



# **Business in the Front, Crypto in the Back: How the Blockchain Startup, Novera, Is Innovating upon Traditional Finance**

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**Abstract.** We present the journey of Novera Capital, a blockchain start-up, that partnered with Finco, an SME investment firm actively looking for opportunities to leverage disruptive technologies. The key to this journey is expressed in Novera’s “Business in the front, crypto in the back” perspective. Finance is a highly regulated and conservative sector. Novera would not have been able to sell its concept for a novel bitcoin tracking fund that received seven figures in venture capital without its corporate ethos. Novera is able to clearly demonstrate compliance to regulations, and moreover show that their business practices would meet stringent expectations of large financial institutions. At the same time, it is Novera’s vision to innovate beyond the fund to a blockchain-based token platform that keeps its team of technologists motivated and forward-looking. We advise others weighing investment in blockchain, especially SMEs and start-ups in finance, to understand and manage this dichotomy.

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## 1. Introduction

This paper describes a case study of a partnership between an established organization in financial services and a blockchain start-up. Incumbent organizations in the financial industry have been reluctant and risk averse towards blockchain and cryptocurrency ventures, but the risk aversion attitudes have been changing gradually. On February 14, 2019, J.P. Morgan announced that it “became the first U.S. bank to create and successfully test a digital coin representing a fiat currency” (J.P. Morgan & Chase Co. 2019). The JPM Coin is based on blockchain-based technology enabling the instantaneous transfer of payments between institutional accounts (J.P. Morgan & Chase Co. 2019). In the evolution of blockchain technology to new business applications and use cases, this announcement is significant for several reasons. One, J.P. Morgan is the largest US bank with assets of 2.45 trillion dollars. Two, its CEO, Jamie Dimon, one of the prominent CEO’s of the financial world, stated that bitcoin was a “fraud” in September 2017. He also said then that he believed nevertheless in the long-term potential of the blockchain technology that underlies bitcoins and other cryptocurrencies. Therefore, J.P. Morgan as an incumbent financial industry organization has signalled that global financial institutions are finally ready to scale up blockchain projects beyond Proof-of-Concepts (PoC’s). The JPM Coin launch may be a critical affirmation of the journey that started in September 2015 with the formation of the R3 consortium, described in additional detail following an introduction to blockchain.

Blockchain is defined as “a digital, decentralized and distributed ledger in which transactions are logged and added in chronological order with the goal of creating permanent and tamper-proof records” (Treiblmaier 2018, p. 547). It is alternatively defined as an application that is a “distributed, peer-to-peer system for validating, time-stamping, and permanently storing transactions on a distributed ledger that uses cryptography to authenticate digital asset ownership and asset authenticity, and consensus algorithms to add validated transactions to the ledger and to ensure the ongoing integrity of the ledger’s complete history” (Lacity 2018a, p. 41). The umbrella term ‘distributed ledger’ denotes “a type of database that is spread across multiple sites, countries or institutions, and is typically public. Records are stored one after the other in a continuous ledger, rather than sorted into blocks, but they can only be added when the participants reach a quorum” (Government Office for Science 2016, p. 17).

Blockchains can be classified into three basic types, where the difference is the ‘permissions’ of the participants to read, write and verify transactions:

1. Permissionless public blockchains like Bitcoin and Ethereum networks allow all users to read, write, and verify transactions
2. Permissioned private blockchains like IBM Food Trust and TradeLens allow only authorized users to read, write, and verify transactions

3. Permissionless private blockchains like Ripple allow all users to view stored data but only authorized nodes are able to validate transactions (Pedersen et al. 2019).

Blockchain was introduced to the general public in 2009 via the most popular applications that it underlies, the Bitcoin network, but now underlies use cases such as food safety, healthcare, finance, and even politics (Iansiti & Lakhani 2017; Larios-Hernández 2017; McDonald 2017; Susskind 2017; Treiblmaier 2019; Stafford and Treiblmaier 2020). According to Treiblmaier et al. (2020, p. 2), “blockchain technology was originally tied to a narrow set of use cases for cryptocurrency, but blockchain technology has evolved to a broader set of use cases, independent of cryptocurrency, with mostly positive economically and socially beneficial consequences, and some negative consequences.”

Having provided a basic description of the underlying blockchain technology, we now return to applications of blockchain in the financial industry. R3 was a blockchain development consortium founded by key global banks including J.P. Morgan, Goldman Sachs, Bank of America, as well as Barclays, Credit Suisse, Deutsche Bank, HSBC, and Mizuho Bank. Its aim was to jointly investigate the potential of blockchain technology to disrupt global finance. They chose the “T+3” problem as their litmus test. That is, if blockchain could address this massively complicated problem, then it would prove that blockchain as a technology works. This problem refers to the reality in global capital markets that it may take up to 3 days after a trade execution for the trade to officially settle. There is a complicated system of intermediaries including clearing houses, brokers, and banks that need to be involved to confirm the legitimacy of a trade. R3 believed that blockchain use could displace this system of intermediaries, not only reducing the time to settlement to one day but also drastically reducing processing costs.

Since then, a lot has happened. The price of bitcoin went from \$400 when R3 was formed to nearly \$20,000 in January 2018, before collapsing (CoinMarketCap.com 2020). As of May of 2019, the price has stabilized around \$8,000. Hundreds of cryptocurrencies were minted in Initial Coin Offerings (ICOs) and their prices followed the trajectory of bitcoin. In fact, the majority of these coins are now worthless. Blockchain found traction in other applications such as providing farm to fork traceability for ensuring food safety (del Castillo 2017), bookkeeping for decentralized electricity micro-grids (Lacity 2018b), and many others. R3 has grown to represent over 200 financial institutions (Clark 2018). Interestingly, JP Morgan left the initiative in the spring of 2017, having learned enough to undertake blockchain projects on its own (Irrera 2017). And R3 all but abandoned trying to solve the T+3 problem (Metz 2016): institutions discovered they were so enmeshed in the incumbent system that it would have been too disruptive and not compelling enough to switch to a blockchain-based

system. However, as exemplified by the JPM Coin launch, financial institutions have found other, more tractable use cases for blockchain.

Consortia like R3 play a very important role in blockchain innovation, much more than other technologies like AI and Analytics. Why? When an industry is trying to disintermediate an existing system of intermediaries (as with R3's T+3 use case) or it is trying to develop a system in the absence of intermediaries (as Walmart, IBM, Nestle, Unilever, and others are doing for IBM's Food Trust Blockchain), its stakeholders need to band together to fulfill the functions that would otherwise have required intermediaries. It has been theorized that complex systems used between organizations such as transportation (Neven et al. 1995) and manufacturing systems (Linden et al. 2000) innovate as multiple stakeholders participate via consortia. Technology uncertainty risks are then spread across stakeholders rather than borne by individual companies. Blockchain technologies certainly fall within this category, so unsurprisingly then, there are even other active consortia for industries such as commercial insurance, B3i (Milano 2018) and transportation, BiTA (Khatri 2018). There are also the two biggest consortia to develop blockchain technologies—The Hyperledger Project (Roberts 2017), and Enterprise Ethereum Alliance (Hackett 2017).

In spring 2018, there were over 60 blockchain consortia active globally (Healey et al. 2018). Deloitte's survey of over 1,000 managers in 2018 found that 29% said that their organization was already participating in a blockchain consortium, and 45% stated their organization was likely to join one soon. So, it seems that participation in consortia is a very conventional way to commit to blockchain adoption. However, not all companies are invited to participate in a consortium. Small and Medium Enterprises (SMEs) can be shut out. This is especially disadvantageous in light of a study that found that the three key factors that influence blockchain adoption are: top management support, organizational readiness, and organization size (Clohessy et al. 2019). Smaller organizations may have the willingness to adopt blockchain technologies but may lack requisite resources and technical know-how. And if they are shut out of consortium participation as well, how do they keep pace in a competitive environment where 84% of 600 executives globally state that their organization is actively involved with the technology (Davies and Likens 2019)?

The answer lies in externally focused strategies for absorbing disruptive technologies into a firm, as espoused in Clayton Christensen's *The Innovator's Dilemma* (Christensen 2011). One more-tactical strategy entails having on-going dialogue with top-tier scientific researchers and venture capitalists. Another is to explore efforts such as partnerships, licensing agreements, joint ventures, taking equity positions in, and outright purchase of startups with expertise in the disruptive technology. For SMEs in financial services—or really any industry that is potentially disrupted by blockchain technologies—these external strategies must be seriously considered.

In this paper, we detail a case study of how *Novera Inc.*, a blockchain start-up, reached out to SMEs in financial services to execute these strategies. We believe this case provides a rough blueprint for how small companies, particularly in finance, can accrue valuable experience with the disruptive technology that is blockchain, and even open new markets and opportunities as blockchain further disrupts their industry.

## **2. Background: Finco, an SME in Financial Services**

According to Christensen, potentially disruptive technologies pose a dilemma for successful companies that provide incumbent technology or service. If these firms focus on their successes, they often forgo the opportunity to fully invest in technology that could render incumbent technology obsolete or uncompetitive in the future. Yet, if they devote resources to every potentially disruptive technology, they risk deflated profitability and the ire of the shareholders whose quarterly earnings expectations may not be met. Once-dominant firms like Kodak failed to invest in disruptive technologies like the digital camera because they were reluctant to deviate from a very successful formula. Upstarts who have no such history then take the risk of exploring novel technologies even if they are initially of low performance and serve small niche markets. By the time that a technology becomes truly disruptive, and its performance meets needs of a large market, the head start that the upstart has enjoyed cannot be overcome by the once-dominant firm. Even in the context of SMEs, this dilemma exists: After all, SMEs especially do not have resources to focus on an incumbent technology *and* explore a potentially novel one.

There are suggested remedies for the dilemma that apply. Internal strategies like developing a portfolio of speculative projects or regular staff rotation work much better for larger firms that can afford them rather than SMEs. Externally focused strategies such as dialogue with experts in universities and venture capitalists and working with start-ups are applicable independent of size.

At the beginning of 2018, like most firms in their industry, *Finco*, an investment management firm based in Toronto, Canada, sought to capitalize on, or at least learn much more about, the opportunities in bitcoin and other cryptocurrencies, as well as blockchain technologies that provide the data infrastructure for these “cryptos.” By the end of the year, *Finco*’s collaboration with *Novera* represented the effective execution of the above-mentioned externally focused strategies.

*Finco* advises institutional investors in hedge fund portfolio construction and risk monitoring. *Finco* currently has employees that number in the tens, which classifies them as an SME. They specialize in providing investment services and products that use sophisticated risk management and pricing models to hedge funds, pension funds, and other institutional investors.

As fintech innovations like AI applications, robo-investing (Fisch et al. 2018), and open banking (Zachariadis and Ozcan 2016), disrupt the field of finance, Finco understands that it must keep up. However, with a small staff of professionals trained in finance and mathematics, they recognize the difficulty in cultivating technology expertise in-house. A chance meeting between Finco and some blockchain researchers at the beginning of 2018 started a journey—one that led them to not just better understand a disruptive technology, but to potentially position themselves to be on the leading edge of another disruption.

### 3. Background: Novera Capital

Charlie Shier and Marek Laskowski attended a conference in early 2018. During the conference, Shier and Laskowski got to know Finco; Shier and Laskowski were blockchain researchers who understood finance as a leading application area for blockchain, and Finco wanted to understand blockchain much better. Laskowski and Henry Kim were professors at the Schulich School of Business in Toronto's York University who founded the *blockchain.lab* in 2015, and Shier had worked at the lab over two summers as a student researcher before going off to Harvard Law School.

A month after the conference, Shier called Laskowski and Kim to tell them of an idea he had. The price of bitcoin had skyrocketed to nearly \$20,000 and was starting its eventual steep descent when Shier was looking into ways to short it. He found that there was no easy way to do this. Although both the Chicago Mercantile Exchange (CME) and the Chicago Board Options Exchange (CBOE) started trading bitcoin futures in December, the futures were so new that liquidity was relatively low. Shier risked taking unfair prices to buy and sell short futures. In addition, these are not put options, so he risked unlimited losses if bitcoin prices resumed its straight ascent. When he explored actual put options, they could only be traded in unregulated markets with extremely low liquidity that are susceptible to manipulation; he would receive truly unfair prices to buy and sell. Finally, there was no publicly traded bitcoin short ETF or fund.

Shier had an idea to structure a financial instrument that he believed was not subject to these shortcomings. Laskowski and Kim said that they couldn't punch holes in his idea. As *blockchain.lab* co-founders they were pitched many cryptocurrency and blockchain ideas, most of them terrible, and they quickly recognized that Shier's idea had merit. Laskowski and Kim offered to help where they could but suggested that Shier seek partners in his venture with expertise in financial markets. The next time he called, Shier announced that he and Jacob Unger, a financial trader, co-founded a start-up to commercialize his idea.

Based in New York, Unger believed in crypto. When he heard about bitcoin and Ethereum, he learned to program, closed his foreign exchange fund and moved many of his investors into a crypto-trading fund he started. As that venture

took off, he started to realize the risk he was taking. Inasmuch as the bitcoin and Ethereum networks are extremely robust to manipulation, the digital wallets that hold their cryptocurrencies are famously vulnerable. There are numerous stories of hackers siphoning off funds from wallets (Avan-Nomayo 2019) or lost security keys rendering wallets forever inaccessible (Williams 2019). When he and Shier met at the behest of a venture capitalist, he was impressed that Shier's idea could alleviate his worries in addition to addressing the difficulty of shorting bitcoin. In March 2018, Shier and Unger co-founded the start-up that would eventually be named Novera Capital.

#### **4. Business in the Front: Long-Short Funds**

In spite of Shier being a registered student at Harvard and Unger living in New York, they decided to locate the base of their operations to Toronto. A good idea takes a start-up only so far, and what they needed was capital and technology. As arguably a top-five place for blockchain tech in the world, Toronto offered start-ups access to strategic capital and leading technologists. The prodigious leading force behind Ethereum, Vitalik Buterin, is from Toronto, as are other key founders. The thought leader that the corporate world most identifies with blockchain, Don Tapscott, is also from there. For Shier, Toronto is home; he could access his and his family's business networks. Finally, Unger and Shier could access top blockchain technical expertise through the blockchain.lab and the lab's social connections. So, they brought Laskowski and Kim on as advisors. Their plan worked! Within months, they had secured seven digit venture capital from a Toronto-based investor, who was very knowledgeable in cryptocurrencies and blockchains.

Novera considered raising money through an Initial Coin Offering (ICO). Given the frothy climate of 2017-2018, they could conceivably have raised tens of millions of dollars. However, they would have lacked legitimacy when meeting with financial institutions and regulators, since ICO raises in Canada had been deemed in violation of regulations (Token Alliance 2018). This decision established their corporate ethos: Novera would be able to walk into any boardroom and clearly demonstrate compliance to regulations, and moreover show that their business practices would meet stringent expectations of large financial institutions.

Novera retained a top-tier law firm who engaged in ongoing communications with the Ontario Securities Commission (OSC) about Security Token Offerings (STO's) and ICOs<sup>4</sup>. They also communicated with all the Big Four accounting firms and chose one for audit of their financial instrument structure. During these efforts, Novera re-connected with Finco when they realized that they need to partner with an asset/portfolio management firm like Finco in order to operationalize Shier's original idea.

So, what was Shier's idea? It comprised of two funds with identical amounts invested in them that would offset each other. There would be a Long Bitcoin Fund whose shares' value would increase at the same rate as a bitcoin rise, and there would be a Short Bitcoin Fund which would increase in value proportional to a decline in bitcoin prices. As a more recent Novera investor would remark, "so you guys are bookies... and I like that because bookies don't lose money." To maintain the offset, the most any investor could lose was their investment; the most they could earn was double. Figure 1 on the next page shows what would happen to the Funds when bitcoin prices reach \$6,000, if investors initially invested \$50M each into Long and Short funds when bitcoin was priced at \$4,000.

Also, if bitcoin doubled in price to \$8,000, the Long Fund holders would double their investment and Short Fund holders would lose it all. At that point, the Long and Short Funds would be recapitalized at an equal amount, and the values in the funds would fluctuate until another doubling event at \$16,000 or until bitcoins prices goes to 0. Novera's revenue model consists of collecting fees when investors bought or sold Fund shares, and income from deploying investors' capital into very low-risk investments.

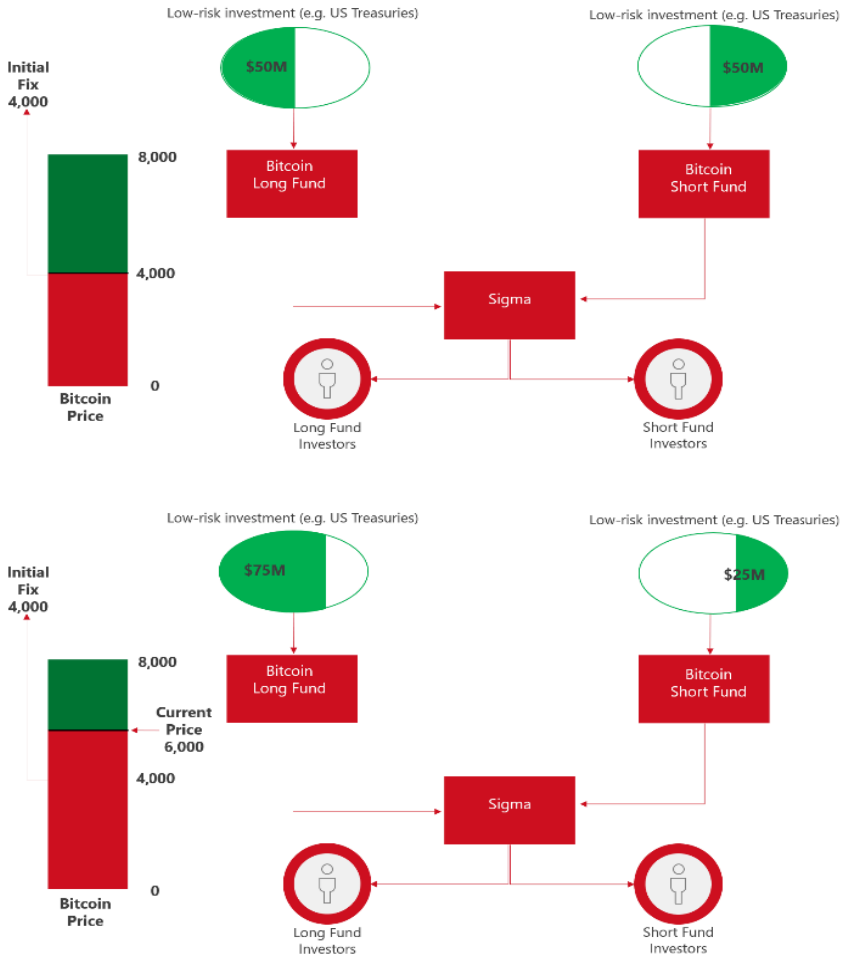
Recall why this idea was conceived. In this structure, as long as there is an agreed-upon closing price of bitcoin, say, at 4PM, there is an indisputable and auditable price for the Long and Short Fund shares. Fund liquidity and manipulation efforts by Fund investors cannot affect these prices. Buying into the Short Fund does not mean a potential for unlimited losses. Moreover, there is no *custody risk* of the kind that concerned Unger for his crypto fund. Since the Funds merely track bitcoin prices, there is no need for Novera to ever own bitcoins. Therefore, concerns about securing bitcoin wallets are moot. Novera or someone they appoint still needs to be in custody of fiat (USD or CAD) currencies with which investors buy into the Funds, but numerous providers know how to custody dollars, so the risk there is negligible. Finally, there is no *counter-party risk*. If Long and Short Funds have equal amounts in them, Novera as the bookie does not have to be a counter-party on a losing trade.

Further details of the long and short funds are proprietary and will not be elaborated upon in this paper.

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4. Even though the US and Canada have different regulatory frameworks, the conventional wisdom on ICOs is this. Unless a cryptocurrency, or "coin," distributed via an ICO (usually over the Ethereum network, which has developed mechanisms and standards amenable for automated distribution and maintenance of tokens) is truly a utility token—think subway tokens—and hence does not look like a security, regulations technically forbid Canadian and US nationals to participate in coin offerings (see reference above). For the most part, regulatory bodies have not enforced this except in cases of outright apparent fraud. An STO represents a regulatorily compliant alternative. In early 2018, TokenFunder received pioneering acceptance into OSC's LaunchPad, a program that shepherds innovative companies towards full regulatory approval and helps establish regulatory precedents and frameworks in the process.



Figure 1: Overview of How Long-Short Funds Works



Shortly after re-connecting, Novera and Finco started conversations to partner. Novera needed Finco to market and sell the Funds to investors and manage those relationships because regulations stipulated that only qualified asset/portfolio managers like Finco could perform these services. And Finco was excited that Novera could help Finco be a pioneer, especially in Canada, in giving “Wall Street/Bay Street<sup>5</sup>” investors safe exposure to bitcoin and potentially other cryptocurrencies. By adhering to their corporate ethos, Novera had networked only with highly reputable institutions, and these institutions had attested to Finco’s quality reputation.

5. Bay Street is the Wall Street analogue in Canada

To encourage collegial partnership, workers from Novera and Finco had a kickoff social outing. Novera’s twentysomething founders convinced the party—with surprisingly little arm twisting required—to go to a bar frequented by millennials. Many in the party had started working at Finco only a few years after Shier was born, and some at Finco were more than twice his age. That outing was a fitting microcosm for the Novera/Finco partnership: the young and the not-as-young working together, old tech trying to find its footing in the land of new tech, corporate vs. crypto. Jose Herrera, Lead Blockchain Engineer at Novera and another twentysomething, put it best when he said that night, “We’re like a mullet, though instead of a ‘business in the front, party in the back’ haircut, we’re a ‘business in the front, crypto in the back business.’”

## **5. Crypto in the Back: Long-Short Tokens**

Herrera is unabashedly in the “crypto in the back” camp. He isn’t crypto in the sense that he is a volume trader of cryptocurrencies. It’s more that he really believes in the crypto ethos that blockchain, as he says, “could rid the world of extractive intermediaries and data hoarding infomediaries and give power back to the people.” He had come from Calgary to Toronto to be part of its blockchain scene.

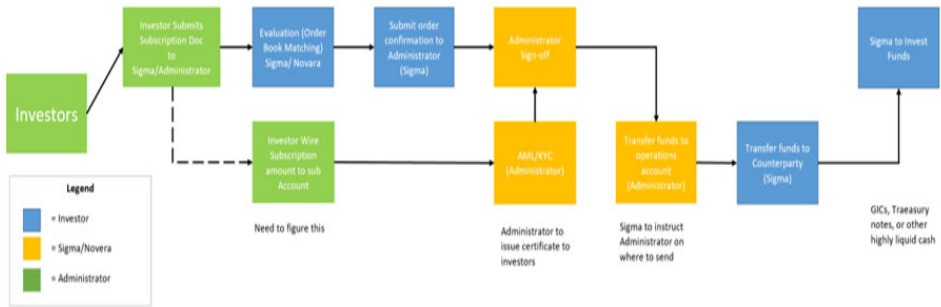
Novera CTO Laskowski and Herrera are leading the development of the Long-Short Tokens, a blockchain version of the Long-Short Funds. Rather than using traditional financial markets facets like stock exchanges, prospectuses, and asset/portfolio managers, Long-Short Tokens would instead be traded on a financial services blockchain where much of the functions of these facets would be performed automatically using smart contracts. For now, this is on Ethereum, but it could be EOS, Stellar or any other promising public blockchain. Also, investors could go long-short in cryptocurrencies. For instance, if an investor wants to bet that bitcoin would rise against ethers, they would buy shares of the Long Token using their ethers. If they wanted to bet that bitcoin would decline against the dollar, they could buy shares of the Short Tokens using a stable coin<sup>6</sup> like tether that is moored to the US dollar.

Figure 2 graphically illustrates the complexity of administering the Funds, and why a simpler, less-intermediated flow on the blockchain would be compelling.

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6. A stable coin is a cryptocurrency that is tethered to the price of stable fiat currency, usually the US Dollar. Tether is a well-known cryptocurrency that is “tethered” to the USD. Using stable coins on the blockchain, payments can be processed, and transactions could be settled instantaneously and automatically across different jurisdictions even if they involve multiple fiat currencies. JPM Coins are stable coins that offer just this functionality.

Figure 2: Information Flow for Long-Short Funds



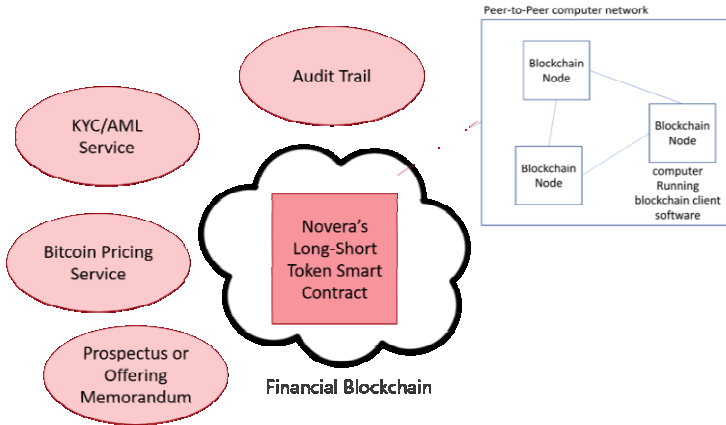
There are several intermediaries involved in this flow, and their responsibilities are as follows:

- Novera: Designer of the structure and Fund policies for redemption, order matching, etc.
- Finco: Portfolio manager, licensed by the OSC to market, sell, and liaise with the investor.
- Administrator: Tasked with responsibilities such as evaluating that investor is not laundering (Anti Money Laundering [AML]), establishing that the investor is appropriate for this investment “Know Your Customer (KYC)”, declaring an official Net Asset Value (NAV) of the Funds which incorporates actual Bitcoin prices less all fees charged to investors, as well as other routine clerical tasks.
- Though not shown, a financial institution would hold the funds in a low-risk investment.

Novera and Finco spoke to one large Administrator, who said their minimum quote was in excess of \$100,000. Such an intermediary would be considered “heavyweight,” and their service would entail significant human clerical processing—use of emails, transfer of spreadsheets, “sneakernet.” In contrast, Novera spoke to a vendor that did automated KYC/AML verification for bitcoin exchanges and charged a few dollars per verification. That would be considered a “lightweight” intermediary.

Figure 3 shows a revised design on the blockchain that introduces “lightweight” intermediaries.

Figure 3: Information Needs of the Long-Short Tokens on the Blockchain



In the design of the Long-Short Tokens, the responsibilities of intermediaries needed for the Long-Short Fund would be split between Novera's Long-Short Token smart contract, and lightweight services available on the blockchain. The calculation of the NAV would be performed by a smart contract and immutably recorded on the blockchain. At any time, or even in real-time, regulators have a trail they can audit. This transparency and any-time auditability obviates the need for a heavyweight third-party Administrator to calculate NAV. Novera would however engage a highly reputable third-party bitcoin pricing service (or oracle) to provide a widely-accepted price of bitcoin. The choice of an official bitcoin price and then the calculation of NAV based off it are ostensibly two opportunities for price manipulation. However, the threat that Novera would concoct its own bitcoin prices is reasonable enough that use of a third-party is sensible, whereas a well-conceived blockchain design would negate the threat of Novera falsifying NAV calculations, assuming that bitcoin prices inputted in NAV are correct. In this design, there is no reason to overpay a heavyweight Administrator; a much less expensive pricing service could be employed, even while transactions are processed 24/7 and more rapidly. A similar argument can be made for use of a lightweight KYC/AML blockchain-based service rather than a heavyweight Administrator.

Whereas Novera has regulatory approval to launch the Funds, Laskowski, Herrera and others at Novera know that it may take some time to get this level of approval for their Tokens. Nevertheless, what binds the folks at Novera is their belief in blockchain as a disruptive innovation. The comparison of Figure 2 versus Figure 3 is an enticing visual for Novera; it compels the twentysomethings, and the not-so-twentysomethings, to work towards developing something really cool.

## **6. Meeting the Regulator**

A real benefit of Novera's corporate ethos of working only with well-established legal counsel and financial institutions including Finco became evident when Novera went in front of the Ontario Securities Commission (OSC), which regulates financial markets in Ontario. There had been other similar firms that had come before the commission. This was beneficial as the commission was familiar with bitcoin and other cryptocurrencies, and because Novera showed itself to be very legitimate and well-prepared relative to others that had come in front of the commission with similar aspirations.

The OSC was quite positive towards the Long-Short Fund; Novera knew however that the timing was not right to even broach Long-Short Tokens. The commission advised that at that point, in December of 2018, Long-Short Funds should be made available only to accredited investors as a private placement using Finco as the registrant (the seller). The alternative would have been a public placement, which is the means by which ETF's and mutual funds are bought and sold through public exchanges like the Toronto Stock Exchange. There are slightly varying definitions of what constitutes an accredited investor, but the key factor is reasonably high wealth and income<sup>7</sup>, which is deemed a proxy for sophistication of investment knowledge. Regulators are inclined to protect unaccredited investors by placing a higher regulatory burden for financial products to be traded on public exchanges where all investors can participate.

The OSC had many questions about bitcoin prices. They had heard reports of bitcoin price manipulations, especially in foreign markets (Carl 2019), and they had heard of wide price variances that can occur between different markets (Taylor 2018). Though very open to the Long-Short idea, they wanted more clarity that Long-Short Fund NAV and prices would not be based off a manipulated or unfair price of bitcoin. The US Securities and Exchange Commission (SEC) also shares similar concerns. This is why even though there have been numerous requests, the SEC has repeatedly withheld approval for a publicly traded bitcoin ETF (Rooney and Pisani 2018). Novera truly appreciates that this is a boon. From the investor's perspective, a bitcoin ETF would be a very familiar instrument and it would draw away from potential Long-Short Fund investors. Plus, large players against whom Novera could not compete would enter the market. Finally, short bitcoin ETF's would surely be available once the first long only ETF was approved.

Novera had conversed with the large financial data services about bitcoin price feeds. Companies contacted included Bloomberg, New York Stock Exchange/ICE, and Thompson/Reuters. Even these services were wary of price manipulation. Some provided data feeds from many different bitcoin exchanges but were hesitant to put an aggregated index price to a given time. Unlike most

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7. Nominally, in the US, net worth over \$1M ex of primary residence, or income in excess of \$200,000.

equities, forex and bitcoin trade on multiple markets. Unlike forex, however, bitcoin trades in unregulated markets that can be amenable to price manipulation. Therefore, unlike forex, it's not as simple as saying that the price of bitcoin now is the last price at which it traded, and will change when there is another trade. There must be index calculations that may weigh trades from different exchanges differently and may discount questionable trades.

A typical private placement fund will be priced once a day. So, it would be acceptable if the Long-Short Funds were priced once a day too. There are data providers who are willing to stand behind an End of Day index price. Using a price from any of these very reputable data providers means that auditors would not likely flag Novera. It is not clear whether a data provider would be willing to offer an index price more frequently right now. Novera is working with mathematicians to develop a more refined index. Currently these data providers do not factor in bitcoin trades that are nominated in ethers, yet bitcoin/ether trades are about a third of the volume of bitcoin/USD trades, so they should not be ignored. There is a widely used US dollar index, called the "Dixie," and it does not factor in just USD to euros and ignore USD to yen. So, Finco and Novera are using a technique called numeraire to factor in bitcoin trades nominated in ethers and other cryptocurrencies to get a fairer value for a bitcoin index price (Seco et al. 2018). In a blockchain world, this could be a lightweight service that Novera offers other firms on the blockchain.

As Novera and Finco work towards launching the Long-Short funds, getting the fairest bitcoin price is just but one priority. The "devil is indeed in the details," and they are finding that there are many things they need to collaborate upon. Maybe the easy part has been done: The disruptee, Finco, has matched with the disruptor, Novera. We, the documenters of this match, hope to document in the future how this synergy would be realized.

## **7. Conclusion**

We presented the journey by which Novera Capital, the blockchain innovator, partnered with Finco, an SME investment firm actively looking for opportunities to leverage disruptive technologies. What can the reader take-away from the documentation of this journey?

### **7.1. For any Company, but Especially for an SME...**

Blockchain may be disrupting your industry, and if you don't pay attention, your business may be disrupted away

- Try to join a blockchain consortium in your industry

- Reach out to university researchers, technologists, and venture capitalists. See if there are government or industry programs that will help fund or other facilitate working with these experts
- Find a start-up who possesses blockchain expertise and explore partnerships, licensing agreements, joint ventures, taking equity positions in, and outright purchase
- It may be even be possible that with the right collaboration, you might pioneer blockchain use in your industry, and perhaps new business opportunities will be open to you.

## 7.2. A Corporate Ethos

In the halcyon days of cryptocurrencies and ICOs, zealots called for the global financial system to be overhauled and completely decentralized. Investors complained when their cryptocurrencies didn't double in a week, lamenting "when moon" (Taplin 2017)?<sup>8</sup> Yet many had no idea what they were investing in. So-called companies raised tens, even hundreds of millions of dollars in ICOs, based on some mostly-formed ideas stapled together in a white paper that were marketed on Youtube and Reddit. They wanted to replace Bay and Wall Street's using flimsy business models, hollow techno-speak, and unproven and insecure technology.

Against this backdrop, Bay and Wall Streets were suspicious of crypto people. Even though Novera was pitching a bitcoin tracking instrument, a Harvard law student (Shier), a New York hedge fund manager (Unger), and two business school professors (Laskowski and Kim) walking into a meeting sends the message that Novera is plenty corporate. And Novera endeavored to adhere to their corporate ethos.

Novera would be able to walk into any boardroom and clearly demonstrate compliance to regulations, and moreover show that their business practices would meet stringent expectations of large financial institutions.

We believe the lesson here is that in finance, which is heavily regulated and conservative, start-ups—whether they are espousing AI, blockchain, or Big Data—should show that they want to work with Bay and Wall Streets, not replace them. In this context, we do not believe "Move fast and break things" (Taplin 2017) is appropriate.

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8. i.e. when is my cryptocurrency price going to the moon

### 7.3. Regulators Support Innovation; They Support Blockchain

We've already noted how knowledgeable and supportive the OSC was to Novera. A couple of years ago, blockchain.lab participated in the RegHack (Regulators Hack) blockchain hackathon sponsored by the OSC. Then OSC allowed the TokenFunder STO to take place under their watch through the OSC Launchpad program. A Finco senior manager noted that Ontario was creating a regulatory arbitrage opportunity with STO's. Like the US and many parts of Europe, Canadian regulators opine that most ICOs are likely in violation of regulations. Yet, because the Launchpad was studying STO's, the framework for that was being better refined in Ontario rather than other places where ICOs are not allowed. It could be considered an arbitrage in that if an entrepreneur wanted to do a legal token offering at a place where there is ample transparency and well-respected rules of conduct, then Ontario turns out to be one the best places in the world.

The value of a regulators' willingness to support blockchain innovation transcends finance. The factor most commonly cited by 39% of 1,000 executives as a barrier to greater organizational investment into blockchain is regulatory issues. We see similar regulatory support for Ontario's agriculture industry. We were involved in a provincial government project to study how to get dairy farmers—who are mostly effectively SMEs—to adopt, or at least be more educated in, blockchain technologies.

We believe the lesson here is that large companies and SME, but most especially startups, should engage appropriate regulators in decisions about blockchain investments.

### 7.4. From Heavyweight Intermediaries to Lightweight Blockchain Services

Comparing information flows for Long-Short Funds versus those for Long-Short Tokens, it is possible to see this. Long-Short Funds require Novera, Portfolio Manager (Finco), and a Fund Administrator as intermediaries. Long-Short Token on the blockchain actually require more intermediaries—Novera smart contract, KYC/AML service, Bitcoin pricing oracle, and an Auditing service. This shows that working with Bay and Wall Streets, rather than trying to replace them, entails not necessarily eliminating or decreasing the number of intermediaries, but rather making them more light in weight. If a heavyweight intermediary is unnecessarily human-based and expensive, then the work it previously did could be replaced by an interplay between a main smart contract and other lightweight services. The responsibilities of the Administrator can be parsed to work to be done by smart contracts of Novera and the regulators, as well as KYC/AML and bitcoin pricing services. The immutability, automation, and transparency qualities of the blockchain enable efficiency going from heavyweight to lightweight. Inasmuch



as we recognize that it would enlighten the reader to understand more about the innards of Novera's solution, we are unfortunately limited in what we are allowed to divulge beyond mentioning that the long/short tokens are functionally similar to Contract for Differences (CFD's).

We believe that there are still great many possibilities for large companies, SMEs, and start-ups to invest in blockchain technologies, and not just in finance. We hope that this paper provides a rough blueprint delivered by way of a detailed and insider-written case study to guide the motivated reader.

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