "social" growers on the entire cannabis market in Western countries. In our study, however, it seemed to be the case that frequent users either grew their own, or established a relationship with a grower, or, at least, had a market relationship with a broker who was in touch with small-scale growers. Through this, we would like to argue that under a less punitive cannabis policy, such as the Czech one, a large market share is taken by small entrepreneurs whose activities are not primarily motivated by profit and bring lesser social and health risks to the users and to society.

These findings are limited to the extent that the study used a non-random sample of cannabis users and sellers that might not be representative of the entire population of cannabis users. The limitations of the snowball sampling were that the users could have biased the sample by referring to their rather isolated cannabis acquisition networks (i.e. the group of users obtaining cannabis from the same source that has reduced cannabis prices). Nevertheless, the heterogeneity that was sought among the initial respondents (“seeds”) has helped to make it possible to observe the market patterns across different user groups, and, at the same time, the snowballing technique would control for individual differences and opinions.

● 5 CONCLUSIONS

Our analysis shows how the perceived risks/transaction costs on cannabis markets in the Czech Republic have been reduced through domestic cultivation activities. For instance, the recent developments in terms of cannabis self-supply or purchasing cannabis from an indoor grower or from a source not too distant from the grower has brought substantial health benefits to the users, and contributed to lower profits being made on the illicit market in cannabis overall. The risk of purchasing solely from one grower (as well as growing one’s own) is, however, the lack of choice between the strains. In that sense, a “broker” (a person re-selling crops from a small number of growers directly to the users) would represent the most efficient market model in terms of minimising the health risks to the users, while, however, taking substantial legal risks themselves.

At the same time, selling outdoor cannabis crops is considered as an inferior option by many users. This stems from the Czech history of outdoor cannabis cultivation in which cannabis grown outdoors was typically distributed for free. It should be remembered that many growers still give their cannabis away for free to their fellow users, and thus provide an important alternative to the illicit market overall. In terms of indoor production, the fixed costs of cannabis cultivation suggest that the “social club” model, or the “broker”/“social grower” model, would diminish the risks to the users of excess cost and low variability. In that sense, the sales of cannabis produced indoors could be considered justifiable by the user, since the price would be likely to reflect the actual costs of production. Given that many outdoor growers experience the risk of the theft of their crops and of seasonal availability, this additional market option is justifiable to them.

In terms of further policy implications, many respondents were, in fact, reluctant to support the legalisation of cannabis because of their reluctance to see a market with cannabis introduced. This is in line with Finnish cannabis growers, who favoured decriminalisation over legalisation (Hakkarainen & Perala, 2011). Although this belief was not

shared by all the respondents, it further supports the fact that in terms of drug policies, a “no size fits all” approach should be used, and that the self-supply model, in many aspects, fits the cannabis use context in the Czech Republic. The current legislative framework, allowing for five plants for self-supply, is in accordance with this practice.

What remains unsolved is the issue of fixed costs in indoor cannabis cultivation, and the strict legislative approach to any practice related to cannabis distribution – regardless of its health and social risks. The Czech criminal code seems not to be in favour of developing the so-called social clubs where the cost of cannabis production is shared among users, although the growing culture would consider it sensible. In terms of the cannabis market practice, though, the risk framework outlined in the study would suggest that privileges could be given to small-scale cannabis growers and their supply niche. We could hypothesise, in line with Decorte (2010), that small-scale growers can take over a substantial part of the market and replace the share of organised crime. To explore to what extent this has already happened for Czech users remains a research challenge.

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REFERENCES

- Belackova, V. & Vaccaro, C. A. (2013). "A Friend With Weed Is a Friend Indeed" Understanding the Relationship Between Friendship Identity and Market Relations Among Marijuana Users. *Journal of Drug Issues*, 43(3), 289–313.
- Běláčková, V., Maalsté, N., Zábranský, T., & Grund, J. P. G. (2014). "Should I Buy or Should I Grow?" How drug policy institutions and drug market transaction costs shape the decision to self-supply with cannabis in the Netherlands and the Czech Republic. *International Journal of Drug Policy*, in print
- Běláčková, V. & Zábranský, T. (2014). Transformation of the marijuana market in the Czech Republic – from free-of-charge outdoor cannabis to a competitive market in indoor products. *Adiktologie*, 14 (4), 382–391.
- Caulkins, J. P., Johnson, B., Taylor, A., & Taylor, L. (1999). What Drug Dealers Tell Us About Their Costs Of Doing Business. *Journal of Drug Issues*, 29(2), 323–340.
- Caulkins, J. P. & Reuter, P. (1998). What Price Data Tell Us About Drug Markets. *Journal of Drug Issues*, 28(3), 593–612.
- Coase, R. H. (1937). The Nature of the Firm. *Economica*, 4(16), 386–405.
- Gabrhelík, R., Kubů, P., Miovský, M., & Zábranský, T. (2008). Vzorové užívání konopných drog a parafernálie [Patterns of cannabis consumption and the use of cannabis paraphernalia]. In M. Miovský (Ed.), *Konopí a konopné drogy [Cannabis and cannabis-type drugs]* (132–135). Prague: Grada.
- Hakkarainen, P., & Perala, J. (2011). With a little Help from my Friends: Justifications of Small-Scale Cannabis Growers. In T. Decorte, G. Potter & M. Bouchard (Eds.), *World wide weed: Global trends in cannabis cultivation and its control* (75). London: Ashgate Publishing.
- Hammersvik, E., Sandberg, S., & Pedersen, W. (2012). Why small-scale cannabis growers stay small: Five mechanisms that prevent small-scale growers from going large scale. *International Journal of Drug Policy*, 23(6): 458–64.
- MacCoun, R., & Reuter, P. (2002). Preface: The Varieties of Drug Control at the Dawn of the Twenty-First Century. *Annals of the American Academy of Political and Social Science*, 582, 7–19.
- Miovský, M. (2006). *Kvalitativní přístup a metody v psychologickém výzkumu [Qualitative Approach and Methods in Psychological Research]*. Prague: Grada.
- Miron, J. A. (2003). The Effect of Drug Prohibition on Drug Prices: Evidence from the Markets for Cocaine and Heroin. *The Review of Economics and Statistics*, 85(3), 522–530.
- Mravčík, V., Pešek, R., Škařupová, K., Orlíková, B., Škrdlantová, E., Štastná, L., et al. (2009). Výroční zpráva o stavu ve věcech drog v České republice v roce 2008. [Annual Report: The Czech Republic – 2008 Drug Situation]. Prague: Office of the Government of the the Czech Republic.
- Mravčík, V., Pešek, R., Horáková, M., Nečas, V., Chomynová, P., & Štastná, L. (2011). Výroční zpráva o stavu ve věcech drog v České republice v roce 2010. [Annual Report: The Czech Republic – 2010 Drug Situation]. Prague: Office of the Government of the the Czech Republic.
- North, D. C. (1995). The New Institutional Economics and Third World Development. In J. Harriss, J. Hunter, & C. Lewis (Eds.), *The New Institutional Economics and Third World Development*. London: Routledge.
- Offer, A. (2003). Between the gift and the market: the economy of regard. *The Economic History Review*, 50(3), 450–476.
- Patton, M. Q. (2002). *Qualitative Research & Evaluation Methods*. Thousand Oaks: Sage Publications.
- Potter, G. (2008). The growth of cannabis cultivation: explanations for import substitution in the UK. *Cannabis in Europe: Dynamics in perception, policy and markets* (87–105): ISSDP.
- Potter, G. R. (2010). *Weed, Need and Greed: A Study of Domestic Cannabis Cultivation*. London: Free Association Books.
- Rasmussen, D. W. & Benson, B. L. (2003). Rationalizing Drug Policy under Federalism. *Florida State University Law Review*, 30, 679.
- Reuter, P., & Kleiman, M. A. R. (1986). Risks and Prices: An Economic Analysis of Drug Enforcement. *Crime and Justice*, 7, 289–340.
- Rhodes, T. (2002). The risk environment: a framework for understanding and reducing drug-related harm. *The International Journal of Drug Policy*, 13(2), 85–94.
- Rhodes, T. (2009). Risk environments and drug harms: A social science for harm reduction approach. *The International Journal of Drug Policy*, 20(3), 193–201.
- Soto, H. (2003). *The mystery of capital: Why capitalism triumphs in the West and fails everywhere else*. New York: Basic Books.
- Wilkins, C. (2001). New Institutional Economics Approach to the Reliability of Street-Level Drug Transactions. *Contemporary Drug Problems*, 28, 679–693.
- Williamson, O. E. (2000). The New Institutional Economics: Taking Stock, Looking Ahead. *Journal of Economic Literature*, XXXVIII, 595–613.