

# Funding Science with Science: Cryptocurrency and Independent Academic Research Funding: Open Review

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Reviewers: Reviewer A, Reviewer B

**Abstract.** The final version of the paper “Funding Science with Science: Cryptocurrency and Independent Academic Research Funding” can be found in Ledger Vol. 2 (2017) 65-76, DOI 10.5915/LEDGER.2017.108. There were two reviewers who responded, neither of whom have requested to waive their anonymity at present, and are thus listed as A and B. After initial review (1A), the author submitted a revised submission and responses (1B). The revised submission was reviewed once again by reviewers A and B, who determined that the author had adequately and substantively addressed their concerns, thus completing the peer-review process. Authors’ responses are indented for clarity.

## 1A. Review

### Reviewer A:

1. I would counsel the authors to keep it as non-technical as possible and perhaps add a section somewhere (conclusion?) that includes the gist of their proposal in non-technical terms. They could try explain their point to a complete ignoramus in the blockchain universe like myself, who, after reading, asks himself old grandma questions like: who is putting up what kind of money where? how can universities / academics tap into this money, based on what criteria, selectivity? I understand that blockchain makes money streams independent of banks, but who is in control instead?
2. The authors tend to invoke their references a bit cavalier; it's not always clear what specific argument or point they are referring to when invoking, e.g. Moro/Chomsky or Meyer/Zhou.

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perhaps elaborate a bit what you are referencing them for.

3. Also, in their intro (page 1 "privileging certain types of inquiry") ...could use reference to sources to back them up.

**Reviewer B:**

When I accepted the review assignment for this paper, I was excited to see new ideas about funding science, a topic which is near and dear to my heart. As I read the paper, my initial excitement waned, as I realized that the essential nugget of the idea, albeit couched in complex language, was rather thin.

The idea is to invest money in university endowments in staking coins that can generate dividends, and use these to fund research.

I was hoping for some deep connection between this particular investment asset class and the issues facing science funding. The only thing I could find in the paper that headed in this direction was the idea that generating income from cryptocurrencies would change the power and decision making structure and move it away from the agencies that currently manage most of the research funding in the U.S. and other countries. But there wasn't anything inherent in the cryptocurrency per se that addresses issues in funding. It's only proposed as a revenue generating source. Many other investment options could be considered. The argument seems to be that because cryptocurrencies are appreciating rapidly right now, universities should shift investments there from other options. That has nothing to do with all of the "ontological" content in the paper about the history and issues connected with research funding. This is what I mean when I say that the paper seems thin.

Detailed comments:

1. The first sections of the paper has a thoughtful overview of scholarship and the evolution of ideas regarding science funding. The overview seems to have value in and of itself, and almost seems like overkill when compared to the meat in the actual proposal in the latter part of the paper.

2. Endowments aren't a major source of research funding. Moving support for research from federal agencies to endowments seems a major recommendation in the paper that isn't stated explicitly, but seems like a far bigger shift than changing the endowment portfolio from traditional assets to cryptocurrencies.

3. The example strategy shown in Figure 1 is only described in a few sentences in the body of the paper, as if the figure explains everything. It doesn't.

4. It is interesting that the authors have actually implemented the staking coin strategy. I suggest that the paper be rewritten as a report on the details of that strategy, and the details of how it would be used in practice. In other words, expand the brief discussion on the strategy itself into the entire paper and eliminate much of the boilerplate in other sections.

5. The last paragraph on page 6 and the first paragraph on p. 7 say more or less the same thing. Editing is needed to eliminate repetition and add missing detail.

6. What about the value of the scientific research itself, and IP licensing fees? Are those tied in somehow to the dividend stream from the staking coins?

7. The research enterprise in the U.S. and worldwide is massive and seems to me to be unsustainable. So many universities are competing for research funding, hiring postdocs and full time research staff, and building quasi-companies within the organization that it is distorting the goals of educational institutions away from a healthier, student-focused mission. The real value of much of the massive volume of research that is being done is not the ideas and publications, but the human capital – students who are trained during their research apprenticeships. That value is not well factored into the current funding enterprise, as more and more academic and non-academic organizations enter the funding game and compete for grants. If this value could be brought into the concept, it would be to me more interesting.

## 1B. Authors' Response

### Reviewer A:

I would counsel the authors to keep it as non-technical as possible and perhaps add a section somewhere (conclusion?) that includes the gist of their proposal in non-technical terms. They could try explain their point to a complete ignoramus in the blockchain universe like myself, who, after reading, asks himself old grandma questions like: who is putting up what kind of money where? how can universities / academics tap into this money, based on what criteria, selectivity? I understand that blockchain makes money streams independent of banks, but who is in control instead?

1. Terminology was refined throughout to ensure a non-technical voice.
2. Conclusion was revised to better summarize the proposed innovation more clearly in less technical terms.
3. Article revised for clarity of the proposed innovation for how a university, or a consortium of universities, could fund their own science research.
4. Revised to clarify a university or consortium would allow for independence from current structures.

The authors tend to invoke their references a bit cavalier; it's not always clear what specific argument or point they are referring to when invoking, e.g. Moro/Chomsky or Meyer/Zhou. Perhaps elaborate a bit what you are referencing them for.

Meyer/Zhou references were removed. In addition, we removed the Chomsky/Moro citation, and narrowed the focus to Chomsky's contentions on scientific funding and its relationship to technological innovation.

Also, in their intro (page 1 "privileging certain types of inquiry") ...could use reference to sources to back them up.

As recommended, citation was added and strengthened to support this phrasing (seen both in the abstract and page 6). Additional citation was added, in particular Giroux , to augment the knowledge claim noted in the left column.

**Reviewer B:**

Overview A. When I accepted the review assignment for this paper, I was excited to see new ideas about funding science, a topic which is near and dear to my heart. As I read the paper, my initial excitement waned, as I realized that the essential nugget of the idea, albeit couched in complex language, was rather thin.

Article revised to better balance the discussion of the status quo within the academic and strengthened clarity for the proposed innovation specific to funding scientific research. References to endowment funding removed to clarify focus on scientific research funding.

Overview B. The idea is to invest money in university endowments in staking coins that can generate dividends, and use these to fund research.

Focus of article narrowed to the proposed approach for cryptocurrency to fund scientific research. References to endowment funding removed to clarify focus on scientific research funding.

Overview C. I was hoping for some deep connection between this particular investment asset class and the issues facing science funding. The only thing I could find in the paper that headed in this direction was the idea that generating income from cryptocurrencies would change the power and decision making structure and move it away from the agencies that current manage most of the research funding in the U.S. and other countries. But there wasn't anything inherent in the cryptocurrency per se that addresses issues in funding. It's only proposed as a revenue generating source. Many other investment options could be considered.

The argument seems to be that because cryptocurrencies are appreciating rapidly right now, universities should shift investments there from other options. That has nothing to do with all of the “ontological” content in the paper about the history and issues connected with research funding. This is what I mean when I say that the paper seems thin.

Article revised to better balance the discussion of the status quo within the academy and strengthened clarity for the proposed innovation specific to funding scientific research with cryptocurrency. Proposed innovation clarified to highlight the model and its appreciating model for future scientific research. References to endowment funding removed to clarify focus on scientific research funding. Article was revised to note that the proposal only highlights a potential ‘diversifier’ for science funding, not a full replacing of the funding system for science.

The first sections of the paper has a thoughtful overview of scholarship and the evolution of ideas regarding science funding. The overview seems to have value in and of itself, and almost seems like overkill when compared to the meat in the actual proposal in the latter part of the paper.

1. We expanded the clarity of the model and its application within the realm of scientific funding within the academy. We revised the paper and highlighted our a university, or a consortium of universities, could fund their own science research.
2. Section headings revised for further clarity of this focus.
3. Sections were reorganized for clarity.
4. Proposed fund centers on a narrative focused solely on science research.

Endowments aren’t a major source of research funding. Moving support for research from federal agencies to endowments seems a major recommendation in the paper that isn’t stated explicitly, but seems like a far bigger shift than changing the endowment portfolio from traditional assets to cryptocurrencies.

Article refined to eliminate endowment language to avoid confusion. Article more focused on cryptocurrency as diversification solution for the funding scientific research.

The example strategy shown in Figure 1 is only described in a few sentences in the body of the paper, as if the figure explains everything. It doesn’t.

Discussion of Figure 1 strengthened for clarity. Additionally, the discussion was strengthened with detailed evidence underscored how open sources tools were utilized. Additional description of the formation of the model was added.

It is interesting that the authors have actually implemented the staking coin strategy. I suggest that the paper be rewritten as a report on the details of that strategy, and the details of how it would be used in practice. In other words, expand the brief discussion on the strategy itself into the entire paper and eliminate much of the boilerplate in other sections.

This is a proposed innovation that utilizes open sources tools. The entire article was revised for clarity of the proposed approach to fund scientific research with cryptocurrency.

The last paragraph on page 6 and the first paragraph on p. 7 say more or less the same thing. Editing is needed to eliminate repetition and add missing detail.

Paragraph was revised to eliminate redundancy and strengthen to add the missing detail.

What about the value of the scientific research itself, and IP licensing fees?  
Are those tied in somehow to the dividend stream from the staking coins?

The discussion centering on Figure 1 highlights how this fund was set-up, without revealing any proprietary knowledge. Discussion strengthened detailing the type of independence such a fund could offer institutions in the funding of science.

The research enterprise in the U.S. and worldwide is massive and seems to me to be unsustainable. So many universities are competing for research funding, hiring postdocs and full time research staff, and building quasi-companies within the organization that it is distorting the goals of educational institutions away from a healthier, student-focused mission. The real value of much of the massive volume of research that is being done is not the ideas and publications, but the human capital – students who are trained during their research apprenticeships. That value is not well factored into the current funding enterprise, as more and more academic and non-academic organizations enter the funding game and compete for grants. If this value could be brought into the concept, it would be to me more interesting.

Under the conclusion, we detailed, more fully, the limitations of the model and the ways it needs to be more fully tested.

1. We added to the conclusion a call for future research, noting how this model needs to be tested empirically within multiple institutional settings.
2. Specific to the human capital question, it is a compelling argument, yet is beyond the scope of our prototype fund for scientific research.



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