

**Responses to Post-Hearing Questions for the Record
Submitted to Patrick Murck
From Senator Thomas R. Carper
“Beyond Silk Road: Potential Risks, Threats, and
Promises of Virtual Currencies”
November 18, 2013**

- 1. Overall, how would you assess the federal government’s activities thus far regarding virtual currencies and in what areas do you believe more work needs to be done?**

The U.S. federal government’s work on Bitcoin has been notably thoughtful and careful. As you have pointed out, the Treasury Department, the Internal Revenue Service, the Justice Department, the Department of Homeland Security, and the Consumer Financial Protection Bureau have looked into Bitcoin, educated themselves about it, and found little that is troubling. There will be areas where Bitcoin’s unique characteristics challenge the application of existing law, but in most areas the laws already on the books are sufficient to protect the public. We will continue to assist federal, state, and international governments seeking to understand Bitcoin, apply existing law to its use, and resolve any issues that arise. We believe the jurisdictions that foster Bitcoin innovation and use will be rewarded with jobs and economic growth.

Though we believe that the U.S. federal government’s agencies have acted with care, the U.S. Bitcoin business ecosystem is very sensitive to their activities. So far, most U.S. Bitcoin businesses have been founded by individuals with greater technical knowledge than familiarity with the laws and regulations that may apply to the new business models they are creating. Start-up businesses do not regard the cost of legal counsel as trivial; legal fees can be the difference between a successful new business and a business idea foregone. And all U.S. businesses know that being on the wrong side of a U.S. financial regulator or security agency can bring massive legal costs, fines, destruction of reputation, and even the threat of incarceration. Because Bitcoin is new and fascinating to the public, the media will whip even faint signals from regulators as though they are heavy-handed threats.

All this makes it very important that federal regulators act with circumspection toward Bitcoin users and businesses. Uses of Bitcoin that are clearly illegal deserve no dispensation, but a business that may be in a legal gray area should get light-touch treatment until the legal questions are resolved. We expect federal agencies to know that they can be a “bull in a china shop,” and that their inadvertence can do a great deal of damage to the U.S. Bitcoin ecosystem, frustrating your goal for the country, which is to get the benefits of Bitcoin while mitigating the risks.

- 2. Do you think virtual currencies, including Bitcoin, fit into our current legal and regulatory framework? Do you see any gaps in our statutes and regulations regarding virtual currencies? Which agencies do you believe need to be at the forefront of the federal government's work on virtual currencies?**

Most of the functions that Bitcoin serves are already covered by existing law. There will, of course, be gaps that arise over time, as ways of using Bitcoin and the Bitcoin protocol evolve. The ingenious Bitcoin protocol may come to be used for many things beyond value storage and transfer over time.

Rather than thinking of any one agency being “at the forefront,” each agency should examine how Bitcoin interacts with the laws that it is charged with implementing and the protections that it provides the public. If a use of Bitcoin falls within its purview, or if a use of Bitcoin threatens consumer welfare in a way Congress empowered the agency to address, then that agency should work with us toward a corrective.

At the present time, the Internal Revenue Service's treatment of Bitcoin transactions is a matter of speculation and educated guessing. The U.S. Bitcoin community would benefit from clarity about how the IRS believes the law applies to various kinds of transactions. This would create confidence among Bitcoin businesses and their customers by reducing uncertainty. The issues are complicated and changing, so the IRS should commence an open and transparent notice-and-comment rulemaking, allowing all dimensions of the issues to be well considered.

- 3. As I understand things, currently there is still a relatively very small group of people that use Bitcoin. That being the case, the full scope of the ramifications of the use of Bitcoin remains to be seen.**
 - a. What are some examples of uses that might have a positive impact for consumers or the broader economy? What are some of the promises of this new technology, as you see them?**

There are many obvious uses for Bitcoin that will benefit consumers and the broader economy. Bitcoin allows individuals to send money to one another nearly instantly at very low cost. Bitcoin allows small businesses to receive payments without paying the high fees charged by many payment processors. Bitcoin allows immigrants to send money to their families without paying the exorbitant fees currently charged for international remittances. These benefits can return billions of dollars per year to consumers, and the competition that these uses of Bitcoin present to financial services providers should force them to lower their prices and improve their services.

As important—if not more important—are the innovations that creative Bitcoiners may build onto this open platform. Their experimentation will not just shave some inefficiency off of financial services. It will produce inventions that benefit consumers in ways we cannot predict. If public policy does not get in the way, someone will build a service on the Bitcoin protocol that is the

equivalent of what Google did with search or what Wikipedia did with information-gathering and dissemination.

b. What kinds of businesses and opportunities might emerge around Bitcoin if the currency continues to grow?

The obvious business opportunities are in payments. Bitcoin businesses are already positioned to deliver needed competition in online payments. Bitcoin may produce advances in mobile payments and micro-payments. Remittances, as noted earlier, is an area where a small number of providers charge huge fees for transferring funds to people who rather badly need all the money they can get.

But the Bitcoin protocol has many features, and advanced services can be built on top of the protocol. So, just as one example, there may be a business providing escrow services—cost-effective, credit-card-like assurance of transactions when needed. We cannot predict all the ways that Bitcoin might underlie new business models and businesses. There are many opportunities in the Bitcoin space.

4. Since its introduction in 2008, Bitcoin has experienced a number of significant price swings. For example, in 2013, the price per Bitcoin fell from \$266 in early April to \$50 in late April, but today is hovering around \$1000.

a. What factors have contributed to this volatility?

Volatility is a challenge to perceptions that Bitcoin is suitable for payments and for storing value. People rendering their judgments based on the behavior of markets for Bitcoin during its present infancy take volatility to be damning, but it will fall over time and mechanisms already exist to insulate some users from its effects.

Bitcoin has existed for just five years, and it has garnered widespread attention in only the last year. It is very thinly traded compared to the depth Bitcoin markets will reach when Bitcoin and the Bitcoin protocol reach their potential.

At its highest price against the U.S. dollar so far, in December 2013,¹ the total stock of Bitcoin was valued at about US\$14.5 billion. At this writing, the value of all Bitcoin in U.S. dollars is about US\$11 billion.² Compare this to the quantity of U.S. dollars: \$11 to 12 trillion (varying with different measures of money supply).³ The market for Bitcoin is roughly 1/1000th the size of the market for U.S. dollars. Unsurprisingly, it acts like a thinly traded market. The quantity of “stable” U.S. dollars, its worth noting, has increased more than 25% over the last four years.

¹ The date on which these responses are being submitted is January 10, 2014.

² See Blockchain.info, “Market Capitalization” Web page, <https://blockchain.info/charts/market-cap>.

³ See Federal Reserve Bank of St. Louis, *Monetary Trends* (current to Dec. 4, 2013), p. 3
<http://research.stlouisfed.org/publications/mt/page3.pdf>

As some observers have noted, owning Bitcoin now is like owning shares of a startup company long before its initial public offering. Changes in valuation are substantial as different prospects for the success or failure of Bitcoin, and for its value against other currencies and goods, express themselves in its price. Unlike shares in an early-stage company, these changes are visible in constantly updated, online charts.

A substantial amount of Bitcoin trading and holding is by investors who see opportunity in Bitcoin, including the opportunity to anticipate other investors' recognition of Bitcoin's value. This is entirely normal price discovery. While entrepreneurs discover uses for Bitcoin and the Bitcoin protocol, investors will discover the value of Bitcoin against other currencies and goods. This process will continue indefinitely.

Government policies around the world have contributed to volatility. Part of the dramatic rise in the price of Bitcoin against the dollar late last year is probably attributable to the easing of uncertainty around how the U.S. Congress would view Bitcoin. A later fall in price is probably associated with Chinese government policy appearing to change. Aggressive anti-money laundering laws in many jurisdictions, including recent changes that may have dispensed with the *mens rea* (or "guilty mind") requirement so deeply ingrained in criminal law, amplify the perception of governments as a threat to Bitcoin. We anticipate government action and signaling to be one of the primary drivers of volatility in the near future, diminishing as governments grow more comfortable with Bitcoin and as investors and users grow more confident that governments are comfortable with Bitcoin.

Time will iron out volatility in the Bitcoin price. As there are more users and more investors in coming years and decades, price spikes will diminish. And because Bitcoin is a global protocol, it may ultimately reach a trading depth well beyond the dollar or any other currency.

b. For those companies trying to build businesses around this technology, does this volatility concern you? What can be done so the price is not so volatile?

Volatility is a concern because it inhibits acceptance and adoption of Bitcoin. As noted above, we believe that volatility will fall over time, but while it exists, it retards the growth of the Bitcoin ecosystem. Much of present volatility is, however, a natural and essential part of price discovery. There should be no formal effort to inhibit volatility as such. Rather, fostering growth in the Bitcoin ecosystem will naturally cause volatility to fall.

There are already mechanisms in place to limit the effects of volatility. In the area of payments, for example, a number of companies allow online retailers, web sites, and any other business or individual to accept payment in Bitcoin, immediately converting bitcoins received into dollars. These businesses absorb the risk of short-term fluctuations in Bitcoin's value against local currency, which is a welcome service. Volatility is no reason to avoid accepting Bitcoin payments.

At present, we believe there lacks a sufficient number of stable exchange platforms, both in the United States and abroad. If Bitcoin price discovery were to occur on multiple exchanges that had deposit/withdrawal capabilities similar to existing equities and futures exchanges, volatility would drop. More streamlined inter-exchange arbitrage would remove the “regional” price spikes and plunges that have occurred in certain time zones.

The ability to sell bitcoins short will also help stabilize the price of Bitcoin. There are platforms where this can be done already, but more of them, operating in deeper markets, will be good for the Bitcoin ecosystem because of the input they bring to price discovery. Any effort to limit short-selling of Bitcoin artificially—an idea that has surfaced in other investment areas—should be stoutly resisted.

Though we have yet to see them, it is possible that fraudulent schemes to manipulate the price of Bitcoin could emerge (entirely distinct from investment, speculation, arbitrage, and other sophisticated price-discovery behaviors). If truly fraudulent manipulations of Bitcoin prices were to occur, those should be punished under ordinary law. Likewise, any government’s policies or programs that aim to manipulate Bitcoin prices or interfere with normal price discovery in Bitcoin markets should be rejected.

Volatility in Bitcoin prices will fall as Bitcoin arrives at scale, business models exist to insulate Bitcoin users from volatility, and more techniques, such as arbitrage and short-selling, are in the offing. Bitcoin’s best weapons against volatility are time and freedom for entrepreneurs and investors to act as they will.

5. Most of the research and media coverage on virtual currencies has focused on Bitcoin. Are there other virtual currencies that we should be paying attention to? How do they differ from Bitcoin?

The most important distinction to make between different types of digital currencies—which are quite real, not “virtual”—is between decentralized and centralized currencies. Bitcoin is a decentralized currency and protocol because it allows transfers directly from one user to any other, effectuated by publishing transactions on the global public ledger known as the “blockchain.” Centralized currencies require an intermediary organization of some kind to effect transactions, record them, and confirm them.

The Bitcoin software is open source. Anyone can use it to start their own payment system or to make any other use of the protocol. Different versions of the Bitcoin protocol and software may have properties that make them more useful than Bitcoin in certain respects. Any of them that come into common use are worth paying attention to and encouraging.

Bitcoin is the current leader among decentralized currencies because of the strong network effects that exist in protocols and payment systems. If many people are using a protocol, it is more valuable to everyone, and many people are using Bitcoin. But other decentralized

currencies based on the Bitcoin protocol are seeking and may find a welcome place in the digital currency arena.

Time and experience will tell how important and valuable alternative implementations of the Bitcoin protocol will be. There are and will be other decentralized currencies based on it, and perhaps in future on other protocols. There is plenty of room for innovation, and in the end multiple decentralized digital currencies may co-exist, each put to use for the purposes to which it is best suited.

- 6. The point has been made to me that the way to see Bitcoin and virtual currencies today is a bit like we saw email or the internet itself 20 years ago. At the time, we thought email might replace mail but it was sort of complicated and difficult to work unless you were more technically minded. Obviously as the technology matured it became easier to use and more widely adopted and it's changed the way we communicate in fundamental ways. With that said, if you could hazard a guess, what do you see for Bitcoin 20 years from now?**

I respectfully decline to offer myself up for some future list of the “worst predictions about Bitcoin”!

The point of your question is a salient one, though. Email—also known as the “Simple Mail Transfer Protocol”—has dramatically reformed the way people communicate with one another. It has parallels with traditional postal mail in that text communications and pictures are its primary payload. And the “mail” metaphor was probably useful because it made the idea of sending a “letter” over the Internet understandable. SMTP has many flaws, but email is incredibly valuable, and most people could probably scarcely imagine what their lives would be like today without it.

The name “Bitcoin” similarly uses metaphor to convey what this protocol is about. The Bitcoin protocol can be used to transfer value more quickly and cheaply than conventional methods. It is relatively easy to understand as “online money.” Like email, the Bitcoin protocol and software have flaws, but its potential is similarly huge.

Like email differs from postal mail, Bitcoin differs from conventional currencies. Bitcoin may be programmable money that allows a payment to be held in escrow, for example, until goods are delivered. Indeed, the protocol can be used for many more things than value transfer. It might be used, for example, to prove the existence and authorship of documents or texts, to identify people or things in a registry beyond the control of any central actor, and even for distributed democratic decision-making. We will learn more about the potential uses of the Bitcoin protocol over time.

An essential element of reaching the Bitcoin protocol’s potential is the freedom of its designers and users to experiment. Because it is open source and worldwide, the Bitcoin protocol and software are naturally resistant to centralized control, but forbearance on the part of

governments will give the inventors and entrepreneurs within their jurisdictions the latitude to discover the highest and best uses of the Bitcoin protocol. Inventors, entrepreneurs, and investors will produce jobs and economic growth in the countries that give them room.

I cannot predict what the most valuable uses of it will be, but Bitcoin's potential extends well beyond payments and storage of value, which alone may dramatically increase economic growth and global financial inclusion. Future uses of the Bitcoin protocol may improve the social and economic circumstances of people around the globe even further still. As you've suggested, we should seek the benefits of Bitcoin while minimizing the risks.

7. What can we as policymakers and legislators be doing to encourage innovation by good actors interested in being involved in the virtual currency space?

The bulk of responsibility for Bitcoin's success lies with the inventors, entrepreneurs, and investors building the services and businesses that can make Bitcoin's prospects a reality. Our role at the Bitcoin Foundation is to standardize, protect, and promote the use of Bitcoin for the benefit of users worldwide. Much of what we seek from Bitcoin will materialize if conditions are right. That means many things, but chiefly, for these purposes, that means giving Bitcoin's innovative community wide latitude to experiment and innovate.

We are pleased with your approach to Bitcoin and the statements of many federal agency officials about seeking the benefits of Bitcoin while mitigating the risks. The formula for doing that is fairly simple: Policymakers should educate themselves about Bitcoin. There will be areas where Bitcoin's unique characteristics challenge the application of existing law, but in most areas the laws already on the books are sufficient to protect the public. Where the law is unclear, circumspection should be the first response. It is very easy for government action intended as modest to be magnified in the press, to impose large costs on small start-up businesses, and to dissuade potential investors and Bitcoin users.

I encourage you to treat the Bitcoin Foundation as a resource. Bitcoin's potential for improving global financial inclusion, advancing privacy and liberty, and providing sound money are incentive enough to bring innovators and investors to the digital currency space. While policing against truly wrongful and damaging uses of Bitcoin, our job is to provide them the latitude they need to find out how people worldwide will use Bitcoin to improve their lives.