RESEARCH NOTE

18 May 2020

CANE ISLAND DIGITAL RESEARCH

A Two Factor Model for Valuing LINK

Executive Summary

- **ChainLink is a new and promising incarnation of Blockchain because it allows interaction with real-world information**. ChainLink has taken the lead in oracle-interaction blockchains. Among the top 20 cryptocurrencies in market capitalization, it is the only one in this space. We view it as the only top-20 token with broad, adaptable business application that is easily explained to an average person: ChainLink is the first successful Blockchain application to interact with the outside world.
- **We found that only two factors heavily influence LINK's monthly price: Ethereum's price and LINK's user growth.** Unlike most other cryptocurrencies and tokens, LINK was *not* materially influenced by Bitcoin's price movements.[1] The merit to this finding lies not only in an investment diversification benefit, but in that *almost none* of the popular naysay arguments against Bitcoin would have much weight or applicability to LINK.
- **We found that LINK's user growth rate has been an astonishing 17% per month**. Our opinion is that ChainLink has viable real-world business application. LINK does not simply serve as a speculative store of value or medium of exchange. Therefore, adoption of the ChainLink protocol by businesses and governments for legitimate purposes has the potential to further drive adoption of the LINK token.

ChainLink as Blockchain 3.0

Qualitatively, we view ChainLink as a promising implementation of Blockchain 3.0.

In our view, Blockchain 1.0 consists of encrypted distributed ledgers used primarily as transaction mechanisms and include Bitcoin, Litecoin, and various incarnations of basic blockchain technology.

Blockchain 2.0 encompasses smart-contract implementations such as Ethereum. Our definition of Blockchain 2.0 constrains these applications to cyberspace. While Blockchain 2.0 has wide applications to financial markets, it has limited application to physical markets because it cannot directly interact with the physical world.

We view Blockchain 3.0 as a fundamental new epoch in development, because it is the first incarnation of blockchain that interacts with the physical world. ChainLink takes real-world information—information that is external to blockchain applications—and puts it on a blockchain. ChainLink connects blockchain to existing infrastructure. This has tremendous application for things like inventory control and flow metering. Nearly everything in the world is inventoried, so the applications are global and virtually unlimited: electricity, gasoline, groceries, water, lumber, grain, paper, carbon emissions, and so on.

A ChainLink blockchain is useful for supply and inventory management in a way that prevents tampering, theft, or manipulation, and facilitates reliable custody, tracing, storage, and delivery of *physical* goods. This is far different than the public's perception of cryptocurrency as a speculative investment, alternative currency, or digital store of value.

What Influences LINK's Price?

We examined some 30 potential variables that could influence LINK's price, focusing on network activity such as active addresses, hash rate, and transaction counts. We also examined the impact of new coin issuance, and the rate of new coin issuance, on price.

[1] In this research note, we reference LINK as the cryptocurrency token and ChainLink as the underlying blockchain technology.

We evaluated these factors, and their one-period lags, for LINK, and possible effects on LINK of these same factors by Bitcoin and Ethereum. To control for serial correlation, all variables were defined as monthly lognormal differences and tested for stationarity:

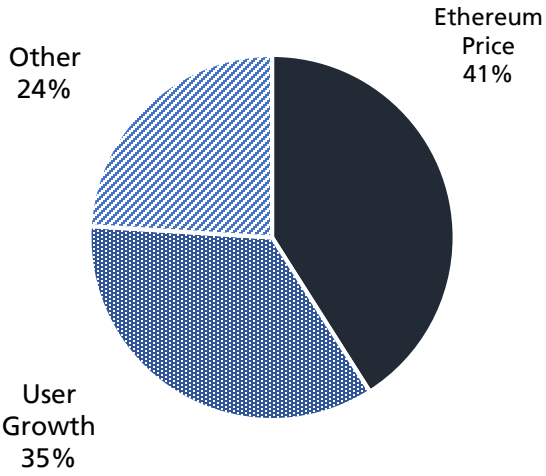
$$\ln(\Delta x) = \ln\left({}^{j_t}/_{j_{t-1}}\right)$$

We found only two variables that had a statistically significant impact on LINK's monthly return (ΔP_{LINK}): Ethereum's return for the month (ΔP_{ETH}), and the change in LINK's active addresses for the month (ΔAA_{LINK}).

$$\ln(\Delta P_{LINK}) = 0.553 \times \ln(\Delta P_{ETH}) + 0.474 \times \ln(\Delta AA_{LINK}) + 0.066 + \varepsilon$$

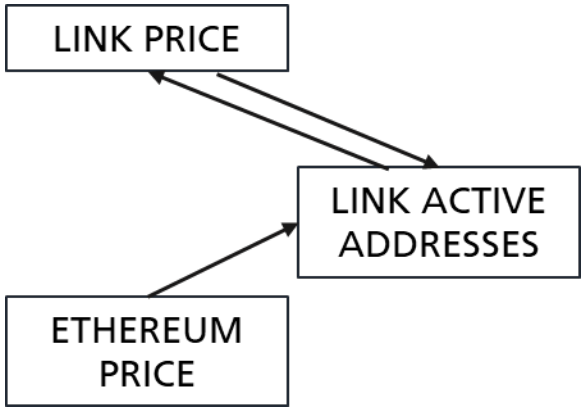
This model accounts for 81% of the changes in LINK's monthly prices. We can summarize the influencers on LINK's monthly price graphically as follows:

Factors Influencing LINK Price



In a separate analysis (not presented here) we examined precedence between Ethereum and LINK's Active Addresses on LINK's Price. We can map the relationship between the primary factors as follows:

Precedence Map for Influencing Factors



The bidirectional relationship between active addresses and price is common in cryptocurrency. It represents a positive feedback loop, shown to be an integral element in successful payment systems in particular, and characteristic of network effects in general. [2,3,4,5,6]

Selected regression statistics for our analysis are shown in the table below.

R-squared: 0.81

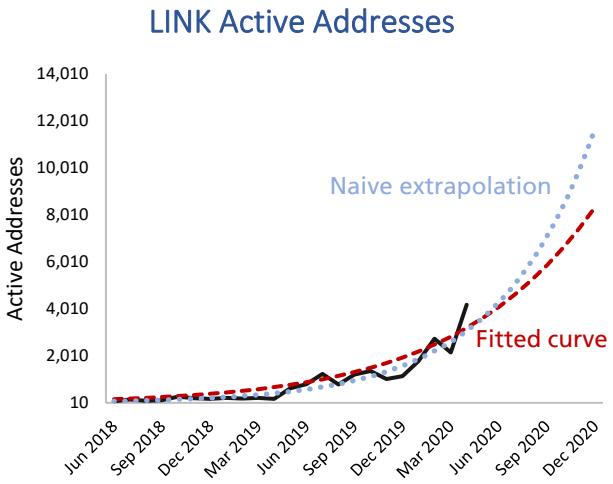
	Coefficients	*S.E.*	*t Stat*	*P-value*
Intercept	0.07	0.04	1.60	0.12
ΔP_{ETH}	0.55	0.14	3.92	0.00
ΔAA_{LINK}	0.48	0.03	7.49	0.00

LINK Adoption Rate

The variable ΔAA_{LINK} represents the monthly adoption rate for LINK. Using data from June 2018, we estimated that LINK adoption has grown, on average,

[2] Filistrucchi, Lapo, and Tobias J. Klein. "Price Competition in Two-Sided Markets with Heterogeneous Consumers and Network Effects." *SSRN Electronic Journal*, 2013, doi:10.2139/ssrn.2336411.
[3] Robinson, Constance. "Network Effects in Telecommunications Mergers - MCI WorldCom Merger: Protecting The Future Of The Internet." *Speech to the Practicing Law Institute*, 1999.
[4] Russ, Christian. "Online Crowds – Extraordinary Mass Behavior on the Internet." *Proceedings of I-MEDIA '07 and I-SEMANTICS '07*, 2007.
[5] Rysman, Marc. "An Empirical Analysis of Payment Card Usage." *SSRN Electronic Journal*, 2006, doi:10.2139/ssrn.892591.
[6] Tucker, Catherine. "Empirically evaluating two-sided integrated network effects: The case of electronic payments." *Stanford Institute for Economic Policy Research*, 2004

at about 17% per month. A naïve extrapolation would forecast this growth to result in excess of 10,000 active addresses per month by the end of 2020. We think this is optimistic.



We performed a Gompertz curve-fit to estimate the parameters for growth and decay over the same time period and estimated about 8,000 active addresses at December 2020. This forecast comes with a wide range of variation.

Still, this more conservative growth estimate would represent a 130% increase in current usage. If this growth materializes, and in light of the impact user past growth has been shown to have had on LINK price, we would expect such growth have a significant positive impact on LINK's future price as well.

Disclosures

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