Fire (XFR): The Most Deflationary Asset in the World

Abstract:

A number of deflationary cryptocurrencies have emerged in the last few years. Most of them burn a portion of every transaction done with the token, in the form of a transaction fee. This burning mechanism is flawed because raising the cost of transacting with the coin only provides an incentive not to transact with it, hence lowering the deflation rate. What I propose in this whitepaper is to have a cryptocurrency with a daring and novel deflation policy. The currency will be an BEP20 named Fire (XFR). 100 trillion Fires will be pre-mined. From the beginning of the token's existence the account balance of every holder of XFR will fall daily a rate such that every year for about 12 years 90% of the XFR are burned. That is, 99.999999999% of the XFR will be burned in the next 12 years, and only about 100 XFR will remain in the end. The burning rate is a function of time and affects each address holding XFR equally and constantly. This solves the incentive problem that plagues most deflationary cryptocurrencies. We look forward to seeing the effects this continuous burning policy will have on the nominal price of XFR and the psychology of potential and actual XFR holders, who will have to intuit their way around their real and nominal gains or losses.

Fire (XFR):

Bitcoin was designed from the start to have disinflationary issuance. That is, Bitcoin's supply growth rate is positive, but it falls over time. What I propose is a cryptocurrency that is inherently deflationary right from its creation, call it Fire (XFR). Fire's supply growth rate is negative right from the beginning, and it achieves this by reducing the number of XFR proportionally in each account balance daily. The currency will exist in the Binance Smart Chain, as it has a good combination of adoption, high scalability and low transaction fees.

A number of cryptocurrencies have already attempted this already: FUZE, SHOCK, ETHPLODE, BOMB are all ERC20 tokens whose supply is limited, and that enforce a transaction fee burning policy, that is to say, every time a user transacts with the currency, a percentage of the value transacted is burned. Below the respective transaction fees:

Currency	Transaction fee	Source
Fuze	5%	https://www.docdroid.net/whZspxx/fuze-token-whitepaper-v-1.pdf#page=4
Shock	6% (3% is burned, 3% is distributed to other holders of SHOCK)	https://aftershock.vip/AfterShock-Technical-Paper-v1.0.pdf
Ethplode	0.5%	https://www.ethplode.com
Bomb	1%	https://medium.com/swlh/14-things-we-learned-creating-a-million-dollar-hyperdeflationary-currency-f372b270469c

The problem with instituting a transaction fee as the only burning mechanism of your deflationary cryptocurrency is that this gives people a strong incentive not to transact with your currency, because doing so would means sacrificing 0.5% to 6% of your equity. This burning mechanism never takes off because it relies on shifting equity from those who transact with the coin, to those who do not, and so given a choice everyone decides not to transact with the coin. Hence, the burning rate ends up being too low and it has very little effect on the nominal price.

Fire's deflation policy fixes this by making the burning rate a function of time, rather than of the number of times someone has transacted XFR. Since the account balances of all addresses burn at indistinguishable rates, at no point is the coin's equity transmitted from one kind of user to another.

The supply of XFR will decrease daily. Any account that holds any XFR will see their nominal balance fall by about 0.6288% per day. So for example, if someone acquires 10 million XFR on a given day, the Next day they will have:

$$10,000,000 \times (1 - 0.006288)$$

or

$$10,000,000 \times 0.993712$$

And N days after they will have:

$$10,000,000 \times (0.993712)^N$$

This reduction in the nominal account balances of XFR holders will go on for about 12 years, or roughly until there are only 100 XFR in existence. Hence, the final supply of XFR will be about 100. This will ensure that more than 99.999999999% of the circulating supply of Fire will be burned.

Why people would invest in XFR:

Anyone looking to buy and hold XFR will be rational to do so if they expect that the price of XFR will increase at a higher rate than their nominal account balance will decrease. For example, suppose I buy 10 million XFR at 0.0001 USD each (or about 1,000 USD). Suppose also I read the XFR white paper and I know that my nominal account balance will fall by 0.6288% per day. I plan to hold on to these XFR for a year, so I sit down and do the math and find that after I year I will have approximately:

$$10,000,000 \times (0.993712)^{365}$$

or about 1,000,218 XFR. If the price of XFR grew by a factor of about 10, then by the end of that year I will have made a modest profit. Suppose the opportunity cost of investing in XFR is investing in Bitcoin, and I expect the price of Bitcoin to double in the next year. If I am risk neutral, I would be rational to invest in XFR if I expect the nominal price of XFR will grow by a factor of more than about 20 (to make up for the decrease in my nominal account balance and the opportunity cost of investing in Bitcoin).

Now the question becomes what would make people expect the price of XFR to rise faster than their nominal account balance is going down. Why would they expect that the real value of XFR will increase over time. Here we can point to the fact that XFR is the first asset of its kind and that the nominal price is under great pressure to increase. This provides the coin with a significant publicity mechanism to attract new investors and to expand the size of the network.

Small account balances:

Small account balances pose a challenge to the system. Each XFR is divisible by 18 decimal places. If someone deposited $3x10^{-18}$ Fire to an account, then the system would not be able to upgrade the account balance according to the algorithm described above, as $3x10^{-18}$ XFR multiplied by 0.993712 is 2.981136×10^{-18} XFR, but we only have 18 decimal places to play with. So this account will have 2×10^{-18} XFR after one day, 1×10^{-18} XFR after two days, and 0 XFR after three days. This means accounts with very small account balances will experience a higher burning rate

than other accounts. However, these amounts are so small this is unlikely to cause major problems for the system.

Exchanges:

Because some exchanges have already listed Ampleforth, a cryptocurrency with a similar re-basement policy, we can analyze the way they have done it and use it as a blueprint for how exchanges would probably manage listing XFR. Bitfinex, for example, implements the following three policies close to the time of the AMPL re-basement:

(source: https://support.bitfinex.com/hc/en-us/articles/360025320913-Ampleforth)

- Exchange Deposits & Withdrawals - are paused **10 minutes** before the start of each rebase window
- New Trades are Paused - 1 minute before the start of each rebase window
- Everything Resumes - 30 minutes after the start of each rebase window
- Traders that have open orders in AMPL markets on Bitfinex after the once-daily supply change event will not have those open orders amended. However, if they do not have the AMPL funds to cover the orders after the rebalancing event, then they will see their orders only partially filled if subsequently matched in the market.

Similar policies could be implemented by exchanges looking to list XFR.

Derivative markets:

When perpetual future contracts develop for XFR, they will likely always have a high, positive funding rate. So longs would pay shorts a relatively high percentage of their position, in order to compensate for the daily debasements. This is, of course, if XFR derivative markets develop in the same way AMPL derivative markets did, where the contract keeps its nominal value regardless of the debasement of the underlying asset.

XFR margin trading:
Implementing XFR margin trading would be relatively straightforward for exchanges, as the burning rate is constant. Exchanges would probably have a negative nominal interest rate, that is nonetheless smaller in absolute value than the burning rate. So, for example, if an exchange allowed for XFR lending and borrowing of the underlying asset for margin trading, they could set a nominal interest rate of -50% yearly. Because 90% of the XFR in existence disappear every year, this would be the equivalent of setting a nominal interest rate of about +40% every year for an asset with no debasement.