

Ampleforth

Ampleforth is a digital asset token protocol for a cryptocurrency whose supply expands and contracts in response to the prevailing market price's deviation from a hard-coded price target. It is intended to have a unique volatility footprint and be uncorrelated with other assets with the goal of reducing systemic risk in investor portfolios. In the long-term, the team hopes that volatility will decrease and it will be better suited as a global reserve money than existing cryptocurrencies.



This report is not to be construed as investment advice or a legal opinion. Smith + Crown focused on Ampleforth in its latest Deep Dive Report as a result of our Research Directives feature (beta) in the Smith + Crown Intelligence Platform SCI. Research directives are part of our enterprise subscriptions, with details available in a forthcoming memo.



Overview

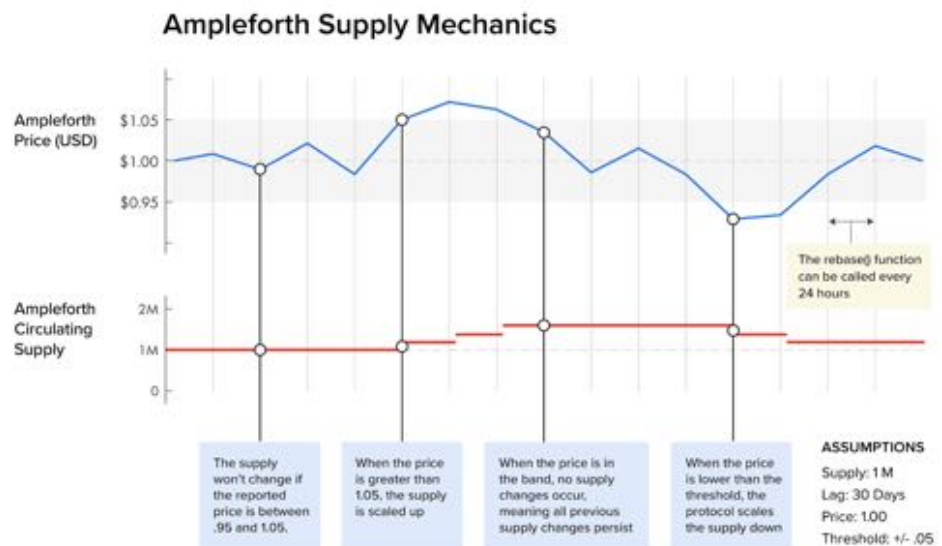
Ampleforth is an Ethereum blockchain metatoken protocol intended to produce a long-term stable cryptocurrency called Amples. The protocol will increase the global supply of Amples across all Ample wallets when the market price of Amples, provided by a set of oracles, exceeds an established target range and decrease it across all wallets when the price falls below this range. The intent is that creating more Amples will add sell pressure to the market and removing Amples will reduce sell pressure. This allows the broader Ampleforth network valuation (commonly referred to as the “market capitalization”) to fluctuate with supply and demand for Amples, while retaining the price of individual Amples around a steady nominal target. Supply changes occur via a smart contract function anyone can call after 24 hours have passed since the last function call. Supply changes are proportional to how far off the market price is to the target price and take effect over the course of 30 days.

Amples will launch pegged to \$1 and track as its price target the [Personal Consumptions Expenditures \(PCE\) Index](#), a measure of U.S. inflation. The price target will be designed to rise with inflation, such that 1 Ample (assuming equilibrium at the price target) could be worth \$1.015 next year if the PCE rises by 1.5%. A notable consequence of Ample’s novel supply expansion and contraction mechanics is that long-term holders who neither buy nor sell cannot be diluted out of holdings.

Figure 1

Ampleforth Supply Metrics

Source: Smith + Crown analysis using Ampleforth whitepaper and assumed supply, price, price threshold, and lag (k) values



NOTABLE DEVELOPMENTS**Q4 2014**

Robert Sams releases his [paper on a Seignorage Shares](#) protocol, introducing the concept of an on-chain relationship between an asset price and its prevailing supply

Q2 2015

Publication of [Synthetic Commodity Money](#) by George Selgin in the Journal of Financial Stability

Q2 2016

Ark Invest releases "[Bitcoin: Ringing the Bell for a New Asset Class](#)" which helped formalize the growing sentiment that Bitcoin can be thought of as a new distinct class of capital assets

Q1 2018

Fragments emerged as a stablecoin-like 'low volatility cryptocurrency, having raised \$3 million from several prominent cryptoasset investors

Q4 2018

Ample releases results of a [code audit](#) of the Fragments codebase, which, after modifications, becomes the Ampleforth protocol

The original inspiration for the Ampleforth protocol traces back to a [2015 economics paper](#) in which economist [George Selgin](#), currently a director at the Cato Institute, classifies Bitcoin and cryptocurrencies broadly as a new class of money he dubs 'synthetic commodities' that have no use value but are absolutely scarce. The term itself does not have a settled definition in economics or finance literature, and it is worth noting that there are multiple competing schools of thought on what constitutes ideal money. The takeaway from the paper is that synthetic commodities have the potential to address shortcomings that non-synthetic commodities have (their vulnerability to unexpected supply shocks) and that fiat currencies have (their vulnerability to arbitrary mismanagement). Selgin argues that Bitcoin, as a synthetic commodity, is not well equipped for macroeconomic stability due primarily to the deflationary pressures of its fixed supply schedule. He argues that another synthetic commodity with a more elastic supply schedule could deliver (what Selgin sees as) the marginal benefits Bitcoin has over existing commodity monies and existing fiat monies while also being more conducive to macroeconomic stability.

Ampleforth—as a cryptocurrency designed to have an elastic supply, rules-based monetary policy, and no use value that could introduce supply shocks—is intended to instantiate this vision.

The philosophical inspirations for the Ampleforth protocol are discussed in the company's "[Red Book](#)", along with other topics that could form the basis for a debate, but ultimately they are immaterial to understanding the system's mechanics. Moreover, Smith + Crown typically does not comment on a project's philosophical inspirations, noting that, in a highly disruptive industry, people draw from a wide range of influences. Finally, Smith + Crown notes that theories in the economics discipline are often varied and highly contentious, and chooses not to present such work as necessarily empirical, though do seek to rearticulate the reasoning to a lay audience.

The takeaway is that the Ampleforth developers sought something that did not have the deflationary pressures of Bitcoin but retained the properties that Selgin seeks in an ideal synthetic commodity.

AMPLEFORTH AIMS TO BE STABLE IN THE LONG-TERM BUT NOT A STABLECOIN IN THE SHORT TERM

Ampleforth does not position itself as a stablecoin, despite its built-in mechanisms to track a price target and its attempt to serve as a long-term global money. Ampleforth’s predecessor project, Fragments, was widely viewed as a stablecoin project.

Ampleforth is [explicit that it is not designed](#) to be stable in the short-term, implying Ample’s usefulness as a stable currency should be low. Reflecting on some high-level similarities and differences between Ampleforth and projects explicitly offering stablecoins can help explain the mechanics of the protocol and help the reader understand Ampleforth’s likely path through the crypto industry.

Fiat-backed stablecoins, like Tether and PAX, are intended to track a fiat price target by virtue of being backed 1:1 by actual fiat reserves. The price should presumably stay within bounds if one assumes that one crypto stablecoin is redeemable for one fiat dollar.

Collateralized stablecoins, like MakerDAO, allow users to collateralize a stablecoin with cryptoassets but rely on a price peg and arbitrage opportunities to stabilize the price around a target.

[Seignorage Shares stablecoins](#), like the proposed but never launched Basis and Carbon, alter the fluctuating supply of their stable asset in response to price changes and use supply changes as a means of influencing price to produce a stablecoin.

Figure 2
In Comparison to Ampleforth

This section assumes the reader is familiar with the mechanics of these protocols. For an overview, please see the later sections discussing them in detail.

	Similarities to Ampleforth	Differences from Ampleforth
MakerDAO	<ul style="list-style-type: none"> Protocol mechanics designed to track a price target Set of ETH smart contracts and a metatoken Mechanics enforced on-chain Use of an oracle system 	<ul style="list-style-type: none"> MakerDAO DAI are collateralized MakerDAO has an on-chain governance structure
Tether, PAX	<ul style="list-style-type: none"> Intended (eventually) to be a medium of exchange 	<ul style="list-style-type: none"> Tether, PAX stablecoins are collateralized with fiat Tether, PAX model requires a central issuer
Basis, Carbon	<ul style="list-style-type: none"> Designed to track a price target Uses supply as a means of influencing price Incentive to ‘buy’ predicated on belief protocol will grow Intended to launch as a money pegged to a fiat value Set of ETH smart contracts and a metatoken 	<ul style="list-style-type: none"> The latest version of Basis, Carbon protocols did not launch Ampleforth does not utilize a concept of debt tokens or any secondary or tertiary tokens Ampleforth supply changes affect everyone equally, meaning 1 Ample today could become 2 Amples tomorrow At launch, Ampleforth will track a price index rather than a fiat currency

The differences here suggest Ampleforth is in a different category of project and may not appropriately be thought of as a stablecoin in the sense that the industry views it today.

One critical difference between these protocols and Ampleforth is that Amples should have a unique asset-like quality: long-term holders would likely expect the *aggregate value* of their Amples to fluctuate even if the price of an individual Ample tracked a price target. If aggregate demand over time kept the price above its peg for a longer duration and/or great magnitude than below, the total supply would rise and a holder would simply get more Amples.

In addition, Ampleforth does not have a formal ‘death spiral’ protection in the case of a market panic. Indeed, the combination of low pricing and rebasing could drastically exacerbate market hype and panic: an asset rising in value that suddenly begins expanding supply could, in the short-term, have a high nominal network value, while an asset dropping in value that suddenly begins contracting could, in the short-term, have a rather low nominal network value.

This feature is presumably part of the pressures pushing the price back to its peg. One implication of the contraction is that buying substantial portions of the supply becomes progressively cheaper—much more so relative to a depressed asset with a fixed supply. This would make Amples even easier to acquire for any remaining in the market who believe in it. This design, combined with a set of mechanics intended to produce a unique volatility footprint, makes Ampleforth seem more like an asset than a stablecoin.

AMPLEFORTH AS AN ASSET

Ampleforth must contend with a core challenge at the heart of Seignorage Shares protocols—indeed at the heart of what Selgin calls ‘synthetic currencies’—why should anyone buy them in the first place? This initial belief is needed to kickstart the process of giving such instruments market value. Of course, this is admittedly a low bar in the crypto industry, when thousand of assets have active markets and some buyers may actually have no idea what the instruments are intended to do. In addition, and as discussed below, there is evidence that markets lump cryptocurrencies together, suggesting a widespread acceptance that if Bitcoin has value, other cryptocurrencies can have value too.

For this reason alone, it is possible that simply having an IEO will kickstart the process of market formation. Nonetheless, it is worth looking closer at this argument, because presumably, markets will become more discerning in the future, and, as Smith + Crown and others have noted elsewhere, cryptocurrency projects and the tokens they issue vary immensely.

In this case, the argument is that the supply expansion and contraction mechanics will produce a volatility profile in the market price that is unlike anything available today. If the volatility profile functions as the team expects, this may make Ampleforth, especially in the short-term, attractive to certain investors simply as a largely uncorrelated asset.

MODERN PORTFOLIO THEORY AND THE ROLE OF VOLATILITY

Ampleforth's approach can be considered in the context of [Modern Portfolio Theory \(MPT\)](#), which prescribes a method for assembling an optimal basket of assets presenting the highest expected return for a given level of risk. MPT highlights uncorrelated assets' importance as a means of reducing the total portfolio's risk; assets are considered insofar as they affect the portfolio's overall risk and volatility. This approach assumes that investors are risk averse, such that if two portfolios offer the same expected return, they will prefer the less risky portfolio. Under such conditions, there exists an efficient frontier such that an investor can optimize their risk-return profile. Effective diversification is a key element of this strategy. If one asset decreases in price, other elements of the portfolio should remain stable or even rise, thereby increasing the portfolio's resiliency. Historically, gold has been uncorrelated with equity markets, and fund managers consider gold as useful asset in constructing a robust portfolio.

Cryptocurrencies are often noted for their distinct volatility profiles and [lack of correlation to traditional equity markets](#), even if individual cryptocurrencies are themselves generally highly correlated to Bitcoin and other leading cryptocurrencies. [Ample is intended to have a unique volatility profile](#) (that is, be uncorrelated) to both the broader cryptoasset market and possibly other asset classes such as equities. Ampleforth has not released concrete models or simulations to demonstrate this unique volatility profile, and Smith + Crown has not performed independent modeling. However, given that other synthetic commodities (i.e., Bitcoin) have demonstrated unique profiles and Ample aims to be a new class of synthetic commodity, there is at least some reason to consider that Ample could emerge as such. If the volatility profile is unique and offers a compelling advantage from a portfolio construction perspective, it may be adopted by fund managers in the broader market.

[Ample is intended to have a unique volatility profile \(that is, be uncorrelated\) to both the broader cryptoasset market and possibly other asset classes such as equities.](#)

DIVERSIFYING BEYOND CRYPTO & TRADITIONAL ASSETS

A key value proposition of Ample, as a synthetic commodity money, is its use as a financial instrument that is uncorrelated with both other cryptoassets and other asset classes (equities, bonds, physical commodities, etc.). Other asset classes have a variety of established correlations with one another—commodities are generally uncorrelated and precious metals are negatively correlated with equities.

Various finance and economics research studies the emerging correlations between cryptoassets and other classes. At a high level, major cryptoassets have been significantly correlated throughout their (relatively short) history. Thus, a new cryptoasset presenting a true lack of correlation with this set could present a compelling diversification tool for cryptocurrency portfolios. [Various studies](#) have noted the correlations in cryptoasset markets' behavior, though the correlation is not constant over time and is subject to various market cycles. One example would be how correlations rose across major cryptocurrency assets throughout 2018.

Figure 3

Cryptoasset Prices Jan 2016 - May 2019

Major cryptoassets have begun trading at significantly correlated prices since early 2017

Source:
Smith + Crown analysis
of Nomics data



This shifting market signal indicates that the broader market thesis on cryptoassets is not settled. Indeed, it should strike observers as odd that these assets are so correlated given their wildly different use cases, configurations, governance structures, maturity stages, and adoption footprints. The underlying assets themselves, particularly Ethereum's metatokens, vary wildly in function. In many ways, this tight correlation should not persist as markets gradually recognize the differences between the cryptoassets, though it is unclear how long this will take and even whether it will happen.

CORRELATIONS BETWEEN CRYPTOASSETS AND OTHER ASSET CLASSES

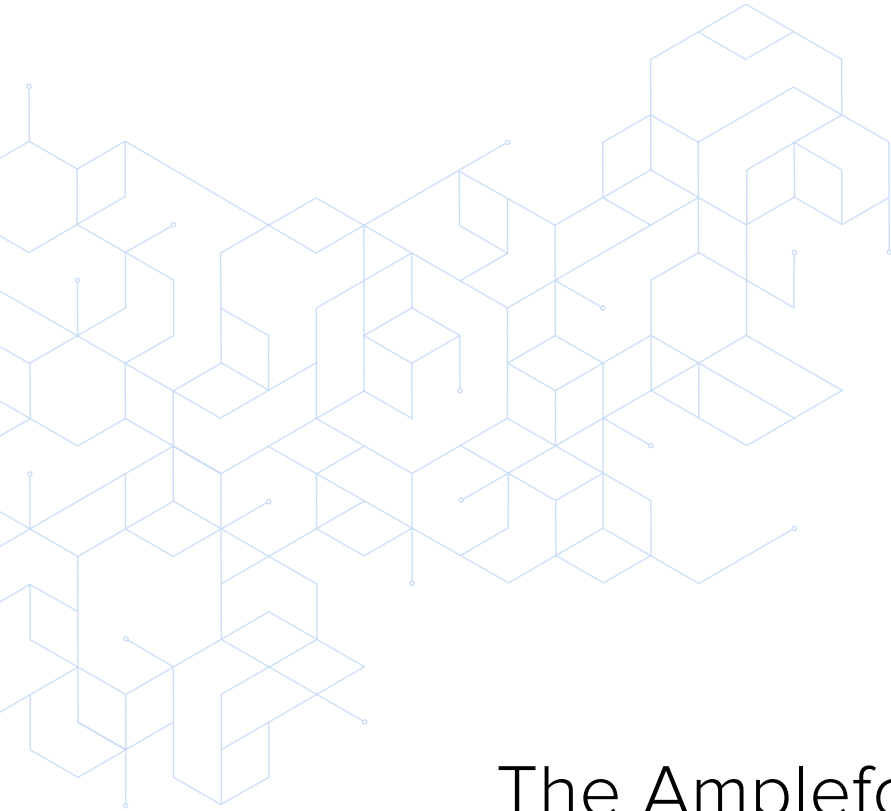
In the broadest sense, cryptoassets are generally uncorrelated with other asset classes. A [2018 study](#) cited in the Ampleforth whitepaper examines all historic returns to BTC, ETH, and XRP in a larger market context, finding little correlation with other asset classes, including precious metals or major national currencies nor with broader macroeconomic factors. Further, and somewhat counterintuitively, cryptoassets had no significant relationship with equity returns in a wide range of industries. These findings echo earlier studies and a prevailing sentiment that cryptoassets are a new asset class. Ark Invest's "[Bitcoin: Ringing the Bell for a New Asset Class](#)" helped formalize this view and also argued that Bitcoin has remained relatively uncorrelated with other traditional assets throughout its lifetime. [This Bloomberg graphic](#) provides an overview of asset correlations across a period ranging from Q2 2017 - Q2 2018.

At a high level, major cryptoassets have been significantly correlated throughout their (relatively short) history. Thus, a new cryptoasset presenting a true lack of correlation with this set could present a compelling diversification tool for cryptocurrency portfolios.

Nonetheless, it is worth noting that with cryptoasset markets, the time period selected for analysis matters, and cryptoassets go through stages of correlation with broader markets, further indicating the broader market investment thesis for cryptoassets is still in motion.

It is difficult to anticipate how the market would absorb an instrument like Ampleforth. Would it be bundled together with other cryptoassets simply because it is a cryptocurrency? Or would the combination of cryptocurrency and the incentive mechanics produce something with a complex short-term volatility? From an investor's perspective, Ampleforth could prove compelling if it is uncorrelated with both other cryptoassets and other asset classes, thus pushing out MPT's risk/reward frontier.





The Ampleforth Network

This section explains the protocol's core mechanics.

THE PROTOCOL

The Ampleforth protocol is designed with the express objective of creating an asset with a price volatility profile different from any other. The unique price change behavior is expected to result from supply adjustment procedures that expand and contract the effective Ample supply in response to changes in the nominal exchange rate of Ample/USD.

When the nominal exchange rate exceeds the protocol-determined target, Ample price plus a price change threshold (denoted $PT, + \delta$), incremental Ample units are released into token holder wallets pro rata. This is intended to bring the exchange rate down as new Ample inventory is disbursed.

Figure 4
Long-term Impact of High Prices
 Source: Smith + Crown analysis using Ampleforth whitepaper and assumed supply, price, price threshold (d), and lag (k) values



Similarly, when the nominal exchange rate is below the price change threshold, Ample units are relinquished from token holder wallets pro rata, reducing total supply and (theoretically) increasing unit prices.

Figure 5
Long-term Impact of Low Prices
 Source: Smith + Crown analysis using Ampleforth whitepaper and assumed supply, price, price threshold (d), and lag (k) values



Supply adjustments are effectuated over a period of k days to limit rapid overcorrection. Supply change values are publicly logged to provide users with a concrete range of timestamps within which subsequent supply adjustment activities can be enacted. Any user can call the rebase function to initiate the supply adjustment process at any time, but it only has effect if at least the time window has passed.

To ingest nominal exchange rate information, the protocol utilizes a market oracle system made up of whitelisted independent data providers. Market oracles broadcast 24 hour volume weighted average price (VWAP) to a single on-chain aggregator smart contract that calculates the median value of aggregated exchange rates. This calculation informs supply adjustment operations.

The aggregator updates a global coefficient of expansion known as the `splitRatio` no more than once every 24 hours, at which time supply changes are automatically and simultaneously executed across user wallets. Temporary deviations from the peg may persist for up to 24 hours, until the aggregator contract takes effect. If significant deviations are common and persistent, Ample's might never achieve functionality as a relatively price stable asset, that is, as a global money in the long term.

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SOFTWARE ARCHITECTURE

Ampleforth is implemented as a set of Ethereum smart contracts.

One market oracle contract is responsible for aggregating price information from oracle feeds that supply price information. The contract takes the submitted values median values: this is similar to MakerDAO's Market Oracle and a common approach to avoiding outlier values. The smart contract only accepts prices from whitelisted oracles; this is discussed more below in the Governance discussion.

Another contract is responsible for managing the global supply. The mechanism for actually doing this does not involve burning or minting but adjusting a scalar value on all Ample holdings. An ERC-20 contract is simply a ledger that tracks which addresses hold which balances and a simple operation, *rebase()*, can scale everyone's Ample balance. If this functions as the Ampleforth team expects, it could prove to be an elegant solution that removes the need for performing an operation on every single account balance.

Anyone can call this *rebase()* function after 24 hours have elapsed and, when confirmed in a block, *rebase()* immediately changes supply values. This does technically raise the concern of a double-spend variant in which Bob sends Alice 1 Ample in the same block as the *rebase()* occurs, and if Alice is unaware of an impending *rebase()*, she may think she gets 1 Ample but may in fact receive less than one after the rebase. However, given that the market oracle price will be transparent, it seems likely that someone will call *rebase()* as quickly as possible, allowing all Ample holders to adjust their expectations of Ample delivery.

Ampleforth's code is [available for review on their Github](#). (Some code contains references to *Fragments*, the team's predecessor project and the audits were conducted in late 2018 when the project became formally known as Ampleforth and underwent two security audits by [Slowmist](#) and [Trail of Bits](#).) A [blog post discussing audit findings](#) can be found here and the actual audit reports [here](#). Trail of Bits did not find 'high severity' or 'medium severity' issues, and Slowmist did not report any issues.



DYNAMIC SUPPLY

The protocol changes everyone's supply values once *rebase()* is called.

- If the exchange rate is \$1.5 per Ample, the price difference can be offset by increasing each wallet's balance by 50%. Grading uniformly over k days, the protocol will increase wallet quantities by $50\%/k$ on day zero. Ampleforth will launch with $k = 30$.
- If the exchange rate is \$.5 per Ample, this price difference can be offset by decreasing each wallet's balance by -50% . Grading uniformly over k days, the protocol will update wallet quantities by $-50\%/k$ on day zero. Ampleforth will launch with $k = 30$.

The whitepaper provides several examples that help articulate Ample’s elastic supply mechanism in practice, though Smith + Crown created several more that include Ampleforth’s lag parameter:

Figure 6

Ample's Elastic Supply Mechanism

Because the lag occurs over 30 days, the actual daily supply change is modest:

Rows 1 - 4
 $(\$2 - \$1) * \$1 / 30 = 0.033$

Rows 5 - 8
 $(\$0.5 - \$1) * \$1 / 30 = - 0.067$

	EVENTS in descending order	AMPLE PRICE IN USD	ALICE'S AMPLE HOLDINGS	USD VALUE of Alice's Ample Holdings
1	Equilibrium 1	\$1.00	1.00	\$1.00
2	Demand Increase	\$2.00	1.00	\$2.00
3	Supply Increase	\$2.00	1.03	\$2.07
4	Equilibrium 2	\$1.00	1.03	\$1.03
5	Equilibrium 1	\$1.00	1.00	\$1.00
6	Demand Decrease	\$0.50	1.00	\$0.50
7	Supply Decrease	\$0.50	0.98	\$0.47
8	Equilibrium 2	\$1.00	0.98	\$0.98

In practice, actual supply changes are modest due to the lag factor and the 24-hour period in-between *rebase()* calls.

It is worth noting that the tax implications of these expansions and contractions are unclear: are new Amples a ‘return’ while fewer Amples ‘losses’? Are they considered totally new assets, similar to how mining rewards are typically taxed, and contractions would be losses akin to theft? It is not incumbent on every new protocol to understand the tax implications of their network, but, given the target audience and use case, a study of the potential tax implications could serve as an important element of an effort to attract sophisticated users.



The Cryptoeconomics of Ampleforth

This section explains the core cryptoeconomic mechanics of Ampleforth.

AMPLES: CORE CRYPTOECONOMIC INCENTIVES

In the long-term, Ample is intended to be a cryptocurrency: a medium of exchange, unit of account, and store of value. It is intended as a means of value transfer, what Smith + Crown have elsewhere called a medium-of-exchange token or payment token. In the short-term, Ample is intended to function a uniquely volatile asset that can provide arbitrage opportunities to traders and risk reduction to cryptoasset portfolios. Ample has no defined staking, governance, redemption, or feature access benefits.

The economic logic of Ampleforth, like many protocols that use arbitrage to achieve certain price patterns, is predicated on two classes of actors:

Short-term traders who take advantage of arbitrage that the dynamic supply introduces.

Ampleforth 'users' who hold Ampleforth without any intent to short-term trade. This class of users helps provide short-term traders with confidence that someone in the present and the future will want to purchase Ample.

This high-level relationship is found in Seignorage Shares protocols, in which bond buyers speculate on the future value of the stablecoin, while normal users enjoy a stable cryptocurrency as a result, and in MakerDAO, in which arbitrageurs can make money swapping collateral for DAI and vice-versa, and normal users enjoy the presumably stable DAI as a result.



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As explained earlier, Ampleforth is different in that the short-term benefit will not necessarily be a usable 'stablecoin' but will instead be an asset with a unique volatility footprint, targeted toward any investors, particularly cryptoasset investors and asset managers looking to reduce risk in their portfolio. As a part of a financial portfolio, Ample are intended to have an added advantage in that long-term growth in the network should give Ample holders long-term growth in their holdings, as supply consistently increases. Along the way, the volatility produced should increase portfolio performance. In this sense, they resemble an equity-like share in the Ample network.

This particular class of actors is not necessarily essential to a commodity money but it would fill a critical role in the chicken-and-egg conundrum of how an unbacked money should have value. In the long-term, a new class of 'users' should presumably emerge: users of Ample as a form of money that, should the incentives produce the intended market behavior, is stable enough for commerce. Over time, one suspects that the arbitrage market will get more competitive, with the volatility footprint more predictable. In such a case, the remaining market for Ampleforth among portfolio managers would shrink, and the protocol would need to have transitioned to people who want Ampleforth because they believe in its value as a money.

Short-term Traders Profit at Each Other's Expense

One consequence of the supply expansion and contraction mechanics is that long-term holders cannot be diluted out of holdings. In many systems, those who passively hold cryptoassets but do not perform work benefit less than those who do perform work. In Proof-of-Stake systems, for example, it is stakers who earn a return while those who hold get diluted. In Seignorage Shares models, bond buyers get a return, while stablecoin holders do not.

In Ampleforth, holders actually have full exposure to swings in Ample's market valuation, and when short-term traders successfully outmaneuver the market, they do so because they were faster than other short-term traders.

One concern might be that the optimal trading strategy would be to hold. In a market in which there were only two traders using sets of algorithms to profit, one would win and progressively get a greater share of Ampleforth and the other would effectively be diluted. In a market in which there was only one trader, s/he could not profit. In practice, it is unclear what would happen.

AMPLES: SUPPLY AND DISTRIBUTION

The supply change mechanics have been explained above. Below is a rough distribution of Amples (according to private communication with the team, some of this might be subject to minor change.)

Figure 7
Supply & Distribution

	Token Supply	Notable Comments
Ecosystem (growth, community , etc.)	20.00 %	The distribution strategy is unclear, but presumably will be released at a future date and future value.
Treasury	23.2 %	The distribution strategy is unclear, but presumably will be released at a future date and future value.
Team	16.50 %	All employees are on a 4-year vesting schedule with one-year cliffs. According to private communications with the team, 4.8% of tokens will have been vested at time of IEO but they have agreed to a 1-month lockup and then a 6-month unlocking period of already-vested tokens.
Future Employee + Advisory Pool	6 %	The distribution strategy is unclear, but presumably will be released at a future date and future value.
Advisors	2.50 %	Advisors have also agreed to a 1-month lockup and then a 6-month unlocking period, with some advisors having a 24-month unlocking period. Advisors are not on their own vesting schedule.
Seed	19.00 %	Presumably, these Amples were sold when Ampleforth had a valuation lower than the IEO price would imply. Private communication indicated that these tokens have at least a 90-day lockup period.
Private (Series A)	2.80 %	Presumably these Amples were sold when Ampleforth had a valuation lower than the IEO price would imply. Private communication indicated that these tokens have a one-year lockup period.
Public Sale (IEO)	10 %	The implied valuation in the IEO might be slightly lower than that implied in the smart contract launch.

One notable component of the supply schedule is that the starting value of the total Ample supply, tentatively proposed as \$50 million in private communications with the team but not confirmed as the final number, is arbitrary. With no backing and no rational value floor or ceiling, it is unclear at what value the network should be launched. Presumably, this would be a function of the token price as distributed in initial sales, assuming these prices pre-launch indicate acceptance of a valuation range.

This dilemma is not unique to newly launching cryptoassets, who must strive for a valuation in a market full of highly correlated assets and market behavior often viewed as irrational. In such a milieu, projects simply value their assets relative to other recently launched assets. It seems likely that Ampleforth will do the same, while adhering in some way to the mostly recent Ample price, which in this case would be the implied valuation of the private sale or the IEO price.

Given the ratio of IEO tokens to potentially liquid tokens acquired presumably at a lower price, it might launch in a state of disequilibrium if early purchasers are able to sell, but Smith + Crown received private communication that early investors will have “at least 90 days” of lockup with potentially more.



BLOCKCHAIN GOVERNANCE

Ampleforth is an open-source set of Ethereum smart contracts and there currently are no documented formal governance mechanisms. In a protocol like Ampleforth, there are three topics that will need governance processes:

1. PARAMETER DEFINITION

The core parameters of the system, especially the supply target, the delta parameter, and the lag function delay, will be written into the smart contracts, though at time of writing, the rebase lag, the minimum time between *rebase()* executions, and the deviation threshold are configurable. Eventually, either configuring them will need a yet-to-be-defined decentralized governance process or they will be immutable and need a [contract migration](#) to change.

Two things with this approach are worth commenting on. First, migrating a metatoken smart contract is very complex, arguably much more so than forking a core underlying network. The reason for this is that the new contract does not need to just issue tokens to all previous holders but any smart contracts that involved the now-obsolete version needs to be updated. This is a much greater coordination lift than a core network hardfork, which automatically forces users onto one of two internally-consistent ledgers.

Second, Ampleforth is not alone in this dilemma, and not describing a formal forking process is not an unprecedented omission or oversight. This issue is merely highlighted for the reader's education.

2. BUGS AND CONTRACT UPGRADES

There is also a governance issue of who approves new versions of the code if vulnerabilities are found. Again, there is not a formal on-chain or off-chain mechanism described.

The Ampleforth team has articulated an intention to build out a decentralized governance mechanism in the future. It seems likely that in the short-term, the core team currently active in the Github will be helping maintain the codebase. Whether this impacts long-term views of Ampleforth's prospects remains to be seen.

3. ORACLE SELECTION

There is also an open question about how Ampleforth will in the long-term decentralize its oracle selection process, since many attack vectors on the protocol would involve feeding it incorrect price information to initiate incorrect supply changes.

Taking the median of submitted price values, as the contract is designed to do, should help mitigate this, though the question of decentralizing a whitelisting process remains. Ampleforth has initial plans to integrate ChainLink's decentralized oracle network, though it is not necessarily committing to this.

This is an incredibly complex issue that faces the entire industry, so Ampleforth is not alone in integrating a whitelisted price oracle. MakerDAO does currently. One nuance with MakerDAO is that the project has a vehicle (a DAO) for future decentralized decision-making but Ampleforth appears to have no such vehicle. Creating the foundation for a decentralized selection process will be important in the future.

ATTACK VECTORS / CONCERNS

COMPROMISING THE ORACLE SYSTEM

The most vulnerable component to the system is the market oracle, with possible attack vectors involving feeding the oracle contract incorrect price information. The median function would prevent wild outliers from rogue oracles influencing the price, but if over 50% of oracles were compromised or colluded to either submit incorrect information or abstain, it could lead to significant and unintended swings in supply. Reporting the price as \$100000 instead of \$1 could lead to an instant 333,333% increase in supply. As such, oracle selection will be critical. The system may end up needing additional incentives to reward oracles or punish them, since there is no in-built compensation mechanism or even infrastructure for it. As noted, Ampleforth is not unique in this regard but it is an important area for the team to consider.

BLOCK CONFIRMATION INTRODUCED AN ARBITRARY DELAY BETWEEN REBASE() AND SUPPLY CUSTODY

User custody of assets in markets is a function of confirmation time, defined as the number of blocks deep a transaction is. The rebase function implements supply changes immediately, but exchanges and wallets allow users to experience these supply changes only after a delay which is not universally agreed upon or enforced. For example, Kraken [requires 30 confirmations](#) in Ethereum for deposits while Coinbase [requires 35](#); wallets often let users send transactions much more quickly. If such providers treat supply changes as deposits and apply their own standards, it would introduce discrepancy in when users experience supply changes and in odd periods in between *rebase()* and user account balance updates, when orderbooks are technically obsolete. At worst, it is an attack and manipulation vector that exchanges or market makers that have privileged relationships with them can exploit. At best, this is a hiccup smoothed out by market expectation and convention across exchanges.

REBASE() NON-CALLS

Ample holders actually do not have an incentive to call *rebase()* if the new price is lower than the last price, because, unless they are independently interested in a revaluation, more Amples seems better than fewer Amples. It would seem in everyone's independent self-interest to have the protocol increase their Ample supply. That said, it also seems likely that the protocol will have some short-sellers, skeptics, or parties interested in the proper functioning of the protocol to simply call the function.

THE AMPLEFORTH TEAM

Ampleforth was launched by a team with a mix of finance and engineering. CEO [Evan Kuo](#) founded several technology companies and, earlier in his career, was a product manager at Yahoo. Co-founder [Brandon Iles](#) has been a software engineer at a variety of technology companies, including Google and Uber. Both have over a decade of experience and have been with Fragments/Ampleforth for over a year. The core technology team also includes [Ahmen Naguib Aly](#), who was an engineer at Google and was part of the original Fragments Team, [Aditya Sarawgi](#) who was an engineer at Yelp and Uber and part of the original Fragments team, and [Nithin Krishna](#). All four have been active in Ampleforth's Github. Chief Business Officer [Richy Qiao](#) has a background in management consulting, equity capital, and venture capital. He joined Ampleforth in April 2019. This appears to be the team's first full-time blockchain project.

INVESTORS

[Ampleforth's investors](#) include Pantera Capital, Brian Armstrong (CEO of Coinbase), Huobi Capital, FBG Capital, Slow Ventures and others. The dates and amounts of the funding rounds have not been disclosed.

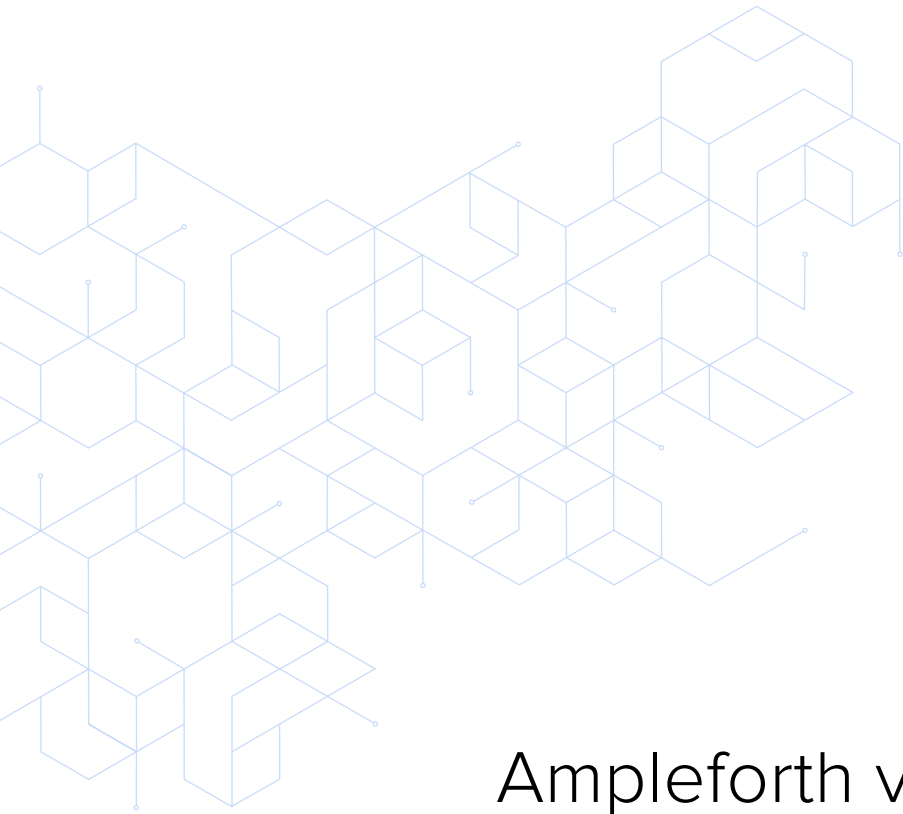
Ampleforth's most well-known blockchain advisors include Augur Co-Founder and Pantera Capital Co-Chief Investment Officer [Joey Krug](#) and Pantera Capital partner [Paul Veradittakit](#). [Dr. Niall Ferguson](#), a historian and senior Fellow at the Hoover Institution whose publications examine the history of money as a technology, is also an advisor.

AMPLEFORTH'S CURRENT STATUS AND ROADMAP

The codebase has been audited and the team asserts it is ready for deployment. The team has not published a detailed roadmap at time of writing beyond [this overview on their website](#), which specifies priorities and order-of-events but not dates. The roadmap for any distributed network may be imagined as a set of decisions and developments across a few categories:

Technical Upgrades	Governance	Adoption
<ul style="list-style-type: none"> • Launch on Ethereum testnet • Launch on Ethereum mainnet • Implement any on-chain governance contracts or mechanisms • Integrate cross-chain functionality to enable users to transfer Amples from chain to chain, though this does not appear to be critical to the functioning of the system 	<ul style="list-style-type: none"> • Release a governance roadmap for long-term maintenance of the oracle system and codebase • Potential changes to protocol parameters should a different volatility footprint be desired 	<ul style="list-style-type: none"> • An upcoming dashboard release could help people interact with their balances and understand the mechanisms more clearly • Cryptofunds or investors would need to incorporate Ampleforth into their portfolios





Ampleforth vs. Key Crypto Projects

This section compares Ampleforth with other notable cryptoassets. It is not a list of 'competitors' and is designed to help the reader understand the unique mechanics of Ampleforth.

A major project positioning itself as an unbacked beta-increasing asset with the long-term goal of becoming a global money has not garnered significant attention or momentum. In this respect, Ampleforth appears to be a unique project that, nonetheless, combines creative cryptoeconomic mechanisms that have precedent elsewhere but have not been applied to such a use case. As such, this section will instead focus on comparing Ampleforth to major stablecoin projects to help the reader understand the critical differences and reflect on the long-run thesis that Ampleforth is better positioned and designed to be a global reserve money.

AMPLEFORTH VS. MAKER

[Maker](#) also utilizes a price oracle system similar to the one proposed by Ampleforth. Briefly, a whitelisted group of price feed providers are supposed to submit prices if no price has been updated in 6 hours or if the price changes by more than 1%. A medianizer contract effectively mutes the impact of outlier prices. The ‘whitelisting process’ is currently performed by MKR holders, who in practice are the core dev team, though it is not difficult to imagine how this approval process could be decentralized in the future. Ampleforth does not have this DAO governance structure to decentralize the whitelisting process, but it has indicated that it intends to watch decentralized oracle protocols like ChainLink.

Another important point of comparison is Maker’s heavily collateralized nature that provides important underpinning to Maker’s operations. Because DAI are over-collateralized via Ethereum deposits against which only a portion of funds are actually issued, there is a reduced (but not zero) risk of loss of catastrophic losses for holders of either Maker tokens or DAI themselves. Ample, being entirely unbacked, could find themselves facing a no-bid situation should markets collectively lose faith or interest in the project. Conversely, the DAI is heavily exposed to fluctuations in ETH’s value, while Ample is independent.

MAKERDAO: PROTOCOL-LEVEL ARBITRAGE

Maker uses [a system of incentive-following bots](#) to enforce the price target with arbitrage opportunities at the protocol level. Termed ‘keepers,’ such bots employ various strategies to both directly arbitrage DAI between order books and maintain the underlying Collateralized Debt Positions (CDPs):

- **Bite-keepers** search for open CDPs that fall below the safe collateralization ratio, and liquidate them through an [external bite\(\) operation](#). This helps ensure that all outstanding DAI are properly backed by ETH (or other cryptoassets, in future versions).
- **CDP-keepers** perform a related function, searching for CDPs that are at risk of falling below the safe collateralization ratio and notifying their owners or providing the CDPs with additional collateral.
- **Market maker and arbitrage keepers** directly monitor the price of DAI across exchanges, executing buys where the price is below \$1 and sells where the price is above \$1. These bots can be integrated with any exchange with an appropriate price feed, and many use the Standard Relayer API from 0x.

MakerDAO facilitates arbitrage to maintain the price peg by enforcing an on-chain market for DAI. In contrast, there is not ‘arbitrage’ in the Ampleforth economy in the same way because there is not an on-chain market. ‘Arbitrage’ in Ampleforth more involves selling Ample before a downside market correction and buying them before an upside one—or, put more bluntly, outtrading other Ample traders. Arbitraging Ample only gives traders exposure to Ample, not any other asset or contract with associated fees.

AMPLEFORTH VS. PAX / USDC / TETHER

Ampleforth is substantially different from existing asset-backed stablecoins, such as Paxos, Circle's USDC, Gemini's GUSD, and Tether. Those asset-backed tokens have a professed intent to retain a nominal token price around a target price, usually some national fiat currency, even as market valuations fluctuate as tokens are issued or withdrawn as fiat is deposited or reclaimed to create or destroy individual tokens. This means that the issuance of additional tokens is of no concern to existing holders; the holder of 1,000 USDC tokens worth \$1,000 is unconcerned with even an order of magnitude increase in the amount outstanding USDC tokens, assuming all are backed by verified collateral.

Ampleforth's expansionary mechanism, issuing tokens proportionally to outstanding holders, means all benefit equally from expansions in outstanding tokens and market valuations. So, the holder of 1% of the outstanding supply of Ample who does not sell during a 10X increase in Ample's market valuation would see their \$1,000 in Ample acquire a value of \$10,000. The converse would of course be true during a proportional decline in Ampleforth's market valuation. The result is that while the asset-backed stablecoins are theoretically static vehicles that can always be redeemed at par—minus applicable fees—amidst even broad market movements, Ample are substantially different, in several ways.

One is that, while Ample do retain the idea of a 'par value' in the sense of intended price targets, the rebasing mechanism is designed to be a slow one, thus deviations from par can be considerable and lengthy. In addition, without backing or collateralization, Ample do not have a basis for fundamental value relative to asset-backed tokens. This could become a substantial amount should the intended unique volatility model be proven in practice, though outcome remains uncertain until the viability of the concepts and mechanisms underpinning the Ample prove their effectiveness and resiliency.

Most importantly, if the broader market fails to accept the premise that Ampleforth's unique volatility model actually exists, or is significant enough to risk placing funds that could be hedged in a larger variety of ways into an untested vehicle with no underlying value, the Ampleforth model may never even have a chance to prove itself resilient.

AMPLEFORTH VS. SEIGNORAGE SHARES PROTOCOLS (BASIS, CARBON)

Another relevant point of comparison for Ampleforth is relative to seigniorage share protocols such as Basis and Carbon. Acknowledging that Basis ultimately withdrew its product offering prior to launch for regulatory reasons, it nevertheless remains useful to consider Ampleforth within this context. Given Ampleforth's original incarnation as Fragments, which closely resembled a seigniorage shares protocol, this examination is particularly relevant.

As discussed in [Smith and Crown's May 2018 consideration of seigniorage share style stablecoins](#), seigniorage share protocols seek to maintain their declared pegs by the automatic contraction and expansion of token supply. In a falling price environment, the protocols withdraw token supply by asking token holders to purchase bonds with their tokens. This is theoretically intended to reduce supply, limit the fall in prices, and ultimately allow prices to rebound. As prices return to the seigniorage share's par value, bonds are redeemed for new stablecoin tokens. The result is that those who purchase bonds to help stabilize the fall in prices, at prices below par, are rewarded by seeing their bonds repurchased at a higher price. The case of a token holder relinquishing their token in exchange for a bond at \$0.70 in order to see the bond reclaimed and a new token issued at \$1.00 illustrates how this might work.

SEIGNORAGE SHARES: A BOND MARKETPLACE

In a Seigniorage Shares protocol, an asset tracks a price target but is not directly backed by collateral. In other words, an asset is always worth \$1 but without any external assets involved. This approach is meaningfully different from the two stablecoin architectures that have survived: stablecoins like PAX or USDC (backed by \$1) or like MakerDAO's DAI (backed by cryptoassets like ETH). The seigniorage protocols also focused on the relationship between price and supply and, like Ampleforth, sought to reduce supply when the price dipped below a target and increase supply when it rose above it.

These protocols—like many cryptocurrency protocols—have the conceit that markets will form around small arbitrage opportunities, and the result is a protocol more secure—or in this case a price more stable—for end users uninterested in arbitrage.

A notable difference in Ampleforth is that, with Basis and Carbon, newly emitted stablecoins were given specifically to a group of people who had chosen to reduce supply previously. That is, when the price went below its target, people could opt to turn their stablecoins into bonds, which represented a right to

get newly emitted stablecoins in the future when the price rose above the target. Basis holders who buy bonds essentially opt into the belief that Basis will have value in the future, and they are the ones who receive tokens. When the price goes down, they hold more of the risk because the bond they bought could truly be worthless, while normal stablecoin holders can always sell; a 50% loss is better than a 100% loss.

In Ampleforth, a different economic logic is intended to take place. When people who are short-term speculating on Amples receive new Amples, they might sell immediately to take advantage of the new Amples they just received, in order to capture gains prior to their short-term price to the price resetting towards the established target and eliminating their gains, as will be illustrated below.

In Ampleforth, a different economic logic is intended to take place. When people who are short-term speculating on Amples receive new Amples, they might sell immediately to take advantage of the new Amples they just received ...

Another notable difference between Seignorage Shares protocols is that Basis and Carbon concentrate risk and reward in the hands of people (particularly bond holders) who act with long-term confidence that the protocol will grow in the future. These individuals give up their holdings, or purchase additional bonds in an effort to support the protocol's stability and with the intention of profiting under the assumption they will be rewarded when the price rises back towards established par values. This group of people also benefits disproportionately when the price rises.

In the Ampleforth ecosystem, gains (and losses) are distributed proportionally across the entire token supply. This can be appreciated in the example of a rising price, where Amples move from \$1 towards \$2, effectively doubling the Ampleforth valuation. In such a scenario, in order to move the Ample price back towards the \$1 target, the protocol would release sufficient tokens to 'rebase' the tokens back towards the \$1 price while retaining the larger market valuation closer to the new level. While strongly advantageous to long-term holders in a rising valuation scenario, for such individuals will retain a proportionate share as the valuation rises, risks are higher for short-term traders and for all holders in a declining valuation scenario.





Prospects and Challenges

In this section, Smith + Crown briefly highlights the overall prospects for the Ampleforth protocol, attempting to first characterize a scenario of success, then identify risk factors. This section is not intended to be a list of pros and cons.

Ampleforth presents itself as a cryptocurrency protocol with unique attractiveness to both short-term traders and long-term crypto-asset investors. Short-term traders could profit from outmaneuvering each other to acquire a greater share in Ampleforth. Long-term crypto-asset investors could benefit from an instrument potentially uncorrelated with broader crypto-assets while also being both non-dilutive and having full exposure to broader market appeal for the network.

Nonetheless, there is a large market of holders who already believe in the cryptoasset space. The market of such cryptoasset investors likely remains large. Crypto Fund Research, a research group focused exclusively on tracking crypto funds in the industry, estimated at the end of 2018 that over 750 cryptocurrency funds were active in the industry and collectively held over \$14 billion in AUM. 1% of this would be over \$140 million; 3% would be over \$420 million. Many of these funds resemble venture capital in mostly taking illiquid positions and may not be the target audience for a fully developed network and liquid asset, but the number also does not include the informal yet significant holdings of independent traders or even retail crypto asset investors. This of course is a crude measurement and it is difficult to anticipate how the cryptoasset market would absorb an asset with so little precedent.

Realistically, institutional finance is not likely to take major positions in newly launched ERC20 tokens in the short-term: they are still getting comfortable with long-established core networks with significant momentum and history, like Bitcoin. In addition, Ampleforth is a much more exotic asset than even Bitcoin and Ethereum. Acceptance in a broader portfolio of crypto assets is likely many years away, and it is difficult to assess the broader vision of serving as a global reserve money.

Ample does not seem to have the structural deflationary pressures that Bitcoin has, though it is difficult to imagine a metatoken becoming more broadly accepted in the pantheon of global assets, currency reserves, and potential next-generation monies over Bitcoin without significant adoption and battlescars, a much more complex investment thesis on cryptoassets broadly, and a more nuanced understanding of the technology itself. Such a development is not impossible though: for the past decade, many in the industry have said it is difficult to imagine Bitcoin becoming more broadly accepted in the pantheon of global assets too.

Ampleforth could even be successful if its volatility footprint is not that unique. As discussed earlier, the market could simply bundle Ampleforth together with the rest of the industry, as it has done with most other varied crypto assets, and this macro-association will override the internal expansion and contraction mechanics. A non-dilutive instrument that gives holders *more* Amples when the price rises could be immensely popular just for crypto-enthusiasts not worrying about lower betas in their portfolios.

It also seems unlikely Ampleforth would ever truly *die* unless a critical bug was found and no one could patch it. The supply contraction mechanic would mean eventually it would become so cheap to purchase that someone could simply buy 5%, 10%, even 25% of the supply and attempt to revive it and capture gains. The network only depends on an uncompromised oracle system, not any core consensus that requires mining investment or off-chain software or complex integrations beyond exchanges. This does actually make it an extremely resilient smart contract system. The logic is simple enough that the protocol could likely be migrated or mirrored on another network if Ethereum proved unstable unpopular or incompatible.

Ampleforth does seem theoretically to have the underpinnings of a unique volatility footprint. Should it be adopted, it would prove exciting (or heart-rending) to watch. The supply expansion during periods of high prices and contraction during periods of low prices could make the network value (market capitalization), which many in the cryptoasset industry today use to rank assets against each other, fluctuate wildly. This mechanic will likely amplify hype cycles rather than dampen them on short trading intervals and, depending on who holds it, result in panic buying to get more Amples and panic selling before it contracts.

As noted, a unique volatility footprint remains a theoretical feature—it is always possible the market will anticipate such behavior and lead to a surprisingly stable currency that does not require collateralization and doesn't involve a multi-token cryptoeconomic model. Time will hopefully tell.

RISK FACTORS

Ampleforth's long-term ability to succeed as a cryptocurrency or short-term ability to function as a uniquely volatile asset providing arbitrage opportunities to traders and risk reduction to cryptoasset portfolios could be undermined should any of the following occur:

The synthetic commodity's appeal is never established

Like any synthetic money, Ampleforth's ultimate fate will come down to adoption: if the theoretical arguments underpinning Ampleforth capture the market's attention AND the incentives described result in the intended market behavior over a meaningful period, Ample could be more broadly adopted. In other words, there needs to be a compelling argument for why one might adopt Ample in the first place to encourage a collective belief in the value of the protocol to congeal. It is possible that simply having an IEO will accomplish this: the tight correlation between cryptoassets today and the mostly liquid markets following IEO listings suggests markets don't distinguish between individual assets very closely.

Professional investment managers with fiduciary duties are slow to adopt Ample

A core argument is that Ample will appeal to institutional investors looking to reduce risk in a portfolio. However, as a new and untested project with a theoretical model underpinning it, it remains unclear whether Ample could even be purchased or held by professional investment managers having a fiduciary duty to clients. Related to the uncertainty over tax treatment of Ample noted above, which could potentially become an impediment to professional interest in Ampleforth, at least two points of uncertainty can be identified that could meaningfully reduce Ampleforth's potential audience.

Ease of forking fragments adoption

Barriers to entry are low for the establishment of a protocol operating according to these parameters, which opens the door to a high number of copycat protocols. Success for Ampleforth is contingent on adoption, which may become fragmented (no pun intended) by additional entrants. The software is open source and there is no need for 'Bancor-like' funding requirements, which further compounds the risk of successful forking. In addition, the effectively arbitrary nature of the choices for value of several key parameters, such as k days for the rebase period, may encourage others to fork the protocol and establish an Ampleforth clone built around different parameters for these values. Conversely, forking a metatoken smart contract is very complex and there is a much greater coordination lift than a core network hardfork—compared to other networks at risk of fragmentation, the Ampleforth approach does have its advantages.

Trading Ample is too complicated compared to alternative investments

While Ampleforth is theoretically attractive, the question of whether the complicated mechanics of trading Amples may prove not worth the investment of time and capital in the eyes of traders could emerge as a concern. For instance, the volatility associated with the anticipated swings in the price of Amples around rebasings could mean that a trader or investor buying at a local price peak and prior to a rebasing faces a guaranteed near-term drawdown. As a result, purchasing decisions will require considerable knowledge and awareness. This illustrates how those looking to trade Amples will continuously be calculating whether the required financial and mental investments justify potential returns relative to the broader array of potential investment vehicles across different markets. After all, instead of acquiring Amples, a trader could hold stocks, purchase bonds, futures contracts, an enormous range of ETFs, or even just park funds in Treasury Bonds. Ampleforth is likely to find meaningful long-term success only if there emerges a belief in the possibility of outperforming the market while enjoying a reduced risk profile by investing time, energy, and capital playing the volatility expected to exist within the Ampleforth ecosystem.

Little evidence emerges to support Ampleforth's distinct volatility footprint

Ampleforth's distinct volatility footprint remains merely theoretical. In the absence of either sophisticated modeling or actual market performance, assumptions that Amples will indeed demonstrate a unique volatility model continue to be only hypothetical. If the incentive mechanics fails to function as intended—or they do function as intended conceptually but not in a way that produces a meaningfully uncorrelated asset—the core argument for acquiring or holding Amples would be severely undermined.





Parting Thoughts on Cryptoasset Evaluation

Given Ampleforth's clearly ambitious intent—declaring their project has longer-term intentions to become a 'global reserve money' alongside a very small range of well-established, time-tested assets—the project also merits careful, critical evaluation. While the launching of a decentralized concert ticket distribution dApp or decentralized trading venue is not to be dismissed as insignificant or unimportant, Ampleforth is clearly aiming for a far more substantial historical impact. As such, both supporters of the project and industry stakeholders can benefit from critically examining the assumptions underlying the project, both to help stress test those arguments and to ensure that all involved are as aware of ambitious, unmodeled, and unproven elements of the project as they are of the potential impacts that are more extensively described.

Such an exercise, that is, evaluating the prospects of a particular yet-to-be-launched cryptoasset is difficult, for many reasons. First, the high correlation of crypto assets today across projects with wildly different underlying technologies, target markets, team sizes and configurations, and progress, clearly suggests that markets may not be paying attention to underlying fundamentals or design features of networks. It could also mean markets view all crypto assets as having a systemic risk that drowns out the fundamental differences. While such a conclusion would undermine the core claims to differentiation of many networks—and particularly of Ampleforth as being uncorrelated with the market—it could also mean that concerns over a project's core thesis are moot for purposes of its reception by markets.

Second, as Keynes said of rational agents in a market, "we devote our intelligences to anticipating what average opinion expects the average opinion to be." Markets actors aren't necessarily taking positions based on their own conclusions but anticipating how others will. Ampleforth is launching with transparent audited code, with backing from prominent investors, in partnership with Bitfinex, and made itself available for an expressly third-party report at a time when many projects are busy hyping themselves. In today's environment, these are meaningful, even if it seems that they should be minimum requirements for new projects.

An awareness of this project's ambitious, and not entirely tested, model is also important because there is a high likelihood of strong market activity upon the launch of the IEO and the time immediately succeeding it. One might anticipate this outcome both because IEOs in general have traded strongly post-launch over the last few months, and because in Ampleforth's case the mechanisms intended to provide countervailing pressure at times of price appreciation will likely move too slowly to fully offset initial upward price pressures, should market interest in this IEO prove considerable. Such an outcome is likely to generate even more talk of Ampleforth's ambitions to become a globally recognized asset class at a time when Ampleholders were slowly getting more Amples. Were such an atmosphere to develop, a clear sense of the project's fundamentals, cryptoeconomic and technical approaches, and remaining questions will be all the more critical for market participants.

Finally, anyone focused exclusively on fundamental research as the basis for crypto asset prospects has very often been wrong in the short-term—as wrong as analysts who decry the unsustainable valuations of Amazon in the face of its steady stock price rise. It is possible to be wrong in the medium term as well. As these open-source token-based projects have also proven, they evolve as communities form around them and can become different than how they were originally imagined. After over five years of mainstream talking-head mockery of cryptocurrencies as being unscalable, technologies like the Lightning Network are taking off. The industry can always surprise.

Smith + Crown provides cryptoeconomic, strategic, and technical advisory services to a wide array of best-in-class crypto projects and traditional enterprise clients.

