CBD Deliverable Supply

Some of the first forward and option contracts traded on Seed SEF call for delivery of CBD extract against payment of the contract price. For example, unless offset with an identical but opposite contract between the two traders before the expiration, a CBD forward contract requires the seller to deliver 500 grams of CBD to the buyer at the price at which the contract was traded. The seller must deliver the CBD within the next month. The seller may have the CBD on hand, or the seller may have to produce it or procure it.

Let's say the seller decides to buy it in the cash market for redelivery on the contract. The difference between the cash market price and the contract price will determine whether this is a profitable or a losing trade for the seller because if the seller has to buy the CBD from the cash market at a higher price than the contract price, the seller has an instant loss.

The concept of deliverable supply

One of the factors that will drive the cash market price of any commodity, including CBD, is its availability relative to demand. Even if the market fundamentals for a product are stable, temporary shortages and surpluses can lead to unpredictable pricing. With exchange traded forward contracts, the delivery specifications – including notably quality standards - are laid out in the terms and conditions. Sometimes, there is a shortage only of the grade of the product that meets the contract specifications, but that can still drive up the price. So any forward contract seller, like the one in our example, could end up paying more for the commodity than was expected.

In organized commodity markets this issue is discussed in terms of "deliverable supply". Deliverable supply is the total amount of a commodity that could be delivered in fulfillment of the contract's terms. Usually, deliverable supply is discussed just in terms of the quality specified in the contract – that is, it does not include grades of the product that would be delivered at a premium or discount. The U.S. Commodity Futures Trading Commission (CFTC) also distinguishes "economically deliverable supply," which is that part of deliverable supply that actually is in position for delivery on a forward, option or futures contract. This concept excludes from the estimated total the product that is, for example, already contracted to other parties or that is so physically remote that transportation costs make delivery unreasonable.

The CBD market is relatively young and as a result it is hard for many traders and market participants to get reliable data for deliverable supply. Here at Seed CX, we have spent many hours interviewing industry participants and collecting the necessary data to estimate the deliverable supply of CBD

Estimating deliverable CBD

To estimate domestic production, Seed CX first began with publicly available acreage numbers for industrial hemp. Hemp producers must be registered with state departments of agriculture or state universities which, in most states, provide data on acreage, variety, and GPS coordinates of all hemp fields. This record keeping has allowed for precise tracking of hemp acreage – 16,417 registered acres in 2016.

However, the number of harvested acres is less than the registered acres due to the facts that farmers might not plant the full number of acres that they were permitted and then for any number of reasons all of the planted acreage might not be harvested. Interviews with farmers along with published data indicate that 67% of acreage, or 11,000 acres of the more than 16,000 registered acres, is being harvested this year.

Industrial hemp can be grown for a variety of purposes, with the three most notable being for seed, fiber, and CBD. Not all of the 11,000 harvested acres are dedicated to CBD production. Consequently, the percentage of acreage that is dedicated to CBD also needs to be estimated. Last year 45% of harvested acres were purely for CBD, however that number has gone up in 2016 with around 60% of hemp production being devoted to CBD - about 6,600 acres.

These acreage estimates were then coupled with estimates on average CBD yields per acre to obtain a final figure on domestic CBD production in 2016. Through surveys of CBD growers and processors, an estimate on the average CBD concentration of 6% on a dry weight basis was established across the dedicated CBD acreage. Making further assumptions about the yield per acre, an estimate of 21 kilograms of CBD per acre was constructed. This totals 138,600 kilograms of CBD.

While approximately 6,000 acres were devoted exclusively to CBD production, CBD can also be processed from the waste product of hemp grown for seed or fiber. On average, these varieties grown for fiber and seed possess around of 0.5% CBD on a dry weight basis. In 2016, the number of low CBD acres was 4,400 acres. Each acre can produce 3 kilograms of CBD, however only about 40% of the seed and fiber hemp waste will be processed this year. The total of CBD that comes from waste is estimated to be 5,280 kilograms.

Altogether, this yields a domestic production estimate of 143,880 kilograms, to which we add an estimated 24,726 kilograms of imported CBD. The import estimates are drawn from surveys of industry participants. Accordingly, the total estimate of the deliverable supply of CBD is 168,606 kilograms.

Economically deliverable supply

So what percentage of the deliverable supply is available for delivery on Seed's contracts at an economically affordable cost?

Let's first review quickly the product specifications for the forwards and options based on 10% minimum extract. These contracts call for delivery by the seller to the buyer of 500 grams of at least first stage extracted CBD. Just about all of the 168,606 kilograms available in the US pass through this stage. The contract has some additional quality standards but these are aligned with typical standards for cash market transactions – we estimate that virtually all CBD meets these standards, especially in view of the 10% threshold. Likewise, higher purity extractions of CBD are deliverable on the contract.

Another potential constraint on deliverable supply is the mechanical capacity of processing. In an analysis of CO_2 extractors, the capacity of the machinery far exceeds the capacity of available hemp material. Therefore, this will not restrict the deliverable supply estimate.

The CBD is highly transportable especially in view of the fact that a contract – even with tolerances – will not weigh much more than 11 lbs. It is relatively inexpensive to ship 11 lbs. of material by U.S. Postal Service or otherwise domestically in the U.S.

Production of CBD from hemp is not a lengthy process. Using dry plant material, the standard commercial process takes less than a day to produce the quantity deliverable under Seed's contracts specification of 500 grams. Thus, once the hemp has been harvested and dried, CBD can be produced quickly and made available on demand. Moreover, on the Seed contracts, the seller has about 30 days to deliver the CBD to the buyer - considerably longer than the extraction process takes.

There are numerous processors around the country which can produce CBD that would be deliverable on Seed's contracts. Imported CBD is of course also deliverable on the contract, and imported CBD meeting Seed contract standards is counted as deliverable in our estimates. Due to import and custom formalities, demand imports for the contracts would not be feasible and are therefore not considered part of the economically deliverable supply.

Consequently, the seller of the CBD contract that is considering buying CBD in the cash market to fulfill the contract requirements can be confident that there is a sizable predictable supply. We believe that starting with this 2016 industrial hemp harvest there are roughly 165,000 kilograms of CBD economically deliverable on the contracts – at least until the next harvest. There is no observed seasonality in demand so disappearance of CBD from the marketplace may be expected to be predictable with few disruptions or peaks. Of course, that does not imply that the price will be flat – U.S. demand is predicted to pick up; foreign markets may exert either demand or supply effects; and technological changes may shift the supply curve outward as regulation may shift the supply curve inward or outward. There is still plenty of uncertainty, but short-run shortages of deliverable CBD will not add to it.