

Oops, Did I Do That?

Uncovering Apparent Mishandling, Tax Fraud, and
Illegal Contributions via a Systematic Study of
Cryptocurrency Donations to US Political Campaigns

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For Mom, Dad, Meme, Papa, Caleb, and Hunter

And for Anna and Drew

I love you all

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Abstract

Some US political candidates have begun to accept Bitcoin and other cryptocurrencies for donations to their campaigns. Because of the difference between cryptocurrencies and federally-backed currencies, more work is required for a candidate to follow federal finance reporting guidelines. We analyze the current state of cryptocurrencies in campaign donations across the US, gathering datasets for candidate political websites, cryptocurrency addresses, and reports of donations sent to federal regulatory bodies.

By examining transactions involving a candidate's cryptocurrency address and comparing the receipts from the Federal Election Commission, we observe that many candidates do not report their cryptocurrency donations, and of the candidates who do, many make mistakes. We also find many of these candidates have transactions reported for receiving donations, but none for liquidating, showing many candidates choose to never convert their donations out of the cryptocurrency. We observe one candidate who shows signs of severely underreporting the value of donations received, while accurately reporting the amount liquidated.

Lastly, we present recommendations for creating a system where the benefits of cryptocurrencies can be utilized in collecting political donations without mishandling the funds and avoiding federal reporting guidelines. By providing a central platform for donors to register their cryptocurrency addresses, candidates can reference each donation to a trusted source to ensure the identity of the donor is known.

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Chapter 1

Introduction

With the astronomical rise of bitcoin in recent years, the prospect of using cryptocurrencies for everyday purchases has become more and more viable. Some political candidates have embraced the potential of cryptocurrencies as an alternative to government-backed currencies, even candidates running for offices as high as the United States presidency. While the use of cryptocurrencies to back political candidates offers several benefits, the lack of regulations regarding their use has led to US political candidates either ignoring federal or state financial reporting regulations, or attempting to follow said regulations and failing.

The United States Federal Election Commission has regulations in place regarding candidate financial reporting, but due to the fundamental differences between the US dollar and cryptocurrencies, these regulations are often difficult to follow and challenging to enforce. Candidates accepting donations in US dollars have the benefit of well-established financial institutions able to process payments while adhering to data-gathering regulations, without the challenges of establishing a consistent exchange rate, linking financial information to an individual, and other issues that appear when attempting to gather cryptocurrencies without the use of a trusted third party.

In this paper, we analyze the current state of cryptocurrency collection for political donations, gathering data from candidate websites, candidate cryptocurrency addresses, and publicly available FEC filing records to discover the methods candidates use to collect cryptocurrency donations, as well as the financial reporting required to accompany those donations.

We gather a corpus of US political candidate websites in order to search for cryptocurrency addresses, as well as to analyze the methods those candidates use to advertise their payment platform. From this corpus, we extract a set of candidate cryptocurrency addresses to be used in comparing reported transactions against actual transactions involving a given address. These addresses allow us to gather a corpus of transactions to show the donations given to candidates. These transactions can be compared to the publicly available reports provided to the FEC by the candidates, and gathered by FollowTheMoney [1]. Lastly, FollowTheMoney was able to run a direct query on their report database, providing us with a dataset of FEC filings that contain some text relating to cryptocurrencies. We also provide suggestions for methods of accepting cryptocurrencies while adhering to federal and state guidelines.

Chapter 2

Background and Motivation

2.1 Bitcoin

Bitcoin inherently differs from other forms of federal currencies in a number of ways, which complicates its utility as a donation currency. Bitcoin, unlike the US dollar or other government-backed currencies, is designed to operate by sharing a public key, or address, associated with a user. If a donor knows the address of a candidate's bitcoin wallet, he or she can directly broadcast a transaction to the bitcoin blockchain without the need for action from the candidate. The ability to securely share direct account details has a direct impact on the ability of a candidate to responsibly report donations.

Because a bitcoin address has no direct link to an individual, Bitcoin is considered pseudonymous. If a donor decides not to share any information whatsoever about themselves, then a candidate cannot accurately report information related to that donation. These transactions are still publicly viewable on the Bitcoin blockchain, but without some way to link the account with the user, these transactions cannot be legally used for a political donation.

Lastly, the value of Bitcoin has been very volatile compared to other forms of currencies in recent years, which increases the need for a consistent valuation method for donations. Bitcoin can be traded for other forms of currencies at many exchanges, but there is no authoritative exchange rate governing these transactions. Given the large number of available exchanges and the possibility of a large difference in exchange rates, this creates a significant

problem for candidates attempting to report a stable value for a given donation. Some organizations, like Bitpay, have made attempts to solidify the process of receiving bitcoin, but cannot be claimed as a definitive source for exchange rates or transaction processes.

2.2 Political Donations in the United States

The United States federal government enforces laws regarding campaign finances via the Federal Election Commission, or the FEC. These laws specifically dictate what candidates can and cannot do with donations when running a campaign for a federal government position, and there are requirements for campaigns to report the income they receive as donations. Each candidate is required to gather certain information for every donation their campaign receives, which will be discussed later.

Politicians running for state government positions are required to follow regulatory policies provided by the individual state's governing body. These policies can vary from state to state, and as a result candidates running for state-level positions may have entirely different reporting requirements than a candidate running for a federal position.

The FEC has laid out specific requirements for receiving bitcoin [2], while individual states may or may not have laws directly stating policies for receiving cryptocurrencies.

Chapter 3

Methodology and Data Collection

To analyze candidates' use of cryptocurrencies in donations, we attempted to collect a corpus of candidate website data to look for information relating to cryptocurrencies. We assume that if a candidate accepts cryptocurrencies for donations, then they should have donation information on their campaign website. By analyzing the data found on the website, we could search for cryptocurrency addresses, which can be analyzed to find transactions in and out of the candidate's wallet. Once these transactions are found, they can be compared to the reports required by the Federal Election Commission from each candidate. An overview of the process of collecting candidate cryptocurrency data can be found in figure [3.1](#).

3.1 Building Candidate Website Dataset

Finding Candidates with Votesmart

To collect cryptocurrency donations to political candidates, we first start with ground truth about the candidates running. We focus on the United States in elections during the 2018 cycle across US congressional, US senate, state gubernatorial, state legislature, and local mayoral elections. We also include candidates from the 2020 Democratic primary. We rely on Project VoteSmart [\[3\]](#), an open platform for tracking political campaigns, the candidates, and metadata associated with them. We queried all candidates from the VoteSmart API

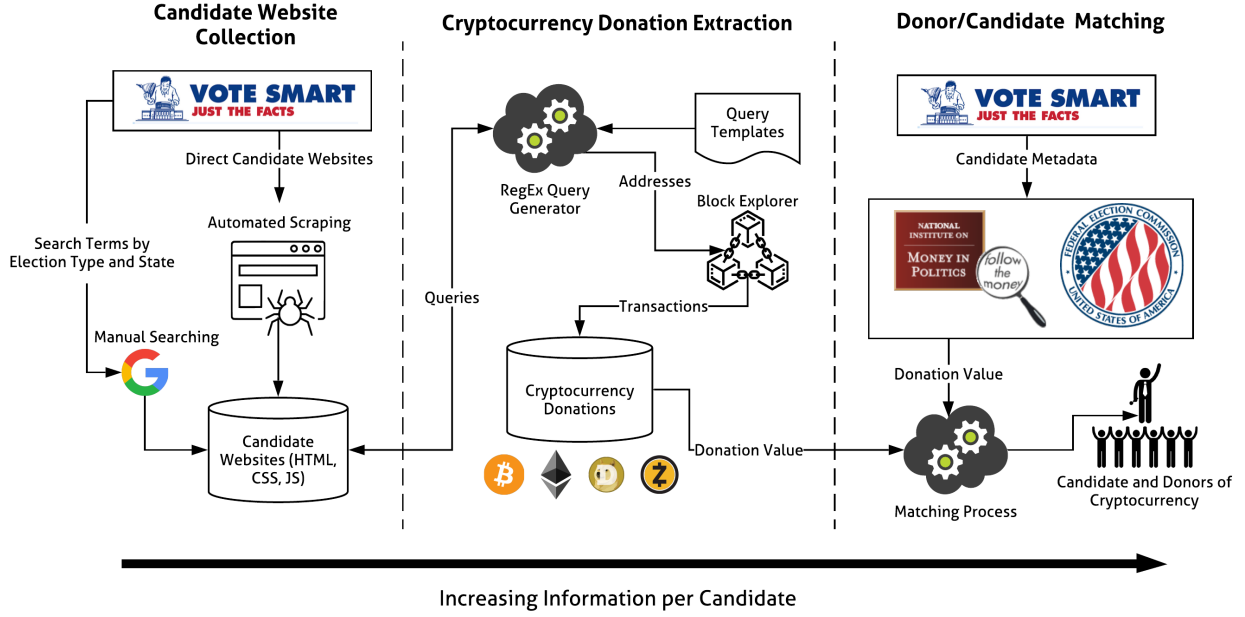


Figure 3.1: Overview of the Data Collection Process

for the above cycles, and downloaded all associated candidate metadata. This data includes campaign dates, offices run for, party, state, and social media and website data if available.

We assume that if a candidate accepts cryptocurrencies as a donation option, the candidate’s website will have information on how to donate using cryptocurrencies or other cryptocurrency related content. To that end, we next take all candidate websites from VoteSmart and proceed to crawl them. Of over 13,000 candidates across all elections in the 2018 non-presidential and 2020 presidential campaigns, we found websites for 4,808 total candidates from VoteSmart. We filtered out sites from the Alexa Top 1k to remove false positives such as Twitter, Facebook, and other social media sites that VoteSmart contributors may have falsely listed as the candidate’s main website. The 4,808 total sites compose our candidate website dataset that we next attempt to crawl and download.

3.1.1 Manual Searching with Google Queries

To supplement the automated web crawling based on candidate data, we also ran a manual search for candidates via Google query operators using parameters pulled from VoteSmart.

For example, a query for "Sue Ann Cobb" for Alabama governor in 2018 could take the form of "'vote — elect — donate — campaign" Sue Ann Cobb governor Alabama 2018 intext:donate'. The query is made up of initial keywords generic to a political campaign, the name of the candidate from VoteSmart, the election, state, and year of the election from VoteSmart, and a requirement that the word "donate" is somewhere on the site.

In total, running these queries was cumbersome due to Google not having an officially supported search API. We relied on a paid 3rd-party service, SerpAPI [4]. Unfortunately, due to these restrictions and SerpAPI issues, we only collected 24 potential sites in our initial run. All of these sites used a service known as BitPay [5], rather than raw addresses. We discuss the difference between cryptocurrency donation gateways like BitPay versus raw addresses in the next section.

3.1.2 Downloading Candidate Sites

Using the Selenium browser automation tool [6], we crawl all 4,808 sites, of which 4,637 downloaded successfully. This includes 4,529 sites that are candidates site at a top-level domain (e.g. brentjonesforcongress.com). 108 total domains were subdomain sites built on web hosting services such as Weebly or SquareSpace [7, 8]. The remaining sites (n=171) were either unresponsive to 5 retries (n=153) on crawling or returned non-parsable results after rendering (n=18). In total, we downloaded 133,378 pages from all sites in the dataset.

3.2 Extracting Addresses from Candidate Sites

3.2.1 Scanning the Website Dataset

Extracting cryptocurrency addresses from the candidate website data was approached as a multi-step process. First, a rough pass was done using regular expressions scanning for any terms including the names and abbreviations of the most popular cryptocurrencies. If a page contained any of those terms, the presumed address was stored along with the page containing the address to be examined later.

The next step in finding valid cryptocurrency addresses was to check the extracted addresses using available address analysis tools [9] [10]. If an address was not a valid cryptocurrency address, that address and its corresponding webpage was discarded. The resulting pages could be narrowed down by manually examining the webpages themselves. This resulted in four valid cryptocurrency addresses that had transactions that could be examined, as well as a set of websites to be examined for candidate collection habits, discussed in chapter 4.

3.2.2 Creating the Manual Dataset

As a final step to ensure no candidate websites were missed, we manually searched for articles online discussing candidates who openly supported the use of cryptocurrencies or accepted them [11]. If an article mentioned a candidate in support of cryptocurrencies, we searched for their website on Google and the Internet Archive [12]. If a page contained a cryptocurrency address, the address was stored in a separate manual dataset, and the webpage containing the address was saved and added to the websites dataset.

3.2.3 Scanning the Manual Dataset

The manual dataset had a list of valid cryptocurrency addresses, as well as the webpages that those addresses appeared on. These addresses were confirmed to be valid candidate addresses at the time of collection, so the only verification step required was to confirm the addresses had transactions that could be observed. This dataset contained 7 candidates, with a total of 16 cryptocurrency addresses.

3.2.4 Creating the Transaction Dataset

With the cryptocurrency address datasets constructed, we analyzed the transactions taking place involving those addresses, creating a dataset that can be used to confirm transactions reported to the FEC. Each transaction contains the date and time, the value in cryptocurrency, and the existing balance in the wallet. For each transaction, we converted

Table 3.1: Results of Collecting Datasets

Metric	Result
Total Sites Found	4808
Websites Downloaded	4637
Addresses Extracted From Sites	4
Candidates Found Manually	7
Addresses Found Manually	16
Transactions Analyzed	157

Table 3.2: Results of FollowTheMoney Query

Metric	Result
FollowTheMoney Candidates	14
FollowTheMoney Transactions	414

the values and wallet balances into USD. In total, we collected 157 transactions from the list of addresses we collected.

3.3 Financial Reporting Dataset

3.3.1 Building FEC Reporting Dataset

In order to confirm the transactions found in the transaction dataset, we compared each transaction to the financial reports sent to the Federal Election Commission [13] from each candidate. To do this, we used FollowTheMoney [1], searching for each candidate and finding the donations of similar value reported on the same day as the transaction.

3.3.2 Requesting the Keyword Dataset

After examining reports found in the FEC dataset, we discovered that many candidates marked the memo section of the donation report with the value of the donation in the cryptocurrency it was donated in. In order to take advantage of this, we approached

FollowTheMoney, requesting a search through their database for all entries containing the keywords used in the address dataset search. From this search, we received 414 records of contributions, including 12 candidates not found in previous datasets and 2 already found in the website dataset.

Chapter 4

Donor Data Collection

4.1 Required Information

The US Federal Election Commission requires political candidates to gather a set of information from the donor for every contribution received [14]. This information is as follows:

1. Full Name (Last, First, Middle Initial)
2. Mailing Address
3. Name of Employer
4. Occupation
5. Amount Donated

The majority of online transactions require some form of information gathering, but are usually handled via some trusted third-party or well-developed infrastructure. Our observations show that many political candidates attempt to perform this data collection on their own when accepting cryptocurrencies, which introduces a significant opportunity for error to occur.

4.2 Collection Via Trusted Authority

A large portion of online financial transactions that take place are processed by some third-party financial institution. This in large part is due to the fact that there are security risks taken when sharing information about one’s bank account. As such, these large institutions tend to have the experience and expertise needed to responsibly handle this task. They handle gathering payment data from both parties, so political candidates only have to gather occupational data to fit the requirements from the FEC. This data gathering provides a strong binding between the transaction itself and the data provided by the parties involved, all while ensuring the proper information is collected.

Both the Republican and Democrat parties have endorsed third-party fundraising toolkits in the form of WinRed [15] for Republicans and ActBlue [16] for Democrats. These toolkits provide a number of resources to candidates that allow them to easily generate forms based on donations received, meaning that the information gathering step is largely handled for them. These toolkits do not provide support for cryptocurrencies, however, meaning that candidates interested in accepting these currencies must find other ways to responsibly handle these transactions.

Some candidates in our dataset opted to rely on Bitpay, a third-party company, to process their cryptocurrency transactions. While Bitpay accepts different forms of cryptocurrencies, it handles data collection in a very similar way as standard online transactions. In order to enter a transaction using Bitpay, participants are required to fill out the required information beforehand, which is inherently different from standard cryptocurrency transactions.

Bitpay also handles the conversion from cryptocurrencies to the recipient’s local currency, which makes understanding conversion rates from the perspective of the candidate much simpler. Exchange rates in transactions involving Bitpay are locked for a brief amount of time, meaning that both the donor and the candidate know exactly which rate is used for each individual transaction.

While Bitpay [5] allows candidates to accept cryptocurrencies, it does not require the candidate to directly expose their publicly available cryptocurrency address. As such, examining transactions to and from candidates which use Bitpay is much more difficult.

1. I am at least eighteen years old. 2. This contribution is made from my own funds, and funds are not being provided to me by another person or entity for the purpose of making this contribution. 3. I am a United States citizen. 4. This contribution is not from a corporation or labor union 5. The provided contributor information is correct. 6. Aware that political donations are not tax deductible.

☐ By making this contribution, I verify that I have read the above and am authorized to make a contribution according to Colorado law. (Required)

By providing your information, you give explicit consent to BitPay to store and provide this information to the merchant. [View Privacy Policy](#)

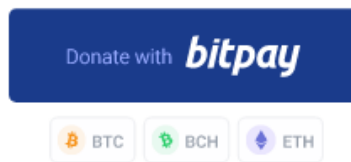


Figure 4.1: Sample Bitcoin Donation Message using Bitpay

We observed five candidates using bitpay links on their websites, but due to the lack of an available cryptocurrency address, we cannot observe payments to or from these individuals.

4.3 Collection Via Other Methods

Most cryptocurrencies are designed in such a way that posting one's account address is not only secure, but is the intended method of initiating a payment. This inherent lack of risk, combined with the relatively few third-party entities providing tools or methods to collect cryptocurrencies, means that many candidates have attempted to provide their own system of collecting and processing transactions. These individual systems tend to allow significant mistakes to be made in regards to collecting data, reporting donation information, linking



Figure 4.2: Candidate Providing Cryptocurrency Address via QR Code on Sign

transactions, or accepting monetary donations as a whole. We have observed a number of behaviors by candidates that directly ignore or sidestep these transaction requirements.

QR codes can be easily used to provide a link to a candidate’s website or donation information, and many candidates chose to use them for the purposes of advertising their cryptocurrency address. This method of collecting donations is equivalent to providing a cryptocurrency address without making any attempts to collect accompanying data. Figure 4.2 shows a candidate providing an address via a QR code on a physical sign [17], while Figure 4.3 is a screenshot from a candidate website providing a bitcoin address and an accompanying QR code, but makes no attempt to collect any information about a donor [18].

Some candidates opted to collect information via forms on their website, but provide the cryptocurrency address on the same page as the forms themselves, meaning that a donor

SUPPORT MY WORK WITH BITCOIN



Figure 4.3: QR Code Provided on Candidate Website

is not required to submit a form to make a donation. Figure 4.4 is an screenshot from a candidate website displaying an example of such a scenario [19].

Due to the issues with anonymity and the trouble of accepting cryptocurrencies as political donations, some candidates have made the decision to accept cryptocurrencies as personal donations rather than campaign donations. Figure 4.5 shows one such candidate's website, which provides an available bitcoin address to donate to along with a disclaimer that states "any transfers to the bitcoin address below are considered to be a gift... and not a campaign contribution" [20].

Gathering information about the donor at the time of the donation is not the only challenging part of collecting cryptocurrency donations, as candidates are required to match a donation from a cryptocurrency address to the donor information collected. Cryptocurrencies provide no strong binding between a donor and the donation itself, which can cause problems when reporting donation information. This problem is quite complex, as there is a requirement for some link between the information provided by the donor and the transaction itself, as well as a need for some absolute standard to value the cryptocurrency at for reporting purposes, and finally a requirement to ensure the donation is received, since the transaction is not processed at the time of the information submission.

For websites that make an attempt to collect donation information from donors, many provide a field for the amount of currency being donated. If the transaction is done using US dollars, this is not an issue, but a cryptocurrency has no fixed value among all entities. This problem is addressed in chapter 6.

As previously discussed, third-party payment portals have the ability to directly facilitate donation transactions at the time of information processing. Because of this close link between data gathering and payment processing, linking a transaction to the data provided is trivial, and ensuring a payment delivery can be performed at the time of gathering data. With cryptocurrencies, these features are not available. As such, candidates must find ways to properly link one transaction with one data submission, all the while ensuring that any data submission without an accompanying transaction is not recorded. This situation is complicated because a transaction is not guaranteed to occur within a given timeframe before or after a data submission occurs.

Occupation *

Employer *

Select Payment Method 
Choose How you wish to pay

BitCoin Donation

To donate BitCoin, use the below QR Code or enter the following address:
1JzbX4uRzHWxcoGYin7qgAPrUKesxaBCK



Figure 4.4: Cryptocurrency Address Provided with Optional Form

Donate Using Bitcoin

IMPORTANT NOTE: Bitcoin is an intrinsically anonymous digital currency and, as such, cannot be used for campaign contributions. Pursuant to [Pennsylvania law](#) (25 P.S. 3254), anonymous contributions must be handed over to the State Treasurer within twenty days of receipt. Rather than lose good bitcoins, any transfers to the bitcoin address below are considered to be a gift to Ken Krawchuk *sui juris* and not a campaign contribution.

Bitcoin Address

1FNq7qYxkDHBmRTapDmfpvjRfktjeiR3c



Figure 4.5: Candidate Accepting Bitcoin Donations as Personal Gift

Of the candidates in the candidate website dataset that decided to handle data collection of cryptocurrencies without the use of a third-party, none seemed to properly be able to link each transaction recorded with a data submission. Several candidates provided methods of submitting information, but no candidates blocked access to the cryptocurrency address until this submission process was complete, meaning that a donor could skip the information collection process entirely.

Chapter 5

Contribution Reporting

5.1 Federal Requirements for Reporting Cryptocurrencies

The requirements by the US government require more reporting for a donation via a cryptocurrency than a donation using the US dollar. The donation is not treated as a cash donation, but rather as a hybrid of three different donations, two occurring at the time of the donation, and one at the point of cashing out. Upon receiving a cryptocurrency donation, a candidate is meant to report one "In-Kind" donation, as though someone donated a good or a service rather than a monetary donation. At the same time, there should be an accompanying disbursement, or campaign expense, reported so that the cash-on-hand remains unchanged for the candidate. The FEC recommends candidates list the amount of cryptocurrency received, as well as the fact that the donation has not yet been liquidated.

At the time of liquidation, the candidate then reports a third donation coming directly from the cryptocurrency exchange used to cash out the donations. This value is reported as the amount of US dollars gained by exchanging the cryptocurrency [2]. This exchange is still subject to any extra fees that come from gathering interest on the transaction from the time of accepting the donation to the time of cashing out.

5.2 Analysis of Candidates Reporting In-Kind Donations and Disbursements

In order to understand whether candidates are actually following the guidelines set by the FEC, we analyzed the reporting dataset collected from the FEC website and the keyword dataset from FollowTheMoney to see whether candidates reported their donations as in-kind with an accompanying disbursement.

Of the fourteen candidates found in this dataset, six were found to follow this style of reporting in-kind donations followed by disbursements.

One candidate only showed donations from a cryptocurrency exchange, meaning he only reported his liquidation rather than reporting at the time of the donation. This donation lacks important information about who the donation actually comes from, demonstrating a clear need for standardized processes in reporting cryptocurrencies.

The rest of the candidates show records of donations, but only incoming donations, meaning that they do not follow the recommended method of reporting. By not following the process of reporting an in-kind donation with a disbursement, the true value of the donation cannot be accurately measured due to only having information about the date of the donation or the date of the liquidation, depending on how the candidate chose to report it.

5.3 Analysis of Candidates Reporting Donations from Cryptocurrency Exchanges

Due to the nature of reporting cryptocurrencies as three separate donations rather than one, we can find candidates who are reporting the cashout process of their cryptocurrency donations easily by looking for donations coming directly from cryptocurrency exchanges. Since these organizations do not usually donate to US political candidates, if a candidate receives a donation from an exchange, we can make the assumption they have cashed out a cryptocurrency donation. Based on the FollowTheMoney keyword dataset, there are four

candidates that have reported cashout donations from a cryptocurrency exchange. This same dataset contains fourteen candidates reporting some cryptocurrency donation, which shows a large number of candidates are either not reporting their cashouts or holding onto their cryptocurrency.

The corpus of transactions extracted from cryptocurrency address records indicates that many candidates are exchanging donations into US dollars and not reporting any income at all. Looking at transactions associated with the cryptocurrency addresses of eleven candidates, eight candidates did not report any of the donations found in the bitcoin blockchain ledger, and one received no donations using cryptocurrencies. Only two of these candidates reported the transactions associated with their cryptocurrency address.

5.4 Time Between Donation and Liquidation

The value of a donation to a candidate has the potential to widely vary given the value of a cryptocurrency at the time of the donation, as well as the time of the liquidation. Because candidates have no requirement to liquidate the donations given to them within a certain timeframe, there exists the potential for a candidate to make a significant amount of money by waiting for the value of the donated cryptocurrency to rise.

By analyzing the transaction dataset, we observed the amount of time that passed between receiving a donation and cashing that donation out. Of the nine candidates whose publicly available addresses we could observe, six appeared to liquidate their donations within a week of the donation, and usually for an amount similar to the full amount donated.

One candidate received a donation of approximately \$300, liquidated \$20, and then waited to liquidate the rest until receiving another donation close to a month later, where he liquidated both the new donation and the remaining value of the previous donation.

Another candidate received a number of donations in 2014 and 2015, each less than \$50 dollars, but did not liquidate any of them until early 2019. By waiting to liquidate until after the price of bitcoin rose significantly, he took approximately \$80 of donations from donors and received \$3550 when he liquidated.

The last candidate in this dataset was observed to receive a \$49 donation and waited 3 months to liquidate, receiving \$63 dollars. After some time, they received another donation for approximately \$100, which as of the time of writing has not yet been liquidated, close to a year and a half after the donation was made.

Chapter 6

Contribution Valuation and Tax Implications

6.1 Valuing a Cryptocurrency Donation

Political donations made using a federally backed currency have the built-in assurance that the valuation at a given time will be mostly stable, as there are a large number of market factors that affect the given value of a unit of currency. Cryptocurrencies have very little backing their value, and as such are highly volatile in price, usually changing much more drastically in less time than federally backed currencies. At the highest peak of Bitcoin's valuation rise in 2017, the value of a given amount of bitcoins could change dramatically within a few hours. This variance is exacerbated by the ability to buy or sell bitcoin at a number of different marketplaces, meaning it becomes difficult to establish a set exchange rate for bitcoin to trade at.

Software has become available allowing potential bitcoin investors to partake in arbitrage trading, where automated processes trade back and forth from one bitcoin exchange to another with the goal of making a profit off of the difference in exchange rates [21].

The FEC recommends that bitcoin donations be valued based on "the market value of bitcoins at the time the contribution is received," [2] but no concrete sources for the market value of bitcoins or other cryptocurrencies are officially endorsed or provided. The ambiguity of this statement makes establishing a standard for valuing cryptocurrency donations up to

Table 6.1: Reported vs Calculated Candidate Donation Totals

Candidate Name	Reported Totals (USD)	Converted Totals (USD)	Error (%)
DONNELLY, TIM	2700.00	2671.31	1.074
FORDE, BRIAN	476426.61	4170537.99	88.576
OVERBY, LUCAS	2.00	1.97	1.522
POLIS, JARED SCHUTZ	2397.91	2176.19	10.188
ROHRABACHER, DANA	5400.00	5497.64	1.776
STARRETT, GRANT	3.00	3.06	1.960
YANG, ANDREW	6204.98	6331.86	2.003

the individual donors, which allows donors to take advantage of the system if not monitored tightly.

6.2 Analyzing Valuation Habits

Using reporting data collected from FollowTheMoney [1], we gathered a list of bitcoin donations reported by political candidates in the US in order to determine the actual value of the donation at the time it was received. We gathered the reported amount of bitcoins donated from the data inside the report and found the exchange rate at the time of the donation using the Crypto Coin Comparison Aggregated Index (CCCAGG) methodology found on cryptocompare.com [22]. This methodology aggregates transaction data from over 70 exchanges, giving an estimate of the given exchange rate of bitcoin at a given time. To account for the variance in price of bitcoin throughout the day, we took the peak value for the day the transaction was reported. This exchange rate was used to calculate the actual value of a donation on the day it was reported, based on the amount of bitcoin reported by the candidate. The sum of the actual value of all donations from the candidates can be found in the Converted Totals column found in Table 6.1.

Because the candidates report the value of a transaction in both bitcoin and converted to US dollars for every report, we directly compared the reported value to the actual value of

the transaction and calculated the total amount received versus the amount reported, which is shown in the Repored Totals column found in Table 6.1.

While most candidates have a difference of less than \$500 from their reported value, one candidate reported a value that was approximately 3.69 million dollars less than the converted value we calculated, or 8.75 times less than the converted value. This candidate received numerous contributions of multiple bitcoin, even reporting one donation of almost 14 bitcoin. These contributions took place in 2018, where the exchange rate of one bitcoin to US dollars was close to \$10,000. The candidate consistently underreported by a very large margin, even reporting multiple contributions as \$2700 despite the donations being much more valuable, even up to \$115,000 for one contribution. A screenshot of an FEC filing report clearly displaying a largely underreported donation can be found in figure 6.1 [23]. Our dataset indicates there are some donations where the candidate seems to have reported the same donation twice, meaning the total sum of donations may differ, but the valuation of the donations is still far from accurate.

This same candidate has contributions appearing on the same Schedule A Itemized Receipts page [24] demonstrating one contribution from Coinbase, a common cryptocurrency exchange [25], and one contribution from a donor. The Coinbase contribution indicates the candidate liquidated his cryptocurrency wallet, and the contribution is valued according to an accurate historical exchange rate, but the donation from the other donor who is not a cryptocurrency exchange is undervalued. These two reports are indicative of the candidate's behavior of reporting a low exchange rate when accepting donations, but using an accurate, much higher exchange rate upon cashing out. Figure 6.2 shows these reports.



Three memory cards are shown, each with a different set of labels and a date. The first card has 'M M' at the top and '04' in the center. The second card has 'D D' at the top and '25' in the center. The third card has 'Y Y Y Y' at the top and '2018' in the center. The cards are separated by slashes.

Amount of Each Receipt this Period

2689.59

 Memo Item

Figure 6.1: FEC Filing Report Showing Severely Underreported Valuation

A. Coinbase Full Name (Last, First, Middle Initial) Mailing Address 548 Market St # 23008 City San Francisco State CA Zip Code 94104-5401 FEC ID number of contributing federal political committee. C Name of Employer Occupation Receipt For: 2018 ☒ Primary ☐ General ☐ Other (specify) ▼ Election Cycle-to-Date ▼ 294536.94			Date of Receipt MM / DD / YYYY 06 / 01 / 2018 Transaction ID : VVBGMDXYT87 Amount of Each Receipt this Period 2700.00 ☐ Memo Item 0.33598989 Bitcoins Sold via Coinbase - Purchaser Unknown
B. Brownworth, Anders, , , Full Name (Last, First, Middle Initial) Mailing Address 3 Windemere Rd City Wellesley State MA Zip Code 02481-4820 FEC ID number of contributing federal political committee. C Name of Employer Occupation Circle Internet Financial Chief Evangelist Receipt For: 2018 ☒ Primary ☐ General ☐ Other (specify) ▼ Election Cycle-to-Date ▼ 5351.04			Date of Receipt MM / DD / YYYY 05 / 30 / 2018 Transaction ID : VVBGMDXYV07 Amount of Each Receipt this Period 702.64 ☒ Memo Item * 1.2689 Bitcoins Received, Not Liquidated

Figure 6.2: FEC Filing Report Showing Contradicting Exchange Rates

Chapter 7

Mitigating Mishandling of Donations

There are significant benefits to using cryptocurrencies for political donations, but these benefits cannot be recognized fully without some changes to the way the FEC handles donation reporting. Changes must be made in the way candidates collect information, as well as the methods taken to value a donation.

7.1 Data Collection

A fundamental issue with accepting cryptocurrencies as a political candidate is the anonymity found in most cryptocurrency systems. The FEC requires information on each donor, which cannot be found easily in a cryptocurrency system without some method of linking a donor to a cryptocurrency address. We suggest some central platform where donors must register their cryptocurrency address in order to be able to donate to a candidate. This registry process would include all necessary steps in data gathering, and would then be accepted by the FEC or whichever governing body maintains the registry. Candidates should then be able to access this system upon receiving a donation, allowing them to verify the identity of a cryptocurrency address, and reject any donations that cannot be verified using this system. To reject a donation, the candidate should simply send the donated cryptocurrency back to the address they received it from. This process, because of the public nature of the blockchain of most cryptocurrencies, could be publicly viewed, allows the governing body to ensure candidates are sending back any unapproved donations.

The total number of individuals who donated enough money to be itemized by candidates for the 2017 and 2018 election cycle was 1,529,533, and it can be assumed that the number of individuals who donate cryptocurrencies is a small subset of these donations. These numbers show that such a system need not be expensive or difficult to maintain, as the number of records that would be stored are small.

7.2 Valuing Donations

The use of cryptocurrencies introduces a number of ways to challenge the value of a donation, so governmental oversight in this regard must be applied as well. The governing body responsible for monitoring these transactions should decide on one exchange to base the value of a cryptocurrency on, in order to prevent candidates from reporting the value of some other exchange to modify the reported value of the donation. The donation should be valued at the time the block containing the transaction is processed into the currency's blockchain, so that the value is publicly available.

By taking these steps, donating a cryptocurrency becomes much like donating stock in a publicly traded company, except with an entirely public ledger. Governing bodies and individuals alike can now see the activity of political candidates, and the issues found in valuing a donation are now resolved.

Chapter 8

Related Work

To date, there are not systematic studies of cryptocurrencies used as a monetary donation mechanism to political campaigns, though small studies of a single candidate or a single election have been done. To the best of our knowledge, our study is the largest known and most comprehensive, surveying all available candidates in the field of US 2018 cycle.

Magleby explores several cryptocurrency contributions to super PACs in the 2016 election cycle [26]. Williamson et al. and Strebel et al. explore several campaign finance violations due to mishandling of cryptocurrencies from a legal perspective [27, 28]. However, these two studies focus on the broader context of election finance with little content on cryptocurrencies specifically. Whyte et al. explores how cryptocurrencies are being used in terrorism efforts, with a note that some donations have been made to extremist political campaigns [29].

Beyond violations and studies of actual cryptocurrency donations to campaigns, other work investigates how the US campaign finance system and rules could be adapted to more broadly support cryptocurrencies and decentralization. Serdult et al. lays out a framework using the blockchain to facilitate donations [30] that can be traced in a manner that would make much of our earlier analysis significantly easier. Ricks et al. expands on using blockchains to explore how general distributed ledgers could factor into political campaigns [31]. Finally Ziskina et al. explored the FEC’s current efforts to regulate cryptocurrencies [32].

Chapter 9

Conclusion

In this analysis, we examined the current state of cryptocurrencies as they are used in US political donations. To do so, we gathered a corpus of 133,378 candidate websites, containing cryptocurrency addresses, as well as financial reports submitted to the FEC. We found that, while cryptocurrency use in political campaigns does not happen often, it is often misused for a number of reasons. Reporting cryptocurrency donations with accurate information about the donor is difficult due to the lack of standardization in valuation, as well as an inability to link information from a donation to a donor. There are few third-party vendors that process cryptocurrencies, so many candidates attempt to collect information themselves, leading to many issues with reporting.

Of candidates that report cryptocurrency donations, many do report accurate values when they follow the instructions laid out by the FEC. Other candidates, however, seem to be missing the full information needed to report a donation, or they misvalue their donations, leading to the potential for serious mishandling of campaign finances.

Lastly, we present recommendations for changes to be implemented in order to reap the benefits of cryptocurrencies in political donations. By providing a system to candidates for their donors to register for cryptocurrency donations, candidates have a set process they can follow to collect and report cryptocurrency donations without breaking federal regulations. This system does not require a large amount of resources to maintain, and will create an open, public environment where anyone can verify the activity of a candidate when accepting

cryptocurrencies. This system, combined with a standard for valuation, would lead to a transparent and safe method of collecting cryptocurrency for any political candidate.

9.1 Future Work

During our study, we discovered that many non-profits accept cryptocurrency donations as well. Since these organizations also must report certain taxation information, future work should explore the state of mishandling and general cryptocurrency usage and traceability in donations to non-profit campaigns. In this work, we also did not examine donations to political action committees (PACs) and super PACs. These committees often take on exorbitant amounts of funding that is then distributed to political candidates that fit the PACs party or cause. Future work should also explore donations of cryptocurrencies to these organizations. Finally, a framework for automatically collecting the information presented in this work for *every* election cycle would be extremely useful to organizations like FollowTheMoney [1], VoteSmart [3], and the FEC [33] to ensure elections in the US are transparent and fair.

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