A Study of OmiseGO's Token Sales

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ICOs have been disrupting the world with over $4.3 billion raised in 2017 which are outrageous compared to the traditional fundraising methods for startups. Most of the token sales are done by deploying an ERC20 contract on the Ethereum network, which we can keep track of the transactions.

OmiseGO is a top 25 alternative coin that is quite well-known.

Background

Token Overview

OmiseGO is a public Ethereum-based financial technology for use in mainstream digital wallets. They want to offer enable peer-to-peer value exchange and payment service, aiming to be the Venmo and Stripe of Asia.

Token Sale

OmiseGO (OMG) fundraised $25 million dollars in June 2017 at the rate of 1 OMG = $0.35 (0.00100 ETH). The total tokens supply is around 140,000,000, but only 65% were available for token sale[1].

Dataset

Etherscan.io is a third-party block explorer that allows people to track a token's transactions including OmiseGO[2]. However, they only allow to export a maximum of 2,000 transactions on each day and unfortunately, there are dates that the number of transactions exceeds 2,000, meaning we can't retrieve full records from them.

To obtain full records, we can run a full Ethereum node and scrape through blocks in the network. With the use of Etherscan.io, we can get the block height of the first transaction and the first transaction of a day involving OmiseGO. We particularly look at the blocks 3,980,733 - 4,064,576.

The multipurpose command line tools `geth` is able to run a javascript snippet interacting with the Ethereum network, so we can scrape through the blocks and obtain 18,955 transactions that involving the smart contract of OmiseGO token.

[1] https://cdn.omise.co/omg/crowdsaledoc.pdf
[2] https://etherscan.io/token/OmiseGo

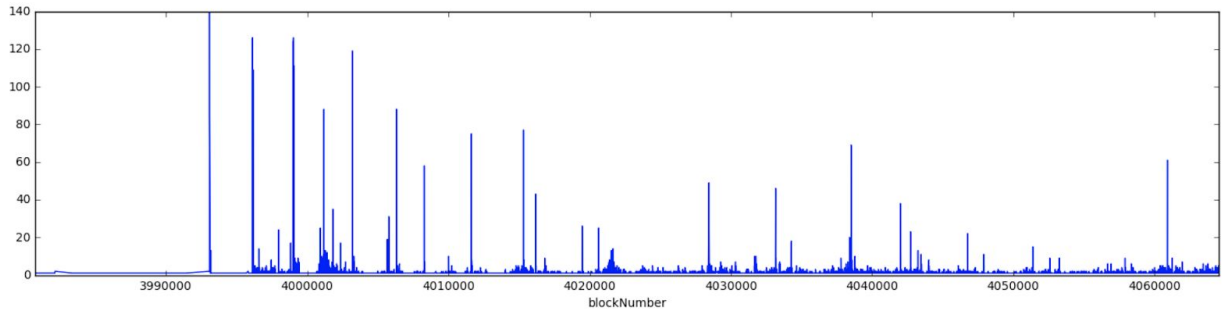
Method

Each transaction contains the following fields: `blockHash, blockNumber, from, gas, gasPrice, hash, input, nonce, r, s, to, transactionIndex, v,` and `value`. We use `from` to determine the address an amount of tokens is sent from, `to` is actually the address of the smart contract, so we need to extract `input` using `eth-abi`, Ethereum Application Binary Interface utilities, to get the address an amount of tokens is sent to and the amount of tokens.

Analysis

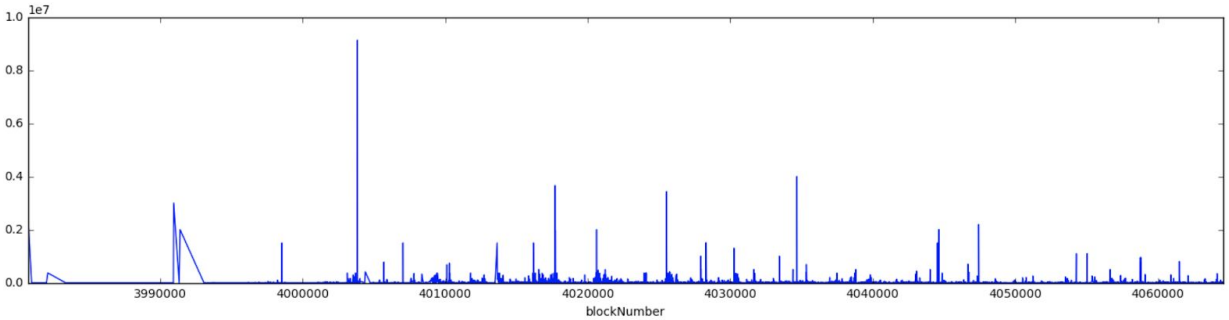
The following figures show characteristics of the transactions.

- The number of transactions within each block



We can see that there are periodic spikes throughout the blocks.

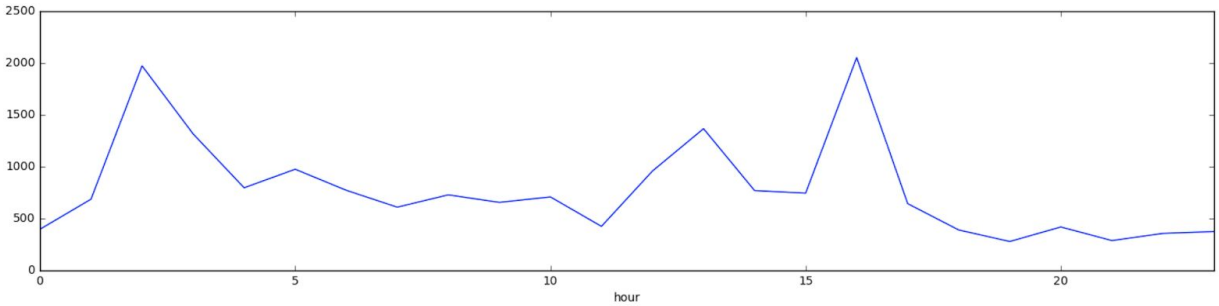
- The amount of tokens transferred within each block



We can see a similar pattern but with less spikes. Comparing between these two histograms, they do not completely correlate to teach other as spikes do not always appear at the same block.

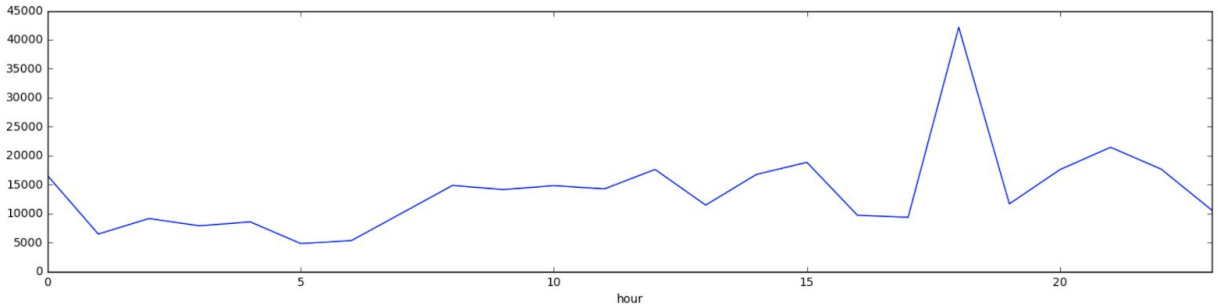
Then we can further get `timestamp` of each block, using `geth` with `blockHash`, to get more ideas than just block numbers

- The number of transactions within each hour in UTC



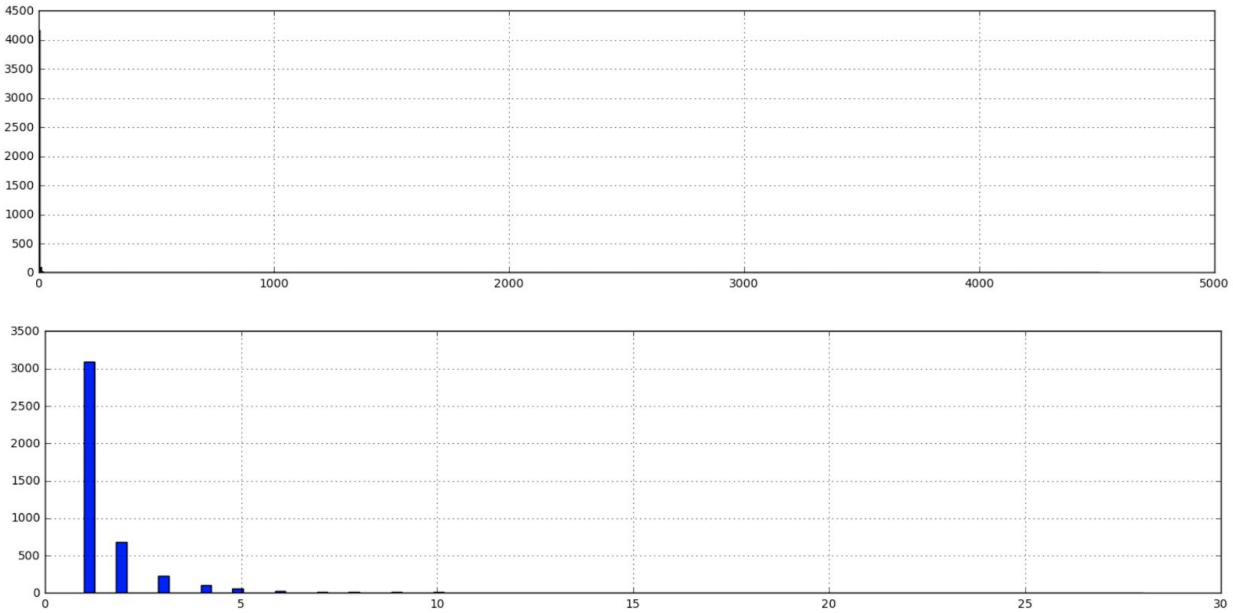
There are two spikes at 2am and 4pm, but no clear period that has higher number of transactions.

- The amount of tokens transferred within each hour in UTC

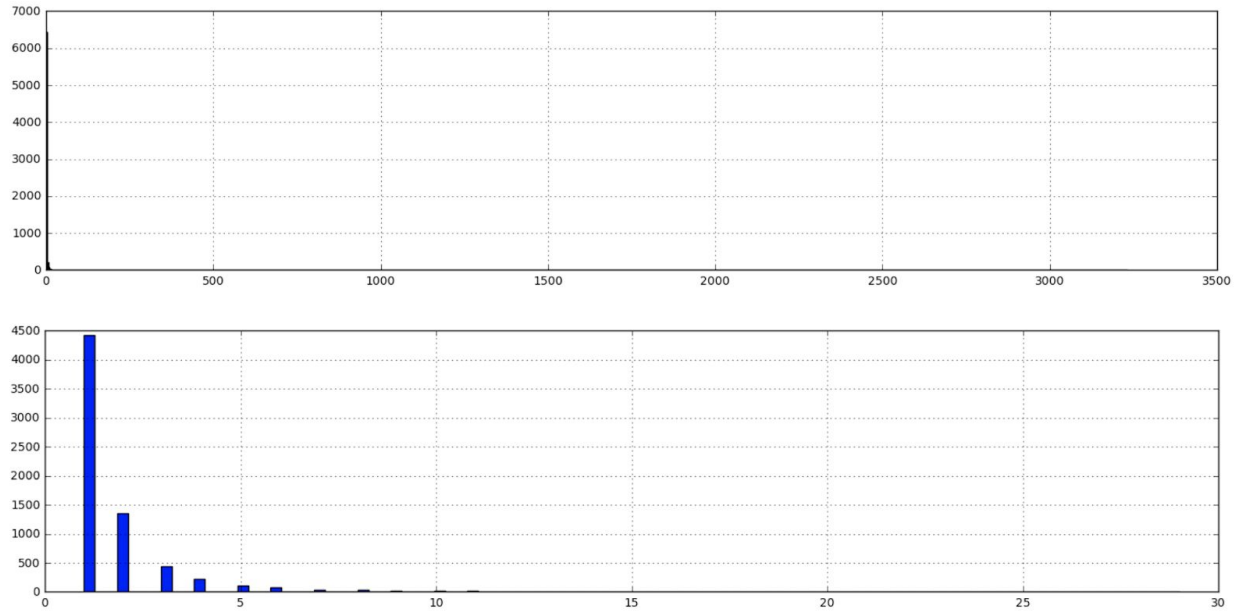


There is only one spike at 6pm. Again, comparing between the two histograms, there is no clear correlation.

- Outdegree histogram

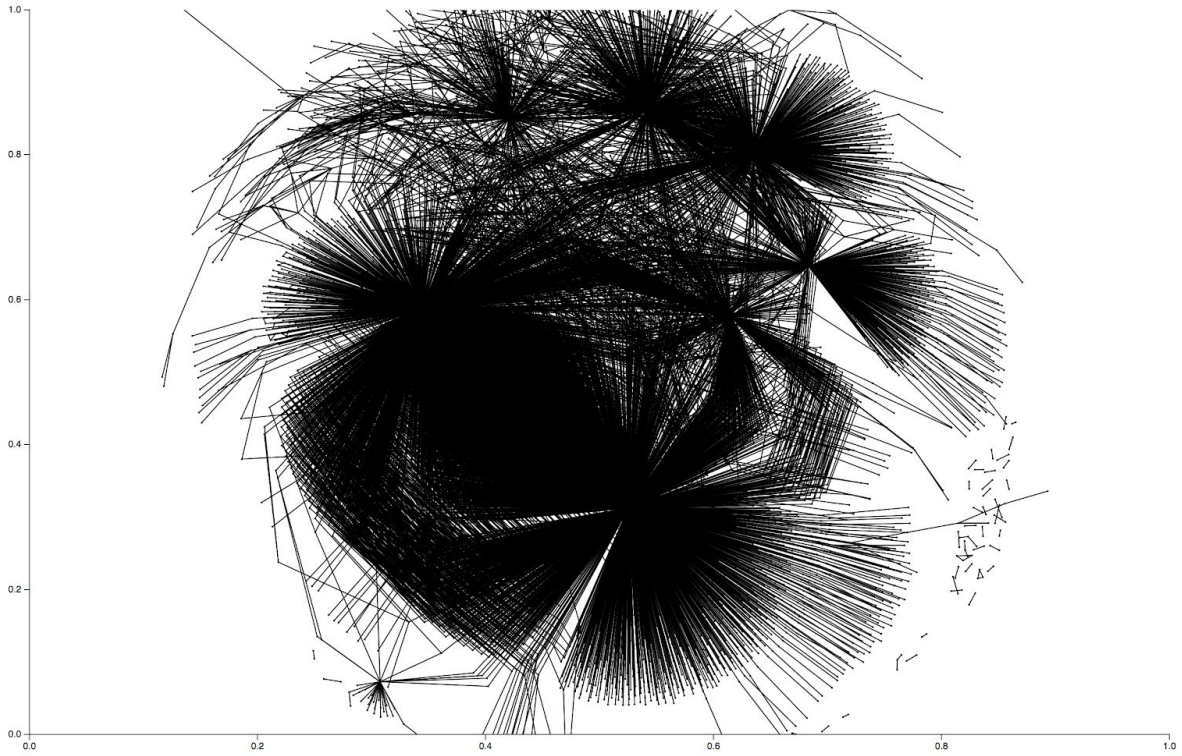


- Indegree histogram



The degrees of each address is very long-tailed as we can expect.

- Visualization of the transactions



This is a plot of 18,955 transactions where each node represents an address, each edge represents a transaction. There are seven particular addresses that have degree of more than 100 which is shown in the table below.

Address	Degree	Notes
0x62eae029fe829fc66c953fa67e15761c941e23ce	3226	Currently holds ~5 OMG
0x8737305011408648c0c2fc6ff831d566fbaac483	2636	Currently holds ~94 OMG
0x1151314c646ce4e0efd76d1af4760ae66a9fe30f	766	Bitfinex_Wallet1
0x5e575279bf9f4acf0a130c186861454247394c06	645	liqui.io_Erc20
0x2ebb507b1da5b2619515d542a8af27b0747a6bc2	518	Currently holds ~16 OMG
0xfbb1b73c4f0bda4f67dca266ce6ef42f520fbb98	500	Bittrex, Current #2 OMG holder
0xeb68aa2764b4a9a943658b2e61db4c902b2ebf85	241	Current #48 OMG holder

Interesting Findings

0x62eae029fe829fc66c953fa67e15761c941e23ce (#1 address)

- Contains 3464 transactions of 999.5 from 4514 total transactions
- Transaction history only involves OMG

0xeb68aa2764b4a9a943658b2e61db4c902b2ebf85 (#7 address)

- Currently holds $60 millions worth of cryptocurrencies
- Is claimed to be Bitcoin Suisse which is a service OmiseGO used for fundraising

As there are multiple exchanges existing in the graph, the blocks might include a short period after token sales has ended as there is no clear indication in the Ethereum Network at which block height a token sales has finished.

Future Work

There are multiple ways to continue this study including:

- Apply the methodology to other ERC20 tokens that have done token sales
- Look at the addresses such as #1 as it seems to be a big player
- Look at the reasons behind the spikes for token transactions