

## CARDANO ECOSYSTEM MASS ADOPTION: ECONOMIC AND POLITICAL ANALYSIS - A COMMUNITY COMPILED DISCUSSION PAPER – version 2

(version 1 - <https://forum.cardano.org/t/cardano-ecosystem-mass-adoption-a-community-compiled-discussion-paper/31322>)

### Reason for this Community effort

In the IOHK website with all the academic papers (<https://iohk.io/en/research/library/>), there are no explicit papers covering the economic and political analysis justifying the Cardano ecosystem. While, it would seem obvious from an investor's point of view, I thought it much more useful and constructive if the community could make a contribution towards development of the Cardano Ecosystem by producing that paper, **not as an academic effort, but as an educational /informational endeavour**. Hopefully, in the process existing investors and potential investors will have a clearer appreciation of the Cardano ecosystem specific perspectives, and potential impacts on the global economy.

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**Required Basic Etiquette** - for building up a solid, but non-academic paper which is easy to read for the Community:

- 1) *When you make your contribution including constructive criticisms, present your reasoning behind your opinion to enable everyone to appreciate your point....so, **avoid thought bubbles and down ramping**.*
  - 2) *Where possible and useful, include Reference sources and acknowledgements/attributions*
  - 3) *When making a contribution that refers to a particular section of this paper, please reference the specific section by the number and/or quoted text so that the context is clear. It will also assist with ensuring your views are not misrepresented when preparing each week the consolidated Community Discussion Paper.*
  - 4) *If you want to add a new section to this discussion paper, state what it is and provide some initial information to provide a framework for others to contribute*
  - 5) *On a weekly or fortnightly basis depending on the feedback, I will be reading and consolidating all the opinions expressed and issuing an updated version, with versioning, so that one does not have to troll webpages. Also, a PDF version will be available for download. Referenced acknowledgements/attribution for contributions will be compiled at the bottom of the document in the References/Acknowledgement section.*
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**A general overview on what has already been expressed by Charles Hoskinson, CEO of IOHK through his AMAs, Interviews and ad hoc updates to the Cardano Community**

References: <https://www.youtube.com/user/charleshoskinson?app=desktop>;

Charles Hoskinson, as CEO of IOHK the developers of the Cardano Protocol and ecosystem, has repeatedly and laboriously provided the rationale for the unique direction for the development of the Cardano ecosystem. These include the following (but is not complete) that I could identify, not in any order of importance or preference:

- 1) A recognition that the current global financial system is broken with a structure that is skewed permanently to benefit an ever decreasing number of super rich, while a sea of humanity is left in increasing poverty or dependent on the "benevolence" of these super rich.
- 2) The increasing concentration of wealth is also accompanied by increasing concentration of political power which is being used against the vast majority of the powerless, impoverished humanity.
- 3) The only hope for humanity to stop this road to increasing inhumanity by a few over a vast majority is to introduce a totally new financial system that has no mechanism by which a few financially privileged and

politically powerful can control its operations.

- 4) The fact that two-thirds of the world's population are unbanked, based on the definitions of banking services and infrastructures freely available in the developed world and therefore a viable market.
- 5) There is, therefore, this vast potential of economic development and empowerment if these unbanked are given a new global financial ecosystem which:
  - a) Is easy to use.
  - b) Guarantees payment for Services and Goods.
  - c) Requires minimum level of education to use.
  - d) Provides proof of identity to secure the assets owned.
  - e) Provides proof of purchase and ownership of any asset.
  - f) Provides a secure and immutable audit trail of transactions from farm-gate, to transportation, processing, manufacturing and finally to the consumer.
  - g) Provides free movement of funds globally without restrictions from any institutions, both private and public.
- 6) The availability of this vast market of the unbanked means there is no need for Cardano to compete in the over-saturated, over-banked, over-regulated Developed Economies financial markets

## **The potential economic and political implications for Cardano Ecosystem mass adoption**

### **Introduction**

**PART 1 & 2** below are my initial contributions to towards the Community pooling of opinions and information. Feel free to make comments that will expand the ideas, information or even add a new concept not yet addressed.

### **PART 1**

#### **Economic Analysis – Implications and Impacts**

##### **1) Assumptions about the Cardano ecosystem**

- a) It is here to stay and will become an ever-increasing influence on the global financial and political systems into the future
- b) It is solving and will solve real world problems that cannot be solved using existing economic, political and technological infrastructure.
- c) There exists unsatisfied demand for banking and financial services among the majority of the global unbanked
- d) The new global financial ecosystem provided by the Cardano ecosystem will be affordable by a majority of these global unbanked.
- e) The Cardano financial ecosystem can be efficiently and competitively productionised on the existing hardware and software technology stack globally.
- f) To meet an expected explosive rise in demand for the Cardano financial ecosystem it will have the inbuilt capability to rapidly and flexibly scale for an indefinite period into the future.

##### **2) Is the world ready for Blockchain and crypto revolution?**

- a) The growth in the number of cryptocurrencies and the total market size since Bitcoin appeared proves the world ready for blockchain and crypto revolution. According to <https://coinmarketcap.com/> as 9<sup>th</sup> March, 2020: Cryptocurrencies: [5,167](#), Markets: [20,819](#), Market Cap: [\\$233,576,062,472](#), 24h Vol: [\\$148,905,054,158](#)
- b) The growth in the demand and application of Blockchain technologies across all economic sectors shows the world is ready and willing to spend billions investing on real world applications - <https://www.ibm.com/blockchain/industries>, <https://consensys.net/blockchain-use-cases/>, <https://coinswitch.co/news/20-blockchain-applications-across-industries-2019>

### 3) Economic Impacts of COVID-19 on Blockchain technologies and Cryptocurrencies

#### a) Failure of centralised systems to manage decentralised economic/health crises

For countries that have State/Regional Governments and Federal Governments e.g. USA, Canada, Australia, Britain, South Africa, Nigeria, and European Union, COVID-19 has created logistical nightmares. The vast differences in the rates of infections across each region has led to very different attitudes to the urgency and therefore responses. A centralised approach to take control is struggling to lead coordinated responses. Worse still, the populations of different regions are getting politically caught up in “our region vs their region”, ignoring the fact that the virus shows no regard for such differences. **The underlying issue is lack of trust among different levels of Governments.** This is quite maybe a concern for many, given that Governments are making life impacting choices without the population having a say: *“Though it may seem crass, the [US] federal government actually has long made a calculation when imposing regulations, called “the value of a statistical life,” that places a price tag on a human life. It has been used to consider whether to require seat belts, airbags or environmental regulations, but has never been applied in a broad public health context.”* ([https://abcnews.go.com/Politics/wireStory/trumps-push-open-economy-cost-lives-69805844?cid=clicksource\\_4380645\\_2\\_takeover\\_2\\_headlines\\_hed](https://abcnews.go.com/Politics/wireStory/trumps-push-open-economy-cost-lives-69805844?cid=clicksource_4380645_2_takeover_2_headlines_hed))

Blockchain ecosystem solutions could bridge the significant inter- and intra-Governmental trust gaps by providing the immutable and secure management of information from source/origin to all levels of Governments significantly reducing mistrust among Government Institutions on the one hand, and between Governments and the governed, on the other.

#### b) Post COVID-19, the high probability for a massive transfer of wealth from the middle- and lower-income groups to the fewer already rich and powerful

If the pandemic prevention economic activity lockdown extends for several months, it is anticipated that it is very highly likely that many Businesses will use this unfortunate COVID-19 event to initiate significant and permanent company restructuring leading to permanent job losses across all layers of the company’s structure. This will be justified as required in the vastly changed economic environment where online delivery infrastructure has become embedded and both Supply Chains and Consumers are now adept to these technologies. So, why go back to the old, expensive systems when these new technologies will substantially increase returns on capital as well as higher shareholder wealth generation. Needless to say, it is the significant owners of shares who then increase their wealth through dividends, stock-options, etc., while significant numbers of employees will never be re-hired once the pandemic is over.

#### c) During and Post COVID-19 mis-use and/or mis-appropriation of Economic rescue funds for powerful and privileged special interest groups

Post COVID-19, without vigilant, eagle-eyed supervision and oversight of the trillions of dollars being handed over to Governments to spend to save Businesses, jobs, and the unemployed, it is highly probable a significant amount will be diverted for other than its intended purposes. As has happened after every major financial crisis before.

This is, perhaps, the area where Blockchain technologies would have the largest “Public Good” value-add. While this, for practical purposes, should be understood as a long-term proposition, it will become imperative as the public is left fuming at, yet again, the squandering and swindling of public funds to line the pockets of powerful and privileged special interest groups.

Blockchain ecosystem solutions could be built into Financial Institution regulatory systems to monitor the movement of every dollar from source to final spending with a transparent accounting for the public scrutiny.

#### d) An entrenched demand and accelerated use of online technologies to deliver goods and services that once were largely based on bricks & mortar

If the pandemic prevention economic activity lockdown extends for several months, Post COVID-19, the market for online delivery of goods and services will have become entrenched in some industries. In particular, some Educational institutions will have achieved their much longed-for desire to move their Students permanently into the online teaching thus freeing up large lecture theatres for hands-on joint research facilities and practical training courses with Businesses and Government Institutions. What’s the point of going back to physical face-to-face lectures after the embedded online culture?

The net result will be fewer jobs for teaching and support staffs. In Technology based industries, it would mean permanent reduction in office spaces as employees are made to work from home permanently. The excess office spaces will be leased out or Buildings sold as various on-premise staff are consolidated into few buildings. Blockchain ecosystem solutions would provide these newly restructured companies with the means for end-to-end

assurance of the quality of their business processes while enhancing their profitability.

**e) Massive increase in cyber-crimes and espionage because of the massive skewing of dependence on online technologies for daily life existence**

There are already reported spikes in the number of fraud and scams associated with COVID-19. These include redirecting people to fake websites to claim Government Benefits, Charitable help or make donations to desperate causes. There will be new educational and social websites offering services that unsuspecting users will be asked to make payments for that turn out to be fakes.

Millions of the desperate unemployed will be rushing to develop new products across all areas of economic activity. Some of these unsuspecting people, who for the first time are forced to enter the online industry, will unfortunately suffer at hands of sophisticated cybercriminals both private and Institutional using phishing, website hijacking, disinformation and illegal private data gathering tool.

Blockchain ecosystem solutions could become the go-to solutions for securing personal and company data as well as providing the assurance that all transactions source and destination.

**f) Unexpected massive shake-out of some Global Corporations and Industry leading companies should key personnel not survive COVID-19**

The current absurd movements of stockmarkets seem to ignore, the fact, that COVID-19 has no regards for powerful Business titans. This fact alone could fundamentally change the future prospects of some iconic companies. COVID-19 is the “**social strata equaliser pandemic**” which means this economic depression is like no other. It will never be a return to the old normal. Unexpected casualties across all strata of society could mean the collapse of some iconic brands. In particular, those that have relied on the cult personality of their elderly Leaders and members of their Boards. Moreover, many of these Board members are on multiple high-profile companies. Their sudden departures could shock Investment Analysts into having to totally re-evaluate the prospects of the company. If their share prices and sales figures were implicitly based on their social cult leaders rather than a market assured succession plan infrastructure, than catastrophic decline in marketcap may occur.

Just as Investment 101 encourages diversification and movement into safe assets during uncertain times, so it maybe that Cryptocurrencies, and Blockchain projects may become attractive investment options, especially if they are responsive to the changing market. This is where Cardano ecosystem with its comprehensive financial infrastructure vision will drive it to easily become the most valued Blockchain project in the world.

**4) Current and Potential constraints on the world's readiness for Blockchain and crypto revolution**

**a) Transaction Speed Per Second (TPS) –**

The ability to offer, at the very least, comparable competitive transactional functionality compared to fiat-based systems is critical if mass adoption is to be achieved. The existing benchmarks are those of Credit Card processing such as Visa at 25,000 TPS. With the availability of thousands of credit cards, any offerings claiming revolutionary capabilities must not only match existing competition, on top of new and unique services that the market has unfilled demand for.

<https://docs.google.com/spreadsheets/d/1wcuIUdLaRt37zI0m81eJdo6hE->

Mcap Rank	Coin	Max current TPS	Caveats + future expectations	
1	Bitcoin	7	Improvements expected with lightning network	Note: Visa max tps is 25,000, 2k is current average
2	Ethereum	25	TPS in the thousands expected with current sharding spec according to Vitalik	
3	Ripple	50000		
4	Bitcoin Cash	57	Improvements expected with adaptive block size limit	
5	Litecoin	56	Improvements expected with lightning network	
6	NEO	10000	100,000 tps expected by 2020	
7	Cardano	7	Expected to be absurdly large when production ready	
8	Stellar	2000		
9	Monero	1700		
10	EOS	25	Just an ERC 20 token right now, 100,000 theoretical	
11	IOTA	1500	Capped by coordinator, infinite theoretical	
12	Dash	28		
13	NEM	4142		
14	TRON	25	Just an ERC 20 token right now, 1200 flaky prediction	
15	Ethereum Classic	14		
16	VeChain	25	Just an ERC 20 token right now	
17	Tether		No data	
18	Nano	7000	Theoretically infinite	
19	Lisk	25	1000 with side chains	
20	Qtum	70	20000 with improvements	
21	Bitcoin Gold	7		
22	OmiseGO	25	Just an ERC 20 token right now, 1,000,000 theoretical with plasma	
23	ICON		No data	
24	ZCash	27		
25	Steem	100000		
28	Bytecoin	500		
29	Stratis	20000		
30	Verge	100	2000 with RSK technology	
32	Waves	100		
35	BitShares	100000		
39	Decred	14	Improvements expected with lightning network	
46	Zilliqa	2488	Team aiming for 10k minimum with sharding	
53	Ark	50		
57	DigiByte	560	280,000 by 2035 due to halving block time every 2 years	
66	PIVX	140	Improvements expected with elastic block size limit	
123	NAV Coin	1120		

**b) Interoperability/Peer-to-Peer exchange between cryptocurrencies without the need to go via an Exchange**

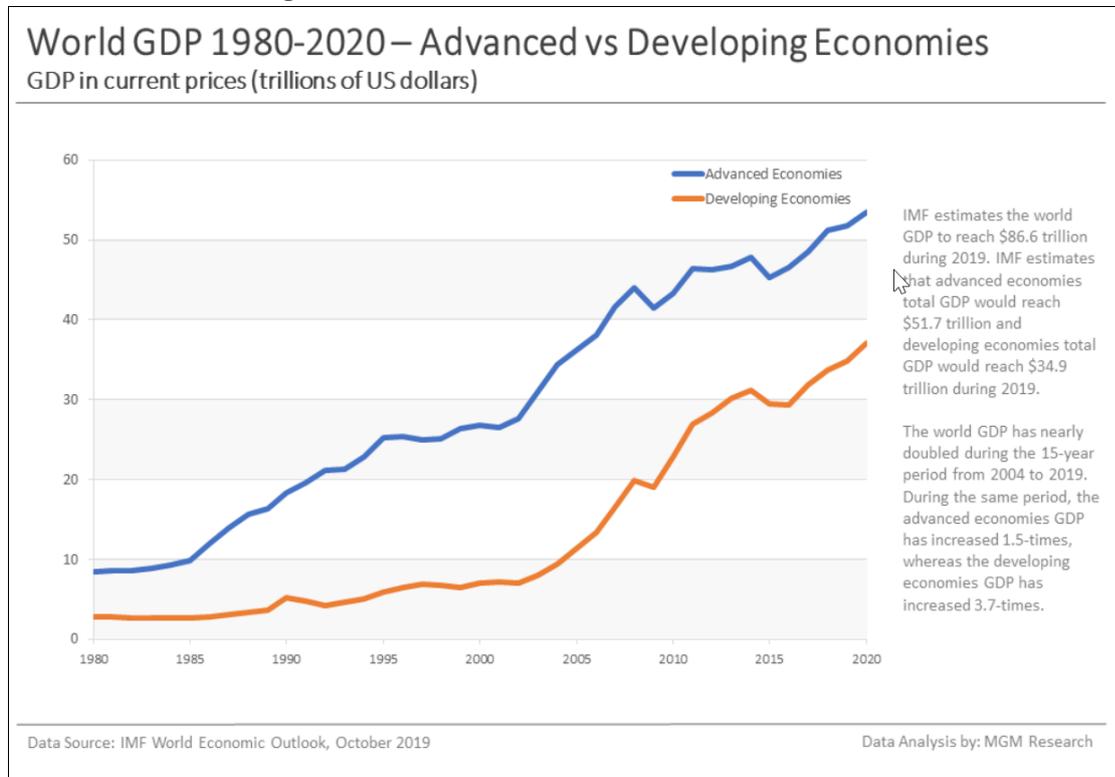
The ability to provide interoperability or peer-to-peer conversion between cryptocurrencies without using a cryptocurrency exchange as the intermediary is significantly important for mass adoption. To engage the unbanked who have little education and even less understanding of the complexity of exchanges requires a user-friendly peer-to-peer exchange available on the mobile phone. This would follow the widely accepted mobile peer-to-peer payments systems.

5) **Potential global market size:**

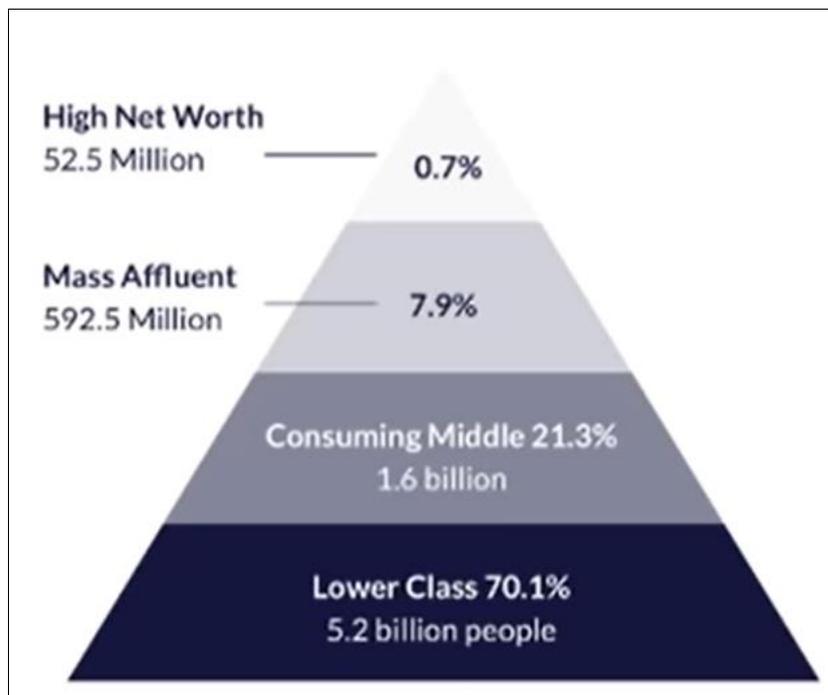
a) \$90 Trillion for 2019/2020 <https://www.statista.com/statistics/268750/global-gross-domestic-product-gdp/>

**Unbanked global market that is being targeted by Cardano:**

<https://mgmresearch.com/world-gdp-ranking/> - IMF estimates the world GDP to reach \$86.6 trillion during 2019. IMF estimates that advanced economies total GDP would reach \$51.7 trillion and **developing economies total GDP would reach \$34.9 trillion during 2019.**



b)



<https://www.youtube.com/watch?v=KIJZIER4nss&feature=youtu.be&t=43>

6) **Best market segments for adoption/ use cases for Cardano**

- a) Business Registrations and Asset Custody - <https://bitcoinmagazine.com/articles/blockchains-greatest-impact-will-be-developing-countries-says-upenn-lecturer>.
- b) Financial Services, Remittances, Peer-to-Peer energy trading, Supply Chain, Land Registry, Identity, Fund Tracking - <https://www.devex.com/news/opinion-7-ways-to-use-blockchain-for-international-development-90839>.

**7) Main competitor platforms focussed on or could compete in Developing Economies**

- a) Ethereum smart contracts.
- b) Tezos for Proof of Stake.

**8) Major potential hinderances to mass adoption**

- a) Transaction and/or Service fees must be equal to or less than existing mobile services fees and charges.
- b) Data transfer rates must be equal to, or better than for existing Mobile Apps.
- c) Services must be responsive to unreliable Internet and Mobile networks.
- d) Data storage on Mobile phones must be competitive with existing majority of mobile storage limits in Developing countries.
- e) Scalability of transaction volumes to avoid crashing the Cardano platform and/or the networks/servers available/accessible in the Developing Countries.

**9) What is the significance of the Cardano Community in the development and promotion of mass adoption?**

- a) Validators of the useability, and capability of the Cardano technology to meet its stated deployment aims.
- b) Educational contributions through Social Media posts, News media, articles in Community and Professional journals
- c) Development of real use case DApps on the Cardano platform demonstrating its efficacy.
- d) Acting as redirection channels for Investors and Developers to the source of truth and development tools they need to meet their specific requirements.

**10) What incentives must be used to promote and achieve mass adoption?**

Based on the experiences from the Incentivised Testnet as well as what is practiced in the IT industry, they include the following, but it is not complete:

- a) Staking incentives – ADA Rewards, Cardano Foundation Online Newsletter.
- b) Pool Operator incentives – ADA, Discounted Cardano Conference tickets, Cardano Foundation Online Newsletter.
- c) Ambassador incentives – ADA, Discounted Cardano Conference tickets, Cardano Foundation Online Newsletter.
- d) DApps developer incentives - ADA, Joint-Development and/or funding, Discounted Cardano Conference tickets, Cardano Foundation Online Newsletter.
- e) Conference and Marketing Events organiser incentives – ADA, Cardano Foundation Online Newsletter.

**PART 2**

**Political Analysis - Implications and impacts**

A revolutionary idea with global economic impacts will inevitably draw political interest and eventually political interference both positively and/or negatively. Ideas that impact citizens of any country will force the authorities in the countries to examine what are the benefits and risks of this new idea. The Cardano ecosystem when fully implemented, and in particular, when fully commercialised with mass adoption will draw responses that may seek to both promote and also inhibit its growth and development.

As investors, particularly with a long-term perspective, the political impacts on the Cardano financial ecosystem should not be underestimated if its vision gains significant traction to the extent that Governments sense a loss of economic controls. Below are some of the questions that come to mind, that Investors must consider.

**1) What is the current global political climate for Blockchains & Crypto ecosystems?**

- a) **Post COVID-19 - Lack of trust in Governments and Institutions to provide trustworthy and actionable instructions**  
The 'slamming of the economic breaks' and sending millions into Economic and emotional Depression as well as the carnage of thousands of deaths from COVID-19 will have profound impact on the population's trust of their

political leaders and institutions. There is and will accelerate a search for an alternative form of governance and information systems that will substantially increase truth telling by political leaders and Institutions. Blockchain ecosystem solutions potential to make a very significant contribution could finally be realised. If current blockchain ecosystem DApps and infrastructure solutions can respond quickly, efficiently and most importantly de-risk and destigmatise the existing scepticism towards existing blockchain products.

**b) Post COVID-19, Governments may have succeeded in convincing their populations to cede their intimate private profiles, to the State as entirely acceptable and necessary, but it will be permanent**

This has already occurred many times during periods of natural disasters, war or terrorism acts where the public willingly agree for the Government to deny them their civil rights and privileges. The current COVID-19 pandemic is no different in that sense. When its over, people will again begin to re-assert their Constitutional rights. No doubt the Governments in the Western democracies will accept this reversion to the accepted norms. However, if this COVID-19 pandemic lasts for 6-12 months then most of the populations would have provided intimate details of their personal profiles to the State databases via Hospitals and other allied medical facilities. A necessity if they have to enter medical facilities or carry out medical tests. Those who may have previously avoided providing intimate private details about their genomes, medical history, family and social networks will need to provide these in order to facilitate treatment for the broader community. This data will now become State property and their true identity will forever be traceable.

In this socially tumultuous scenario, Blockchain technologies would be keenly sort by both Governments and individuals. There will individuals who will be fighting for the right to have their intimate private profiles to be deleted from the Government systems and placed in a blockchain encrypted system of their own choosing, presumably in some cold storage medium.

For Governments, Blockchain technologies would provide the Gold Standard Security Assurance solutions for this highly sensitive vast newly created data and metadata which, incidentally, was **freely** provided without the coercive approach of totalitarian regimes of centralised Governments such as Russia, China or North Korea, etc.

- c) Political power is threatened:** Blockchain ecosystem could lead to perceived loss of power to control all aspects of individuals lives, weakening Taxation capabilities, introducing Commercial practices that cannot be censored or monitored. The Political institutions response solution to this threat is introduction of Regulations (<https://cointelegraph.com/news/us-congressman-introduces-crypto-currency-act-of-2020>) to protect the status quo until the Institutions have developed sufficient depth of understanding of the technology such that they are assured that its long-term direction will not lead to the current political systems overthrow - <https://www.publish0x.com/g4g-crypto-training/the-political-economic-and-social-impacts-of-blockchain-xowyyt>

**2) What specific political impacts will Cardano ecosystem solutions have?**

**PROs for democratic process assurance:**

- a) Reduce the need for vote recounts, eliminate questionable voting results, and increase public assurance that each vote counts and cannot be altered thus, strengthening democratic institutions.
- b) Enable certified online voting and real-time publishing of voting result for each poll booth rather than for each voting centre.

**CONs for existing vested interests:**

- a) Deployment of Cardano ecosystem solutions in the political voting process as well as Identity certification during voting will significantly weaken those interested in continuing to manipulate the voting eligibility vetting process and voting system to gain or maintain political advantage.

**3) What are the political risks at present for Cardano ecosystem?**

- a) Blanket bans by Financial Institutions, in some countries, of solutions built on the Cardano ecosystem similar to bans on Cryptocurrencies and Crypto Exchanges. The global political reality of Governments and their Institutions capacity to collude and collectively impose punitive restrictions, not only on any new ideas but also on those who promote those ideas is well established.

- b) The legitimacy of those Regulatory imposts could, directly, be initiated and strongly lobbied for by influential Investors, Businesses, and Organisations that can clearly see they would be decimated by the implementation of this new ecosystem (“The Empire Strikes Back”). The actions of Central Banks as well as Banking and Finance Institutions whose roles would be replaced by Blockchain and Cryptocurrencies created without the need for Banking Licences and money transfer licences led to the politicising of the Blockchain and Cryptocurrencies developments. The result contributed to the sudden slowdown in the crypto space and the departure of many Start-ups.
- c) There could be onerous legal requirements imposed by Regulators in an attempt to force the Cardano ecosystem to work within existing understanding of Financial markets and infrastructure similar to the onerous New York BitLicense application (<https://en.wikipedia.org/wiki/BitLicense>) and as well as the threats to Facebook’s cryptocurrency, Libra.

#### **4) What are the political risks in the future for the Cardano ecosystem?**

- a) Even if the Cardano ecosystem is initially allowed to flourish, however, a rapid growth in demand and use of the Cardano ecosystem could create a climate of anxiety among Government officials who may see it as a rapidly growing threat to their political and economic control. This could lead to either restrictions or increased supervisory demands over the internal workings of the Cardano ecosystem.
- b) If Cardano was to become as dominant in the blockchain ecosystems as Facebook, Apple and Google are in their ecosystems, the Government attitudes could change to be positive, if it strengthens and expands existing business environments and/or creates a whole new industry like the Internet did for global online businesses.
- c) Cardano ecosystem’s Institutional mass adoption could be ensured, in particular, if Governments and Institutions, that are most vulnerable to the Cardano ecosystem find that, in fact, their capabilities to even more tightly control and manage their citizens and their international business associates are substantially enhanced.

#### **5) Does or should the Cardano Community even care about the political risks and imposts?**

- a) Some might casually say “Meh!, we’ll deal with them as, when or if they happen. Not much to see here at the moment”.
- b) Long-term Investors have probably been grappling with these vexed issues as they see how Governments and Regulators have separately and jointly smashed viable Crypto Start-ups over the past 18-months with the stroke of a pen or a Twitter feed.

To soldier on, through the current Crypto Winter and Political assault, requires the belief that in the end, the will and demand of the majority will win. But will that require some compromises as has occurred in the development of the Internet, which has controls imposed on it through the globally centralised registration and regulation of Internet Address?

- c) It is one thing to have Quantum resistance for Blockchain ecosystems, but it is quite another to have effective Political influence resistance or independence in the globalised world with institutionalised vested interests and legally enforceable frameworks. The capabilities of the decentralised Proof-of-Stake (POS) will no doubt be tested for its robustness against global Institutional power collusion to reign it in, within its unquestioned powers and domains of control.

## **REFERENCES**

1. <https://forum.cardano.org/t/must-see-unqualified-opinions-podcast-from-messari-building-cardano-with-iohk-ceo-charles-hoskinson/31263>
2. <https://www.youtube.com/watch?v=KIJZIER4nss&feature=youtu.be&t=43>