GDPO Situation Analysis

December 2013

Silk Road and Bitcoin

The much trumpeted closure in October 2013 of the Tor-accessible illicit market known as *Silk Road* and arrest of its founder Robert Ulbricht struck a blow to consumer trust in the market for illicit goods and specifically narcotic drugs that are hosted on the Tor network. However, this success for the US multi-agency task force (involving the Federal Bureau of Investigation, Drug Enforcement Administration, Department of Homeland Security, Internal Revenue Service, US Postal Inspection, Secret Service and Bureau of Alcohol, Tobacco, Firearms and Explosives) does not mark the end of black markets hosted on the Tor network, or the availability of drugs anonymously bought online. Rather it spurred innovations in online illicit trading, underlining the hydra headed nature of 'successful' interdiction effort.

Impact

- Accessible only through the anonymising Tor browser (see Box 1) the online narcotics site *Silk Road* boasted $1.2 billion in sales over the course of its two and a half years of operations and an alleged $80 million in commissions for its owner and moderator, also known as the "Dread Pirate Roberts". This reflect the enormous profitability, sophistication, and incentives for entry into, and innovation in narcotic drug sales.

- Online purchase of narcotic drugs using the digital Bitcoin currency (see box 2) is popular among young and technically savvy consumers as it offers a wide diversity of substances manufactured and cultivated across the globe, while anonymous online purchase through a decentralised virtual current reduces the risks associated with 'street level' drugs exchange.

- Despite its closure, the success of the *Silk Road* has inspired a string of competitors and copycats that will continue to trade in illicit goods on Tor. These sites have absorbed lessons learned from Silk Road's closure by improving their security and decentralising their networks to minimise risk and evade law enforcement.

- The volume of online narcotic drug sales will increase over coming years as computer literacy and access to crypto-currencies improves in developing and developed nations. Indicative of the 'one step forward, two steps back' dynamic of drug law enforcement, the October closure of *Silk Road* was followed by the emergence of new illicit vendors such as *Sheep Marketplace* and *Black Market Reloaded* and in early November *Silk Road 2.0* (an identical site to *Silk Road*) was launched (http://silkroaddrugs.org/).

Box 1   Tor: The Onion Router
Recommended as a means of maintaining privacy and protecting civil liberties online Tor was originally developed by the US Naval Research Laboratory to protect government communications. It is available to download as free software (https://www.torproject.org/download/download) and enables users to prevent surveillance and tracking ('traffic analysis') of their network activity. Tor's hidden services allow web publishing, electronic communication and other activities without revealing site location, source and destination.

Analysis

Launched with the help of moderators and key vendors from the original *Silk Road*, the *Silk Road 2.0* site claims new leadership under the old 'Dread Pirate Roberts' moniker. It incorporates a range of new security features to ensure that the same investigative techniques that were utilised to close the previous site will be more difficult to replicate. Interesting trends include:

- **Better security features:** Including double-authentication procedures using PGP (Pretty Good Privacy) cryptographic and data authentication encryption keys to ensure that users can avoid unwanted third parties accessing their accounts, as well as deploying backups of the network. In the event the new Silk Road is taken down an exact mirror of the site will be operational within 15 minutes. The tactic is the same as that deployed by the torrenting site *Pirate Bay*. This operates on the regular web and the use of backups meant the site successfully foiled the attempts of the UK government to instil a nation-wide block on access. Similar tactics were also utilised by Wikileaks during 2011 when it was feared that government reprisals could lead to the site being taken offline

- **Faster Growth:** As this *Silk Road 2.0* site carries the name and many of the system operators of its namesake, the rate of growth has been unparalleled, with listings for narcotics going from 500 to 3000 from its inception (06/11/13). In contrast, the closest competitor (*Black Market Reloaded)* took nine months to grow its narcotic listings from 2800 (Feb 2013) to 6600. It should be noted that a large part of that growth took place only after the first *Silk Road* was seized.

- **New Marketing Strategy:** Unlike its predecessor, *Silk Road 2.0* is embracing media coverage, accepting that the site will be the focus of significant media and public attention. The new Dread Pirate Roberts has been undertaking interviews with journalists and is actively helping media outlets like the BBC and Vice in developing a documentary about the website as well as undertaking philanthropic activities, including fundraising for victims of Typhoon Haiyan. This is leading to further growth in both the market and the public knowledge of Tor black markets and associated technologies like Bitcoin and PGP encryption.

Box 2 - Bitcoin: A revolution in illicit financing

Bitcoin is an open source, decentralised, unregulated virtual currency that is used to purchase products and services in both online and offline environments. It enables anonymous transactions using peer-to-peer technology, with the issuing of bitcoins performed by the network collective. Since its inception in 2008 the value of a single Bitcoin has increased from $13 to over $1000 in November 2013. Bitcoin's value comes from its finite supply; the nature of the mathematical algorithm that underpins Bitcoin ensures that only 21 million Bitcoins are able to come into existence.

Bitcoins are effectively strings of data that are generated each time a computer solves a complex mathematical equation through a process called 'mining'. Anyone with access to the Internet is able to 'mine' Bitcoins by downloading a simple programme (http://bitcoin.org/en) and registering for a 'Bitcoin wallet'. A wallet is effectively an online address where Bitcoin transactions can be made. A sophisticated encryption key, which is set by the user protects each wallet. Without this key there can be no transactions made from the wallet. Any user of Bitcoin can view the contents of wallets, there is no centralised system that is able to freeze or seize the contents of a Bitcoin wallet and all Bitcoin transactions are encrypted and anonymous.

The anonymous and decentralised nature of Bitcoin makes it the ideal financial mechanism for illicit transactions. Online black-market vendors such as *Silk Road* and *Black Market Reloaded* will only accept payment via Bitcoin. Without Bitcoin the current growth of online black markets would not exist. These platforms enable the trade of a wide variety of drugs over large geographical areas while minimising the risk of detection by law enforcement agencies.

It can be assumed that there will be a directly proportional relationship between the wider adaptation of Bitcoin and the number of online black markets in existence. This is supported by the fact that as the numbers of transactions on the *Silk Road* market place grew so did the number of Bitcoins in circulation.

What next?

The purchase of illicit goods via Tor black-markets has previously been accessible only to those with the knowledge of its existence, access to computers and the time to engage in this activity. A majority of users are from first-world nations with strong information and communications technology infrastructures and the financial resources to purchase illicit drugs. This will begin to change as internet connections improve worldwide, marketing, publicity increases and regular web-based proxies to Tor like the '.to' extension funnel - an easy way to log onto Dark Net market places without using encryption - more traffic towards these illicit markets.

Due to improved security, effective law enforcement strategies to tackle sites like the *Silk Road* will become more difficult and will drive illicit suppliers towards other dark nets like I2P. Efforts to improve postal screening to disrupt the supply of drugs from virtual vendors to purchasers can be expected. However, this will slow postal services and require significant investment, making interdiction based activities of this nature an unattractive option. Moreover, vendors have demonstrated a high level of innovation in circumventing the identification and seizure of posted drugs.

In order to understand how to address the rise and dynamic nature of illicit dark net based drug trading, law enforcement and members of the academic and IT community will need to undertake a drastic improvement of capabilities, research and technologies. The Dark Net poses a complex dual use dilemma for law enforcement agencies requiring cross border collaboration, while the vastness of cyberspace renders effective 'patrolling' of illicit transactions complex, if not impossible.

This widening of the network will facilitate an influx of new vendors providing access to more dangerous items like weaponry, false documentation and poorer quality drugs which will make black markets on Tor more dangerous. In the absence of a rethink of broader international drug control strategies, there is no effective method for minimising the potential harm caused to drug purchasers from adulterated substances, while the persistence of prohibition oriented strategies will fuel online illicit sales of cannabis, cocaine, opioids and amphetamine type substances.

About the Global Drug Policy Observatory

The Global Drug Policy Observatory aims to promote evidence and human rights based drug policy through the comprehensive and rigorous reporting, monitoring and analysis of policy developments at national and international levels. Acting as a platform from which to reach out to and engage with broad and diverse audiences, the initiative aims to help improve the sophistication and horizons of the current policy debate among the media and elite opinion formers as well as within law enforcement and policy making communities. The Observatory engages in a range of research activities that explore not only the dynamics and implications of existing and emerging policy issues, but also the processes behind policy shifts at various levels of governance.

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