

The Effect of the Coronavirus Pandemic on a Cybercrime Market: A Stimulation

Anh V. Vu

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Executive summary

CCC COVID Briefing Papers are an ongoing series of short-form, open access reports aimed at academics, policymakers, and practitioners, which aim to provide an accessible summary of our ongoing research into the effects which the coronavirus pandemic (and government responses) are having on cybercrime.

In this report, we focus on a well-known, high-traffic, underground cybercrime marketplace on HACK FORUMS, where trust and reputation play a prominent role as participants are anonymous and there is little legal recourse for dispute arbitration. This marketplace exists in tension between two opposing forces: the drive to hide incriminating information, and the trust and stability benefits that greater openness yields. Since June 2018, the marketplace has provided a trust and reputation infrastructure by way of a semi-public record of all transactions. Starting March 2020, we see a rapid climb in the number and value of contracts completed but no substantial change in the kinds of transactions, users, and behaviours. We conclude that the pandemic has *stimulated* this part of underground economy, rather than *transformed* it.

Members and contracts

Our dataset is the record of the contractual transactions made and completed by members of the HACK FORUMS marketplace over a 14 month period. Our analysis starts in March 2019 – when contracts become compulsory for all transactions – and ends in April 2020, two months after the WHO declared a global pandemic. The contracts include information about the goods and services being exchanged, obligations, agreement terms, ratings of the parties involved, and some are linked with advertising threads and discussion posts. We deem the era before March 2020 ‘STABLE’, thereafter it is the ‘COVID-19’ era.

The COVID-19 era heralds changes to the market with a large increase in ‘Exchange’, ‘Purchase’, and ‘Sale’ contract types. It also facilitates a sudden growth in new contracts: more than 13 000 are created and 5 500 completed in April 2020, surpassing any peak during the STABLE era. We also see an uplift in user numbers across most contract categories, particularly in those making a small numbers of Sale transactions. We observe both new and existing members settling higher numbers of contracts, however overall contract completion rates remain stable – with nearly 50% of contracts failing to complete in either era.

The market is highly centralised around *power-users*, who account for a substantial number of overall transactions. About 5% of users are responsible for over 70% of contracts made. We see this centralisation increasing: and for example if we pick out the top ten most active users over the whole 14-month period we find that they created 70% more contracts in April 2020 compared to February 2020 – just before the pandemic was declared. A further indication of centralisation during the COVID-19 era is seen by considering any advertising threads linked to the contract. Picking out the top 10 threads overall we find that they are linked to three times more contracts in April 2020 than right at the end of the STABLE era in February 2020.

Preferred payment methods

By quantitatively analysing the contracts over time, we find Bitcoin and PayPal are the preferred payment methods. Amazon Giftcards also account for a considerable amount, followed by Cashapp and USD. There is no big change of this composition during the COVID-19 era, with Bitcoin still dominating. Despite its limitations, Bitcoin is more popular than the other cryptocurrencies used in the marketplace, which include Ethereum, Bitcoin Cash, Litecoin, and Monero. We observe a significant growth in the top five payment methods in terms of the number of contracts involved, particularly Bitcoin, for which the number of completed transactions doubled between February 2020 and the end of April 2020.

Trading activities and values

We see a stimulus of top trading activities during COVID-19 with a rapid climb in the number of contracts completed and the total value of the top five products offered. While *giftcards* are the most popular traded products over time, during the COVID-19 era they are relegated to second position, with '*hackforums-related*' products and services nearly doubling at the end of April 2020 compared with February 2020. This category includes virtual products related to HACK FORUMS, such as buying *bytes* – a type of internal currency, vouch copies, and reputation, suggesting a high demand for positive reputation. Most of the products offered are virtual, thus their trade is not disrupted by lockdowns. We observe a large increase of total value traded since the beginning of COVID-19 – it nearly doubles in April 2020 compared to February 2020. In particular Sale contracts rapidly increase, outpacing Exchange to become the highest value monthly traded contract type, but we also see a slight increase in the total value of Purchase and Trade transactions. The monthly values increase across most payment methods, with Bitcoin climbing around 90% higher compared to the end of STABLE. We see a rise then decline in *giftcards* and *tutorials/guides*, while *hacking/programming* and *social network boost* stay mostly unchanged in the first month of the crisis, then increase the month after.

Conclusions

We see the same kinds of transactions, users, and behaviours dominate during the COVID-19 and STABLE eras. While the composition of the market remains mostly unchanged, the number of members, contracts, trading activities, and trading value has increased. Much of the increase is due to increased flows of merchandise and currency involving power-users. There is also further centralisation around influential advertising threads. These findings suggest that the crisis has *stimulated* this part of the underground economy, rather than *transformed* it – and has further concentrated the market around the power-users. We believe that the most convincing explanation for this is *situational*. Rather than serious new forms of crime arising, the uplift has resulted from changes in the everyday lives of the people participating in this market. From consulting forum posts made on HACK FORUMS during this period, the picture is one of mass boredom and economic change. Younger users are confined to their homes with no school and an abundance of time, while older users have either been laid off work and are time-rich and money-poor (and hence desperate to sell and exchange) or are ploughing their recently-received stimulus cheques into the marketplace. We also note that few products require shipping physical goods, so the trust mechanisms are not being strained by the lockdown in the way that they might be on, for example, drug-related cryptomarkets.

At the Cambridge Cybercrime Centre we make our research data available to other academics, sometimes before we have looked at it ourselves! Researchers can be provided access to our 'CrimeBB' dataset of (26 and counting) underground cybercrime forums, our extensive collections of chat channel data, and our new collections of forums relating to online right-wing extremism and radicalisation. We can also share email spam and sensor data related to DDoS and IoT malware. All these collections are regularly updated and can be rapidly provided under license – for full details see: <https://cambridgecybercrime.uk>

The full set of CCC COVID Briefing Papers can be found at: <https://cambridgecybercrime.uk/COVID>

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