

Pricing Something Out of Nothing: the cryptocurrency volatility mystery

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“Satoshi Nakamoto was a time traveler who brought Bitcoin from future”. Such claim may be ludicrous but it does capture the ingenuity of cryptocurrency. As the name suggests, such weaving of currency with coding provide a platform for reevaluating the concept of money. Bitcoin however, within ten years of inception, has undergone significantly turmoil. In 2017 alone, it reached peak of 19783.06 USD, which was 1724% higher than start of year, 659435233% higher than 2010. With surprise we wonder why Bitcoin pricing is so volatile? What is the driving force for Bitcoin’s value? What model should be adopted to price something out of nothing?

This thesis will propose a new pricing model that link cryptocurrency pricing with energy consumption, using Bitcoin

as an example. This idea was derived from interviews with three sizable mining factories’ owners in Sichuan, China, a southwest province which in peak, controls more than 30% of computational power of Bitcoin. We will start by a literature review of proposed pricing models including adoption ratio, Phillips et al. (2011) methodology, block harsh rate and liquidity, exchange rate arbitrage. Further, we will present Bitcoin pricing data with energy consumption data in major mining locations, taken into account energy shock (power outage, price spike). From then on, we will present a single factor model with energy consumption at core assuming Nash equilibrium self-interest mining behavior.