Unlocking Opportunities

Divergence Between Utility and Speculation

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Introduction

Since inception, blockchain has been unreservedly divisive. The technology supports decentralised and transparent transactions between any entity, anywhere in the world, at any time, for almost any conceivable use case. It has been heralded by many as a transformative technological force, applicable to finance, healthcare, supply chains and beyond. However, investors, regulators and journalists alike have also criticised the technology throughout its lifespan, contesting the value proposition of cryptoasset tokens that support its functionality.

Debate centres on a key question: is blockchain a viable, productive and applicable technology, or is it purely speculative – a Ponzi scheme fuelled by irrational exuberance and attention?

Whilst debate can be constructive, such polarised views have, so far, failed to find middle ground. This is hampering blockchain's adoption. Several studies find that media and regulatory discourse, positive and negative, contribute to volatility in crypto markets: between 2018-20, international media publications framed around crypto-related crime and financial governance led to the price of Bitcoin falling between 6-12% in the following 24 hours, whilst increasing media coverage leads to a material increase in the volatility of crypto tokens, including those unrelated to published articles [1, 2]. Given this, anyone looking to adopt blockchain must remain cautious. The impacts of volatility can be damaging and far-reaching. In the wake of the Terra/Luna and FTX collapses, crypto trading activity increased markedly, with large, sophisticated investors selling to smaller retail investors. As a result, between August 2015–December 2022, most retail users globally made losses on their bitcoin holdings [3]. Ironically, this instates a cyclical effect of *news-volatility-news* that reinforces blockchain's speculative, Ponzi-like status [4]. And for entrepreneurs and investors focused on value proposition, the knock-on effect of noise and volatility can be damaging, even terminal [5, 6].

It is therefore critical for blockchain's evolution, perhaps survival, to dissect these contrasting views and highlight the divergence between genuine utility and speculation. Both arguments presented can be correct, in part, without diminishing the other, and this paper considers the

dichotomy between utility tokens and meme coins to present a definition of value in blockchain.

The Role of Tokens

Blockchains leverage native tokens (known as cryptocurrencies) to support value transfer. Cryptocurrencies are digital cash, a way of buying and selling over the internet, and the high-level mechanics are quite simple. *User A* can run wallet software on her computer to store and manage cryptocurrency (Fig. 1). Wallets have a public address identifiable to the network, so other users know where to send cryptocurrency owed to *User A*. Wallets also have a private key known only to the wallet owner, so only *User A* can unlock her wallet. And *User A* must input her private key to send money to others [7]. With this public and private key pairing, *User A* can access tokens associated with her wallet from any Internet-connected computer in the world and send money without involving an intermediary. Tokens are, therefore, essential for peer-to-peer (P2P) functionality.

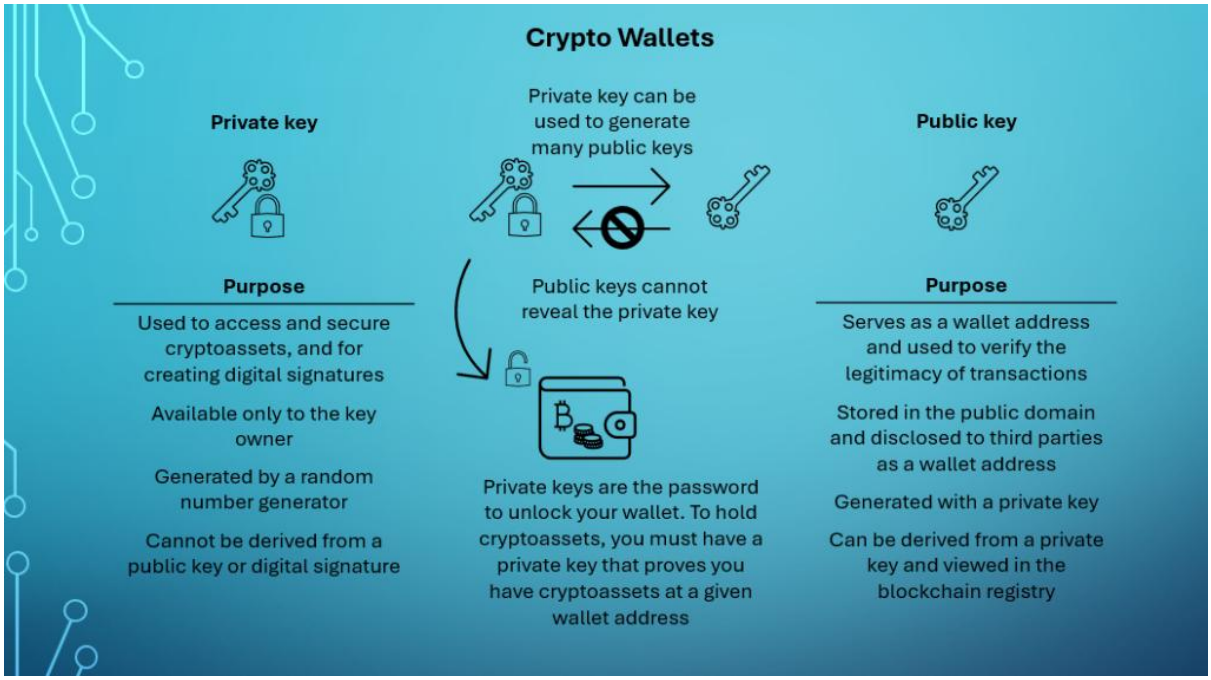

Figure 1 – Blockchain Wallet Software

However, in almost all decentralised ecosystems, tokens also support the mechanics of the network, from upkeep to governance. Ether (ETH), for example, is used to process transactions and state changes on the Ethereum blockchain. Users and developers use ETH as "gas" to fuel decentralised applications (dApps) that run on Ethereum; this "gas" is sent to

validators as reward for validating the transaction [8]. Users can also stake tokens to vote on protocol developments proposed by developers. And this logic is applied elsewhere. Consider the following pairs: Bitcoin, the blockchain, and bitcoin (BTC), the token; Avalanche and AVAX, Cardano and ADA…each decentralised project applies its own method for recording data transfer, whether a transaction, validation or voting.

These token mechanics drive decentralisation. No central authority controls a blockchain; instead, tokens incentivise developers, validators and users to play distinct roles. Blockchains can even support decentralised autonomous organisations (DAOs), in which code upgrades, initially agreed on by DAO participants, are implemented to continuously run the organisation autonomously. As one might expect, to become a DAO member and vote on code proposals, a user must first buy its token [9].

This presents a straightforward conclusion: the value of a cryptocurrency must be intrinsically linked to the operations of its parent blockchain.

The Dichotomy: Utility Tokens vs. Meme Coins

But can this explanation be consistently applied across all cryptocurrencies?

Since Ether is network gas, it can be distinguished from a pure currency on the basis that it supports all applications and behaviours on chain. Users hold Ether to fuel their activities, like how people hold oil to power machinery, and, as the Ethereum blockchain is used more, demand for Ether increases. Owing to a dynamic burn mechanism, which permanently removes ETH from circulation based on fluctuating network activity, increasing demand and decreasing supply contribute to potential appreciation of Ether [10]. This attracts developers and validators, who are incentivised to produce innovative applications on chain for greater reward. Over time, Ethereum should deliver more applications and functionality for users, displaying increasing utility. We determine, therefore, that Ether is a utility token, and its value is linked to the value and utility of Ethereum.

In contrast, certain cryptocurrencies exist without any fundamental technological purpose. Termed ‘Meme coins’, such tokens are created solely to capture speculation and are traded on the expectation that they will appreciate due to their association with a cultural phenomenon [11]. The most recognised is Dogecoin (DOGE), originally created as a parody of bitcoin

based on *Kabosu* from the 'doge' meme, but which is now the 7th most valuable cryptocurrency [12]. As of today, nearly 13 million meme coins have been created [13]. Epitomising the inherent cultural alignment, Donald Trump launched a meme coin ahead of his inauguration, $TRUMP, which soared 1,150% from $6 to $75 in 36 hours but which subsequently crashed to $31 two days later [14]. $TRUMP has no utility, failing to offer governance rights or decentralised finance (DeFi) functionality [15]. It is simply associated with Trump's image and trades based on expected popularity with the community.

Meme coins directly contradict the conclusion that cryptocurrency value is intertwined with the utility of its parent blockchain. Consider that the aptly named *Pump.fun* platform on Solana blockchain allows users to create and trade meme coins. Of the 10,417 tokens launched daily, 9,912 become defunct within 24 hours, and the average life span of a meme coin is just 12 days [16]. They are markedly more volatile than bitcoin: daily returns swing between -60% and +134%, while returns on bitcoin are relatively less extreme. The average standard deviation of meme coins is 0.1483, triple that of bitcoin, whilst their median value is negative at -0.251%, suggesting investors in meme coins, on average, lose money [17]. They are highly controversial instruments, devoid of technological or investment fundamentals, undoubtedly encouraging a culture of gambling on pump-and-dump schemes, and do not support the operations of a parent blockchain. Yet they entertain high volumes of trading and absurd valuations.

Clearly, utility tokens and meme coins represent distinct cryptocurrency classes. Utility tokens provide access to services; meme coins drive community speculation. We might expect volume and value to accrue to utility tokens in a rational market as this distinction becomes increasingly pronounced. Historically, however, the opposite has been true. Silberholz and Wu (2021) analysed 891 cryptocurrencies between 2017-21 and found that, on average, utility usage declines 80% across the first eight weeks of a token's trading history, coinciding with a six-fold increase in on-exchange speculation [18]. This suggests that users currently transition to speculative trading rather than remaining loyal to blockchain platforms. Speculation dominates utility.

A deeper dive reveals why. The researchers categorised trading into three categories: *utility usage* and *exchange-based speculation*, both covered above, and *DeFi-focused speculation*. DeFi tokens are another class of cryptocurrency, encompassing lending and trading protocols

that offer increasingly levered and complex ways to speculate on markets. Conceptually, though DeFi applications promise financial utility through peer-to-peer services, the primary use of these platforms currently is to speculate with other tokens. PancakeSwap and Sushi Swap, for example, are DeFi exchanges with native tokens (CAKE, SUSHI), but use of these tokens unlocks meme coin trading. The researchers, therefore, considered DeFi tokens to be speculative and found that, as this sector swelled in 2020, DeFi-focused speculation crowded out both utility usage and exchange-based speculation, increasing total market speculation [19].

DeFi appears to blur the distinction between utility and speculation and this effect is still prevalent today. Solana, a leading Layer-1 utility platform, was the second most attractive ecosystem for blockchain developers across 2024, the most popular ecosystem for new developers and the second largest blockchain by total value locked (TVL) [20]. Its user base swelled to 3.5 million active daily users [21]. However, the bulk of volume was dedicated to meme coin trading across leading decentralised exchanges in the ecosystem and the market capitalisation of meme coins on Solana today exceeds $21.5bn [22]. Solana's utility appears to be funnelled into DeFi speculation.

Activity centred on speculative trading is bad for market participants. Silberholz and Wu further concluded that higher utility enhances price discovery and lowers future volatility for a token. Utility likely increases the signal-to-noise ratio in prices, embedding relevant information about the economic fundamentals of a blockchain [23]. In contrast, both measures of speculation positively predict future volatility and, additionally, capture more media attention. No wonder, then, that media can be critical, regulation inconsistent and debates so polarised [24]. The negative effects of speculation on volatility and profitability detract from the value proposition of utility tokens.

Value, therefore, is not always intrinsically linked to the operations of a parent blockchain. In fact, the former conclusion appears relevant to only a subset of cases.

The Resolution

Noting that speculative tokens are extremely volatile and attract media attention, the solution to catalyse blockchain's maturity is quite simple. Long-term success hinges on utility: the

ability to solve real-world problems, enhance efficiencies and support value-add innovation. Consider the evolution of Web 2.0 technology companies – early internet applications transitioned into dynamic platforms with clear utility. Amazon transformed commerce by integrating logistics, payment systems and customer support; Facebook and Twitter provided a user-centric design to deliver unprecedented connectivity and information sharing; and cloud services like AWS empowered businesses to scale efficiently. All highlight the importance of value-add utility for technology adoption. Real-world solutions are key.

Given the decentralised solutions proffered by blockchain seek to coordinate human activity in more expansive and inclusive ways than can be achieved by centralised models, utility should be guaranteed. But, as we have seen, the industry has failed to deliver on this promise, and users are turning to speculation a mere eight weeks after projects are launched. Utility means genuinely addressing pressing challenges. DeFi, for example, should unlock remarkable value. Peer-to-peer lending is incredibly powerful, allowing anyone to obtain funding without the need to rely on intermediaries. In the UK, 80% of business funding comes from major banks; in the U.S., the figure is 20%. Instead, private equity, venture capital, angels and retail banks play a major role [25]. DeFi could change the landscape for UK businesses and unlock direct lending from a more diverse cohort of capital allocators. Similarly, Cardano is focused on serving the unbanked: 1.4 billion people who could benefit from accessible finance that traditional institutions have failed to serve [26]. Alternatively, consider Filecoin, which rewards users with FIL tokens for contributing storage space in a decentralised cloud environment, working to deliver a cheaper and more accessible alternative to AWS. These applications can all provide utility, and their tokens value.

Regulatory change must support growth to prevent users from turning to speculation. It has been extremely challenging for entrepreneurs to build sustainable solutions owing to excessive, ineffective or inconsistent regulation. Anyone can create a meme coin at any time on Pump.fun, yet even Ethereum, widely considered the leading smart contract blockchain platform, has been rigorously scrutinised by the Securities and Exchange Commission, which investigated whether it engaged in the unregistered offer and sale of securities [27]. Regulation must clarify legal definitions of cryptocurrency classes and uses, tax implications, use restrictions, and more to ensure value-add projects thrive.

The distinction could be game-changing. Ethereum is a utility token and has been approved for exchange-traded products (ETPs) in the U.S., making cryptocurrency available to traditional financial portfolios. Several providers have applied to launch Solana ETPs, another utility token, and there is expectation that these will be approved in 2025 [28]. Blockchain is not yet mature – there is clear weakness in crypto infrastructure which has harmed investors and users over the years – and uses are not fully established. However, utility is vital to distinguish blockchain from speculative trends and integrate it with real-world processes. With utility, blockchain can mature.

Bitcoin, The Exception

We touch briefly on Bitcoin, the original blockchain to showcase the power of decentralised currency. Bitcoin was created as a distributed ledger that allowed a user to send currency to anyone in the world without relying on an intermediary. It was the breakthrough innovation.

But subsequent developments have expanded blockchain's scope. Bitcoin is now far slower than the likes of Ethereum, Algorand and Solana (Table 1), processing only 4.6 transactions per second (TPS) and incurring a block time of nearly 12 minutes [29]. It also supports far fewer dApps and fails to scale anywhere near as well as competitors. Smart contract platforms offer far greater utility.

Table 1 - Transactions Per Second For Leading Blockchains

Blockchain	***Real-time TPS***	***Max Recorded TPS***	***Max Theoretical TPS***	***Block Time***	***Finality***
Algorand	14.38 tx/s	5,716 tx/s	9,384 tx/s	2.79s	0s
Bitcoin	4.6 tx/s	13.2 tx/s	13.2 tx/s	11m 12s	1h
Ethereum	14.82 tx/s	62.34 tx/s	119 tx/s	12.16s	16m
Solana	1,318 tx/s	2,909 tx/s	65,000 tx/s	0.41s	12.8s

Yet, valued at $2.08tn, bitcoin is five times more valuable than ether and the seventh most valuable asset in the world [30]. It again bucks the notion that the value of a token is inherently linked to the utility of a parent blockchain.

The investment case for bitcoin appears to depend on categorisation as “digital gold”, a likeness bestowed on it owing to use as a potential store of value. It has a limited supply of 21 million coins, bucks inflationary mechanisms present in fiat systems and has until now shown low correlation with traditional assets [31]. And, perhaps gaining the upper hand on gold, bitcoin is also divisible to eight decimal places, accessible on any Internet-connected wallet and hosts transactions that are transparent to the whole network.

Does utility play any part? Arguably, resistance to inflation, divisibility and transferability are extremely useful constructs. If bitcoin truly is digital gold, then it offers utility to users as an innovative store of value.

To this author, bitcoin is a unique case. Technologically, it is inferior to other blockchains and, therefore, under our argument, it should be less valuable. However, bitcoin continues to lead the crypto market, and investors look to bitcoin returns as the strongest indicator of market sentiment. It was the first cryptocurrency and showed what was technically possible, leading the way for all innovations to follow. Whether this is enough to preserve its value in the long run, we shall see.

Closing Remarks

Blockchain is one of the first identifiable large-scale implementations of decentralisation, but it has so far failed to truly grasp public adoption. Debate has raged over whether it is a value-add technology or a concept for speculation, and this has cyclically blurred perceptions of its potential.

Certainly, blockchain has useful concepts, and projects can provide value. Native tokens that support these operations – utility tokens – are inherently valuable, provided the parent blockchain offers utility to users. However, speculation has taken centre stage, and the positive correlation between speculative trading, volatility and media reporting continues to devalue utility tokens.

This must change. Mirroring Web 2.0 technologies, utility is the cornerstone for maturation. Developers, entrepreneurs and investors, aided by proactive regulation, must prioritise utility to ensure blockchain’s enduring impact and deliver on decentralised digital infrastructure. Ultimately, evolution hinges on blockchain’s ability to deliver value through practical

applications. By addressing real-world challenges, utility tokens can turn the tide on adoption.

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