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Comment Letter, Jeff Bandman, Bandman Advisors
Request for Input on potential CFTC-sponsored FinTech prize competitions.

via CFTC website submission

Christopher Kirkpatrick
Secretary of the Commission
Commodity Futures Trading Commission
Three Lafayette Center
1155 21st St NW
Washington, DC 20581

July 24, 2018

Dear Mr. Kirkpatrick:

I am writing to express my strong support for LabCFTC to move forward with science prize competitions, and to suggest three potential topics for competitions. The CFTC has brought strong leadership to the challenge of using new technology to modernize financial regulation to make it both more effective and efficient. I wish to applaud the Commission for considering prize competitions under the Science Prize Competition Act as part of this effort and for seeking public input on how to promote technology-based regulatory innovation.

At the same time, I would like to see LabCFTC invested with even greater freedom to experiment and innovate on behalf of the American people.

My observations reflect lessons I learned first-hand, initially from working as a senior public official at the U.S. Commodity Futures Trading Commission responsible for advising Chairman J. Christopher Giancarlo on FinTech policy, the launch of LabCFTC and promoting innovation, and more recently since returning to the private sector working directly with innovators in the derivatives markets and with blockchain, FinTech and RegTech businesses.[i]

Part 1: The RegTech Ecosystem and the Need for a Regulatory Sandbox for Regulators.

I. Introduction – the RegTech Ecosystem

FinTech innovation is transforming our markets and our economy. I believe we are just at the beginning. The U.S. has already established its leadership in FinTech innovation.

I am concerned however about specific obstacles to U.S. leadership - obstacles that I experienced directly while working at the CFTC on the design and launch of LabCFTC. While these obstacles put the U.S. at risk of falling behind, fortunately there are concrete steps that could be taken to address them.

I find it useful in this context to view regulation, compliance and reporting as an ecosystem involving the regulators and the regulated firms. For example, if financial firms want to use new blockchain data or technology for reporting, the regulator has to be able to receive it and make sense of it. Similarly, if firms are using automated tools and new processes for compliance, regulators need to understand them, and may need new interfaces to access data and the relevant audit trail. Today's regulators require the skills and expertise to understand new compliance tools and techniques. The regulators are a core part of this ecosystem. If the regulators are not equipped to understand new technologies, or to process and make sense of data derived from new technologies, or oversee the use of new technologies, then regulated financial services firms are restricted from adopting the new technologies.

We need a Regulatory Sandbox for Regulators

Well-intentioned rules to deter corruption and promote transparency in government - in particular, procurement and ethics rules - stand in the way of regulators immersing themselves in exploring the capabilities of new technologies. To be crystal clear, these are critical protections that protect the taxpayer and prevent corruption, and I am of course not suggesting these be removed completely.

Greater flexibility and an approach based on proportionality is needed in applying these safeguards. That is why a "Regulatory Sandbox" for regulators is needed. Why is this so important? Precisely because of the critical role of regulators in the financial services ecosystem. The regulators and supervisors of the future must be equipped to understand new technologies, and to process and make sense of data derived from new technologies, and oversee the use of new technologies.[ii] This will empower regulated financial services firms to adopt and harness the benefits of the new technologies.

II. Regulatory Sandbox for Regulators

When the CFTC launched LabCFTC in 2017, it was Chairman Giancarlo's vision to roll up our sleeves and dig deeper into these technologies ourselves.[iii] These new technologies have the potential to make regulators more effective and efficient in carrying out their jobs, to keep up with digital markets, to avoid being left behind in an analog world. This part of LabCFTC was

called "CFTC 2.0". The concept of CFTC 2.0 was for regulators to test and learn these new technologies themselves.

To put it bluntly, when we tried to implement this philosophy in CFTC 2.0, for regulators to engage directly with new technologies, we ran into a powerful tandem of procurement and ethics obstacles.

Obstacles under Procurement Rules

Why are procurement rules a problem?

Procurement is designed for situations where you know exactly what you need, how the solution will meet your requirements. With new technologies, however, you may not know exactly what they can do, or even whether they will work. The system is not designed for something that may not work, or where you are trying to learn its capabilities.

Procurement processes are lengthy. Start-ups move fast. Technological change moves quickly too. By the time a traditional procurement process is completed, what you were considering may already be obsolete. Twelve months or more from end to end is fairly rapid, from what I understand, and 18 months or more is not uncommon.

Procurement requires competitive bids – there may not even be multiple providers of some of these new tools and technologies. Moreover, most FinTech and RegTech start-ups have not run the intensive gauntlet to become eligible government contractors to even bid on procurements.

While waivers to cumbersome procurement procedures are in theory available from the General Accounting Office, I have come to understand that unless you precisely fit the fact pattern of a previously granted waiver, novel waivers are quite difficult to obtain; and that even if you have the good fortune to obtain one, the waiver process can take as long to navigate as the procurement process itself.

It also turns out that there is no such thing as a "pre-procurement" exception for testing things out in a meaningful way.

Obstacles under Ethics Rules

Why are ethics rules a problem?

Ethics rules pose another well-intentioned obstacle. Start-ups often provide technology to prospective users at reduced or no cost. But accepting technology at below full fair market

value can be deemed a "gift" of the amount of the difference. Ethics rules preclude government officials from accepting anything of value without providing fair compensation.

While common sense suggests that doing more with less is commendable, it may even be seen as thwarting the will of the Congress under the Anti-Deficiency Act, because Congress sets the regulator's appropriations. Of course, no regulator would wish to thwart the will of Congress.

Much blockchain innovation is being developed through groups like foundations and consortia. Joining these groups can give regulators important benefits that also benefit the public, like access to research and white papers, and the ability to help shape development of technical standards at an early stage. Yet accepting free memberships in these groups could be deemed a gift, while joining would be a procurement.

It is a catch-22 – you cannot pay for it due to the procurement rules, nor can you do it for free – that would be accepting a gift. So you are stuck.

CFTC Commissioner Quintenz reacted swiftly to this quandary fairly soon after taking his oath of office.[iv] The closing of the present comment period indicates that the CFTC is likely to move forward in experimenting through technology science prize competitions. I strongly support this approach. However, due to the obstacles I have noted above, it is a step in the right direction - an important step, but one that leaves the CFTC's potential for innovation and creativity more restricted than would benefit the markets it oversees if its leadership were truly unleashed.

III RegTech: the U.S. may be falling behind

While the U.S. remains a leader in FinTech innovation, I believe we are at serious risk of falling behind in "RegTech". RegTech, short for "Regulatory Technology," is an emerging area of FinTech with two principal components: 1) technologies used by regulated firms to assist them in regulatory compliance, reporting or monitoring; and 2) technology used by regulators to oversee regulated markets more effectively and efficiently.

Regulators in other jurisdictions, most notably the U.K., are demonstrably taking concrete actions that have put them ahead of the U.S. in RegTech (although I do not believe it is too late for the U.S. to catch up). I would draw particular attention to specific initiatives of the U.K Financial Conduct Authority (FCA) and the Bank of England to experiment with cutting edge RegTech and FinTech technology initiatives. I highlight the example of the FCA's model driven and machine-readable regulation and model driven machine-executable regulatory reporting initiatives: https://www.fca.org.uk/firms/regtech/our-work-programme. Initiatives like these, driven by regulators working with FinTech and RegTech innovators as well as the

industry itself, would transform the regulator's conduct requirements into computer language. This computer language version of their rules can then be used to promote more efficient compliance by regulated firms, and more efficient regulation by the regulator. The Bank of England performs publicly responsible, transparent "proof of concept" experiments testing new technologies and exploring areas of focus such as blockchain, differential privacy, artificial intelligence and new cybersecurity techniques.[v] https://www.bankofengland.co.uk/research/fintech.

The benefits of these types of initiatives are many, and these programs have been widely acclaimed. Not only are there benefits to the regulator, in learning about new technologies, and the industry. These could also promote American innovation if U.S. regulators were freed to embark on comparable programs. I am heartened to see this type of initiative under consideration in the CFTC's request for comment.

I am also hopeful that the recent FinTech bridge between the FCA and the CFTC will promote this type of collaboration in tangible ways, leveraging the strong relationship between the two authorities. It is promising that the CFTC was able to join regulators from around the world at the FCA's recent TechSprint on AML/KYC innovations.

If a regulator uses new innovative technology, it helps boost the FinTech firm's chance of getting used more widely. Participation in the FCA or Bank of England program provides meaningful and beneficial attention to participating firms, helping the deserving ones attract potential adopters and investment. Government can be a great early client.

IV Imagining the "Regulatory Sandbox" for Regulators

While procurement and ethics safeguards must be retained – they should be proportionate and flexible so that regulators can themselves innovate. Regulators want to comply with procurement rules. Regulators want to comply with ethics rules. Regulators are, by nature, compliant. While there is much talk of sandboxes for innovators, I would suggest we need a "Sandbox for Regulators", where regulators can explore these new technologies while complying with procurement and ethics requirements.

One element of such a Regulatory Sandbox for Regulators could be to establish more realistic dollar threshold limits that would allow regulators to implement small scale experimental FinTech and RegTech procurements outside of existing procedures, along with narrowly tailored and proportionate ethics exceptions. (I am most definitively not advocating a *carte blanche* exception to either procurement or ethics rules.)

DARPA and the Department of Defense have flexibility when it comes to exploring innovative technology in their procurement processes. Our financial markets are vital to our prosperity

and security as well. Financial regulators should have scaled-down versions of these programs to allow procurement flexibility and jump-start the regulatory and RegTech ecosystem.

One model for precisely this approach is in use in Canada, where FinTechs and RegTechs are able to qualify as government vendors under the "Build in Canada Innovation Program", also known as BCIP. http://www.tpsgc-pwgsc.gc.ca/app-acq/picc-bcip/priorites-priorities-eng.html. This type of program promotes innovation by Canadian firms (with both a non-military and a military category; the non-military category has lower spending limits). FinTechs and RegTechs may qualify for BCIP under data management, information technology and cybersecurity categories. This provides a framework for Canadian governmental authorities to procure innovative new technologies and learn their capabilities at an early stage.

I believe that this type of initiative would benefit the American taxpayer – as well as American investors in our markets.

While elements of this are beyond the statutory authority of the CFTC to confer to itself, this seems well within the collective remit of Congressional appropriators, oversight committees and of course leadership from Treasury and the White House in promoting FinTech sandboxes and innovation across the FIRREA agencies and financial services industry.

Part 2: Science Prize Experiments the CFTC should consider

1. **Real-Time Regulation: testing receipt of real-time data from DLT nodes, alongside development of an operational and policy framework for real-time regulatory reaction or intervention with the evolution of "Real-Time Regulation":**
    a. The day is coming when regulators will be receiving data in real-time, whether through distributed ledgers or other technological advances. This will present a set of important new operational challenges as well as policy choices, due to the challenges of working with real-time data. Should the regulator have greater power to intervene in real time? Under what circumstances? How should those powers be constrained, what are the appropriate checks and balances? Whose voices should be around the table when those decisions are made?
    b. A transformational innovation is the potential for regulators to harness real-time data from distributed ledgers to empower what I call "Real-Time Regulation".[vi]
    c. With distributed ledgers, data becomes available on the ledger right away to everyone with access and permission to see it. Data becomes available in real-time not only to the parties to the transaction, it can also be made available

and visible to regulators, who may have what are called "regulator nodes" or auditor nodes".

d. This is a transformational shift from the way regulators receive data and see markets today. It may offer a completely new paradigm of the reporting regulators rely on. It presents an exciting opportunity.
e. Today, most data and reporting comes into regulators at the end of the day, or else the next day, or later – at the end of a month or quarter, and so on. Regulators are therefore seeing events in the rear-view mirror, well after they have already occurred. To be clear, I am not criticizing this work – it is of the utmost importance in making our markets safer and more resilient, and protecting investors.
f. In such a prize competition, regulators (actual or simulated) should have "auditor" or "regulator" nodes on the ledger that allow them rights to access the relevant information in real time, as it is created and the ledger is populated.
g. In such a scenario, the vocabulary we use today may itself no longer be up to the task of describing the new practices. We may even need new nouns or verbs to describe all this, as this paradigm is so fundamentally different from traditional "reporting". In this new paradigm, the data may become available and known to the regulator at the time of its creation, by virtue of its mere existence. So for example, the movement of goods from manufacture, to intermediate steps in transportation and shipping – can be tracked via a shared ledger updated in real time throughout that lifecycle. As these updates occur, they can be viewed by the relevant parties – and by their regulators. When new trades occur, when loan payments are made – or notation of failure to be made when due, when appraisals are made of properties for rent or sale – that may likewise be reflected on the shared ledger in real time.
h. That said, with this new next-generation technology, and harnessing real-time data from distributed ledgers, future regulators may be able to monitor events as they unfold. **To see through the windshield, instead of the rear-view mirror**. They may be able to detect wrongdoing, or predatory or deceptive practices, at a much earlier stage.
i. But data is messy and complicated, often inconsistent – what are the likelihood and dangers of misreading or overcorrecting?
j. And what if the regulator does act on this newly available information - how should gains and losses resulting from regulatory intervention be allocated?[vii] Today, in financial markets, this question is posed in extraordinary circumstances, such as the resolution of a systemically important financial institution.[viii]
k. Regulators have emergency powers and procedures, of course. However, these are designed for unusual circumstances, not daily activity. If regulators

are receiving information in real time, then what will they do with the information if it raises concerns as to risk, market integrity, systemic stability, improper conduct or other matters within their statutory domain? It strikes me that they will need new procedures and protocols for review and escalation, appropriate checks and balances by senior leadership, before action may be taken. These will need to be considered and may be the appropriate subject for formal rulemaking with public notice and comment.

l. Consider the film *Minority Report* – once the regulator has these new tools, has access to real-time data from distributed ledgers, has powerful new AI tools to help make sense of that data, has somehow managed to standardize, reconcile the data, to make it interoperable when it comes from multiple ledgers. What then? What about predictive analytics? Will the public expect the regulator to intervene *before* the harm has occurred, before the market manipulation or fraud takes place – to prevent the action or even to punish the actor.

2. **Internet of Things and sensor data in agricultural markets:** As noted in the request for comment, the Internet of Things (IoT) is making new types of information available that may be relevant to the derivatives market. Given the CFTC's heritage in agricultural derivative markets, and its important role in ensuring the integrity of those markets, this should be a top priority and focus of the Commission as it establishes science prize competitions. In particular, the Commission should endeavor both to understand the state of the art in terms of the availability and reliability of sensor data relating to agricultural products, and to advance its development in the interests of promoting innovation and fair competition.
3. **Improving Cost-Benefit analysis through RegTech:** RegTech tools are being developed using techniques such as artificial intelligence and natural language processing that are developing capabilities to parse legislative or regulatory language, identify who are the actors on whom it imposes a regulatory obligation, and define what the scope and extent of those obligations are. It would be useful to understand whether those types of tools are sufficiently developed that they can assist regulators in performing cost-benefit analyses of potential rulemakings. If the analytical skills and insights of economists and lawyers could be augmented by advances in technology, this could enhance understanding and confidence in cost-benefit analyses.

Invite proposed solutions to legal impediments to experimentation: In addition, while this is not in and of itself a science prize competition, I believe there is an opportunity for the Commission to use the prize competition framework to invite proposed solutions for addressing the many current legal impediments to experimentation by the CFTC and other U.S. regulators. This could significantly advance innovation objectives in market regulation.

I am grateful for the opportunity to comment, and I again commend the Commission for its leadership in innovation and for inviting the public to offer its views on this important initiative. I would be happy to provide any further information that may be of assistance, or to discuss any of the above points at your convenience.

Respectfully yours,

Jeff Bandman
Principal, Bandman Advisors

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[i] Jeff Bandman is Founder and Principal of Bandman Advisors, an advisory practice focused on helping financial services clients ranging from start-ups to global firms meet innovation and regulatory strategy challenges. www.bandmanadvisors.com. He is co-founder of the Global Digital Finance (GDF.io) policy initiative to establish a global Code of Conduct for cryptoassets. He will be a Lecturer in Global Affairs at Yale in Fall 2018. He serves as Regulation Mentor for the Techstars Barclays FinTech Rise Accelerator program. He is a member of the RegTech Council, and a Research Fellow of the Blockchain for Algorithmic Regulation and Compliance (BARAC) initiative at University College London's Centre for Blockchain Technologies, and

He was previously a senior official at the CFTC, where he was Founding Director of LabCFTC, FinTech Advisor to Chairman J. Christopher Giancarlo and Chair of the FinTech, Virtual Currencies and Blockchain staff working group. He also served as Acting Director of the Division of Clearing and Risk, Acting Director of the Office of International Affairs, and Special Counsel to Chairman Timothy G. Massad.

[ii] See "Sound Practices on the Implications of fintech developments for banks and bank supervisors, available at https://www.bis.org/bcbs/publ/d431.htm

[iii] See Address of CFTC Chairman J. Christopher Giancarlo before the New York FinTech Innovation Lab: "LabCFTC: Engaging Innovators in Digital Financial Markets", in particular the section "Introducing CFTC 2.0".
http://www.cftc.gov/PressRoom/SpeechesTestimony/opagiancarlo-23

[iv] Commissioner Quintenz said, "Interestingly, a legal barrier has actually prevented us as a federal agency from effectively "demo-ing" technology and having the same authorities and flexibilities as some of our foreign counterparts to work on 'proof of concept' projects with innovators. Ethics rules preclude the agency from accepting "anything of value" without providing fair compensation. However, providing compensation would trigger an arduous and tightly framed procurement process, making sandbox demos enormously burdensome and time consuming." Keynote Remarks of CFTC Commissioner Brian Quintenz before the Symphony Innovate 2017 Conference, http://www.cftc.gov/PressRoom/SpeechesTestimony/opaquintenz1

[v] http://www.bankofengland.co.uk/Pages/fintech/default.aspx. In fact, the Bank of England's first Proof of Concept (POC) focused on blockchain technology, and whether it was sufficiently developed to underpin their next generation real time settlement system. The Bank concluded that it was not sufficiently developed. However, they determined to make their new RTGS system compatible with blockchain.

[vi] I have previously elaborated on some of these operational and policy challenges in greater detail, see Bandman Keynote, Real-Time Regulation, P2PFISY 2017 Conference, University College London, available at https://static1.squarespace.com/static/59234cbd6a496341d7c59306/t/597feb7d8419c2fefbe7e60b/1501555585537/Bandman+keynote+July+20%2C+2017+P2PFISY+-+Final+for+Publication.pdf

[vii] Consider for example, the "No Creditor Worse Off" doctrine developed in the context of regulatory intervention in extreme circumstances, such as when a systemically significant financial institution (such as a bank or clearinghouse) is deemed to be failing or likely to fail, and the "resolution authority" exercises its resolution powers. The exercise of those powers by a governmental authority is itself viewed as extraordinary, and subject to calibrated procedural safeguards. The allocation of losses due to that intervention is likewise of critical importance, as is the determination of the "counterfactual" scenario – what would have happened absent intervention – as a baseline of comparison in calculating the economic impact of the regulator's actions.

[viii] See FSB *Key Attributes of Effective Resolution Regimes for Financial Institutions (Key Attributes) and FMI Annex,* www.fsb.org/2014/10/r_141015/ and FSB *Guidance on Central Counterparty Resolution and Resolution Planning, p. 10 (No Credit Worse Off Safeguard)* *http://www.fsb.org/wp-content/uploads/P050717-1.pdf*