The Theory of Bipolar Markets
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Premise: What is the way in which intrinsic value of a unit of a Blockchain-related asset class is calculated and how do market actors predict these units' price momentum?

BRIEF: The Theory of Bipolar Markets *may be the most important economic theory (and in terms of understanding the pricing and behavior of digital assets, the only way to understand anything meaningfully) developed since George Soros'* <u>Theory of Reflexivity</u>. *Going forward, as digital assets become a more dominant aspect of the global asset pool, applying bipolar market theory and by association, the bipolar market equilibrium, to forecasting asset price increases and predicting market events, will undoubtedly become par for the course of analysis. This White Paper, published for the first time here at* Coinspeaker*, presents the concept of the bipolar market equilibrium and looks at the way specifically it has been brought into being by the market adoption of devices such as the Blockchain, an intelligent ledger system that was developed in order to produce the currency Bitcoin. To date, no one has yet been able to answer a specific question with relation to digital asset classes that trade as a consequence of a Blockchain technology being monetized in unit form: specifically, what is the intrinsic value of a unit of a Blockchain-related asset class and further, how do we predict its price momentum going forward? Further: where will such assets end up on the economic spectrum? To what extent will Blockchain-related tradeable assets such as Bitcoin and Ethereum be influential in the development of markets overall, and how much do their holders stand to gain from the progression of their respective value networks?*

I: What Is Market Bipolarity & How Is Bitcoin Bipolar?
Introduction: Pure Market Reflexivity

The bipolar market, and by association, the bipolar market equilibrium, is the state of alignment between two *thinking* worlds: one which is thinking naturally, which is to say where human beings are doing the thinking, and the other, which is artificially thinking, where machines or technology is doing the thinking.

What is the difference between a natural thinking process and an artificial thinking process?

In defining his concept of reflexivity, George Soros breaks down the process of natural thinking into two aspects: the *cognitive* function and the *manipulative* function. The cognitive function is the function that processes information in order to determine the reality of a situation; conversely, the manipulative function is one that interprets information in order to make use of it to achieve a personal advantage of some kind.

Where the manipulative function and the cognitive function of the thinker are at odds, this is what Soros refers to as a negative feedback loop (a value corrective event); where the manipulative function and the cognitive function of the thinker are aligned however, there is a positive feedback loop. The latter type of loop, argues Soros, allows market events to go on for much longer periods of time than economists assume is necessarily the case.

The bipolar market theory – and by association, the concept of bipolar equilibrium – assumes that Soros' *Theory of Reflexivity* is the actual state of reality in economics. In other words, it does not follow the standard economic definition of market equilibrium.

Bipolar market theory asks: *what happens when bipolar thinking states are applied to markets?* Which is to say; what happens to market prices and economic reality when the natural thinking world is annexed by one in which artificial thinkers are present?

In Bipolar Markets, we get one of two possible outcomes: either we get the outcome of an *ultra-positive feedback loop*, or we get the outcome of a *positive-negative* or a *negative-positive* feedback loop. Note that, unlike in a reflexive market, what is not possible in a Bipolar Market is to ever have a purely positive feedback loop or a purely negative feedback loop.

This is an entirely new concept in and of itself – and in turn, this leads us to thinking about and behaving very differently in markets where there is a substantial amount of bipolarity present. Simply; in markets where bipolarity is the major source of dominant behaviour, simple equilibrium economics doesn't work, since the situation is to some extent, always *fundamentally one of reflexivity*. Which is to say, *the natural state of bipolar markets is reflexive*.

Background to Bipolar Equilibrium

Think for a moment about the consequences of a market where reflexivity – which is the empowerment of the manipulative thinking function over the cognitive thinking function – is the natural state of a market (as opposed to being a state that is alternate to market equilibrium, or a pure cognitive thinking process). In such a case, the equilibrium of a market is no longer one single equilibrium, it is a dual equilibrium: which is to say that first

of all, there is a market price equilibrium where the cognitive or manipulative thinking function is present, but then there is also another market price equilibrium, which is that of the artificial thinking world, where the manipulative thinking function is always dominant:

C-X, *M*-X
M-C, *M*-M

The reason that there is always manipulative thinking present in a world with artificial thinkers is simply that our design of the artificial thinker is in and of itself a manipulative cognitive process.

Even if the purpose of the artificial thinker is to enhance the purely cognitive analysis of the market and thus to use such information in order to profit from the outcome of price discrepancies that move for or against a specific range of criteria that might deviate from this (as is the case with many artificial trading systems today), the very creation of the artificial thinking system in the first place, and the subsequent application of the artificial thinking system to a live trading environment, is in and of itself inherently manipulative.

Establishing Bipolar Equilibrium

Thus, a bipolar market is one in which there are *four* possible price equilibrium constituents present:

Naturally-dominant thinking equilibria (the "natural equilibrium")
Cognitive-Manipulative-Cognitive (CMC)
Cognitive-Manipulative-Manipulative (CMM)

Artificially-dominant thinking equilibria (the "artificial equilibrium")
Manipulative-Manipulative-Cognitive (MMC
Manipulative-Manipulative-Manipulative (MMM)

In first two levels (CMC and CMM), where it is the presence of the natural thinker which is dominant, *market price equilibrium* is at its most present, as even in the case of CMM, it is still nevertheless the human market participant who is doing the price-fixing (albeit this is a market environment with substantial reflexivity present and in which therefore it is debatable to what extent market equilibrium meaningfully applies).

In the second level, however, where only one cognitive layer of thinking is involved, there is not only substantial reflexivity involved but rather, the state of the market *is fundamentally reflexive in nature*. This means that there is little to no application of intrinsic pricing at this point in the market cycle.

This second "pole" of the market equilibrium is what creates market bipolarity ("bipolar" is really a *slight* misnomer in that an equilibrium is by definition never bipolar, but always in flux).

It is this aspect of the market – which is to say, where there are two equilibrium values present – and specifically the influence of the secondary pole which we now seek to explore and understand better as products and innovations such as Bitcoin, Ethereum and other *digital assets*, in which artificially intelligent technologies produce the other half – or more – of the asset's market returns, evolve substantially.

Defining Bipolar

In order to understand better how Bipolar Markets work, we have to dial back and understand the definition of "bipolar". Bipolar is not an arbitrary adjective here: it is very much definitive. In psychology, Bipolar Disorder is one that relates specifically to a disorder in the cognitive process. As defined by the National Institute of Mental Health:

Bipolar disorder, also known as manic-depressive illness, is a brain disorder that causes unusual shifts in mood, energy, activity levels, and the ability to carry out day-to-day tasks. There are four basic types of bipolar disorder; all of them involve clear changes in mood, energy, and activity levels. These moods range from periods of extremely "up," elated, and energized behavior (known as manic episodes) to very sad, "down," or hopeless periods (known as depressive episodes). Less severe manic periods are known as hypomanic episodes

Are Bipolar Markets "Sick"?

Are bipolar markets by definition "sick" in some sense then? By the definition of classic market economics, they certainly are. Classic market economics dictates that market equilibrium is the foundational core of all self-regulating market activity: it is the price at which supply and demand converge in order to produce "fair" or "corrective" market returns for all participants. In other words, it regulates the democratic nature of the free market – precisely by making it "free".

In a market which is ultra-reflexive, however, which is to say, where reflexivity is the dominant theme to such an extent that "fair" market pricing is only one possible aspect of the market, capital asset valuations may become so far removed from traditional supply-demand functions that a very small minority of market actors benefit from a process whereby the majority of market actors assume they are playing in a free market but are really involved in a game of self-manipulating price behaviour, one which is being controlled by the minority pool of actors who substantially influence the second pole of the price equilibrium.

Because in classic free market economics, the equilibrium is founded upon a core reality – supply and demand meeting one another on the yield curve – the process of market price manipulation, where suppliers and consumers may fix prices for specific periods of time in order to gain a market advantage, or where market prices are influenced by a process of "front-running" order-flow etc. – is much easier to identify and thus, regulate. In a market where price equilibrium is both constant in nature and in addition, unconstant, how do you tell the difference, though?

Bipolarity In Bitcoin

This is the case today with many digital assets, whose core supply function is affected by the artificial (manipulative) cognitive thinking process to such an extent that its primary equilibrium is almost obsolete. The case of Bitcoin offers a great example of this. Bitcoin is produced by machines that work out elaborate equations and by doing so, issue new units of the digital currency to market. By the insertion of this artificial thinker into the market pricing equation, however, the core supply-demand yield curve is undermined by the artificially-enabled one the other end of the bipolar spectrum.

For if the price of Bitcoin is not only subject to market supply and demand of the core currency Bitcoin, but also subject to the number machines that produce its availability, and henceforth also subject to a whole series of discount wholesale stock purchase deals which "miners" may then create with another layer of market actors, then at what level is the value of Bitcoin meaningfully "intrinsic" in terms of its underlying yield curve? The answer appears to be: not at all.

Does this mean to say that Bitcoin is "sick"? In the sense in which Bitcoin diverges from any other asset class it is, since there is no underlying value that supports the supply-demand convergence of Bitcoin except for its own core usage. Isn't this, however, the same as for assets such as gold and silver, where the prices of these commodities relate mostly to their speculative values rather than the value of their core uses (as for example, in the case of

copper or iron-ore, where demand and supply are much more dependent on infrastructural build-out in which they are used)? In some ways yes, and in other ways no. The prices of precious metals that are not for the most part dependent on the infrastructural use of their core functionality, such as gold, are in fact used in the financial infrastructure of the global economy, and have been so since time immemorial.

Gold and silver was a "base currency" upon which other national currencies were priced for many years, mostly until the abolition of the gold standard in the 1970s. But even today, without the application of the gold standard, China's government purchases many billions of dollars worth of gold a year in order to hedge against its position in U.S. Treasury Bills, and in this sense at least, gold still serves its purpose as a core infrastructural component of the global markets system.

In the case of Bitcoin, the same is not true. Bitcoin is a brand new asset class, its price determined by a whole series of market actors the likes of which many of whom have never been involved in the creation of asset pricing structures before. It is not in any real sense an established foundational infrastructure of any component of the real economy.

In theory, Bitcoin might be able to serve the same purpose as gold does for China's hedging of acquisition of U.S. Treasury Bills, but it is not meaningful to discuss hypothetical market events in a paper that addresses real market practice, or we as well with equal logic apply the hypothetically-valid notion of market equilibrium theory to the price of Bitcoin, after all. Bitcoin is fundamentally a bipolar asset class. On one hand, its price is derived from the core availability and demand for its units by those who apply it to money-storage and transference uses. On the other hand, its price is reinforced by the notion that it holds some kind of discounted net present value that is as yet unrealized, and much of this discount relates to the intelligence of its underlying technology, the Blockchain, and the potential scalability of that technology. In other words, one part of its value equation is reliant on supply-demand yield-curve economics, and this part is partially-reflexive, while another part is completely reflexive in the sense that it is anyone's guess the extent to which a technology will fulfil a particular role in the market. Bitcoin's "sickness" in a traditional economic sense would seem to arise then from the inability of its asset pricing structure to independently reflect at any point the true state of its supply-demand yield curve calculation due to the presence of an alternate, artificial thinker in the unit production equation, which constantly changes both its actual and its perceived availability (and hence underlying demand for its core functionality). The imposition of the artificial thinker – in this case Bitcoin's blockchain – is the fundamental determinant then of Bitcoin's status as a bipolar asset class.

II: Factory Banking & The Role of The Artificial Thinker

Factory Banking: An Internet of Things Value Configuration

In 2014/2015, I developed a concept called Factory Banking. Factory Banking is an important component of the bipolar market economy, because it establishes the environment in which artificial thinkers are operative in a market environment. At its core, Factory Banking is not really a form of banking at all, but rather it is a value configuration – a way of assembling a value equation – in an economy where the Internet of Things is the dominant state of economic activity.

Traditionally, value configurations have been broken down into three categories: a value chain, where a merchant purchases supplies, assembles a product, marks the product up and sells it; a value shop, where a merchant sells some form of intelligence or knowledge; and a value network, where a merchant assembles a platform of some kind in which every active new participant on the platform contributes by a positive factor exponent to the value of that platform.

Factory Banking is the evolution of these three traditional value configurations. By combining all three value configurations and applying them to the Blockchain, Factory Banking identifies the Blockchain as in and of itself a new value configuration, whereby the Blockchain technology is the new hybrid value configuration for the Internet of Things Economy.

What is special about this idea? For a start, it is the first value configuration to feature an artificially-intelligent market actor. For by means of solving an equation in the manufacturing of Bitcoin – or any other form of digital currency that similarly evolves from an underlying technology the way that Bitcoin does – the value shop process of "Problem Finding-Problem Solving" as well as the Value Chain process of "In-bound/Out-bound Logistics" (which are those value configurations' core value creation processes) are automated on an intelligent Value Network to produce an individual unit of value itself.

In other words, the Blockchain utilizes all aspects of the value configuration trinity in order to recreate value as a new, virtual unit of economic purchasing and spending power. It is hard to overstate the importance of this in an economy where the Internet of Things is the *de facto* mechanism of operation behind much of the economy's day-to-day transaction processing. For by creating a unit of value that is entirely new in and of itself via artificially-intelligent means, the process of Factory Banking just about stops short of reinventing our concept of purchasing power parity in terms of absolute efficiency. In other words, in the

process of Factory Banking value is aligned with its two core functionalities – production and spending – at exactly the same point in time.

Factory Banking In Bipolar Markets

In Factory Banking, the Blockchain is a value configuration for the Internet of Things economy whereby the configuration of value itself is artificially-intelligent in construct (at least partially). This idea satisfies a fundamental pre-requisite for bipolar market economics: that there is an artificial thinker present in the economic equation. In fact, Factory Banking is the only current value configuration – or if you like, economic process of value assembly – that we know of today where an artificial thinker is present and actively influencing economic events in a real sense.

Therefore, we can say that Factory Banking is the pre-requisite process behind bipolar market activity, for without the involvement of the artificial thinker, there is no fundamental bipolarity, merely extensive reflexivity. In this way, Factory Banking is the core driver of bipolar market activity.

What does this mean? Primarily, it means that bipolar markets are ones in which value is being completely redesigned altogether in terms of its fundamental assembly and functionality, primarily as a consequence of the artificial thinker's involvement. Second, it means that value (or if you like, re-interpreted value) – rather than currency or commodity – is the dominant driver of the monetary process in bipolar markets. Third, it means that the second variable of the bipolar equilibrium is not concerned with traditional intrinsic value equations, but rather with some sort of new interpretation of value from the standpoint of its production and consumption – as opposed to supply-and-demand – capability.

This last point is especially important, but its core thesis is one that is especially hard for classic economists to grasp: specifically, that production and consumption are not the same things as supply and demand. In bipolar markets, production and consumption is an alternate version of supply and demand – a sort of derivative of the supply-demand equation, in fact, precisely because of the presence of the artificial thinker.

Since value is what is being produced, and since its production profit margin has everything to do with what niches of the economic spectrum it in turn serves, thus recreating in and of itself a new value paradigm, the process of production and consumption in bipolar markets is not the same thing as the supply-demand curve, but rather a variant of it. Specifically, it has everything to do with the cross-section at which the natural thinker and the artificial thinker converge on the economic platform. This is logical – for if the artificial

thinker is in some sense redefining and recreating value, it is only doing so at the point at which it is meeting the natural thinker – from the world of intrinsic economic value – on the economic spectrum. As long as the artificial thinker is not present in the economic equation, market bipolarity is non-existent, and thus, value in relative terms is either free market value or reflexive market value.

At heart then, in terms of the bipolar equilibrium, value has much more to do with how supply is packaged and presented to core pockets of the demand curve than simply to do with pure product availability and scarcity.

III: Revisiting The Bipolar Equilibrium
Identifying The Artificial Thinking State of Equilibrium

Now that we have explored the process by which the artificial thinker is present from an economic standpoint, let's return to the thinking process that is going on in bipolar markets.

Recall that there are four possible equilibria constituents in the bipolar market equilibrium, two of which at any time are the dominant variants of that equilibrium:

Naturally-dominant thinking equilibria (the "natural equilibrium")
Cognitive-Manipulative-Cognitive (CMC)
Cognitive-Manipulative-Manipulative (CMM)

Artificially-dominant thinking equilibria (the "artificial equilibrium")
Manipulative-Manipulative-Cognitive (MMC)
Manipulative-Manipulative-Manipulative (MMM)

A bipolar equilibrium is composed of one constituent of each of these poles – the natural equilibrium pole (*partially* reflexive) and an artificial equilibrium pole (*exclusively* reflexive). The mixture of combinations of the various polar equations within the bipolar equilibrium at any one time correspond to the "bipolar" nature of the economy in which an artificial thinker is present.

The Four States of Bipolar Equilibrium

I have stated earlier that the use of the term bipolar to describe the state of market activity in which an artificial thinker is operative was one which was specific rather than

arbitrary. To illustrate this, I defined bipolar according to the same criteria as that which the National Institute of Mental Health (NIMH) uses. In further defining bipolar disorder, NIMH breaks the states of bipolarity of a psychiatric patient down into four possible alternate states:

Bipolar I Disorder— defined by manic episodes that last at least 7 days, or by manic symptoms that are so severe that the person needs immediate hospital care. Usually, depressive episodes occur as well, typically lasting at least 2 weeks. Episodes of depression with mixed features (having depression and manic symptoms at the same time) are also possible.

Bipolar II Disorder— defined by a pattern of depressive episodes and hypomanic episodes, but not the full-blown manic episodes described above
.
Cyclothymic Disorder (also called cyclothymia)— defined by numerous periods of hypomanic symptoms as well numerous periods of depressive symptoms lasting for at least 2 years (1 year in children and adolescents). However, the symptoms do not meet the diagnostic requirements for a hypomanic episode and a depressive episode.

Other Specified and Unspecified Bipolar and Related Disorders— defined by bipolar disorder symptoms that do not match the three categories listed above.

Exactly as for the state of a psychiatric patient, so the second pole of the bipolar market equilibrium follows a possible quadrangle of possibilities.

All the possible interpretations of market behavior correspond with those of their psychiatric institution equivalent definitions:

Where a Bipolar I Market State is present, the second pole of bipolar market activity is Cognitive-Manipulative-Cognitive (CMC). *This state of market activity is mostly reflexive, meaning that the manipulative function is positively reinforcing the cognitive interpretation of market events. Naturally, there is an expiry period to such an event cycle, and thus the 7 days – one market week – of activity is applied here.*

In a Bipolar II Market State, Cognitive-Manipulative-Manipulative (CMM) *functions are in play. Once again, this state is one that is for the most part, reflexive in nature,*

but which is more medium-term oriented, and likely to consist of patterns of repeated self-reinforcing market value interpretations (i.e. miners are producing more Bitcoins in order to keep up with supply-demand equations not because of the underlying demand for it, but because of the speculative demand scenario for it).

A Bipolar III Market State is the first instance in market economics of a situation in which an artificial thinker is the dominant configuration agent of value. In this case, Manipulative-Manipulative-Cognitive (MMC) *thinking functions are at work. What this means is that the cognitive thinking function – being the process of rationally interpreting market events according to an independent set of criteria – is replaced foremost by the manipulative function, since in this instance, it is the artificial thinker that is primarily coordinating notions of market value. Here is a perfect illustration of how Bitcoin, in its first two years of adoption, was able to experience such extraordinary price increases – sometimes up to over 1000% in a space of months – without experiencing any of the kind of pullback one might typically expect in the case of other asset classes. Simply – the application of the core underlying technology – the Blockchain, was creating a Bipolar III market, wherein* "numerous periods of hypomanic symptoms as well numerous periods of depressive symptoms … not meet[ing] the diagnostic requirements for a hypomanic episode and a depressive episodes (i.e. bubble/ market crash events)*" was the state of events.*

A Bipolar IV Market State os where the thinking process is entirely artificial, so much so that the natural thinker's cognitive functions are completely avoided altogether. In market conditions where the Manipulative-Manipulative-Manipulative (MMM) *thinking function is in place, there is pure positive-positive reinforcement of value interpretation. We have yet to experience a Bipolar IV Market State, but we might consider Bitcoin's rise through the $10,000-mark (that being roughly 10x the average price of an ounce of gold historically on a 10-year average timeline) as representing such a state when it occurs.*

IV: Conclusion: The Next Evolution of Bitcoin Trading (Bipolar Market IV)

This White Paper seeks to introduce the notion of Market Bipolarity to the modern economic paradigm wherein the Blockchain is the first artificial thinking agent to meaningfully reinterpret and reconfigure value in a context and extent in which we have

never before been exposed. Given the possible presence of four Bipolar Market States, just three of which to date have been actively observable, it follows that there is an extreme likelihood of a Bipolar Market IV state of market equilibrium coming at some point in the next 5-10 years. The affects of this Bipolar Market IV state cannot be understated: whereas in all other contexts, the cognitive thinking function is active, regulating to some extent the intrinsic pricing reality of the underlying asset class(es) (in this case Bitcoin and other digital currency assets) in the event where a Bipolar Market IV equilibrium is present, no such self-regulating behavior will preside. The as yet dormant Bipolar IV State of market equilibrium will likely cause one of two possible outcomes:

1. *Either* the new concept of value as redefined artificially will lead to a process of value innovation to such an extent that other asset classes which follow the free market equilibrium trajectory will be comparatively left behind,
2. *or* the self-reinforcing notions of artificially intelligent value will end up destroying their own innovative cycle.

In other words, in a Bipolar Market IV State, valuations of digital currency assets will either become so far removed from core production distribution equations that they end up undermining the core delivery technology on which they are founded (i.e. Bitcoin price acceleration ends up destroying the Blockchain), or the opposite will be the case: valuations will fundamentally begin to reinforce the core technology underpinning them, in turn undermining traditional economic valuation dominance in the real economy. One way in which the latter scenario may very realistically unfold is if the high valuations support increased venture capital investment into Blockchain-related innovations and a further spur of similar currencies attached to mainstream Blockchains such as those protocols underlying Bitcoin and Ethereum. It is still to early to say for certain which of these outcomes will prevail. It is however quite possible, given the relatively stable cycle in which Bipolar Market Equilibrium States I-III have gradually been accepted into the global market pool, that a reinforcement rather than an undermining of artificially-intelligent value may become the way of the future. Fundamentally, this would change everything we know about value, currency, asset price fluctuations, and risk-reward equations.

Only the future will tell, but if a Bipolar IV Equilibrium State is adoptable within a realistic trading paradigm, one thing is for sure: asset price valuations will fundamentally and catalytically be altered permanently.