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Abstract

The Canadian Government legalized Cannabis usage on October 17th, 2018. During the same month, primarily in the week before and after such legalization, the amount of cash in circulation fell quite materially, in contrast to the rises typically observed in previous years. A key driver is likely to have been Cannabis users switching from cash payments for illegal purchases to using standard recordable electronic payments for their purchases, which have now become legal. The legalization of Cannabis should ultimately reduce the size of the Underground economy by around 4 or 5 percent, with a much bigger decline likely in the black economy.

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Canadian Legalization of Cannabis reduces both its cash usage and ‘Black’ Economy

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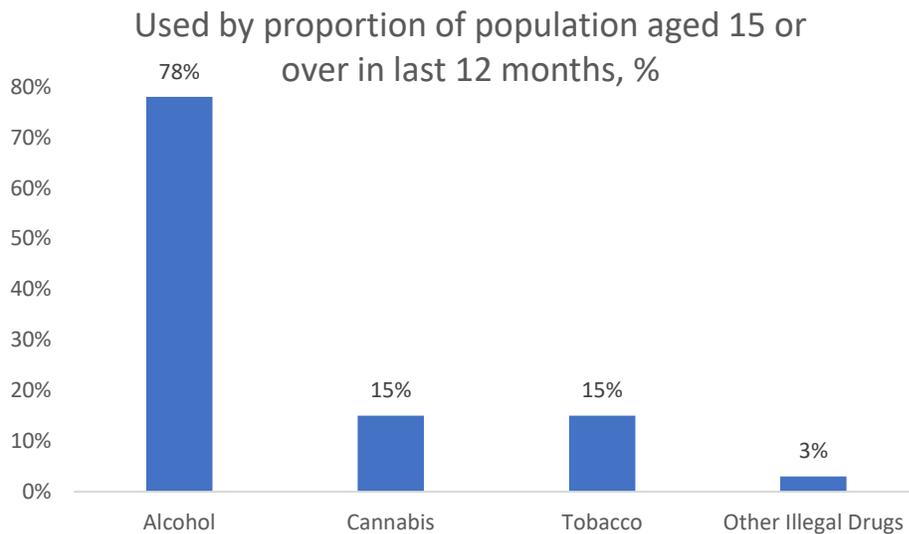
Canadian Prime Minister Justin Trudeau announced on June 20th 2018 that recreational Cannabis would become legal in Canada as of October 17th. The major social policy change had formed part of the general election platform for Trudeau’s Liberal Party in 2015 which suggested that “To ensure that we keep marijuana out of the hands of children, and the profits out of the hands of criminals, we will legalize, regulate, and restrict access to marijuana” (see *Liberal Party of Canada, 2015*). Canada is the first major developed nation to have legalized recreational cannabis use; it had previously legalized its use for medicinal purposes in 2001. It is now also legal in 10 US states for recreational purposes including California, Michigan and Washington and could be legalized in a number of others including New York in 2019. At the country level, Uruguay legalized it in 2013 and it is under consideration elsewhere, with Mexico likely to legalize it soon and New Zealand due to hold a national referendum in 2020.

A relatively significant proportion of Canadians are regular Cannabis users. Results from the *Canadian Tobacco, Alcohol and Drugs Survey (CTADS), 2017* suggest that almost five million or around 15% of Canadians over the age of 15 report smoking Cannabis in the previous twelve months, which is the same as the proportion of the population that report smoking tobacco. That said, the share that report smoking Cannabis on a daily basis (or almost daily) at around 6% (see *Statistics Canada, 2018d*), is lower than the 11% whom report smoking tobacco daily. Meanwhile, the proportion of the population reporting using at least one other illegal drug excluding Cannabis over the past 12 months is much lower than those whom use Cannabis at just over 3% (Exhibit 1). One-fifth of cannabis users reported using at least one other illegal drug over the past 12 months, but less than 1% of non-Cannabis users had.

Given that Cannabis use for recreational purposes was illegal at the time of the surveys some users may have been somewhat reticent to admit using it to government statisticians, suggesting that if anything the usage numbers could be an under-estimate¹. The results of the 4Q National Cannabis Survey (NCS) and subsequent surveys should shed further light on this given that Cannabis is now legal. For similar reasons, the proportion reporting using “Other Illegal Drugs” in the last 12 months may also be an underestimate.

¹ Statistics Canada acknowledges the risk of the underreporting of Cannabis use, particularly when it was illegal. It has been engaging in an experiment to try and estimate total Cannabis usage in the country via a technique called waste-water based epidemiology (WBE), which examines the wastewater system for the concentration of cannabis related metabolites (see *Statistics Canada, 2018g*). As data on legal retail sales of Cannabis becomes available, WBE should help to provide estimates of the size of the remaining illegal market.

Exhibit 1: A similar proportion use Cannabis as tobacco in Canada



Source: *CTADS, 2017*

The NCS survey also reveals quite wide divergence in the reported usage of Cannabis by gender, age and province. 18% of males and 13% of females report smoking Cannabis in 3Q 2018, whilst 27% of 15-24 years olds reported being users but just 13% of those 25 and over did. 23% of Nova Scotians and 20% of British Columbians report using Cannabis but just 10% of people in Quebec and 15% of Ontarians did.

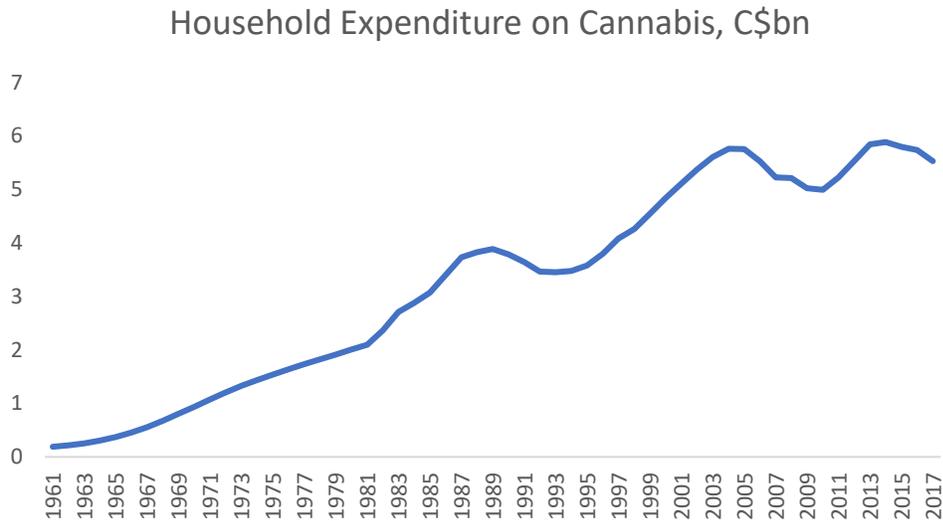
The amount spent by Canadians on Cannabis in 2017 was estimated by Statistics Canada to be around C\$5.5bn (Figure 2) (*see Statistics Canada, 2018h*), with the black market in recreational use estimated to be around 90% of that or around C\$5bn (the remaining 10% would be purchases for medicinal use). This compares with spending of around C\$23tn and C\$17tn on alcohol and tobacco respectively.

According to Statistics Canada and the NCS, around 50% of those previously using illegal cannabis reported they would switch to legal purchases after legalization, whilst 25% were undecided (*see Statistics Canada, 2018b*). It also seems likely that some Canadians who have not previously used Cannabis due to its illegality may start to use it, given that it can now be purchased without risk of punishment. In the NCS around 6% of the 85% of Canadians who did not use illegal Cannabis in the previous three months reported their intention to try it after legalization with around 9% undecided. The main transition from the illegal to the legal market is unlikely to occur all at once, as various provinces had different levels of readiness e.g. in Ontario purchases initially will only be able to be made online, whilst most other provinces will typically sell through some combination of online, government stores, private stores etc. (*see CBC News, 2018; Statistics Canada, 2018c*). Moreover, there has been uncertainty over the extent to which the legal producers will be able to meet demand and the magnitude of the switch out of the black market will also likely depend on the relative price differences with the legal market.

Statistics Canada estimates that legal consumer spending for cannabis will range between C\$0.816bn and C\$1.018bn in 4Q 2018 (C\$3.85bn-C\$4.8bn annualized), with around 25% of the market remaining illegal (*see Statistics Canada, 2018b*). A number of private institutions have also made various

estimations of the future size of the legal cannabis market. Deloitte estimates that in 2019 the total market for cannabis could be as much as C\$7.2bn with the legal recreational market likely to be up to C\$4.34bn, the legal medical market up to C\$1.79bn and the illegal black market up to C\$1.04bn (see *Deloitte.,2018*). Canadian Imperial Bank of Commerce (CIBC) estimates that legal recreational sales could reach C\$6.5bn by 2020 (see *BNN Bloomberg, 2018*).

Figure 2: Cannabis market is over C\$5bn in Canada



Source: Statistics Canada

Prior to the legalization almost all of the retail purchases of recreational Cannabis are likely to have been made in cash. The basic idea is that, given the illegality, almost all shadow economy (black economy plus grey economy) transactions will be made in cash, although not all transactions in the shadow economy are necessarily paid in cash; (Isachsen and Strom (1985) used the survey method to find out that in Norway, in 1980, roughly 80% of all transactions in the hidden sector were paid in cash). The black economy is defined as consisting of illegal activities, e.g., drug sales, trafficking & production, organized crime, prostitution while the grey economy is defined as otherwise legal activities that are deliberately not recorded in order to avoid or evade taxation e.g. a builder failing to report part of his/her income to the authorities in order to pay lower taxes, a firm hiring an illegal immigrant worker and not paying social security taxes on his/her wages. The fact that cash is an anonymous, bearer, instrument makes it the payment mechanism of choice for those who do not want their transactions to be recorded, more widely known, and capable of being used in evidence against them. In contrast, almost all electronic forms of payment leave a record.

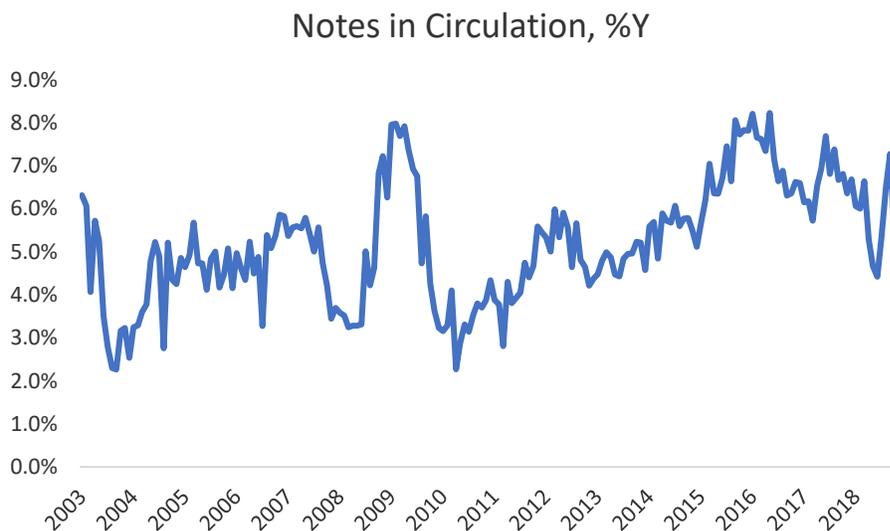
One suspects that other parts of the Cannabis production and supply chains are likely to have been quite heavily cash dependent too, although not exclusively so. Cannabis purchases by “Retail” dealers from “Wholesale” dealers and from “Wholesale” dealers or middle men from Producers are likely to be predominantly in cash, but not all payments by Producers are likely to have been. For example, some producers may have produced Cannabis discreetly alongside other agriculture crops and would have seen no need for anonymity in their payments for inputs e.g. water, electricity, fertilizers, rents etc.

Similarly, it may have been difficult for households producing Cannabis to pay for water and electricity bills in cash. Indeed, efforts to do so may have likely aroused suspicion! Unlike tobacco and alcohol, most Cannabis used in Canada is produced domestically, with Statistics Canada estimating that in 2017 just 8% of total consumption is imported (Canada is estimated to be a net exporter, with illegal overseas sales equivalent to around 20% of 2017 total production). Hence, in terms of production the Cannabis industry is estimated to be bigger than the tobacco industry in Canada and broadly similar to brewing (see *Statistics Canada, 2018a*).

Tracking developments in the value of cash in circulation can provide some insight into the impact Cannabis legalization had on the black economy in Canada. Slower growth in the value of cash in circulation or actual declines would support the view that Cannabis legalization has hit the black economy. This is because most new legal purchases of Cannabis are likely to occur through electronic payment channels e.g. debit/credit cards, mobile phone payments, etc., similar to general payment trends for other legal items. For example, in 2016 cash accounted for just 31% of Canadian total payment transaction volumes down from 42% in 2011. More strikingly, cash accounted for just 1.3% of the total value of payment transactions in 2016 down from 2% in 2011 (see *Payments Canada, 2017*). It also accounted for 38% and 13% of the volume and value of Point of Sale (POS) transactions respectively.

Despite cash's rapidly diminishing role as the payment mode of choice for transactions, both in Canada and the rest of the world, the amount of cash in circulation has actually been rising significantly across most economies over recent decades, particularly since the Global Financial Crisis (GFC). *Ashworth and Goodhart, forthcoming*, suggest declining interest rates and a sharp rise in the size of the grey economy have been key drivers. Rogoff, 2016 suggests that a rising black economy has also played a role. Exhibit 3 highlights the fact that cash in circulation has been rising rapidly in Canada too, often well in excess of the growth in nominal GDP. The pace of year-on-year growth has moderated since the legalization of Cannabis, however, from 7.3%Y in September to 5.3%Y in both October and November.

Exhibit 3: Currency in circulation has generally been growing at a solid clip



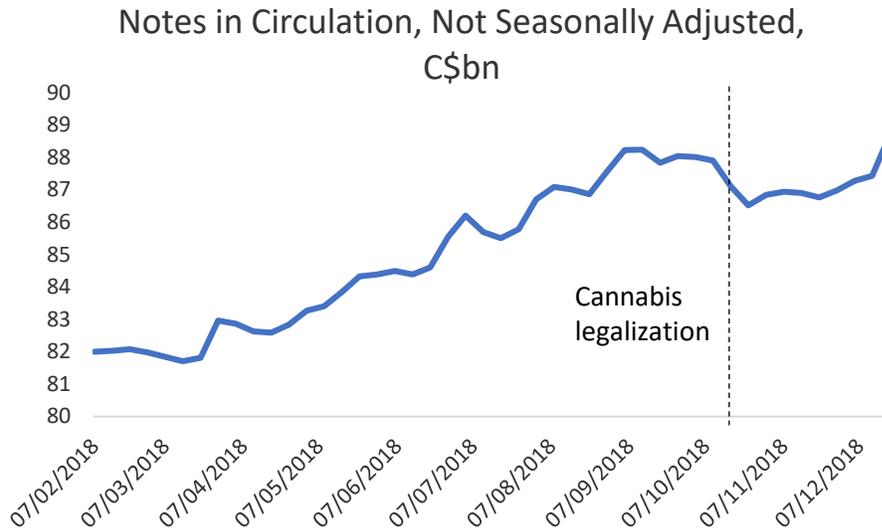
Source: Bank of Canada. Notes in circulation includes notes held by the chartered banks and by the general public.

Looking at the actual value of the amount of currency in circulation and the month-on-month changes can provide us with a somewhat clearer picture of the impact of Cannabis legalization though. As Exhibit 4 highlights, there was quite a sharp fall in the non-seasonally adjusted value of notes in circulation around the time of Cannabis legalization on October 17th with falls of 0.9%M (C\$0.8bn) and 0.7%M (C\$0.6bn) in the week before and after respectively. Given that the date of legalization had been announced in June, one suspects that some of the fall in the week before legalization may have been driven by consumers holding off normal purchases until they could be made legally a week later. Admittedly, there is always the chance other factors could have been at play, including entirely random effects. The Bank of Canada hiked interest rates in October, which could have reduced the demand for cash by raising the opportunity cost of holding it. However, the hike did not occur until the 24th of October after which time currency in circulation moved broadly sideways/slightly higher before embarking on its typical December ascent for seasonal reasons. Moreover, interest rate effects usually work with a bit of a lag.

Exhibit 5 highlights the fact that the value of notes in circulation fell by around 1.4%M (C\$1.2bn) in October as a whole, which compared with usual rises every October over the past ten years. The average October rise over the past 9 years (we did not want to include the huge rise in October 2008 related to the GFC) has been +0.4%M, which if annualized is broadly in line with the average monthly year-on-year percentage rate of increase since the beginning of 2009². Meanwhile, looking at Exhibit 6 which also shows the monthly % increases in September and November, it does not appear as though October's sharp fall was perhaps a response to an uncharacteristically large increase in the previous month (perhaps caused by random one-off factors), whilst neither has it unwound with a big rise in November.

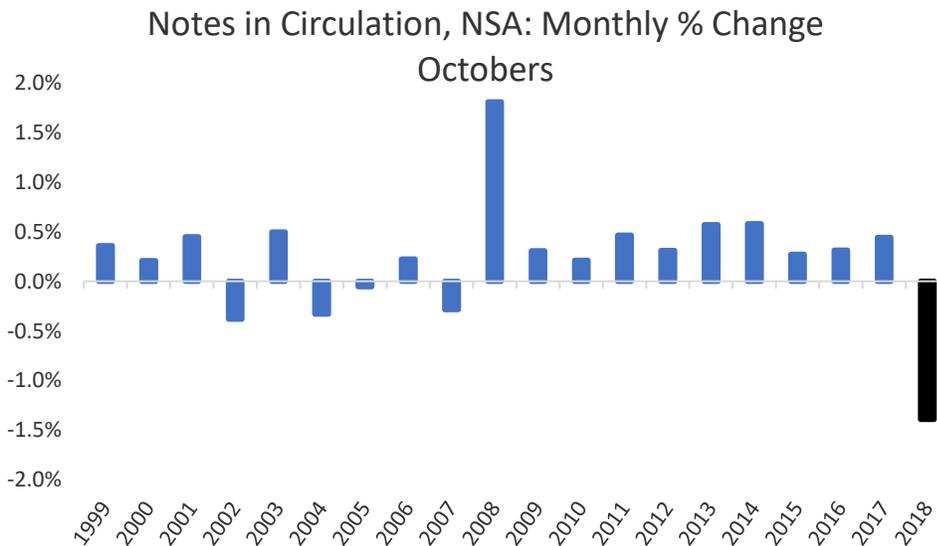
² Statistics Canada also publish a Seasonally Adjusted monthly series of Currency in circulation outside banks. The monthly percentage fall in October was smaller at 0.4% on this series or £0.3bn. That said, this was the first monthly fall in the series since January 2013 and compares with an average monthly October gain of 0.5% over both the previous five and ten years. The previous three October falls were 0.07% in 2007 ,0.04% in 1995 and 0.02% in 1987.

Exhibit 4: Sharp fall in currency in circulation around Cannabis legalization



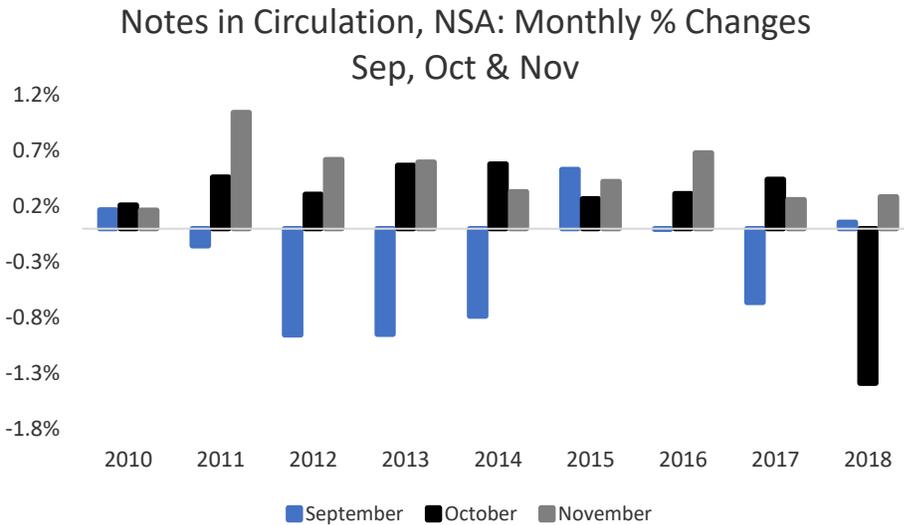
Source: Bank of Canada. Notes in circulation includes notes held by the chartered banks and by the general public.

Exhibit 5: The fall in October was particularly large and contrasts with average monthly gains of 0.4% over the past five years



Source: Bank of Canada. Notes in circulation includes notes held by the chartered banks and by the general public.

Exhibit 6: Monthly changes in September and November don't suggest October move was a fluke



Source: Bank of Canada. Notes in circulation includes notes held by the chartered banks and by the general public.

The movements in cash in circulation around the time of Cannabis legalization would seem to provide early evidence to suggest that Canadian Prime Minister Trudeau’s policy has already been successful in crimping the black economy. The fall in currency in circulation of C\$1.2bn in October (which was driven by large falls in the week before and after legalization) was broadly in line with Statistics Canada’s estimate of likely legal spending on cannabis by consumers in 4Q³. Clearly, changes in cash in circulation are a rather crude measure of changes in the size of the black economy, but they do provide some evidence in support of the expected move of the majority of cannabis users from the black to the official economy.

According to Statistics Canada, the size of the “Underground” economy at the time of the last published estimate in 2016 was C\$51.6bn or 2.5% of GDP. Its share in GDP has stayed pretty steady in the 2.2%-2.7% range since 1992 (see *Statistics Canada, 2018e*)⁴. Statistics Canada defines the underground economy as “consisting of market-based economic activities, whether legal or illegal, that escape measurement because of their hidden, illegal or informal nature”. However, it acknowledges that its estimates do not include some illegal activities such as drugs and prostitution. Their GDP estimate associated with illegal Cannabis in 2016 was approximately 0.2% of GDP. As highlighted in Exhibit 1, reported non-Cannabis drug use in Canada is far lower than Cannabis use, suggesting the GDP associated with it is likely to be quite a bit lower than Cannabis (although much will also depend on the prices etc). Hence, as a rough approximation one could assume that the GDP estimate for non-Cannabis

³ Admittedly, this spending would likely be staggered somewhat over the quarter.

⁴ these estimates are typically lower than external estimates.

drug use and prostitution combined are broadly the same size as Cannabis pointing to a broader estimate of the Underground economy at around 2.9% of GDP in 2016. We could then round this number up to around C\$62bn or 3% of GDP to try and capture any remaining criminal activities that have otherwise been missed.

If around one-quarter of the Cannabis market remains illegal (as estimated by Statistics Canada for 4Q 2018) or even slightly less over time, the legalization of Cannabis could over time reduce the size of the total underground economy by around 4% or 5%, with possibly some upside if switching to legal outlets for their Cannabis purchases also leads some users to buy less of other illegal drugs⁵. Admittedly, there is significant uncertainty around any such estimate given the many assumptions involved. Meanwhile, the legalization of Cannabis is likely to have fuelled a much larger decline in the total size of the black economy.

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⁵ as noted previously, data from the NCS suggests Cannabis users are the main users of other illegal drugs.

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