

## Remarks of Chairman J. Christopher Giancarlo at Commissione Nazionale per le Società e la Borsa (CONSOB), Rome, Italy

### “The New Futurism: 21st Century Financial Markets, Technology and Regulation”

June 3, 2019

#### Introduction

I am delighted to join all of you today. My thanks to Chairman Paolo Savona, Dottore Carmine Di Noia and Condirettore Nicoletta Giusto.

It is great to be part of this program put on by CONSOB, with which the CFTC has a long and cooperative relationship. Here, I am amongst friends and colleagues.

I want to talk today about a time of sweeping changes in technology and culture that create distinctive new modes of thought and experience of time and space, an era of ever-increasing changes seemingly faster and faster breaking down the slow linear course of the past.

No, I am not talking about 2019. I am referring to 1909. Then, Italy was still a very young country, but with a booming and volatile economy. Its people were on the move, including my great grandfather, Onorio Greco, who with his young bride left southern Lazio for the coalmines of southern Colorado and afterwards the industrial factories of New Jersey.

That same year gave birth to the Italian Futurist movement in art and literature. It grew out of Italy's encounter with fast developing technology like the automobile, airplane and machine engines. It glorified modernity and youth and sought to free Italian society from the past.

Futurists used art and literature to express the increasing pace of technological and social change. Pannaggi's *Speeding Train* (1922) shows a powerful locomotive shattering through the canvas and pounding the viewer's senses with a cacophony of hissing steam, thunderous rumbling and ear-splitting whistles.

I think about Pannaggi and the Futurists and their artistic efforts to represent the quickening pace of change and its impact on our lives. I think about them today, more than a century after their emergence, at a time of even greater change, an era when analog mechanics have yielded to digital electronics, when human action has turned to virtual reality, and the pace of change has gone from linear to exponential.

I think about this from the perspective of a financial market regulator. I think that what makes this era of financial technology innovation so challenging for us is that the development of new digital technologies and business models is intertwined with the existence of much older regulatory frameworks. Like the Futurists we struggle with old regulatory forms and mechanisms to represent and accommodate the modern pace of change, innovation and technological advancement. Yet, we strive undauntedly to keep up.

Today I want to share my thoughts on technology, regulation, and markets, and the relationship between the three – what we might call Digital “Futurism”.

## **The Blockchain – Taking Stock**

In the past few years, I have had numerous opportunities to discuss one prominent application of blockchain technology – cryptocurrencies – especially given the CFTC’s oversight of crypto-related futures and derivatives markets.[1]

Today I want to take stock of the current state of blockchain technology and renew a focus on how it can impact – and improve – our markets. To begin, I want to take you back for a moment to September 2008.[2] That was a perilous time in global financial markets. An enormous housing bubble had burst triggering a cascading global credit crisis. Concern was rife about imminent investment and commercial bank failure.

I was on Wall Street, serving as a senior executive of one of the world’s major trading platforms for credit default swaps (CDS), then the epicenter of systemic risk. Panic was in the air and tension was on our broking floor trying to maintain orderly markets. I remember a call from a U.S. bank regulator asking about CDS trading exposure of several major banks, including Lehman Brothers. In fact, trading conditions were deteriorating by the hour. It was clear that the regulator had little means, short of telephone calls, to read all the danger signals that the CDS markets were broadcasting.

But imagine what a difference it would have made a decade ago on the eve of the financial crisis if regulators had access to the real-time trading ledgers of large Wall Street banks, rather than trying to assemble piecemeal data to recreate complex, individual trading portfolios.

Imagine if, instead of having to call around to brokerage firms like mine searching for market information, prudential regulators had access then to a “golden record” of the real-time ledgers of all regulated trading participants.

And imagine if in 2008 regulators could have viewed a real-time distributed ledger, and, perhaps, been able to utilize modern cognitive computing capabilities to recognize anomalies in market-wide trade activity and diverging counterparty exposures indicating heightened risk of bank failure. And imagine if, that insight would have shown that the \$400 billion notional of outstanding credit default swaps written on Lehman Brothers represented under \$8 billion in net market exposure to failure of the firm.[3]

In short, what a difference it would have made a decade ago if blockchain technology on a private distributed ledger accessible to regulators had been the informational foundation of Wall Street’s derivatives exposures. At a minimum, it would certainly have allowed for far faster, better-informed, and more calibrated regulatory intervention instead of the disorganized response that unfortunately ensued.

Now, let’s fast forward to today. Bitcoin has refocused attention on topics of back-office infrastructure, interoperable databases, and shared ledgers – and this is a good thing. It means that efforts to upgrade data infrastructure with blockchain and Distributed Ledger Technology (DLT)-inspired systems is getting the attention required to drive broader adoption.[4] And these systems

could enhance efficiencies and transparency not just in our financial markets, but also across the real-economy.

With respect to financial markets, DLT and its inspired systems is likely to have a broad and lasting impact in payments, banking, securities settlement, title recording, cyber security and trade reporting and analysis.[5]

Additionally, as our recent LabCFTC primer on smart contracts makes clear,[6] DLT will likely develop hand-in-hand with smart contracts that can value themselves in real-time, report themselves to data repositories, automatically calculate and perform margin payments and even terminate themselves in the event of counterparty default.[7]

DLT may further enable financial market participants to manage the significant operational, transactional and capital complexities brought about by the many mandates, regulations and capital requirements promulgated by regulators here and abroad in the wake of the financial crisis.[8] In fact, one study estimates that DLT could eventually allow financial institutions to save as much as \$20 billion by 2022 in infrastructure and operational costs each year.[9] Another study reportedly estimates that the technology could cut trading settlement costs by a third, or \$16 billion a year, and cut capital requirements by \$120 billion.[10] Moving from systems-of-record at the level of a firm to an authoritative system-of-record at the level of a market is an enormous opportunity to improve existing market infrastructure.[11]

Outside of the financial services industry, many use cases for DLT are being posited from international trade to charitable endeavors and social services. International agricultural commodities merchant, Louis Dreyfus, and a group of financing banks last year completed the first agricultural deal using DLT for the sale of 60,000 tons of U.S. soybeans to China.[12] Other potential DLT use cases include: legal records management, inventory control and logistics, charitable donation tracking and confirmation, voting security, and human refugee identification and relocation.[13]

Clearly, DLT development and adoption will not be easy, and challenges remain around scalability, governance, security, and value. Indeed, as I have observed over the past few years, some advances will seem slow, until they hit a tipping point.

Yet it is undeniable that DLT and interoperable database systems hold enormous commercial promise. It may provide critical assistance to financial market regulators in meeting their mission to oversee healthy markets and mitigate financial risk. And, that is just one of the reasons why I am excited about the promise and prospects of DLT.

### **Regulatory Response to Exponential Technologies: the CFTC Approach**

Let's shift gears, however, to the broader discussion of regulation in the face of exponential technologies. A threshold question that frequently arises when we talk about FinTech is whether or why is this time different when it comes to innovation as compared to historical periods? After all, one could fairly argue the ATM in the 1960s was a landmark financial technology innovation, as was the establishment of electronic trading venues in the 1980s and 90s.

I would suggest, however, that there are a number of characteristics of the current period of innovation, that are – in fact – different and require a new, differentiated regulatory response.<sup>[14]</sup> Allow me to discuss each in turn.

The first is that we live in a period of **exponential technological change**. That is, the sheer speed of innovation has increased exponentially, both in terms of production of new models and products and their subsequent public adoption. The former dynamic is driven by increases in the power of computing coupled with decreases in computing costs, and the latter is a function of how the internet and mobile allow for rapid public adoption and scalability. These dynamics put pressure on regulators to keep pace with rapidly changing markets, especially given the potential for new technologies to impact markets in short order.

The second characteristic is the **disintermediation of traditional actors or business models**, which can challenge regulators and existing regulatory frameworks. Consider, for example, how the digitization of everything, including music, travel, trading, and even farming have furthered the decentralization of traditional intermediaries. Such decentralization of key economic actors is an enormous challenge to most regulatory approaches and frameworks, which tend to focus on key intermediaries through registration of major market participants and designation of self-regulatory organizations comprised of such participants.

Consider cryptocurrencies, for example, which seek to offer alternative means and rails to execute payment transactions, power self-executing software, or drive capital raising activity. In many instances crypto-related activity may occur outside of traditional intermediaries – indeed frequently by intentional design in order to offer an alternative model – and include new economic actors not covered by existing regulatory frameworks or covering them in an ill-fitted manner.

The third characteristic is that the pace and nature of technology-driven innovation requires **heightened technological literacy** across leaders in business and government. How many today truly understand the technologies that power underlying business models? And from a government perspective, how can regulators be expected to mitigate risks and formulate sound policies that foster market-enhancing innovation without requisite technology literacy?

Given these characteristics, how is a regulator to respond and keep pace with rapidly changing markets?

During my tenure as Chairman of the CFTC we have taken affirmative steps to evolve into a 21<sup>st</sup> century regulator and craft a modern regulatory approach. Our formula for this evolution is quite straightforward and is predicated on four key elements:

1. **Adopting an Exponential Growth Mind-set.**
2. **Creating an Internal FinTech Stakeholder.**
3. **Becoming a Quantitative Regulator.**
4. **Embracing Market-Based Solutions.**

Let's look at these ingredients in more detail:

First, it is critical to train our minds to anticipate the pace of exponential growth. Specifically, this means expecting rapid change not just in technological innovation, but also in market adoption and

utilization of new and disruptive digital technologies. This mindset must inform and serve as the lens through which we approach our markets.

The second ingredient is really a natural outgrowth of the first: that is, the creation of a permanent stakeholder within regulatory agencies to understand and address the opportunities, challenges, and risks posed by innovation. Absent this stakeholder there is no other constituent tasked with thinking about the direction of emerging technology, considering the impact on existing rules and regulations, exploring ways to internalize such new technologies, and working to mitigate emerging risks.

The stakeholder should have both an external and internal focus. Externally, the stakeholder engages with innovators – whether start-ups or existing market participants – and can help save them time and resources by providing feedback on new concepts or identifying regulatory friction. By serving as a liaison to the innovator, the stakeholder also benefits by gleaning key insights into technological change and market evolution.

Internally, this stakeholder helps to educate and inform the regulatory agency and its staff on new developments. It can help manage the tension of innovation against existing regulatory frameworks, advocate and inform internal technology and procurement strategies, and serve as a liaison to other domestic and international regulators, as well as political bodies.

If this stakeholder sounds familiar and like a good idea, I am glad to say that it is the description of our very own LabCFTC.

Launched in 2017 on the floor of the New York Stock Exchange,<sup>[15]</sup> LabCFTC has engaged with more than 275 entities in cities and regions around the world, including NYC, Chicago, Silicon Valley, Austin, Singapore, London, Boston, and Washington, D.C.<sup>[16]</sup> LabCFTC has published timely primers on emerging technologies, including virtual currencies and smart contracts, embarked on an innovation competition, informed policy at the Commission, participated in numerous external events, operationalized bilateral FinTech cooperation arrangements with international regulators, and engaged with the US Congress and other governmental bodies.

The work of LabCFTC has highlighted an important challenge for regulators – the need to test, demo, and generate proof of concepts around emerging technologies and systems. Despite certain limitations and constraints we face in this realm, we are currently working on a LabCFTC effort whereby we would use a variety of tools, including internal pilots and tests, market research, and innovation competitions in order to drive better understanding of emerging technologies. This enhanced understanding, in turn, can help inform policy and internal technology and procurement strategies.

We will have more to say soon on this front, and we look forward to the next phase of LabCFTC as we look to deploy our increased agency budget in support of modernization and capacity building. And, I am pleased that at this point in time every federal financial regulator in the U.S. either has or is creating an innovation program or office similar to LabCFTC as we all seek to develop a blue print for regulatory modernization.

The third ingredient is for the CFTC to become what I have previously called a “Quantitative Regulator.”<sup>[17]</sup> Commercial trade execution and strategy in CFTC regulated markets is increasingly driven by quantitative data analysis of highly granular market data. We are beginning to chart a parallel course for the CFTC to become a Quantitative Regulator, which means an effective and up-to-

date big data organization capable of engaging in robust data collection, automated data analytics, and artificial intelligence deployment. The transformation I describe here will be necessary to ensure we can glean critical market intelligence, conduct effective trade surveillance and oversight, calibrate policy prescriptions, and capably regulate our markets.

In many respects, this quantitative capability is the necessary antidote to systemic disintermediation. It makes the regulator competent to conduct independent market data analysis across disparate data sources, less reliant on delegation to SROs and major market intermediaries, and a potential node capable of accessing information found in decentralized economic blockchains and networks.

### **Embracing Market-Based Solutions**

The fourth ingredient in creating a 21<sup>st</sup> century regulator deserves its own discussion and consideration, as it is more of a foundational principle rather than a CFTC activity. The ingredient is to embrace market-based solutions – a concept that should be assumed and readily accepted but that perhaps today requires some reminders.

Markets are in CFTC regulatory DNA, and are the basis for our regulatory mandate. In the US, market-based capital and risk transfer have allowed for unparalleled industrial and technological innovation. Indeed, markets are adept at valuing innovation and managing enterprise risk, can be more nimble than bank finance, and are more comfortable with handling intangible collateral.

Through the interaction of hundreds, if not thousands, of individual economic actors, markets further drive price and value discovery, allow for the efficient allocation of resources, and permit risk transfer that drives stability and certainty in real-world economic activity. While markets are not always perfect, they have proven time and again to be the most effective means humans have to drive economic productivity and prosperity. For today's younger generations, you can think of markets as the ultimate in crowd-sourced and decentralized decision making.<sup>[18]</sup>

Indeed, that is the central value proposition of free market capitalism. The proposition that broad and sustained prosperity generally occurs wherever in the world there are open and competitive markets, free of political interference, combined with free enterprise, personal choice, voluntary exchange and legal protection of person and property. This value proposition is a source of human expression, aspiration and creativity. Freedom of choice is a social good in its own right, a moral and economic imperative.

Nevertheless, it is frequently tempting to apply a paternalistic hand on markets in order to steer them in desired directions or eliminate all risk – a truly futile exercise. This temptation is understandable, but must be constrained, as efforts to tip the scale are more likely to drive unintended and undesirable outcomes.

This is not to say that careful oversight, targeted enforcement, and proper guardrails are not appropriate, but our individual concerns or judgments should not override the availability of markets for others to make their own determinations or to pursue their own goals.

We at the CFTC believe in the power of markets to be the best determinate of the value of technology-driven innovation. To this end, a case study can help illustrate the above concepts.

At the end of 2017 two CFTC exchanges – CME and CBOE – sought to self-certify and list futures products based on the value of Bitcoin. CFTC regulatory practice is for exchanges to self-certify that new contracts meet CFTC core principles before listing. This approach has allowed for robust and dynamic risk transfer markets to develop and test new products without a time-consuming application process. Indeed, over 12,000 new futures products have come to market in the US since 2000, far more than in any other national marketplace.

With respect to the bitcoin products, because they were novel and based on a unique crypto-asset, the exchanges did engage in substantial prior discussions with CFTC staff before launch; this allowed for incorporation of risk mitigating elements, including around higher margin requirements and contract sizes.[\[19\]](#)

Some have questioned the decision to allow bitcoin futures to be self-certified by the exchanges. But in my view risk transfer markets comprised of sophisticated institutional investors were in the best place to make individual determinations regarding the value of Bitcoin and the need to offset price or volatility risk. And I think a strong case can be made that the results of the past year confirm this view.

Indeed, at the time of the launch of Bitcoin futures many observed a potential bubble in the price of Bitcoin, which had exceeded \$19,000. That price was reduced to less than \$10,000 within months of the futures product offerings. Some have speculated that this price decrease reflected a reversion to Bitcoin fundamentals: namely the cost of production. Economists from the San Francisco Fed noted in a 2018 economic letter[\[20\]](#) that the launch of bitcoin futures products coincided with the subsequent and precipitous *drop* in the price of bitcoin, perhaps because futures allowed for the first accessible way to speculate against the price of the asset.

Notwithstanding the arguments made for Bitcoin's price declines, it remains true that markets allow actors to meet and reach price equilibrium on the value of an asset and/or transfer risk. In the case of Bitcoin, I would posit that the decrease in prices has helped end a speculative bubble and perhaps allow this novel technology and asset class quieter time to continue to develop from a technological and adoption sense.

The key takeaway, however, is that markets work even if in ways we do not expect. And the expression of a market is a healthier forum for such information discovery than the mere opinion or perspective of a few.

### **Solving for a Digital Economy**

So there you have it -- the CFTC response to FinTech innovation and modern market regulation – having an exponential growth mind-set, creating an internal FinTech stakeholder, becoming a quantitative regulator, and embracing market-based solutions. You might call this a 21<sup>st</sup> Century regulatory expression of Futurism in response to today's digital technology, algorithmic markets, and public policy.

When I talk to audiences of technology innovators steeped in the language of computer protocols, I like to point out law and regulation are also protocols. At the CFTC, we work on a really old protocol – in our case it's over 80 years old. It's voluminous, it's thousands of pages of regulations and it's very detailed.

Yet, while our regulatory frameworks were designed for environments that have been transformed, the principles underlying our regulations remain relevant – and remain enforceable.

I am so pleased that the CFTC and CONSOB will engage together on this new, fast paced journey. We hope to learn about your own unique responses to these remarkable challenges. No doubt, just like the Italian Futurists, you will find your own special way of keeping pace with a rapidly changing world and ensuring a dynamic and successful future for modern trading markets.

Thank you.

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- [1] Virtual Currencies: Testimony of Chairman J. Christopher Giancarlo before the Senate Banking Committee, Washington, D.C. (Feb. 2018), at: <https://www.cftc.gov/PressRoom/SpeechesTestimony/opagiancarlo37>.
- [2] Portions of this section are derived from the Keynote Address of CFTC Commissioner J. Christopher Giancarlo Before the Cato Institute, “Cryptocurrency: The Policy Challenges of a Decentralized Revolution” (Apr. 2016), at: <https://www.cftc.gov/PressRoom/SpeechesTestimony/opagiancarlo-14> and Virtual Currencies: Testimony of Chairman J. Christopher Giancarlo before the Senate Banking Committee, Washington, D.C. (Feb. 2018), at: <https://www.cftc.gov/PressRoom/SpeechesTestimony/opagiancarlo37>.
- [3] Bruce Tuckman, “In Defense of Derivatives: From Beer to the Financial Crisis,” Cato Institute Policy Analysis, Number 781, (Sept. 29, 2015) p. 17., at: <https://object.cato.org/sites/cato.org/files/pubs/pdf/pa781.pdf>.
- [4] I first addressed the potential of distributed ledger technology for financial transaction data observation in 2016. See, “Regulators and the Blockchain: First, Do No Harm: Special Address of CFTC Commissioner J. Christopher Giancarlo Before the Depository Trust & Clearing Corporation 2016 Blockchain Symposium,” March 29, 2016, at: <https://www.cftc.gov/PressRoom/SpeechesTestimony/opagiancarlo-13>.
- [5] Virtual Currencies: Testimony of Chairman J. Christopher Giancarlo before the Senate Banking Committee, Washington, D.C. (Feb. 2018), at: <https://www.cftc.gov/PressRoom/SpeechesTestimony/opagiancarlo37>.
- [6] CFTC, Office of Public Affairs, CFTC’s LabCFTC Releases Primer about Smart Contracts [Press release] (Nov. 2018), at: <https://www.cftc.gov/PressRoom/PressReleases/7847-18>.
- [7] See Massimo Morini & Robert Sams, “Smart Derivatives Can Cure XVA Headaches,” Risk Magazine (Aug. 27, 2015), at: <http://www.risk.net/risk-magazine/opinion/2422606/-smart-derivatives-can-cure-xva-headaches>; see also Jeffrey Maxim, “UBS Bank Is Experimenting with “Smart-Bonds” Using the Bitcoin Blockchain,” Bitcoin Magazine (June 12, 2015), at: <https://bitcoinformagazine.com/articles/ubs-bank-experimenting-smart-bonds-using-bitcoin-blockchain-1434140571>; and Pete Harris, “UBS Exploring Smart Bonds on Block Chain, Block Chain Inside Out” (June 15, 2015), at: [http://harris-on.typepad.com/block\\_chain\\_io/2015/06/ubs-exploring-smart-bonds-on-block-chain.html](http://harris-on.typepad.com/block_chain_io/2015/06/ubs-exploring-smart-bonds-on-block-chain.html). See generally Galen Stops, “Blockchain: Getting Beyond the Buzz,” Profit & Loss at 20 (Aug.–Sept. 2015), at: <http://www.profit-loss.com/articles/analysis/technology-analysis/blockchain-getting-beyond-the-buzz>.
- [8] See, e.g., Oversight of Dodd-Frank Act Implementation, U.S. House Financial Services Committee, at: <http://financialservices.house.gov/dodd-frank/>.
- [9] Santander InnoVentures, Oliver Wyman & Anthemis Group, “The Fintech Paper 2.0: Rebooting Financial Services” 15 (2015), at: <http://santanderinnoventures.com/wp-content/uploads/2015/06/The-Fintech-2-0-Paper.pdf>.
- [10] Telis Demos, “Bitcoin’s Blockchain Technology Proves Itself in Wall Street Test,” The Wall Street Journal (Apr. 7, 2016), at: <https://www.wsj.com/articles/bitcoins-blockchain-technology-proves-itself-in-wall-street-test-1460021421>.
- [11] Based on conversations with R3 CEV, <http://r3cev.com/>.
- [12] Emiko Terazono, “Commodities Trader Louis Dreyfus Turns to Blockchain,” Financial Times (Jan. 22, 2018), at: [www.ft.com/content/22b2ac1e-fd1a-11e7-a492-2c9be7f3120a](http://www.ft.com/content/22b2ac1e-fd1a-11e7-a492-2c9be7f3120a).
- [13] Frisco d’Anconia, “IOTA Blockchain to Help Trace Families of Refugees During and After Conflicts,” Cointelegraph.com (Aug. 8, 2017), at: <https://cointelegraph.com/news/iota-blockchain-to-help-trace-families-of-refugees-during-and-after-conflicts>.



- [14] Remarks of Chairman J. Christopher Giancarlo before the Sims Lecture At Vanderbilt Law School, Nashville, Tennessee (Apr. 2018), at: <https://www.cftc.gov/PressRoom/SpeechesTestimony/opagiancarlo44>;  
Cryptocurrencies - Oversight of New Assets in the Digital Age: Testimony of Daniel S. Gorfine before the U.S. House Committee on Agriculture (July 2018), at: <https://www.cftc.gov/PressRoom/SpeechesTestimony/opagorfine1>.
- [15] “LabCFTC - Engaging Innovators in Digital Financial Markets: Address of CFTC Acting Chairman J. Christopher Giancarlo before the New York FinTech Innovation Lab,” May 17, 2017, at: <https://www.cftc.gov/PressRoom/SpeechesTestimony/opagiancarlo-23>.
- [16] The Mission of the CFTC: Testimony of Chairman J. Christopher Giancarlo before the U.S. Senate Agriculture, Nutrition, and Forestry Committee, Washington, D.C. (Feb. 2018), at: <https://www.cftc.gov/PressRoom/SpeechesTestimony/opagiancarlo38>.
- [17] Quantitative Regulation: Effective Market Regulation in a Digital Era: Keynote Address of Chairman J. Christopher Giancarlo at FinTech Week, Georgetown University Law School (Nov. 2018), at: <https://www.cftc.gov/PressRoom/SpeechesTestimony/opagiancarlo59>.
- [18] Remarks of Chairman J. Christopher Giancarlo at the U.S. Department of Agriculture (USDA) 95th Annual Outlook Forum (Feb. 2019), at: <https://www.cftc.gov/PressRoom/SpeechesTestimony/opagiancarlo64>.
- [19] CFTC, Office of Public Affairs, CFTC Staff Issues Advisory for Virtual Currency Products [Press release] (May 2018), at: <https://www.cftc.gov/PressRoom/PressReleases/7731-18>.
- [20] Galina B. Hale, Federal Reserve Bank of San Francisco, Economic Letter, “How Futures Trading Changed Bitcoin Prices” (May 7, 2018), at: <https://www.frbsf.org/economic-research/publications/economic-letter/2018/may/how-futures-trading-changed-bitcoin-prices/>.