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## Assessing the Evolution of Cryptocurrency: Demand Factors, Latent Value, and Regulatory Developments

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# ASSESSING THE EVOLUTION OF CRYPTOCURRENCY: DEMAND FACTORS, LATENT VALUE, AND REGULATORY DEVELOPMENTS

*Ryan Clements\**

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## INTRODUCTION

Cryptocurrency—and particularly Bitcoin—has a polarizing effect on people. Some call it “unsustainable”<sup>1</sup> while others question its “environmental im-

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1. Christopher Malmo, *Bitcoin is Unsustainable*, VICE (June 29, 2015, 4:23 PM), [https://motherboard.vice.com/en\\_us/article/ae3p7e/bitcoin-is-unsustainable](https://motherboard.vice.com/en_us/article/ae3p7e/bitcoin-is-unsustainable).

pact.”<sup>2</sup> Famed banker Jamie Dimon calls Bitcoin a “fraud”<sup>3</sup> and says that it’s “worse than tulip bulbs.”<sup>4</sup> Former Securities and Exchange Commission (“SEC”) Chairman Arthur Levitt, Jr., thinks it benefits “the disenfranchised living in places banks cannot or will not serve.”<sup>5</sup> Rappers, celebrities, and even Floyd Mayweather, Jr., want in on the action,<sup>6</sup> and if you own enough of it, Bitcoin can buy you citizenship in “one of the happiest countries” on the planet.<sup>7</sup> It is easy to get lost in the hype and noise of this nascent market that, over the course of its history has exhibited, at times, almost a “religious” like devotion.<sup>8</sup> The purpose of this Comment is to analyze the roots of this fervor—including that which drove Bitcoin’s initial demand surge—and investigate whether cryptocurrency can survive a market bubble that experienced a significant correction in 2018.<sup>9</sup>

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2. See Joseph Bradley, *The Energy Efficiency of Bitcoin*, CRYPTOCOIN NEWS, (Mar. 31, 2016, 5:07 PM), <https://www.cryptocoinsnews.com/energy-efficiency-bitcoin/>; see also Sebastiaan Deetman, *Bitcoin Could Consume as Much Electricity as Denmark by 2020*, VICE (Mar. 29, 2016, 11:30 AM), [https://motherboard.vice.com/en\\_us/article/aek3za/bitcoin-could-consume-as-much-electricity-as-denmark-by-2020](https://motherboard.vice.com/en_us/article/aek3za/bitcoin-could-consume-as-much-electricity-as-denmark-by-2020).

3. David Henry & Anna Irrera, *JP Morgan’s Dimon Says Bitcoin “Is a Fraud”*, REUTERS (Sept. 20, 2017, 9:35 PM), <https://www.reuters.com/article/us-usa-banks-conference-jpmorgan/jpmorgans-dimon-says-bitcoin-is-a-fraud-idUSKCN1BN2KP>.

4. Fred Imbert, *JPMorgan CEO Jamie Dimon Says Bitcoin is a “Fraud” that Will Eventually Blow Up*, CNBC (Sept. 12, 2017, 1:27 PM), <https://www.cnbc.com/2017/09/12/jpmorgan-ceo-jamie-dimon-raises-flag-on-trading-revenue-sees-20-percent-fall-for-the-third-quarter.html>.

5. Arthur Levitt Jr. & Peter Smith, *BankThink: Here’s What the Bitcoin Naysayers Get Wrong*, AM. BANKER (Aug. 15, 2016, 9:30 AM), <https://www.americanbanker.com/opinion/heres-what-the-bitcoin-naysayers-get-wrong>; see also Eugene Kim, *Bitcoin Fans Fire Back at Jamie Dimon After ‘Fraud’ Comment*, CNBC (Sept. 14, 2017, 9:00 PM), <https://www.cnbc.com/2017/09/14/bitcoin-fans-fire-back-at-jamie-dimon-after-fraud-comment.html>.

6. See Frank Chaparro, *The Game is Promoting the Initial Coin Offering of a Company Owned by a Former Miss Iowa Who Is Looking to Usher in the Weed Revolution*, BUS. INSIDER (Aug. 11, 2017, 5:14 PM), <http://www.businessinsider.com/rapper-the-game-promoting-weed-company-ico-2017-8>; see also Eugene Kim, *Cryptocurrency Investors Worry About a Bubble as Jamie Foxx and Other Celebrities Jump on Board*, CNBC (Sept. 19, 2017, 9:31 AM), <https://www.cnbc.com/2017/09/19/jamie-foxx-ico-investors-worried.html>; Rob Price, *Weed, Times Square, and Floyd Mayweather: How Cryptocurrency Mania is Creeping into the Mainstream*, BUS. INSIDER (Sept. 1, 2017, 9:28 AM), <http://www.businessinsider.com/cryptocurrency-bitcoin-ethereum-ico-mania-going-mainstream-2017-8>.

7. Sara Clemence, *Bitcoin May Now Buy You Citizenship in One of The Happiest Countries*, BLOOMBERG (Oct. 12, 2017, 4:12 PM), <https://www.bloomberg.com/news/articles/2017-10-12/bitcoin-can-buy-you-citizenship-in-one-of-the-happiest-countries>.

8. See Mike Orcutt, *Why People Get Religious About Bitcoin*, MIT TECH. REV. (Nov. 3, 2017), <https://www.technologyreview.com/s/609313/why-people-get-religious-about-bitcoin/>.

9. See Will Martin, *Bitcoin is 10 Years Old Today—Here’s A Look Back at Its Crazy History*, BUS. INSIDER (Oct. 31, 2018, 6:12 AM), <https://www.businessinsider.com/bitcoin-price-10-year-anniversary-of-cryptocurrency-2018-10>.

Despite its price drop in 2018,<sup>10</sup> the cryptocurrency market in 2017 experienced unprecedented growth driven by improved ease of access, speculation, familiarity, media attention, network effects, mining activity, distrust of traditional banking, global instability hedging, and a demand effect from the initial coin offering (“ICO”) market. The market correction in 2018<sup>11</sup> strengthens the speculation that 2017 prices were an asset bubble. Nevertheless, the future of cryptocurrency is impossible to predict. Although it is unlikely that cryptocurrency will eliminate trusted intermediaries or replace sovereign fiat altogether, it has numerous latent value propositions and long-term use cases. These include distributed ledger technology (“DLT”) and blockchain innovations (particularly in financial payments, settlements, clearing, supply chain, agriculture, and voting), identity and data protection mechanisms, crowd-funding, and decentralized business applications and services.

There may also be long-term benefits to a bubble, including “long tail” successes, hype-financed research and development in DLT and blockchain infrastructure (that wouldn’t have otherwise received funding in a reticent market), and consumer familiarity benefits.<sup>12</sup> The regulatory response to date has largely been enforcement-based (emphasizing fraud detection and criminal deterrence), with public statements and interest across a diverse range of regulatory bodies, rather than unified rules. There are, however, inherent difficulties in regulating the cryptocurrency market, which will be discussed in detail in this Comment.

## I. HOW DID WE GET HERE? DEMAND FACTORS AND REGULATORY FRAMEWORK

### A. *Cryptocurrency and the Historic Price Run*

Cryptocurrency is “digital money” secured through cryptology and running on a “blockchain”—a distributed, decentralized ledger where individuals can anonymously transact and maintain records without an intermediary.<sup>13</sup> Bitcoin is the most widely known<sup>14</sup> (and currently the most valuable)<sup>15</sup> cryptocurrency.

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10. See Aaron Hanklin, *Bitcoin Plunges Nearly 15%, Makes Fresh 2018 Low*, MARKETWATCH (Nov. 14, 2018, 9:54 PM), <https://www.marketwatch.com/story/bitcoin-slides-to-one-month-low-2018-11-14>.

11. See Eustance Huang, *Bitcoin Market Cap Falls Below \$100 Billion for First Time Since October 2017*, CNBC (Nov. 15, 2018, 9:31 PM), <https://www.cnbc.com/2018/11/15/bitcoin-market-cap-falls-below-100-billion-for-first-time-since-2017.html>.

12. Ramana Nanda & Matthew Rhodes-Kropf, *Investment Cycles and Start-up Innovation*, 110 J. FIN. ECON. 403, 403–04 (2013).

13. See *What Is Cryptocurrency, How Does It Work and What Are the Uses?*, TELEGRAPH (Aug. 17, 2018, 12:54 PM), <http://www.telegraph.co.uk/technology/0/cryptocurrency/>.

14. See Teddy Wayne, *Grandpa Had A Pension. This Generation Has Cryptocurrency*, N.Y. TIMES (Aug. 3, 2017), <https://www.nytimes.com/2017/08/03/style/what-is-cryptocurrency.html?mcubz=0>.

There are many others, most notably Ether, the token that powers the popular Ethereum blockchain (the technology behind smart contracts),<sup>16</sup> and Litecoin, a cryptocurrency designed for smaller payments.<sup>17</sup> Cryptocurrency is “divorced from governments and central banks”<sup>18</sup> which makes it “decentralized” and immune from inflation (and deflation) and some believe a “quicker, cheaper and more reliable form of payment.”<sup>19</sup> In 2017, the value of cryptocurrency surged with Bloomberg calling the initial price run “staggering” and noting that its run was larger than the dot.com boom in technology stocks.<sup>20</sup> In 2018, the market values of popular cryptocurrencies (including Bitcoin) experienced a steep decline.<sup>21</sup> Nevertheless, current market prices are still significantly higher than those of late 2016 and early 2017.<sup>22</sup> So what exactly has driven the demand for cryptocurrency?

### B. Familiarity, Ease of Access, Speculation, and Network Effects

The ease of purchasing cryptocurrency<sup>23</sup> combined with increased media attention has led to an influx of new, less sophisticated buyers,<sup>24</sup> and there is an

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15. The market cap of Bitcoin, on December 13, 2017, was just under \$278 billion. As of November 16, 2018, the market cap is just under \$100 billion. See *Cryptocurrency Market Capitalizations*, BITCONNECT <https://coinmarketcap.com> (last visited Nov. 16, 2018).

16. See Cara McGoogan, *What is Ethereum and How Does It Differ from Bitcoin?*, TELEGRAPH (Aug. 16, 2017, 12:55 PM), <http://www.telegraph.co.uk/technology/0/ethereum/>.

17. See Arjun Kharpal, *Litecoin Hits a Record High and Is up Nearly 1,400 Percent This Year*, CNBC (Aug. 29, 2017, 11:54 PM), <https://www.cnbc.com/2017/08/29/litecoin-price-hits-record-high.html>.

18. Chris Weller, *Bitcoin Is Going Wild—Here’s What the Cryptocurrency Is All About*, BUS. INSIDER (May 25, 2017, 11:54 PM), <http://www.businessinsider.com/what-is-bitcoin-the-cryptocurrency-explained-2017-5>.

19. *Id.*

20. Julie Verhage, *Bitcoin’s Epic Rise Leaves Late-1990s Tech Bubble in the Dust*, BLOOMBERG (Aug. 29, 2017, 10:06 AM), <https://www.bloomberg.com/news/articles/2017-08-29/bitcoin-s-epic-rise-leaves-late-1990s-tech-bubble-in-the-dust>; see also Lucinda Shen, *If You Bought \$100 Worth of Bitcoin One Year Ago, Here’s How Much Richer You Would Be Today*, MONEY (Sept. 1, 2017, 5:55 PM), <http://time.com/money/4925008/bitcoin-5000-price-value-cryptocurrency/> (reporting that a \$10,000 investment made on September 1, 2016 would be worth over \$85,000 on September 1, 2017).

21. See David Meyer, *The Entire Cryptocurrency Scene—Including Bitcoin—Is Plummeting Again. These Might Be the Reasons Why*, FORTUNE (Nov. 15, 2018), <http://fortune.com/2018/11/15/bitcoin-price-cryptocurrency-crash-why/>.

22. See Gareth Jenkinson, *A Brief History of Bitcoin: 10 Years of Highs and Lows*, COINTELEGRAPH (Oct. 31, 2018), <https://cointelegraph.com/news/a-brief-history-of-bitcoin-10-years-of-highs-and-lows>.

23. See Hiawatha Bray, *Instant Bitcoins—at a Price*, BOSTON GLOBE (July 6, 2017), <https://www.bostonglobe.com/business/2017/07/05/instant-bitcoins-price/LHo7nc95clgnfGZvIAyepP/story.html>.

24. See Evelyn Cheng, *Bitcoin Speculators Are the New Day Traders*, CNBC (June 23, 2017, 3:39 PM), <https://www.cnbc.com/2017/06/23/bitcoin-speculation-markets-trading.html>.

active effort underway to make the market less opaque.<sup>25</sup> Universities around the world are starting to offer courses on cryptocurrency,<sup>26</sup> and *Netflix*<sup>27</sup> and *Khan Academy*<sup>28</sup> series have increased public familiarity with cryptocurrency, DLT, and blockchain.<sup>29</sup> Demand is also amplified by a “network effect,” where a technology becomes more valuable simply because more people are using it.<sup>30</sup> For example, Coinbase (the largest Bitcoin exchange in the United States) added over 100,000 customers in one day after the Chicago Mercantile Exchange announced it would launch Bitcoin futures.<sup>31</sup> There has also been significant mining and development activity as well as purchases of cryptocurrency as a hedging substitute for gold or the U.S. dollar.<sup>32</sup>

### C. The Initial Coin Offering Market

Another factor driving demand is the initial coin offering (“ICO”) market (which was red hot in 2017), where a company issues digital coins or tokens that provide access to a service (called a “utility” or “app” token) or that represent an investment opportunity (like a traditional security).<sup>33</sup> ICOs generated in excess of \$1.2 billion of start-up capital in 2017, and many see them as a work-around traditional venture capital.<sup>34</sup> OVERSTOCK.COM recently announced a

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25. See Joel Comm, *Bitcoin is Getting Easier to Understand, and It's Pushing up Prices*, FORBES (Sept. 5, 2017, 7:00 AM), <https://www.forbes.com/sites/forbescoachescouncil/2017/09/05/bitcoin-is-getting-easier-to-understand-and-its-pushing-up-prices/#3ecec4072b1f>.

26. See Kevin Helms, *Five Leading Russian Universities Start Offering Cryptocurrency Courses*, BITCOIN.COM NEWS (Sept. 18, 2017), <https://news.bitcoin.com/russian-universities-cryptocurrency-courses/>.

27. See NETFLIX, *Banking on Bitcoin*, <https://www.netflix.com/title/80154500> (last visited Nov. 14, 2017).

28. See KHAN ACADEMY, *Bitcoin: Overview*, <https://www.khanacademy.org/economics-finance-domain/core-finance/money-and-banking/bitcoin/v/bitcoin-overview> (last visited Nov. 14, 2017).

29. See Michael Hooper, *Why Bitcoin is Rising*, SEEKING ALPHA (May 9, 2017, 2:39 PM), <https://seekingalpha.com/article/4071204-bitcoin-rising>; see also *Why Demand for Cryptocurrencies Is on the Rise*, BLOOMBERG (Sept. 21, 2017, 7:54 PM), <https://www.bloomberg.com/news/videos/2017-09-21/why-demand-for-cryptocurrencies-is-on-the-rise-video>.

30. See Trace Mayer, *Investor Who Bought Bitcoin at 25 Cents Says It Can Hit \$10,000 in a Few Years*, VALUEWALK (May 26, 2017, 6:55 PM), <https://www.valuewalk.com/2017/05/bitcoin-value-10000-dollars/>.

31. See Evelyn Cheng, *Largest US bitcoin Exchange Added 100,000 Customers in One Day After Futures Announcement*, CNBC (Nov. 3, 2017, 3:37 PM), <https://www.cnbc.com/2017/11/03/coinbase-adds-100000-users-after-cme-announces-bitcoin-futures-plans.html>.

32. See *Thoughts on What Bitcoin's Rise in Value Means*, FORBES (Mar. 31, 2017, 6:00 AM), <https://www.forbes.com/sites/forbestechcouncil/2017/03/31/five-thoughts-on-what-bitcoins-rise-in-value-means/#c655d5e32bd>.

33. See Erin Griffith, *Why Startups Are Trading IPOs for ICOs*, FORTUNE (May 5, 2017), <http://fortune.com/2017/05/05/ico-initial-coin-offering/>.

34. See Paul Vigna, *Forget and IPO, Coin Offerings Are New Road to Startup Riches*, WALL ST. J. (July 7, 2017, 8:34 AM), <https://www.wsj.com/articles/forget-an-ipo-coin-offerings-are-new-road-to-startup-riches-1499425200>; see also Arjun Kharpal, *Initial coin offerings have raised \$1.2*

\$500 million token sale (which would be the largest ICO ever).<sup>35</sup> Also, participation in an ICO generally requires Bitcoin or Ether.<sup>36</sup> So, as the economic principle of supply and demand dictates, greater demand for ICOs means greater demand for Bitcoin or Ether (hence the price rise).

#### D. Regional Instability and Post-Financial Crisis Institutional Distrust

Another demand factor is the continuing, post-financial crisis distrust of the traditional banking sector.<sup>37</sup> Some investors (mostly outside of stable monetary systems) view Bitcoin and other cryptocurrencies as a hedge against volatile local currencies and geopolitical risk (for example the large “mining” activity in Venezuela, despite the physical risks).<sup>38</sup> As long as some countries support Bitcoin, there will be continuing demand for it.<sup>39</sup> Some investors are taking the position that it is a “new gold” given its fixed supply.<sup>40</sup> This belief is starting to gain traction, and there is currently “more money trying to get in than out”—increasing demand even further.<sup>41</sup>

billion and now surpass early stage VC funding, CNBC (Aug. 9, 2017, 7:13 AM), <https://www.cnbc.com/2017/08/09/initial-coin-offerings-surpass-early-stage-venture-capital-funding.html>.

35. See Evelyn Cheng, *Overstock.com Goes for Largest Digital Coin Offering Ever at \$500 Million*, CNBC (Oct. 25, 2017, 2:35 PM), <https://www.cnbc.com/2017/10/25/overstock-com-goes-for-largest-digital-coin-offer-ever-at-500-million.html>.

36. See Saheli Roy Choudhury, *Billionaire CEO Taizo Son Predicts that ICOs Will Come to Dominate Fundraising*, CNBC (Sept. 20, 2017, 2:44 AM), <https://www.cnbc.com/2017/09/20/ico-cryptocurrency-will-become-major-funding-source-billionaire-taizo-son-says.html>.

37. See Avery Hartmans, *Millennials’ Distrust of Banks is Spawning a New Breed of Startups*, BUS. INSIDER (Aug. 14, 2016, 4:18 PM), <http://www.businessinsider.com/millennials-distrust-banks-new-startups>; see also *Don’t Dismiss Bankers’ Predictions of a Bitcoin Bubble—They Should Know*, THE GUARDIAN (Sept. 17, 2017, 3:16 PM), <https://www.theguardian.com/business/2017/sep/17/jamie-dimon-bitcoin-bubble-he-would-know-banking>.

38. See Jim Epstein, *The Secret, Dangerous World of Venezuelan Bitcoin Mining: How Cryptocurrency Is Turning Socialism Against Itself*, REASON (Jan. 2017), <http://reason.com/archives/2016/11/28/the-secret-dangerous-world-of>.

39. See Prableen Bajpai, *The Surprising Reasons for Bitcoin’s Rising Price*, INVESTOPEDIA (May 2, 2017, 1:53 PM), <http://www.investopedia.com/news/surprising-reasons-bitcoins-rising-price/>; see also John O. McGinnis and Kyle Roche, *Why Bitcoin Is Booming*, WALL ST. J. (July 9, 2017, 6:22 PM), <https://www.wsj.com/articles/why-bitcoin-is-booming-1499638932>.

40. Tanzeel Akhtar, *Is Bitcoin the New Gold*, STREET (Aug. 28, 2017, 7:05 PM), <https://www.thestreet.com/story/14285619/1/is-bitcoin-stealing-gold-s-safe-haven-status.html>.

41. Tanzeel Akhtar, *Bitcoin Will Soar to \$5000 Barring A Major Catastrophe*, STREET (Sept. 22, 2017, 12:40 AM), <https://www.thestreet.com/story/14315973/1/bitcoin-valuation.html>; see also Naeem Aslam, *Sanctions on North Korea Could Boost Bitcoin Demand*, FORBES (Sept. 12, 2017, 8:26 AM), <https://www.forbes.com/sites/naemaslam/2017/09/12/sanctions-on-north-korea-could-boost-bitcoin-demand/#590f6650537c>; Lana Clements, *Is Bitcoin the New Gold? Cryptocurrency Price Rise and Scarcity Make It ‘a Safe Haven’*, EXPRESS (Sept. 21, 2017, 3:37 PM), <http://www.express.co.uk/finance/city/857063/Bitcoin-latest-updates-price-gold-Cryptocurrency-news-forecast-safe-haven>.

### E. Criminal Activity and Regulation Through Enforcement

How have regulators in the U.S. responded to this historic price run? For the most part through fraud detection, enforcement, anti-money laundering, and general criminal deterrence. Congress is aware of the dangers of cryptocurrency.<sup>42</sup> Bitcoin is a known criminal haven, and a way of facilitating nefarious activity like “donating to Wikileaks.”<sup>43</sup> A recent study by Omri Marian suggests that cryptocurrencies are “super tax havens” and that they could become the “weapon of choice for tax evaders.”<sup>44</sup> Cryptocurrency is also utilized by hackers<sup>45</sup> because of anonymity and the ability to convert it into cash (or “wash” it) in the “darknet” (where developers take a “cut” for “cleaning” the money).<sup>46</sup> One recent report noted that banks have even started to “hoard Bitcoin” as a purse for future ransom attacks.<sup>47</sup>

The SEC has applied enforcement or cease and desist orders<sup>48</sup> used in traditional securities matters (like fraud, illegal trading, or pump and dump<sup>49</sup>) for digital currency.<sup>50</sup> It has also rejected applications for cryptocurrency-based exchange-traded funds.<sup>51</sup> Also, the Commodity Futures Trading Commission (“CFTC”) recently cracked down on an alleged Ponzi scheme orchestrated

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42. Congress has proposed legislation to amend the Bank Secrecy Act to add issuers of digital currency, and digital currency exchanges to the definition of “financial institution.” See *Combating Money Laundering, Terrorist Financing, and Counterfeiting Act of 2017*, S. 1241, 115<sup>th</sup> Cong. (2017); see also *Virtual Currency: Financial Innovation and National Security Implications: Hearing Before the H. Comm. on Financial Services*, 115<sup>th</sup> Cong. (2017).

43. See BLOOMBERG, *supra* note 29.

44. Omri Marian, *Are Cryptocurrencies ‘Super’ Tax Havens?*, 112 MICH. L. REV. FIRST IMPRESSIONS 38 (2013), <http://scholarship.law.ufl.edu/facultypub/358>.

45. See Tali Arbel, *Why Bitcoin is the HBO Hackers’ Payment of Choice*, BUS. NEWS NETWORK (Aug. 8, 2017), <http://www.bnn.ca/why-bitcoin-is-the-hbo-hackers-payment-of-choice-1.824819>.

46. Simon Osborne, *Digital Gold: Why Hackers Love Bitcoin*, GUARDIAN (May 15, 2017, 2:10 PM), <https://www.theguardian.com/technology/2017/may/15/digital-gold-why-hackers-love-bitcoin-ransomware>.

47. See Jamie Doward, *City Banks Plan to Hoard Bitcoins to Help Them Pay Cyber Ransoms*, GUARDIAN (Oct. 22, 2016), <https://www.theguardian.com/technology/2016/oct/22/city-banks-plan-to-hoard-bitcoins-to-help-them-pay-cyber-ransoms>.

48. See SECURITIES AND EXCHANGE COMM’N, RELEASE NO. 78282, ADMINISTRATIVE PROCEEDING FILE NO. 3-17335, IN THE MATTER OF BITCOIN INVESTMENT TRUST AND SECOND MKT., INC. (July 11, 2016).

49. See Complaint, SEC v. Willner, No. 1:17-cv-06305 (E.D.N.Y. Oct. 30, 2017).

50. See Complaint, SEC v. Recoin Grp. Found. LLC, No. 1:17-cv-5725 (Sept. 29, 2017); see also *SEC Suspends Trading in Securities of Three Blockchain-Related Companies*, JD SUPRA (Aug. 31, 2017), <http://www.jdsupra.com/legalnews/sec-suspends-trading-in-securities-of-63856/>.

51. See Exchange Act Release No. 34-80206, 2017 LEXIS 1237 (Mar. 10, 2017); see also Trevor Hunnicutt, *Backers Withdraw Two Proposals to List U.S. Bitcoin Funds*, REUTERS (Sept. 28, 2017, 12:22 AM), <http://www.reuters.com/article/us-bitcoin-etp/backers-withdraw-two-proposals-to-list-u-s-bitcoin-funds-idUSKCN1C30CK>.



through Gelfman Blueprint, Inc.<sup>52</sup> and also requested information on leverage and margin requirements from Coinbase in relation to a June 2017 “flash crash” on its GDAX platform.<sup>53</sup> The CFTC has granted registration orders to LedgerX as a derivatives clearing organization<sup>54</sup> and swap execution facility<sup>55</sup> and has allowed the self-certification of Bitcoin derivative products by the Chicago Mercantile Exchange and the CBOE Futures Exchange as well as and Bitcoin binary options on the Cantor Exchange.<sup>56</sup> It has also pursued enforcement actions against BFXNA Inc.,<sup>57</sup> Coinflip, Inc. (Derivabit), and Francisco Riordan (for operating an unauthorized online facility connecting Bitcoin options counterparties).<sup>58</sup> Moreover, the Department of Justice has also pursued criminal charges in money laundering matters using cryptocurrency<sup>59</sup> and has recently reported cryptocurrency as a threat to drug enforcement measures.<sup>60</sup> The Financial Crime Enforcement Network (“FinCEN”), a branch of the U.S. Treasury Department, has issued guidance on the application of the Bank Secrecy Act<sup>61</sup> and other anti-money-laundering laws to cryptocurrency<sup>62</sup> and requires “admin-

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52. COMMODITY FUTURES TRADING COMM’N, CFTC CHARGES NICHOLAS GELFMAN AND GELFMAN BLUEPRINT, INC. WITH FRAUDULENT SOLICITATION, MISAPPROPRIATION, AND ISSUING FALSE ACCOUNT STATEMENTS IN BITCOIN PONZI SCHEME (Sept. 21, 2017), <http://www.cftc.gov/PressRoom/PressReleases/pr7614-17>.

53. See Lily Katz & Matt Robinson, *Cryptocurrency Flash Crash Draws Scrutiny from Watchdog*, BLOOMBERG (Oct. 2, 2017, 11:22 AM), <https://www.bloomberg.com/news/articles/2017-10-02/cryptocurrency-flash-crash-is-said-to-draw-scrutiny-from-cftc>.

54. See U.S. COMMODITY FUTURES TRADING COMM’N, ORDER OF REGISTRATION IN THE MATTER OF THE APPLICATION OF LEDGERX, LLC FOR REGISTRATION AS A DERIVATIVES CLEARING ORGANIZATION, (July 24, 2017), <http://www.cftc.gov/idc/groups/public/@otherif/documents/ifdocs/ledgerxdcorder72417.pdf>.

55. COMMODITY FUTURES TRADING COMM’N, ORDER OF REGISTRATION IN THE MATTER OF THE APPLICATION OF LEDGERX, LLC FOR REGISTRATION AS A SWAP EXECUTION FACILITY (July 6, 2017), <https://www.cftc.gov/sites/default/files/idc/groups/public/@otherif/documents/ifdocs/orgledgerxord170706.pdf>.

56. See Press Release, U.S. Commodity Futures Trading Comm’n Order, CFTC Statement on Self-Certification of Bitcoin Products by CME, CFE and Cantor Exchange (Dec. 1, 2017), <http://www.cftc.gov/PressRoom/PressReleases/pr7654-17>.

57. See BFXNA Inc, C.F.T.C. Docket No. 16-19 (June 2, 2016).

58. See Coinflip, Inc., C.F.T.C. Docket No. 15-29 (Sept. 17, 2015).

59. See Press Release, U.S. Dep’t of Justice, Founder of Liberty Reserve Pleads Guilty to Laundering More than \$250 Million Through His Digital Currency Business (Jan. 29, 2016), <https://www.justice.gov/opa/pr/founder-liberty-reserve-pleads-guilty-laundering-more-250-million-through-his-digital>; see also U.S. Dep’t of Justice, Deputy Attorney General Rod J. Rosenstein Delivers Remarks at the Emerging Frauds In the Digital Age Conference (May 23, 2017), <https://www.justice.gov/opa/speech/deputy-attorney-general-rod-j-rostenstein-delivers-remarks-emerging-frauds-digital-age>.

60. See U.S. DEP’T OF JUSTICE, DRUG ENFORCEMENT ADMIN., 2017 NATIONAL DRUG THREAT ASSESSMENT 130 (Oct. 2017), [https://www.dea.gov/docs/DIR-040-17\\_2017-NDTA.pdf](https://www.dea.gov/docs/DIR-040-17_2017-NDTA.pdf).

61. Bank Secrecy Act, 31 U.S.C. § 5311 (1970).

62. See Press Release, U.S. Dep’t of the Treasury, Fin. Crimes Enforcement Network, FinCEN Issues Guidance on Virtual Currencies and Regulatory Responsibilities (Mar. 18, 2013),

istrators” or “exchangers” of virtual currency to be subject to “money service business” (“MSB”) regulations and licensing.<sup>63</sup> FinCEN has also been very active in enforcing these laws in the cryptocurrency market.<sup>64</sup>

#### F. Regulatory Challenges, Overlapping Jurisdiction, and Resultant Costs

Regulating cryptocurrency is difficult<sup>65</sup> because the rules were not designed for it,<sup>66</sup> and it is hard to keep pace with new business models and innovation<sup>67</sup> (for example, AirSwap, a decentralized exchange framework powered by smart contracts).<sup>68</sup> Regulators want to avoid the “cobra-effect”—where a solution to a problem makes the problem worse.<sup>69</sup> Also, there is uncertainty about what cryptocurrency actually is—is it a currency, a commodity,<sup>70</sup> a payment mechanism,<sup>71</sup> property,<sup>72</sup> an asset, or a combination of these?<sup>73</sup> An example of the un-

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<https://www.fincen.gov/news/news-releases/fincen-issues-guidance-virtual-currencies-and-regulatory-responsibilities>.

63. See U.S. DEP’T OF THE TREASURY, FIN. CRIMES ENFORCEMENT NETWORK, APPLICATION OF FINCEN’S REGULATIONS TO PERSONS ADMINISTERING, EXCHANGING, OR USING VIRTUAL CURRENCIES (Mar. 18, 2013), <https://www.fincen.gov/resources/statutes-regulations/guidance/application-fincens-regulations-persons-administering>.

64. See, e.g., Press Release, U.S. Dep’t of the Treasury, Fin. Crimes Enforcement Network, FinCEN Fines BTC-e Virtual Currency Exchange \$110 Million for Facilitating Ransomware, Dark Net Drug Sales (July 27, 2017), <https://www.fincen.gov/news/news-releases/fincen-fines-btc-e-virtual-currency-exchange-110-million-facilitating-ransomware>; Press Release, U.S. Dep’t of the Treasury, Fin. Crimes Enforcement Network, FinCen Fines Ripple Labs Inc. in First Civil Enforcement Action Against a Virtual Currency Exchanger (May 5, 2015), <https://www.fincen.gov/news/news-releases/fincen-fines-ripple-labs-inc-first-civil-enforcement-action-against-virtual>.

65. See EDWARD V. MURPHY ET AL., CONG. RESEARCH SERV., R43339, BITCOIN: QUESTIONS, ANSWERS, AND ANALYSIS OF LEGAL ISSUES, CONGRESSIONAL RESEARCH SERVICES (2015).

66. See Marcel T. Rosner & Andrew Kang, Note, *Understanding and Regulating Twenty-First Century Payments Systems: The Ripple Case Study*, 114 MICH. L. REV. 649 (2016).

67. See BANK FOR INT’L SETTLEMENTS, BASEL COMMITTEE ON BANKING SUPERVISION, IMPLICATIONS OF FINTEC DEVELOPMENTS FOR BANKS AND BANK SUPERVISORS—CONSULTATIVE DOCUMENT (Aug. 2017), <http://www.bis.org/bcbs/publ/d415.htm>; see also Jackson Mueller, *FinTech: Considerations on How to Enable a 21<sup>st</sup> Century Financial Services Ecosystem*, MILKEN INST. CENTER FOR FIN. MKTS., (Aug. 3, 2017), <http://www.milkeninstitute.org/publications/view/872>.

68. See Matthew Leising, *This 31-Year-Old is Trying to Revolutionize Cryptocurrency Trading*, BLOOMBERG (Sept. 28, 2017, 5:00 AM), <https://www.bloomberg.com/news/articles/2017-09-28/upending-digital-currency-market-is-next-act-for-ex-virtu-trader>.

69. See generally Lawrence G. Baxter, *Adaptive Financial Regulation and Regtech: A Concept Article on Realistic Protection for Victims of Bank Failures*, 66 DUKE L.J. 567, 594 (2016); see also MICHAEL S. BARR, HOWELL E. JACKSON & MARGARET E. TAHYAR, FINANCIAL REGULATION: LAW AND POLICY, 800-02 (2016).

70. See JOHN H. CLIPPINGER & DAVID BOLLIER, FROM BITCOIN TO BURNING MAN AND BEYOND: THE QUEST FOR IDENTITY AND AUTONOMY IN A DIGITAL SOCIETY (2014).

71. See Michael S. Barr, Remarks at Brookings Institute Conference, *Beyond Bitcoin: The Future of Blockchain and Disruptive Financial Technologies* (Jan. 14, 2016).

certainty is the SEC determination made on July 25<sup>th</sup>, 2017 (citing the “Howey test”<sup>74</sup> and other cases<sup>75</sup>), which stated that a public offering of digital tokens known as “the DAO” was an offering of securities that was subject to federal law.<sup>76</sup> The ruling provided clarity to token issuers who were offering “profit-based” coins: they would need to comply with securities laws.<sup>77</sup> However, it also created uncertainty because it did not address “underlying utility” tokens that were not profit-based but rather granted the holder a right to a service (like data storage). This led some to believe that such tokens are unregulated.<sup>78</sup> Similar developments have taken place in Canada<sup>79</sup> and Australia.<sup>80</sup>

Cryptocurrency exchanges trigger money transmission laws on a state level (wherein laws tend to vary widely), creating high costs of compliance for companies and hampering the speed of innovation.<sup>81</sup> With the introduction by the New York Department of Financial Services (“NYDFS”) of the Virtual Currency Regulatory Framework<sup>82</sup> and the granting of trust charters to virtual currency exchanges,<sup>83</sup> there is potential relief to the extensive state-to-state registration

72. The Internal Revenue Service considers cryptocurrency as property for taxation purposes. See INTERNAL REVENUE SERV., NOTICE 2014-21 (Mar. 25, 2014), <https://www.irs.gov/newsroom/irs-virtual-currency-guidance>. However, there is proposed legislation introduced in the House of Representatives on Sept. 7, 2017 that would amend the Internal Revenue Code and allow for cryptocurrency purchases up to \$600 without the requirement to report to the IRS. See Cryptocurrency Fairness Act of 2017, H.R. 3708, 115<sup>th</sup> CONG. (2017).

73. See generally David Yurmack, *Is Bitcoin a Real Currency? An Economic Appraisal*, (National Bureau of Economic Research, Working Paper No. 19747, 2013), <https://www.nber.org/papers/w19747.pdf>; see also generally ANTON BADEV & MATTHEW CHEN, BITCOIN: TECHNICAL BACKGROUND AND DATA ANALYSIS (2014), <https://www.federalreserve.gov/econresdata/feds/2014/files/2014104pap.pdf>.

74. See SEC v. W.J. Howey Co., 328 U.S. 293, 301 (1946).

75. See SEC v. Edwards, 540 U.S. 389, 393 (2004); see also United Housing Fund Inc. v. Forman, 421 U.S. 837, 852–53 (1975); Tcherepnin v. Knight, 389 U.S. 332, 336 (1967).

76. U.S. SECURITIES AND EXCHANGE COMMISSION, REPORT OF INVESTIGATION PURSUANT TO SECTION 21(A) OF THE SECURITIES EXCHANGE ACT OF 1934: THE DAO, SECURITIES ACT RELEASE NO. 81207 (July 25, 2017); see also Jeff John Roberts, *The SEC’s Big Digital Coin Ruling: What It Means*, FORTUNE (July 26, 2017), <http://fortune.com/2017/07/26/sec-icos/>.

77. Allen Scott, *Legal Experts: Investors May View SEC’s Statement as Validating ICO’s*, BITCOINIST NEWS (Aug. 2, 2017, 8:00 AM), <http://bitcoinist.com/legal-investor-sec-statement-ico/>.

78. See Roberts, *supra* note 76; see also Josh Garcia & Marco Santori, *SEC Publishes Landmark Guidance on Blockchain Tokens*, LEXOLOGY (Aug. 9, 2017), <https://www.lexology.com/library/detail.aspx?g=0db16fb4-5e48-43a0-b08d-5c8a0f7b0455>.

79. See CAN. SEC. ADM’S, *Cryptocurrency Offerings*, CSA Staff Notice 46-307 (Aug. 24, 2017), [http://www.osc.gov.on.ca/documents/en/Securities-Category4/csa\\_20170824\\_cryptocurrency-offerings.pdf](http://www.osc.gov.on.ca/documents/en/Securities-Category4/csa_20170824_cryptocurrency-offerings.pdf).

80. See AUSTRAL. SEC. & INVS. COMM’N, *Initial Coin Offering*, Information Sheet 225 (Sept. 2017), <http://asic.gov.au/regulatory-resources/digital-transformation/initial-coin-offerings/>.

81. See Benjamin Lo, *Fatal Fragments: The Effect of Money Transmission Regulation on Payments Innovation*, 18 YALE J.L. & TECH. 111, 113 (2016).

82. See Press Release, N.Y. Dep’t of Fin. Servs., DFS Grants Virtual Currency License to Coinbase, Inc. (Jan. 17, 2017), <http://www.dfs.ny.gov/about/press/pr1701172.htm>.

83. See *id.*

costs.<sup>84</sup> The NYDFS's "bitlicense" regime, however, has not been embraced.<sup>85</sup> Also on the horizon is the Regulation of Virtual Currency Business Act,<sup>86</sup> published by the National Conference of Commissioners on Uniform State Laws, which could allow for regulatory reciprocity across states.<sup>87</sup>

#### G. Public Statements, Backdoor Rulemaking, and Goodhart's Law

Another regulatory development is the interplay of public statements (which provide some guidance but are not formal laws with notice and public comment) and policy through enforcement. In 2017, in relation to the cryptocurrency market, the SEC issued public statements on celebrity promotion of ICOs,<sup>88</sup> retail investor protection and cybersecurity,<sup>89</sup> and public companies making ICO related claims.<sup>90</sup> LabCFTC, an initiative launched by the CFTC in May 2017 to facilitate "market-enhancing financial technology ("FinTech") innovation, fair market competition, and proactive regulatory excellence and understanding of emerging technologies" recently issued a *Primer on Virtual Currencies*<sup>91</sup> which discussed various "use cases" for cryptocurrency and the CFTC's role in oversight and jurisdiction.<sup>92</sup> Based on the CFTC primer, virtual currency could be a medium of exchange, unit of account, store of value, or a convertible

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84. See Houman Shdab, *What itBit's Banking Law Charter Really Means*, COINDESK (May 17, 2015, 3:00 PM), <https://www.coindesk.com/in-itbit-we-trust/>; see also generally Sarah Jane Hughes, *Did New York State Just Anoint Virtual Currencies by Proposing to Regulate Them, or Will Regulation Spoil Them for Some?*, 71 WASH. & LEE L. REV. ONLINE 51 (2014).

85. See Suzanne Barlyn, *New York's Bitcoin Hub Dreams Fade with Licensing Backlog*, REUTERS (Oct. 31, 2016, 1:20 AM), <http://www.reuters.com/article/us-bitcoin-regulations-dfs/new-yorks-bitcoin-hub-dreams-fade-with-licensing-backlog-idUSKBN12V0CM>.

86. See UNIFORM LAW COMM'N, UNIFORM REGULATION OF VIRTUAL CURRENCY BUSINESSES ACT (July 20, 2017), [http://www.uniformlaws.org/shared/docs/regulation%20of%20virtual%20currencies/URVCBA\\_Final\\_2017oct9.pdf](http://www.uniformlaws.org/shared/docs/regulation%20of%20virtual%20currencies/URVCBA_Final_2017oct9.pdf).

87. See V. Gerard Comizio, *Virtual Currencies: Growing Regulatory Framework and Challenges in the Emerging Fintech Ecosystem*, 21 N.C. BANKING INST. 131 (2017).

88. See Press Release, U.S. Sec. and Exchange Comm'n, Statement on Potentially Unlawful Promotion of Initial Coin Offerings and Other Investments by Celebrities and Others, SEC Division of Enforcement and SEC Office of Compliance Inspections and Examinations (Nov. 1, 2017), <https://www.sec.gov/news/public-statement/statement-potentially-unlawful-promotion-icos>.

89. See Stephanie Avakian, U.S. Sec. and Exchange Comm'n, The SEC Enforcement Division's Initiatives Regarding Retail Investor Protection and Cybersecurity, (Oct. 26, 2017), <https://www.sec.gov/news/speech/speech-avakian-2017-10-26>.

90. See Press Release, U.S. Sec. and Exchange Comm'n, Investor Alert: Public Companies Making ICO Related Claims (Aug. 28, 2017), <https://www.investor.gov/additional-resources/news-alerts/alerts-bulletins/investor-alert-public-companies-making-ico-related>.

91. U.S. COMMODITY FUTURES TRADING COMM'N, A CFTC PRIMER ON VIRTUAL CURRENCIES, <http://www.cftc.gov/LabCFTC/Primers/index.htm> (last visited Oct. 28, 2017).

92. *CFTC Issues Primer on Virtual Currencies, Claims Certain Virtual Tokens Fall Under Its Oversight*, BUCKLEY SANDLER INFOBYTES BLOG (Oct. 20, 2017), <https://buckleysandler.com/blog/2017-10-20/cftc-issues-primer-virtual-currencies-claims-certain-virtual-tokens-fall-under-its-oversight>.

currency,<sup>93</sup> and the definition of “commodity” in the Commodity Exchange Act (“CEA”) is broad enough to include both “currency” and “all services, rights, and interests . . . in which contracts for future delivery are presently or in the future dealt in.”<sup>94</sup>

Even if a utility token is not a “security” under the *Howey* Test, or otherwise triggers the criteria set out in the SEC’s DAO determination, it may still fall within CFTC jurisdiction.<sup>95</sup> A utility token might be classified by the CFTC as a currency or a contract for the future exchange of services, rights, or interests and thereby subject to the jurisdiction of the CEA.<sup>96</sup> Utility token issuers would undoubtedly challenge such an interpretation (and would argue their offering is akin to a prepaid service or expense). Nevertheless, there are no bright lines in the primer—only general guidance that the CFTC considers cryptocurrencies to be commodities and that it is actively monitoring this market.<sup>97</sup> This approach has been described as “making policy about financial technology through enforcement actions rather than traditional rulemaking”<sup>98</sup> and denying public notice and comment.<sup>99</sup> This is not the first instance in which the CFTC has been accused of regulating through the “backdoor.”<sup>100</sup> Current SEC Commissioner Hester Pierce argues that the CFTC has engaged in extensive backdoor policy making (like staff letters, long policy statements, guidance and enforcement actions) in relation to implementing its mandate under the *Dodd-*

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93. U.S. COMMODITY FUTURES TRADING COMM’N, *supra* note 91, at 4.

94. *Id.* at 11. The CFTC also asserts jurisdiction over a wide range of commodity matters including “fostering open, transparent, competitive and financially sound markets” protecting the public from “fraud, manipulation and abusive practices” ensuring “financial integrity” ensuring “fair competition” and mitigating against operational, cyber-security and speculative risk. *See id.* at 10–20.

95. *See* Kari S. Larsen & Michael Selig, *CFTC Releases Primer on Virtual Currencies*, LEXOLOGY (Oct. 19, 2017), <https://www.lexology.com/library/detail.aspx?g=e12b3475-c3ab-43f8-88cb-4e705edf4e1a>; *see also* Matthew De Silva, *CFTC Commissioner: Tokens Might ‘Transform’ From Securities into Commodities*, ETHNEWS (Oct. 20, 2017, 6:04 PM), <https://www.ethnews.com/cftc-commissioner-tokens-might-transform-from-securities-into-commodities>; Stan Higgins, *CFTC Aligns with SEC: ICO Tokens Can Be Commodities*, COINDESK (Oct. 17, 2018, 4:45 PM), <https://www.coindesk.com/cftc-no-inconsistency-sec-cryptocurrency-regulation/>; Richard Hill, *Coin Offering ‘Tokens’ Can Be Regulated by the CFTC, Agency Says*, BLOOMBERG LAW (Oct. 17, 2017), <https://www.bna.com/coin-offering-tokens-n73014471011/>.

96. *See* U.S. COMMODITY FUTURES TRADING COMM’N, *supra* note 91, at 11.

97. The CFTC considers its primer to be consistent with the SEC’s directive on the DAO and that “depending on the facts and circumstances” a token could be a security or commodity as the CFTC will “look beyond form and considers the actual substance and purpose of an activity.” *See* U.S. COMMODITY FUTURES TRADING COMM’N, *supra* note 91, at 14.

98. Richard Hill, *CFTC Making Fintech Policy Through Enforcement, Quintez Says*, BLOOMBERG (Oct. 20, 2017), <https://www.bna.com/cftc-making-fintech-n73014471211/>.

99. *Id.*

100. Hester Pierce, *Backdoor and Backroom Regulation*, HILL (Oct. 11, 2014, 6:30 AM), <http://thehill.com/blogs/pundits-blog/finance/223472-backdoor-and-backroom-regulation>.

*Frank Act*.<sup>101</sup> This makes understanding the CFTC's actions difficult for the public and (arguably) violates the Administrative Procedure Act.<sup>102</sup>

When considering the trend to regulate by enforcement, one is reminded of the famous “Goodhart’s Law” (named after economist Charles Goodhart). Professor Lawrence Baxter has summarized this phenomenon as follows: “target regulation is inherently self-defeating because strategic action will be taken to work around the targets.”<sup>103</sup> Goodhart’s Law is often cited in relation to financial regulations that “miss the mark” since market participants “game the system” and act strategically around the regulations.<sup>104</sup> Perhaps the regulatory approach currently identifiable in the cryptocurrency market—overlapping jurisdiction, rule making through enforcement, and application uncertainty—is intentional. It keeps ICO issuers on their feet (and continually consulting with their lawyers); otherwise, they are unable to “game the system.” Intentional ambiguity on the part of the regulators is unlikely; however, it might be a reasonable short-term strategy given the new, and constantly evolving, market. But a time will come when regulators will have to set out clear-cut guidelines.

## II. WHERE ARE WE GOING? EVOLVING USE CASES, LATENT VALUE, AND REGULATORY DEVELOPMENTS

### A. *Social Scalability or Sovereign Showdown?*

To call Nick Szabo an “enigma” might be an understatement. This erudite computer scientist, who holds an honorary doctorate in social sciences from Universidad Francisco Marroquin in Guatemala<sup>105</sup> and went to law school “for fun,”<sup>106</sup> is widely regarded as one of the most influential people in blockchain technology and cryptocurrency<sup>107</sup> as well as a “quiet master of cryptocurren-

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101. *Id.*

102. See Hester Peirce, *Regulating Through the Back Door at the Commodity Futures Trading Commission*, Mercatus Center Geo. Mason U.: Mercatus Working Paper (Nov. 7, 2014), <http://mercatus.org/publication/regulating-through-back-door-commodity-futures-trading-commission>.

103. See Lawrence G. Baxter, *Adaptive Financial Regulation and Regtech: A Concept Article on Realistic Protection for Victims of Bank Failures*, 66 DUKE L.J. 567, 575 n. 20 (2016).

104. John Kay, *Law That Explains Bank Regulation Folly*, FIN. TIMES (Sept. 11, 2012), <https://www.ft.com/content/e5436a62-fb49-11e1-87ae-00144feabdc0?mhq5j=e7>.

105. See Michael Jordan, *Cryptocurrencies with Tim Ferriss, Nick Szabo and Naval Ravikant*, MEDIUM (June 6, 2017), <https://medium.com/@giftedproducts/cryptocurrencies-with-tim-ferriss-nick-szabo-and-naval-ravikant-51a99d037e04>.

106. Shane Ferro, *The Alleged Bitcoin Founder Went to Law School for Fun—And that Says a Lot About What Bitcoin is Really For*, BUS. INSIDER (May 15, 2015, 3:01 PM), <http://www.businessinsider.com/bitcoin-is-about-property-law-2015-5>.

107. See *the 100 Most Influential Blockchain People*, RISE (July 4, 2017), <https://www.rise.global/top-fintech-people/p/5824542/t/2520358>; see also *30 Most Influential People in The Blockchain Space*, CRYPTOCOMPARE (Feb. 13, 2017), <https://www.cryptocompare.com/coins/guides/30-most-influential-people-in-the-blockchain-space/>.

cy.”<sup>108</sup> He created “Bit Gold,”<sup>109</sup> the predecessor of Bitcoin, and some (actually many) believe that he is in fact the mysterious Satoshi Nakamoto<sup>110</sup> (the creator of Bitcoin)—though Szabo has explicitly denied this claim.<sup>111</sup> In his widely read blog *Unenumerated*, Szabo suggests that Bitcoin is “now in important ways the most reliable and secure financial network in the world”<sup>112</sup> and that the true value in Bitcoin is in something he calls “social scalability.”<sup>113</sup> Szabo says that to understand the concept of social scalability we must recognize our cognitive and institutional limitations.<sup>114</sup> Technological advancements (like the Internet) and institutional progress (like the facilitation of open global markets) have “lowered cognitive costs” and created a world, previously unknown, where a single entity, at a low cost, can connect and transact with others across previously impenetrable barriers.<sup>115</sup>

According to Szabo, cyber security and information technology innovations reduce our “vulnerability” to each other (which is needed as the number of active participants in this new world is constantly increasing) in a process he calls “trust minimization,” which in turn frees our “cognitive capacity.”<sup>116</sup> We currently require “institutional” oversight (laws, regulators, etc.) because our cyber security protocols do not give us “complete guarantees when accounting for all

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108. See Tim Ferriss, *The Quiet Master of Cryptocurrency*, THE TIM FERRISS SHOW (June 4, 2017), <https://tim.blog/2017/06/04/nick-szabo/>.

109. Nick Szabo, *Bit Gold*, UNENUMERATED (Dec. 27, 2008, 4:16 PM), <http://unenumerated.blogspot.com/2005/12/bit-gold.html>.

110. See Nathaniel Popper, *Decoding the Enigma of Satoshi Nakamoto and the Birth of Bitcoin*, N.Y. TIMES (May 15, 2015), <https://www.nytimes.com/2015/05/17/business/decoding-the-enigma-of-satoshi-nakamoto-and-the-birth-of-bitcoin.html?mcubz=0>.

111. See Rob Price, *The Man Everyone Thinks Is the Creator of Bitcoin Gave a Speech Discussing the History of the Technology*, BUS. INSIDER (Nov. 13, 2015, 7:49 AM), <http://www.businessinsider.com/nick-szabo-ethereum-bitcoin-blockchain-history-satoshi-nakamoto-2015-11?r=UK&IR=T>.

112. Nick Szabo, *Money, Blockchains, and Social Scalability*, UNENUMERATED (Feb. 9, 2017), <http://unenumerated.blogspot.com/2017/02/money-blockchains-and-social-scalability.html>.

113. *Id.* (Szabo defines social scalability as “the ability of an institution – a relationship or shared endeavour, in which multiple people repeatedly participate, and featuring customs, rules, or other features which constrain or motivate participant’s behaviours – to overcome shortcomings in human minds and in the motivating or constraining aspects of said institution that limit who or how many can successfully participate.”).

114. *Id.* (“The more an institution depends on local laws, customs, or language, the less socially scalable it is.”).

115. *Id.* (“Innovations in social scalability involve institutional and technological improvements that move function from mind to paper or mind to machine, lowering cognitive costs while increasing the value of information flowing between minds, reducing vulnerability, and/or searching for and discovering new and mutually beneficial participants.”).

116. *Id.* (“A wide variety of innovations reduce our vulnerability to fellow participants, intermediaries, and outsiders, and thereby lower our need to spend our scarce cognitive capacities worrying about how an increasingly large number of increasingly diverse people might behave . . . Trust minimization is reducing the vulnerability of participants to each other’s and to outsider’s and intermediaries’ potential for harmful behaviour.”).

possible behaviors of all participants.”<sup>117</sup> Bitcoin, smart contracts, and blockchain technology, Szabo advocates, will increase social scalability on an elaborate scale because, unlike the social scalability of the Internet (which he calls “matchmaking”<sup>118</sup>), the social scalability of blockchain, smart contracts, and cryptocurrency is “trust minimization,” which allows us to increase the scale of our social interactions while simultaneously reducing the need for institutional (or legal) oversight.<sup>119</sup> In a podcast episode with popular author Tim Ferris, Szabo (citing Ayn Rand and *Atlas Shrugged*) stated that digital currency advocates are seeking a post-regulatory “Galt’s Gulch in the cloud.”<sup>120</sup>

Szabo does, however, acknowledge that “utopian schemes” are not “viable options” and that we are much more likely to rework our regulatory and organizational structures rather than “designing from scratch.”<sup>121</sup> Nevertheless, he believes society is moving towards a state of affairs where we enforce “data integrity via computer science rather than via ‘calling the cops.’”<sup>122</sup> From an evolutionary perspective, Szabo’s views mirror, in many ways, those of historian and futurist Yuval Noah Harari, whose best-selling books *SAPIENS: A BRIEF HISTORY OF MANKIND*<sup>123</sup> and *HOMO DEUS: A BRIEF HISTORY OF TOMORROW*<sup>124</sup> describes two jumps in human cognitive capacity: one through the collective adoption of “myths” shared by humans to allow “millions of strangers to cooperate and work towards common goals”<sup>125</sup> and a second, modern cognitive evolution by way of technology.<sup>126</sup> According to Harari, we are now beginning in-

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117. *Id.* (“For example, encryption can strongly protect an email from direct eavesdropping by third parties, but the sender still trusts the recipient to not forward or otherwise divulge the contents of that email directly or indirectly to any undesired third parties.”).

118. *Id.* (Szabo defines “matchmaking” as “facilitating the mutual discovery of mutually beneficial participants.”).

119. *Id.* (“A blockchain can reduce vulnerability by locking in the integrity of some important performances (such as the creation and payment of money) and some important informational flows, and in the future may reduce the vulnerability of the integrity of some important matchmaking functions.”).

120. See The Tim Ferriss Show, *Nick Szabo Interview*, YOUTUBE (Aug. 11, 2017), <https://www.youtube.com/watch?v=3FA3UjA0igY>.

121. Szabo, *supra* note 112.

122. *Id.*

123. YUVAL HARARI, *SAPIENS: A BRIEF HISTORY OF MANKIND* (1st ed. 2014).

124. YUVAL HARARI, *HOMO DEUS: A BRIEF HISTORY OF TOMORROW* (1st ed. 2017).

125. See Michael Gerson, *Myths, Meaning and Homo Sapiens*, WASH. POST (June 11, 2015), [https://www.washingtonpost.com/opinions/myths-meaning-and-homo-sapiens/2015/06/11/28660902-106f-11e5-a0dc-2b6f404ff5cf\\_story.html?utm\\_term=.2070c8572d2d](https://www.washingtonpost.com/opinions/myths-meaning-and-homo-sapiens/2015/06/11/28660902-106f-11e5-a0dc-2b6f404ff5cf_story.html?utm_term=.2070c8572d2d).

126. See Carole Cadwalladr, *Yuval Noah Harari: The Age of the Cyborg Has Begun—And the Consequences Cannot Be Known*, GUARDIAN (July 5, 2015, 3:45 AM), <https://www.theguardian.com/culture/2015/jul/05/yuval-harari-sapiens-interview-age-of-cyborgs>.



creasingly to look to technology rather than institutions to solve society's problems.<sup>127</sup>

Much of the value speculation, uncertainty, derision, and even excitement in today's cryptocurrency market is because the future is an unknown and very different world than the one that we currently occupy.<sup>128</sup> Is it possible that our fears are misplaced simply because we cannot foresee the future, and this uncertain tension gives rise to bias in favor of the status quo?<sup>129</sup> The media discussion surrounding Bitcoin usually compares it to traditional government fiat; however, this might be a false comparison—maybe cryptocurrency is not fiat at all but rather a “new asset class that enable[s] decentralized applications.”<sup>130</sup> Or even grander—maybe it is a redefinition of the entire Internet, or, as Mike Orcutt puts it, “a new kind of Web in which we won't have to trust banks, corporations, or governments with our valuable data.”<sup>131</sup>

Perhaps we are not heading for a showdown between the sovereign and technological anarchists at all but rather an adoption by the sovereign of the underlying technology powering Bitcoin for traditional fiat. Several governments, including Sweden, Canada, Singapore, and China have begun testing cryptocurrency technology to be used in various central banking functions.<sup>132</sup> A “Fedcoin” has some support by economists as a mitigation of volatility.<sup>133</sup> This posi-

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127. See Steve Rosenbush, *'Homo Deus' Author Yuval Noah Harari Says Authority Shifting from People to AI*, WALL ST. J. (Mar. 10, 2017, 6:49 PM), <https://blogs.wsj.com/cio/2017/03/10/homo-deus-author-yuval-noah-harari-says-authority-shifting-from-people-to-ai/>.

128. See Thomas Heath, *Is Bitcoin Another Tulip Craze or a Legitimate Investment?*, WASH. POST (Sept. 14, 2017), [https://www.washingtonpost.com/news/get-there/wp/2017/09/14/is-bitcoin-another-tulip-craze-or-a-legitimate-investment/?utm\\_term=.dc78d51fec25](https://www.washingtonpost.com/news/get-there/wp/2017/09/14/is-bitcoin-another-tulip-craze-or-a-legitimate-investment/?utm_term=.dc78d51fec25) (In the article Christian Catalini, Assistant Professor for technological innovation at MIT's Sloan School of Management, notes: “with bitcoin, you have the ability to exchange a scarce, digital token across the globe without having to rely on an intermediary. This is a fundamental change in how we transfer value across the globe and how we design marketplaces.”).

129. The behavioural psychology and economics phenomenon of “status-quo” or “certainty” bias (also called the “endowment effect”) are well researched. See William Samuelson & Richard Zeckhauser, *Status Quo Bias in Decision Making*, 1 J. RISK & UNCERTAINTY 7 (1988); Richard Thaler, *Toward a Positive Theory of Consumer Choice*, 1 J. ECON. BEHAV. & ORG. 39 (1980); Duncan Kennedy, *Cost-Benefit Analysis of Entitlement Problems: A Critique*, 33 STAN. L. REV. 387 (1981); Russell Korobkin, Note, *Policymaking and the Offer/Asking Price Gap: Toward a Theory of Efficient Entitlement Allocation*, 26 STAN. L. REV. 663 (1994); Russell Korobkin, *The Status Quo Bias and Contract Default Rules*, 83 CORNELL L. REV. 608 (1997).

130. See Adam Ludwin, *A Letter to Jamie Dimon*, CHAIN (Oct. 16, 2017), <https://blog.chain.com/a-letter-to-jamie-dimon-de89d417cb80>.

131. Orcutt, *supra* note 8.

132. See Mike Orcutt, *Governments are Testing Their Own Cryptocurrencies*, MIT TECH. REV. (Sept. 25, 2017), <https://www.technologyreview.com/s/608910/governments-are-testing-their-own-cryptocurrencies/>.

133. See JP Koning, *Fedcoin: A Central Bank-Issued Cryptocurrency*, R3 REPORT (Mar. 14, 2017), <http://www.r3cev.com/blog/2017/3/14/b7721wbuk4rkk429h1obxjqbxt3rdc>; see also Brian Patrick Eha, *Cheat Sheet: Radical Visions of Central Bank-Issued Digital Currencies*, AM. BANKER (Mar. 14, 2017, 4:01 PM), <https://www.americanbanker.com/news/cheat-sheet-radical-visions-of-central-bank-issued-digital-currencies>.

tion, however, is controversial because there are concerns about who would perform ledger verifications and whether its use would facilitate bank runs.<sup>134</sup> Perhaps the future will not involve a substitution of cryptocurrency for fiat but rather a “parallel currency” (that can only be used domestically).<sup>135</sup> This is also controversial as the State could, in theory, use it as a mechanism of “social control” (restricting usage against certain commodities like guns, alcohol, sugar, etc.).<sup>136</sup> Perhaps the Sovereign’s application will not be in retail at all but rather in the wholesale markets, in line with a recent article published by the *Bank of International Settlements*, allowing clearing and settlements in the wholesale market via cryptocurrency.<sup>137</sup>

### B. *Bubble Dynamics and the Inevitability of Market Cycles*

There are many high-profile individuals like Warren Buffett,<sup>138</sup> Ray Dalio,<sup>139</sup> and Mark Cuban<sup>140</sup> who are skeptical of cryptocurrency—particularly Bitcoin. In the words of Joe Kennedy, it is time to leave the market when “shoeshine boys give stock tips.”<sup>141</sup> Angela Walch, Associate Professor of Law at St. Mary’s University, suggested that this was precisely the state of the market in 2017: “[i]f you put the word ‘crypto’ or ‘token’ or ‘coin’ around an offering, it doesn’t matter what the substance or fundamentals behind it are, they are drawing money, and that’s a dangerous situation.”<sup>142</sup> Yale Economics Professor and Nobel Laureate Robert Shiller was one of the first to note the bubble dynamics of Bitcoin and stated that, like other bubbles, it was driven by “stories” rather

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134. Orcutt, *supra* note 132.

135. See Wendy McElroy, *Fedcoin: The U.S. Will Issue E-Currency that You Will Use*, BITCOIN NEWS (Jan. 12, 2017), <https://news.bitcoin.com/fedcoin-u-s-issue-e-currency/>.

136. *Id.*

137. See Morten Bech & Rodney Garratt, *Central Bank Cryptocurrencies*, BIS Q. REV. 55 (Sept. 2017), [https://www.bis.org/publ/qrpdf/r\\_qt1709f.pdf](https://www.bis.org/publ/qrpdf/r_qt1709f.pdf).

138. See Matthew Frankel, *Here’s Why Warren Buffett is Right About Bitcoin*, MOTLEY FOOL (Apr. 5, 2014, 3:06 PM), <https://www.fool.com/investing/general/2014/04/05/heres-why-warren-buffett-is-right-about-bitcoin.aspx>.

139. See Tae Kim, *Ray Dalio, Founder of the World’s Largest Hedge Fund, Says ‘Bitcoin Is a Bubble’*, CNBC (Sept. 19, 2017, 8:39 AM), <https://www.cnbc.com/2017/09/19/ray-dalio-says-bitcoin-is-bubble.html>.

140. See Matthew Frankel, *What 3 Billionaires Think About Bitcoin*, MOTLEY FOOL (June 15, 2017, 7:19 AM), <https://www.fool.com/retirement/2017/06/15/what-3-billionaires-think-about-bitcoin.aspx>.

141. Edward Helmore, *Warnings Grow Louder over Cryptocurrency as Valuations Soar*, GUARDIAN (Oct. 8, 2017, 7:00 AM), <https://www.theguardian.com/technology/2017/oct/08/cryptocurrencies-bitcoin-ethereum-bubble>.

142. *Id.*; see also Ron Insana, *Bitcoin is in a Bubble, and Here’s How it’s Going to Crash*, CNBC (Sept. 13, 2017, 5:54 PM), <https://www.cnbc.com/2017/09/13/bitcoin-is-in-a-bubble-and-heres-how-its-going-to-crash-ron-insana.html?recirc=taboolainternal>.

than “fundamentals.”<sup>143</sup> Investment manager and author Andy Kessler argued that there was no rational metric that explained the valuation of Bitcoin in late 2017. It is not a scarce commodity (like precious metal) but, because of the blockchain, is rather a “software as a service—transactions for a price, like credit cards.” Unlike credit card providers, however, Bitcoin has a fee structure that is “some 3000 times less than Visa.”<sup>144</sup>

Even if Shiller and others are correct (and the 2018 price correction provides support for their arguments) does this mean that the underlying technology (or idea for that matter) will forever disappear? The Internet bubble burst, and it did not lead to the extinction of the Internet—quite the opposite. Perhaps we are heading for a showdown between the sovereign and those who would prefer to live in “Galt’s Gulch in the cloud.”<sup>145</sup> Or perhaps, as former SEC Chairman Arthur Levitt, Jr., put it, cryptocurrency is “here to stay.”<sup>146</sup> It is also possible that we are asking the wrong question. Perhaps, instead of speculating about whether the cryptocurrency bubble will decline even further, we should just accept its inevitability and instead look for the most appropriate response (including non-intervention). Devotees of Hyman Minsky’s “financial instability hypothesis” (which came to some prominence in the aftermath of the 2008 global financial crisis) would argue that bubbles are inevitable,<sup>147</sup> and that “stretches of prosperity,” bull market booms, and price run-ups just “sow the seeds of the next crisis.”<sup>148</sup> Minsky’s framework is based on a view that “capitalist economies exhibit inflations and debt deflations which seem to have the potential to spin out of control”<sup>149</sup> and that government intervention can often compound the problem.<sup>150</sup>

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143. See Elizabeth Gurdus, *Nobel Prize Winner Robert Shiller Explains How Bitcoin Resembles Past Market Bubbles*, CNBC (Sept. 6, 2017, 6:50 PM), <https://www.cnbc.com/2017/09/06/economist-robert-shiller-explains-how-bitcoin-resembles-past-bubbles.html>.

144. Andy Kessler, *The Bitcoin Valuation Bubble*, WALL ST. J. (Aug. 27, 2017, 5:10 PM), <https://www.wsj.com/articles/the-bitcoin-valuation-bubble-1503868225>.

145. See Ferriss, *supra* note 108.

146. See Heath, *supra* note 128; see also Levitt & Smith, *supra* note 5.

147. See Hyman Minsky, *The Financial Instability Hypothesis* (Levy Economics Institute of Bard College, working paper n. 74, 1992), in *HANDBOOK OF RADICAL POLITICAL ECONOMY* (Philip Arestis & Malcolm Sawyer eds. 1993); see also HYMAN MINSKY, *CAN “IT” HAPPEN AGAIN? ESSAYS ON INSTABILITY AND FINANCE* (1982); HYMAN MINSKY, *STABILIZING AN UNSTABLE ECONOMY* (1986).

148. See *Minsky’s Moment*, THE ECONOMIST (July 30, 2016), <https://www.economist.com/news/economics-brief/21702740-second-article-our-series-seminal-economic-ideas-looks-hyman-minskys>.

149. Minsky, *The Financial Instability Hypothesis*, *supra* note 147, at 2.

150. *Id.* at 8. For a further discussion of how regulation can potentially destabilize liabilities see Jose Gabilondo, *Dodd-Frank, Liability Structure, and Financial Instability Cycles: Neither a (Ponzi) Borrower Nor a Lender Be*, 46 WAKE FOREST L. REV. 469 (2011).

### C. The Systemic Implications of a Cryptocurrency Price Collapse

The “pre-sale” offering dynamics of an ICO allow for significant “pump and dump” risk to retail investors (reminiscent of the IPO tech bubble). Institutional investors will often come in at a much lower pre-ICO price and ride the “hype” to a quick cash out; less sophisticated investors are then “left holding the proverbial bag.”<sup>151</sup> There is no question that the ICO market is rife with hype, speculation—even fraud—and that a lot of people are positioned to lose money.<sup>152</sup> Should the regulators take a more aggressive stance on the market in light of the bubble dynamics that are developing?

The question of more aggressive intervention is usually a function of the systemic risks inherent in a bubble, and in the case of cryptocurrency those seem (at the moment) to be contained.<sup>153</sup> Professor Robert Wolcott of Northwestern University’s Kellogg School of Management, suggests cryptocurrency is not a “too big to fail” scenario because it (intentionally) operates “outside of incumbent financial systems.”<sup>154</sup> As a result, it does not pose “at-risk participation” threats (the extent that broad sectors of the market are participating in a risky behaviour) or “interdependence” risk (the extent that basic financial systems have “multiple dependencies” on the market in question).<sup>155</sup> This could change, however, with institutional participation in the Bitcoin futures market. Wolcott suggests we should hope for a bubble bursting soon to “mitigate the cost of learning to the economy.”<sup>156</sup>

When you look at cryptocurrency through the framework of the recent global financial crisis you see other differences. The Financial Crisis Inquiry Commission (“FCIC”), in its final report on the causes of the financial crisis,<sup>157</sup> identified many factors—in addition to interdependence and contagion—that contributed to the crisis. These included—but were not limited to—a general environment of deregulation,<sup>158</sup> a belief (by former Federal Reserve Chairman

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151. See Olga Kharif, *Hedge Funds Flip ICOs, Leaving Other Investors Holding the Bag*, BLOOMBERG (Oct. 3, 2017, 5:00 AM), <https://www.bloomberg.com/news/articles/2017-10-03/hedge-funds-flip-icos-leaving-other-investors-holding-the-bag>.

152. See Lily Katz, *Kyle Bass Says ICO Investors Will Get Wiped Out in Crypto ‘Mania’*, BLOOMBERG (Oct. 6, 2017, 2:55 PM), <https://www.bloomberg.com/news/articles/2017-10-06/bass-says-ico-investors-will-get-wiped-out-in-crypto-mania>.

153. See Trevor Hunnicutt, *No systemic risk from cryptocurrency speculation: BlackRock strategist*, REUTERS (July 11, 2017, 2:36 PM), <https://www.reuters.com/article/us-blackrock-bitcoin-outlook/no-systemic-risk-from-cryptocurrency-speculation-blackrock-strategist-idUSKBN19W2BE>.

154. See Robert C. Wolcott, *The Coming Cryptocurrency Crash – And Why It’s A Good Thing*, FORBES (July 7, 2017, 10:17 AM), <https://www.forbes.com/sites/robertwolcott/2017/07/07/the-coming-cryptocurrency-crash-and-why-its-a-good-thing/#78b39bf34eed>.

155. *Id.*

156. *Id.*

157. FIN. CRISIS INQUIRY COMM’N, THE FINANCIAL CRISIS INQUIRY REPORT: FINAL REPORT OF THE NATIONAL COMMISSION ON THE CAUSES OF THE FINANCIAL AND ECONOMIC CRISIS IN THE UNITED STATES (2011).

158. *Id.* at 52–67.

Alan Greenspan) that it was “beyond the ability of regulators” to foresee crashes,<sup>159</sup> the mismanagement of government-sponsored entities in pursuit of executive bonuses,<sup>160</sup> growth in shadow banking<sup>161</sup> and high risk derivatives,<sup>162</sup> a period of extreme growth,<sup>163</sup> a dramatic increase in poor quality loans<sup>164</sup> and predatory lending practices,<sup>165</sup> a disregard of prudent underwriting standards and quality control for mortgages,<sup>166</sup> errors made by rating agencies,<sup>167</sup> manipulation of accounting standards,<sup>168</sup> extreme executive compensation,<sup>169</sup> and moral hazard.<sup>170</sup> Really, the only similarity with cryptocurrency, at least at this point, is greed and a period of rapid growth.

#### D. Public Trust in a Changing Financial World

If cryptocurrency is to become viable in the long-term, it must generate the same trust as traditional fiat. One could argue that much of the “fear mongering” coming from the traditional banking sector is due, in large part, to the threat cryptocurrency represents to core banking business sectors.<sup>171</sup> However, uncertainty could also be attributed to the cyber-security risks noted above, with one recent study going as far as to label it a “substantial danger in terms of criminal enterprise.”<sup>172</sup> Another study labelled cryptocurrency a “threat to domestic and international security” and advocated for making the entire market illegal.<sup>173</sup> Further, there are no government guarantees, like deposit insurance, in the case of cryptocurrency. Independent of a stable regulatory environment, the general consumer must become comfortable with it to be sustainable long term. There have been many “high profile” cryptocurrency hacks over the past several years, calling its safety into serious question. The most notable include the infamous “Mt. Gox” digital currency exchange breach (which resulted in a

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159. *Id.* at 3.

160. *Id.* at 16.

161. *Id.* at 27–38.

162. *Id.* at 38–52.

163. *Id.* at 64.

164. *Id.* at 102–04.

165. *Id.* at 78.

166. *Id.* at 107–08.

167. *Id.* at 112.

168. *Id.* at 177.

169. *Id.* at 64.

170. *Id.* at 65; *id.* at 134; *id.* at 165.

171. *See* Kim, *supra* note 5.

172. Steven David Brown, *Cryptocurrency and Criminality: The Bitcoin Opportunity*, 89 POLICE J. 327, 327 (2016).

173. Eric Engle, *Is Bitcoin Rat Poison: Cryptocurrency, Crime, and Counterfeiting (CCC)*, 16 J. HIGH TECH. L. 340, 393 (2016).

loss of nearly \$460 million),<sup>174</sup> the Coindash breach (which resulted in a hacker stealing nearly \$7 million worth of Ethereum),<sup>175</sup> the hack of the DAO offering (which resulted in losses of over \$50 million),<sup>176</sup> the Bithumb (South Korean exchange) hack of customer data,<sup>177</sup> and the recent “cell-phone” attacks across numerous networks including Verizon, T-Mobile, Sprint, and AT&T.<sup>178</sup>

Cryptocurrency may be ushering in a completely new business and legal framework—the “decentralized business model”<sup>179</sup>—and wholesale changes to long-established systems give people pause. Cryptocurrency technology is allowing companies to create and sell their own tokens which can serve a number of purposes including “utility” or usage rights, as well as profit participation through crowd funded ICOs. With this technology, it is now possible to contemplate a world of business without centralized control or board of director driven fiduciary oversight.<sup>180</sup>

#### E. Cryptocurrency’s Long-Term Value Proposition

Not everyone shares Jamie Dimon’s view of Cryptocurrency. Goldman Sachs is considering dedicating a trading operation to digital currencies.<sup>181</sup> Bitcoin, despite its popularity, has drawbacks, like high mining fees,<sup>182</sup> but maybe a better cryptocurrency will replace it, or a sovereign will adopt their own cryptocurrency altogether? Internationally, government reception of cryptocurrency has been varied. Japan has embraced it, officially recognizing 11

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174. See Robert McMillan, *The Inside Story of Mt. Gox, Bitcoin’s \$460 Million Disaster*, WIRED (Mar. 3, 2014, 6:30 AM), <https://www.wired.com/2014/03/bitcoin-exchange/>.

175. See Jen Wieczner, *Hackers Just Stole \$7 Million in Brazen Ethereum Cryptocurrency Heist*, FORTUNE (July 18, 2017), <http://fortune.com/2017/07/18/ethereum-coindash-ico-hack/>.

176. See Clint Finley, *A \$50 Million Hack Just Showed That the DAO Was All Too Human*, WIRED (June 18, 2016, 4:30 AM), <https://www.wired.com/2016/06/50-million-hack-just-showed-dao-human/>.

177. See Rob Price, *One of the World’s Biggest Bitcoin Exchanges Has Been Hacked*, BUS. INSIDER (July 5, 2017 8:09 AM), <http://www.businessinsider.com/south-korean-bitcoin-exchange-bithumb-hacked-ethereum-2017-7?r=UK&IR=T>.

178. See Nathaniel Popper, *Identity Thieves Hijack Cellphone Accounts to Go After Virtual Currency*, N.Y. TIMES (Aug. 21, 2017), <https://www.nytimes.com/2017/08/21/business/dealbook/phone-hack-bitcoin-virtual-currency.html?mcubz=0>.

179. See Fred Ehrsam, *Blockchain Tokens and the Dawn of the Decentralized Business Model*, COINBASE BLOG (Aug. 1, 2016), <https://blog.coinbase.com/app-coins-and-the-dawn-of-the-decentralized-business-model-8b8c951e734f>.

180. *Id.*

181. See Paul Vigna, Telis Demos & Liz Hoffman, *Goldman Sachs Explores a New World: Trading Bitcoin*, WALL ST. J. (Oct. 2, 2017, 8:00 PM), <https://www.wsj.com/articles/goldman-sachs-explores-a-new-world-trading-bitcoin-1506959128>.

182. See Olga Kharrif, *Paying \$15 to Send \$25 Has Bitcoin Users Rethinking Practicality*, BLOOMBERG (Sept. 29, 2017, 5:00 AM), <https://www.bloomberg.com/news/articles/2017-09-29/paying-15-to-send-25-has-bitcoin-users-rethinking-practicality>.

firms recently as “registered cryptocurrency exchange operators”<sup>183</sup> and even considering creating their own sovereign cryptocurrency called the “J-Coin.”<sup>184</sup> Dubai also recently launched a government-backed cryptocurrency called “em-Cash.”<sup>185</sup> China,<sup>186</sup> on the other hand, has banned ICOs, coin exchanges, commercial trading,<sup>187</sup> and even one-on-one and peer-to-peer trading.<sup>188</sup> South Korea has also taken a negative stance by banning new virtual currencies sold through ICOs.<sup>189</sup>

Jeremy Philips of Columbia Business School acknowledges that cryptocurrency doesn’t have “the backing of a sovereign nation,” but, on the other hand, government fiat is also “largely dependent on trust” and is generally created “out of thin air.”<sup>190</sup> He argues that cryptocurrencies like Bitcoin are rising and could rise even further given the fact that Bitcoin for example cannot be devalued by “centralized monetary policy” because it is more like gold with a fixed quantity.<sup>191</sup> Philips also states that new “use cases” for digital currency are add-

183. See Luke Graham, *As China Cracks Down, Japan is Fast Becoming the Powerhouse of the Bitcoin Market*, CNBC (Sept. 29, 2017, 8:43 AM), <https://www.cnbc.com/2017/09/29/bitcoin-exchanges-officially-recognized-by-japan.html>.

184. See Arjun Kharpal, *Japanese Banks Are Thinking of making Their Own Cryptocurrency Called the J-Coin*, CNBC (Sept. 27, 2017, 4:45 AM), <https://www.cnbc.com/2017/09/27/japanese-banks-cryptocurrency-j-coin.html>.

185. See, e.g., Jon Buck, *Dubai Will Issue First Ever State Cryptocurrency*, COINTELEGRAPH (Oct. 1, 2017), <https://cointelegraph.com/news/dubai-will-issue-first-ever-state-cryptocurrency>; *Dubai Signs Deal to Create Digital Currency emCash*, ARABIAN BUS. (Sept. 26, 2017, 7:22 PM), <http://www.arabianbusiness.com/industries/banking-finance/379617-dubai-signs-deal-to-establish-digital-currency-emcash>.

186. See Kenneth Rapoza, *China’s ICO Ban Doesn’t Mean It’s Giving up on Cryptocurrencies*, FORBES (Sept. 6, 2017, 2:31 PM), <https://www.forbes.com/sites/kenrapoza/2017/09/06/chinas-ico-ban-doesnt-mean-its-giving-up-on-crypto-currencies/#773c4187aebf>.

187. See Chao Deng & Paul Vigna, *China to Shut Bitcoin Exchanges*, WALL ST. J. (Sept. 11, 2017, 8:16 PM), <https://www.wsj.com/articles/china-to-shut-bitcoin-exchanges-sources-1505100862>.

188. See Chao Deng, *China’s Interference on Bitcoin Tests Currency’s Foundation*, WALL ST. J. (Sept. 18, 2017, 12:37 PM), <https://www.wsj.com/articles/china-widens-bitcoin-crackdown-beyond-commercial-trading-1505733976>.

189. See Nathaniel Popper, *Bitcoin Bug Bites Japan and South Korea as China Clamps Down*, N.Y. TIMES (Oct. 1, 2017), <https://www.nytimes.com/2017/10/01/technology/bitcoin-japan-south-korea.html>; see also Paul Vigna & Gregor Stuart Hunter, *Bitcoin’s Lot: Win Some, Lose Some*, WALL ST. J. (Sept. 29, 2017, 8:31 AM), <https://www.wsj.com/articles/bitcoin-exchange-giant-bitflyer-expected-to-get-key-license-in-japan-1506664801>.

190. Jeremy G. Philips, *What Jamie Dimon is Missing About Bitcoin*, N.Y. TIMES (Sept. 18, 2017), <https://nyti.ms/2y8MkrU>.

191. *Id.* The argument for Bitcoin as a replacement for gold is however controversial. See James Mackintosh, *Bitcoin’s Wild Ride Shows the Truth: It Is Probably Worth Zero*, WALL ST. J. (Sept. 18, 2017, 3:08 PM), <https://www.wsj.com/articles/bitcoins-wild-ride-shows-the-truth-it-is-probably-worth-zero-1505760623> (“Gold has a value far above what is justified by its uses in electronics and jewelry only because (almost) everyone agrees that it has value. That ‘network effect’ is what Bitcoin needs to establish itself, and the more attention it garners, the more likely it is to become established. Yet gold has had thousands of years and a history of being used to back money to support its position”).

ing to its stickiness, citing examples such as regulatory arbitrage and “open source software of distributed storage networks.”<sup>192</sup> Cryptocurrencies like Bitcoin will continue to have value (as both a medium of exchange and store of value) when there is a lack of stability in a local government’s fiat—and the recent popularity of cryptocurrency in Venezuela is a robust case study for this proposition.<sup>193</sup> Former SEC Chairman Arthur Levitt, Jr., suggests the issue is not whether cryptocurrency is better than “established systems” (like the United States and Western Europe) but rather how it impacts “the 2.5 billion people excluded from the established system?”<sup>194</sup> Levitt also believes that holding cryptocurrency can be preferable to local currency in many places and notes that in the U.K. there was a run up in Bitcoin holdings in light of Brexit uncertainty.<sup>195</sup> In politically unstable regions it can be held as an “alternative currency.”<sup>196</sup> There is also underlying value in DLT as applied to cryptography and peer-to-peer networking.<sup>197</sup>

*F. Long Tail Successes, Hype-Financed Infrastructure,  
and Research and Development*

Bubbles can have an “important upside” as a financial engine for “innovation and growth.”<sup>198</sup> Without a bubble, as suggested by William Janeway, Managing Director at the Venture Capital firm Warbug Pincus, “many productive technologies and companies would otherwise struggle to find financing.”<sup>199</sup> As a result, bubbles may be more than what NEW YORKER writer John Cassidy calls a “destructive sideshow.”<sup>200</sup> A recent JOURNAL OF FINANCIAL ECONOMICS study, by Ramana Nanda and Matthew Rhodes-Kropf (2013), looked at “seed or series A investment” of technology start-ups from 1985 to 2004 (12,285 firms). It showed that venture capital (“VC”) activity in the United States during “hot markets” led to risky investing by VCs but also “a mindset of experimentation and a willingness to fail” that led to funding which may not otherwise have

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192. *Id.*

193. See Simon Chandler, *How Venezuela Came to Be One of The Biggest Markets for Crypto in the World*, COINTELEGRAPH (Sept. 2, 2018), <https://cointelegraph.com/news/how-venezuela-came-to-be-one-of-the-biggest-markets-for-crypto-in-the-world>.

194. See Levitt & Smith, *supra* note 5.

195. *Id.*

196. Heath, *supra* note 128 (“[I]t’s here to stay because of the disparity between countries where a monetary system is robust and countries where this is virtually no monetary system.”).

197. See generally Robleh Ali et al., *Innovations in Payment Technologies and the Emergence of Digital Currencies*, BANK OF ENG. Q. BULL.2014 Q3 (2014).

198. John Cassidy, *Are Speculative Bubbles Good?* NEW YORKER (Apr. 11, 2014) <http://www.newyorker.com/news/john-cassidy/are-speculative-bubbles-good>.

199. *Id.*

200. *Id.*



happened.<sup>201</sup> An interesting note is what happens in the “tails of the distribution of outcomes” of start-ups that obtain funding during bubbles.<sup>202</sup> The authors report that although companies who were started during a “hot period” are “significantly more likely to go bankrupt than those founded in periods when fewer start-up firms were funded,” other companies ended up being “extremely successful and innovative.”<sup>203</sup> In other words—a bubble extends both sides of the distribution “tail”—there is not only more failure but also more “extreme success.”<sup>204</sup> Moreover, a company that “succeeds” (the authors define success as an “IPO or acquisition”) will “simultaneously create more value.”<sup>205</sup>

Daniel Gross, the author of the book *POP! WHY BUBBLES ARE GREAT FOR THE ECONOMY*,<sup>206</sup> suggests that a bubble has a detrimental effect only when “resources are allocated efficiently and investors and consumers behave rationally.”<sup>207</sup> Gross believes that bubbles create “infrastructure” which is then consolidated and put to long-term use.<sup>208</sup> Bubbles also create “mental infrastructure”<sup>209</sup> because of “marketing, advertising, promotion, hype and brand awareness.”<sup>210</sup> This applies to cryptocurrency as we see the development of an

201. Nanda & Rhodes-Kropf, *supra* note 12, at 403–04; *see also id.* at 416 (“Our IV results also highlight that changes in capital availability that are unrelated to the investment opportunities seem to exacerbate our results, suggesting that one mechanism through which hot markets could lead to riskier investments is that it makes investors more willing to experiment, and thereby fund more novel, risky investments. This finding is consistent with Nanda and Rhodes-Kropf (2012), who demonstrate how increased funding in the venture capital market can rationally alter the type of investments investors are willing to fund toward a more experimental, innovative project. According to this view, the abundance of capital associated with investment cycles might not only be a response to the arrival of new technologies, but could also play a critical role in driving their creation and commercialization. That is, the abundance of capital can change the type of firm investors are willing to finance in these times. Financial market investment cycles can therefore create innovation cycles.”).

202. *Id.* at 404.

203. *Id.*

204. *See id.*

205. *Id.* at 416. The authors justify their value claim by showing data on patent filings and citations and further state at 416, (“successful firms that are funded in hot markets had more patents and received more citations in the initial years following their first funding than firms funded in less heady times.”); *see also The Babe Ruth Effect in Venture Capital*, CDIXON, June 7, 2015, <http://cdixon.org/2015/06/07/the-babe-ruth-effect-in-venture-capital/> (explaining that venture capitalists (“VCs”) sometimes refer to this ideal of “extreme success” on the outer tail of distribution as the “Babe Ruth Effect” in that the best VCs have more home runs of greater magnitude).

206. DANIEL GROSS, *POP! WHY BUBBLES ARE GREAT FOR THE ECONOMY* (2007).

207. Daniel Gross, *Pop! Why Bubbles Are Great for the Economy*, SLATE (May 9, 2007, 5:35 PM) <http://www.slate.com/articles/business/moneybox/2007/05/pop.html>.

208. *See id.* (citing several examples, such as the “rail networks” that were “build way ahead of demand” but allowed the U.S. to assume a position of “dominance in the national and international market in information” as well as the creation of “Web 2.0,” a post internet bubble, which had led to social media and the Internet as we currently know it).

209. *Id.*

210. *Id.* (“Bubble-era companies, desperate for traffic, discount furiously, pay rebates, offer free shipping, and run their businesses on negative margins – all as part of a heroic effort to coax

cillary technologies and market enhancing competition.<sup>211</sup> John Cassidy, the author of *HOW MARKETS FAIL: THE LOGIC OF ECONOMIC CALAMITIES*<sup>212</sup> and *DOT.CON: HOW AMERICA LOST ITS MIND AND MONEY IN THE INTERNET ERA*,<sup>213</sup> notes that a bubble facilitates research and development in useful areas post-bubble.<sup>214</sup> Economist Steven Fazzari, agrees and says there is a “link between access to finance and the amount of research and development that firms, particularly young ones, carry out.”<sup>215</sup> A blockchain expert Peter Van Valkenburgh calls research into speculative technologies “socially productive” because it “allocates capital to long-shot paradigm shifting innovation.”<sup>216</sup>

#### CONCLUSION: ASSESSING THE FUTURE

What does the future of cryptocurrency entail? This question is impossible to answer, but there are signs pointing in several directions. Cryptocurrency, in some form, is likely here to stay,<sup>217</sup> but so is government fiat.<sup>218</sup> New forms of cryptocurrency will emerge to fill value gaps, and today’s leaders (like Bitcoin and Ether) will pressure major banks and tech players (like Amazon, Facebook, and Dropbox) to improve their products and services.<sup>219</sup> In addition to smart contracts innovations, DLT may improve global payments,<sup>220</sup> equities clearing

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consumers and businesses to spend their money in fundamentally different ways. The telegraphs slashed per-word rates to compete with the mail and with each other. The railroads slashed freight rates to compete with canals and rivers, and with each other. In the 1990s, the entire e-commerce sector spent furiously to persuade consumers and businesses to take the leap of faith and buy stuff—stocks, books, airline tickets, pet food, groceries, diamonds, chemicals, you name it—online.”).

211. See Kenneth Rogoff, *Bitcoin’s Price Bubble Will Burst Under Government Pressure*, THE GUARDIAN (Oct. 9, 2017, 8:00 AM), <https://www.theguardian.com/technology/news-blog/2017/oct/09/bitcoin-price-bubble-government-cryptocurrency>.

212. JOHN CASSIDY, *HOW MARKETS FAIL: THE LOGIC OF ECONOMIC CALAMITIES* (2010).

213. JOHN CASSIDY, *DOT.CON: HOW AMERICAN LOST ITS MIND AND MONEY IN THE INTERNET ERA* (2003).

214. See Cassidy, *supra* note 198.

215. *Id.*

216. See Nathan Reiff, *What if a Cryptocurrency Bubble Isn’t That Bad?* INVESTOPEDIA (Oct. 9, 2017, 1:25 PM), <http://www.investopedia.com/news/what-if-cryptocurrency-bubble-isnt-bad/>.

217. See Robert Hackett, *IMF Head: Cryptocurrency Could Be the Future, Really*, FORTUNE (Oct. 2, 2017), <http://fortune.com/2017/10/02/bitcoin-ethereum-cryptocurrency-imf-christine-lagarde/>.

218. See Patrick T. Harker, President and Chief Exec. Officer, Fed. Reserve Bank of Philadelphia, *Fintech: Revolution or Evolution?* (Apr. 3, 2017), <https://www.philadelphiafed.org/publications/speeches/harker/2017/04-03-17-penn>.

219. See Robert Hackett, *7 Cryptocurrency Predictions from the Experts*, FORTUNE, (July 25, 2017), <http://fortune.com/2017/07/25/bitcoin-ethereum-cryptocurrency-predictions/>.

220. See Samantha Radocchia, *How a Blockchain Payments Processor Can Improve Industry Transactions*, FORBES (Sept. 28, 2018, 11:18 AM), <https://www.forbes.com/sites/samantharadocchia/2018/09/28/how-a-blockchain-payment-processor-can-improve-industry-transactions/#225dad0550a>.

and settlement,<sup>221</sup> supply chain management,<sup>222</sup> and possibly even “online voting results.”<sup>223</sup> It will also improve identity and data protection through “self sovereign identity schemes,”<sup>224</sup> which will have positive implications for charities.<sup>225</sup> It may also enhance wholesale energy trading markets,<sup>226</sup> as well as government functionality and regulatory technology.<sup>227</sup>

Adaptive regulatory measures will emerge to reflect these changes,<sup>228</sup> and regulators will continue for a time with their varied, overlapping, and often “backdoor” enforcement focused approach<sup>229</sup> (which can reduce gaming incentives);<sup>230</sup> however, clear-cut regulatory regimes will eventually emerge. As illustrated in other jurisdictions, regulatory efforts to provide education and

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221. The Bank of Canada (Canada’s central bank and monetary policy authority), together with Payments Canada (a division of the Canadian Finance Department that supervises payments infrastructure), the TMX Group, Accenture, and R3, recently published a “Phase III Proof of Concept” report on using blockchain for securities clearing and settlement. *See New Report from Payments Canada, the Bank of Canada, TMX Group, Accenture and R3 Proves that Distributed Ledger Technology Can Enable Equity Settlement*, PAYMENTS CANADA (Oct. 22, 2018), <https://www.payments.ca/about-us/news/new-report-payments-canada-bank-canada-tmx-group-accenture-and-r3-proves-distributed>.

222. *See* Jacob Bunge, *Latest Use for a Bitcoin Technology: Tracing Turkeys from Farm to Table*, WALL ST. J. (Oct. 25, 2017, 5:30 AM), <https://www.wsj.com/articles/latest-use-for-a-bitcoin-technology-tracing-turkeys-from-farm-to-table-1508923801>; *see also* Robert Hackett, *Walmart and 9 Food Giants Team up on IBM Blockchain Plans*, FORTUNE (Aug. 22, 2017), <http://fortune.com/2017/08/22/walmart-blockchain-ibm-food-nestle-unilever-tyson-dole/>.

223. *See* Mike Orcutt, *Why Bitcoin Could Be Much More than a Currency*, MIT TECH. REV. (May 8, 2015), <https://www.technologyreview.com/s/537246/why-bitcoin-could-be-much-more-than-a-currency/>.

224. *See* Chris Skinner, *Blockchain Key to Rethinking Identity, Avoiding Next Equifax*, AM. BANKER (Sept. 13, 2017, 12:00 PM), <https://www.americanbanker.com/opinion/blockchain-key-to-rethinking-identity-avoiding-next-equifax>.

225. *See* Rhodri Davies, *Knowing Me, Knowing You: Self-Sovereign Digital Identity and the Future for Charities*, CAF CHARITIES AID FOUND. (July 21, 2017), <https://www.cafonline.org/about-us/blog-home/giving-thought/the-future-of-doing-good/self-sovereign-digital-identity-and-the-future-of-charity>.

226. *See* Jules Besnainou, *Diving into Blockchain Use Cases: Wholesale Energy Trading*, CLEANTECH GRP. (June 20, 2017), <https://www.cleantech.com/diving-into-blockchain-use-cases-wholesale-energy-trading/>.

227. *See* Gary Markham, *How the Blockchain Is Reinventing the RegTech Market*, DATAFLOQ (Apr. 23, 2018), <https://datafloq.com/read/how-blockchain-is-reinventing-the-regtech-market/4911>; *see also* Philip Salter, *This Regtech Entrepreneur Aims to Professionalize Blockchain and Crypto*, FORBES (Apr. 24, 2018), <https://www.forbes.com/sites/philipsalter/2018/04/24/this-regtech-entrepreneur-aims-to-professionalize-blockchain-and-crypto/#6f5e5905052>.

228. *See* Jerome H. Powell, Remarks at the Yale Law School Center for the Study of Corporate Law Weil, Gotshal, and Manges Roundtable, *The Future of Finance and Capital Markets?* (Mar. 3, 2017), <https://www.federalreserve.gov/newsevents/speech/powell20170303b.pdf>.

229. *See* Alexander B. Lindgren, *Blockchain Regulation: Growing Pains of a Financial Revolution* 59 ORANGE COUNTY LAW. 38, 40–41 (2017).

230. *See* U.S. GOV’T ACCOUNTABILITY OFFICE, GAO-17-361, FINANCIAL TECHNOLOGY: INFORMATION ON SUBSECTORS AND REGULATORY OVERSIGHT (2017), <http://www.gao.gov/assets/690/684187.pdf>.

transparency can be positive for the cryptocurrency space because they provide public familiarity, credibility, and simplicity to an otherwise opaque market.<sup>231</sup>

The Office of the Comptroller of the Currency (“OCC”), which has an internal Office of Innovation,<sup>232</sup> recently announced a special purpose banking fintech charter,<sup>233</sup> which has been contested at the state level.<sup>234</sup> However, because the OCC’s special purpose charter proposal is focused on “core banking,” Congressman David Schweikert, (R-Ariz.) has suggested that it does not do enough to support crypto and digital currency companies.<sup>235</sup> It is also uncertain whether cryptocurrency will ever be substitutable for wage payment given its current treatment by the IRS and its inherent price volatility.<sup>236</sup>

Perhaps the most interesting development will be whether cryptocurrency, on its own, can become a mainstream payment mechanism, or whether the future is simply in the blockchain. Some countries ban it outright as a form of payment,<sup>237</sup> yet payments continue to surface—including lawyer’s fees, Montessori school tuition, real estate, and even a Lamborghini Huracan.<sup>238</sup> Also, a new “Bitcoin Visa” is in the works by London Block Exchange (a British cryp-

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231. See Cali Haan, *Ontario Securities Commission Releases Colourful New “Cryptoasset” Educational Website*, CROWDFUND INSIDER (Nov. 6, 2018, 9:22 AM), <https://www.crowdfundinsider.com/2018/11/140953-ontario-securities-commission-releases-colourful-new-cryptoasset-educational-website/>.

232. The Office of the Comptroller of the Currency has established an “Office of Innovation” and indicated that it plans on issuing “special purpose bank charters for fintech companies.” See Press Release, Office of the Comptroller of the Currency, OCC Issues Responsible Innovation Framework (Oct. 26, 2016), <https://www.occ.gov/news-issuances/news-releases/2016/nr-occ-2016-135.html>.

233. See Press Release, Off. of the Comptroller of the Currency, OCC Begins Accepting National Bank Charter Applications from Financial Technology Companies (July 31, 2018), <https://www.occ.gov/news-issuances/news-releases/2018/nr-occ-2018-74.html>.

234. See Alan S. Kaplinsky, *State Regulators File Second Lawsuit Opposing OCC Fintech Charter*, CONSUMER FIN. MONITOR, BALLARD SPAHR LLP (Oct. 29, 2018), <https://www.consumerfinancemonitor.com/2018/10/29/state-regulators-file-second-lawsuit-opposing-occ-fintech-charter/>.

235. Lalita Clozel, *Lawmaker to OCC: Don’t Ignore Cryptocurrency in Fintech Plan*, AM. BANKER (Sept. 20, 2016, 5:09 PM), <https://www.americanbanker.com/news/lawmaker-to-occ-dont-ignore-cryptocurrency-in-fintech-plan>. (“But since the OCC’s plan only refers to institutions engaged in “core banking” activities — lending, taking in deposits and paying checks — observers noted that it did not appear tailored to virtual currency companies. Schweikert suggested that because virtual currency companies do not fit into the traditional mold of a financial institution, they should be given a different type of charter.”).

236. See Patrick McLeod, *Taxing and Regulating Bitcoin: The Government’s Game of Catch Up*, 22 COMM.LAW CONSP. 379, 391–92 (2014).

237. See Sana Elouazi, *Bye-Bye Bitcoin: Morocco Bans Cryptocurrencies*, MOROCCO WORLD NEWS (Nov. 21, 2017), <https://www.morocccoworldnews.com/2017/11/234382/bitcoin-morocco-cryptocurrencies-economy/>; see also Daniel Palmer, *Vietnam’s Central Bank Announces Ban on Bitcoin Payments*, COINDESK (Oct. 31, 2017, 3:10 PM), <https://www.coindesk.com/vietnams-central-bank-announces-ban-on-bitcoin-payments/>.

238. See Evelyn Cheng, *Bitcoin Is Working Well for Some Big Ticket Purchases Despite Its Volatility*, CNBC (Nov. 20, 2017, 1:27 PM), <https://www.cnbc.com/2017/11/20/bitcoin-is-working-well-for-some-big-ticket-purchases-despite-its-volatility.html>.

to currency exchange).<sup>239</sup> If payment acceptance becomes mainstream, then the entire concept of money, as we know it, will be under paradigmatic assault, and governments around the world will be faced with challenging decisions on how to respond.

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239. James Titcomb, *This Visa Card Lets You Spend Bitcoin Anywhere*, TELEGRAPH: TECH. INTELLIGENCE (Nov. 15, 2017, 11:09 AM), <http://www.telegraph.co.uk/technology/2017/11/15/visa-card-spend-bitcoin-anywhere/>.