

## Research Report

# Bitcoin – Asset or Currency? Revealing Users' Hidden Intentions

DIGITAL CURRENCIES ARE A GLOBALLY SPREADING PHENOMENON THAT IS FREQUENTLY AND PROMINENTLY ADDRESSED BY MEDIA, POLITICS AND ACADEMIA. WE AIM AT GIVING EMPIRICAL INSIGHTS ON WHETHER USERS' INTEREST REGARDING DIGITAL CURRENCIES IS DRIVEN BY ITS APPEAL AS AN ASSET OR ITS UTILITY AS A CURRENCY. BASED ON OUR EVALUATION, WE FIND STRONG INDICATIONS THAT ESPECIALLY UNINFORMED USERS APPROACHING BITCOIN ARE NOT PRIMARILY INTERESTED IN AN ALTERNATIVE TRANSACTION SYSTEM, BUT SEEK TO PARTICIPATE IN AN ALTERNATIVE INVESTMENT VEHICLE.

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### Introduction

Digital currencies propose a shift away from the established design of monetary system infrastructures. Information systems and technological solutions like peer-to-peer connectivity and cryptographic algorithms allow for decentralized organization, operational security, and transparency, thus opposing the centrally coordinated and less transparent traditional monetary systems' structures (Samuelson, 1968). Against the back-drop of the recent economic crisis, this new breed of currencies is

gaining public attention and is becoming more relevant while introducing innovative concepts for future currency systems.

The digital currency that attracts most attention within this context is Bitcoin. Bitcoin can be described as an electronic financial mechanism providing features that resemble an established currency system with its own money creation and transaction regime. However, it relies on a decentralized organizational structure. Money creation in the Bitcoin system is transparently

realized by a distributed and open algorithm which facilitates the reliability of expectations about the future supply of money. Likewise, the infrastructure allows near real-time transaction execution and monitoring via the public peer-to-peer network. The entire transaction history is stored in a "block chain" which represents all verified and valid transactions between users of the network. In contrast to previous digital currencies, which can rather be seen as community currencies, Bitcoin has a wider focus and is independent from a central institution responsible for money creation. Thus, such an innovative system is not only attracting a steadily increasing level of media attention, but also increasing global dissemination. As of December 2013, it shows a market capitalization of roughly USD 13 billion.

However, the story of Bitcoin is indeed controversial. The considerable increase in dollar value and, foremost, the highly volatile exchange rates in early and late 2013 incur the attention of national regulators. It further raises concerns about the utility of the Bitcoin transaction system and the rationality of its users. At the same time, this development has led to an ongoing discussion about whether Bitcoin is primarily an alternative currency or just a speculative asset (European Central Bank, 2012). The high exchange rate volatility provides indications that Bitcoin is rather considered as the latter. Taking into account these considerations, we pose the central research question: *What are users' intentions when changing their domestic currency into a digital currency?*

### Research Design

In order to provide answers to this question, we rely on the following rationale: Bitcoin users are left to determine the value of Bitcoin themselves, doing so by gathering and evaluating information in news and Web resources, e.g., on Wikipedia as a first step. Their aggregate valuation is reflected in quoted prices and trades executed on Bitcoin exchanges.

People that received information about Bitcoin and additionally identify a personal utility regarding the innovative features are likely to become users. If this innovation is diffusing globally and the rate of potential users reached is growing faster than the supply of Bitcoin, exponentially increasing prices on exchanges should be observed. Every new user will generate trading volume on an exchange by changing his/her domestic currency into Bitcoin. If users want to use Bitcoin as a means of trade, one would expect that, after buying Bitcoin at an exchange, users are going to spend some of their newly acquired Bitcoins to buy goods or pay for services. This behavior would then increase the Bitcoin network transaction volume that is tracked in the block chain. In this case, we should observe a relation between the number of new Bitcoin users and the Bitcoin network volume, or, indirectly, a relation between exchange volume and network volume.

If Bitcoin users seek to use Bitcoin primarily as an asset, they will not leave a footprint in the block chain, i.e., the Bitcoin transaction tracking system. This is further supported by

the common practice of exchanges to keep internal accounts on behalf of their customers, meaning that exchanges do not transfer the acquired Bitcoins through the block chain. Hence, we would expect that those users' Bitcoins primarily remain within the exchanges' internal systems.

### Dataset

The time window to be analyzed in this study covers the range from 2011/01/01 through 2013/10/08. We obtain time series transaction data for the most relevant exchange in terms of volumes. Traded volumes increase when users change traditional money into Bitcoin. In order to determine the Bitcoin network volume, daily aggregated data stored within the Bitcoin block

chain is acquired. The Bitcoin network volume comprises Bitcoin transfers caused by transactions within the Bitcoin currency network. A user will increase block chain network volumes when he either (1) transfers Bitcoin from or to the exchange internal account, (2) pays for a good, or (3) transfers his Bitcoin to another entity. To identify the mass of uninformed users who acquire initial information from an initial source of information, we use the number of daily hits on the English Bitcoin Wikipedia page (Figure 1) as a proxy for measuring user attention (Wang 2013).

### Empirical Findings

By applying a set of GARCH-Models, we find that, on average, people searching on Wikipedia

for Bitcoin information are likely to eventually participate in exchange trading. In particular, we observe that an increase in Wikipedia search volume for Bitcoin drives the growth of future exchange trading volume. In contrast, we do not observe such an effect on network transaction volumes. One explanation might be that there is a transitory delay in the migration from the exchange to the network system. That is, users might need additional time, exceeding our modeled 7-day time window, after buying Bitcoins to actively use them for payment purposes. However, both increases in Wikipedia searches or exchange volumes do not affect network volumes.

### Discussion

Given these results, we argue that new users most likely focus on exchange trading after their first contact. Put differently, they hold Bitcoin as an alternative investment asset and neither contribute to nor participate in the Bitcoin currency network. The interest of new users has an influence on the Bitcoin volume traded at the exchange but not on the volume within the Bitcoin system. One interpretation of the results is that exchange users buying Bitcoin for the first time are likely to keep these Bitcoins in their exchange wallet for speculation purposes and do not have the intention to use these newly acquired Bitcoins for paying goods or services. To add further robustness to our analysis, we included manifold control parameters while our results stay the same. We therefore contribute to the literature on digital- and cryptocurrencies in general and to the literature on

Bitcoin in specific by providing indications that currently new Bitcoin users rather use Bitcoin as an asset and not as a currency as originally intended.

### Conclusion

New users tend to trade Bitcoin on a speculative investment intention basis and have low intention to rely on the underlying network as a means for paying goods or services.

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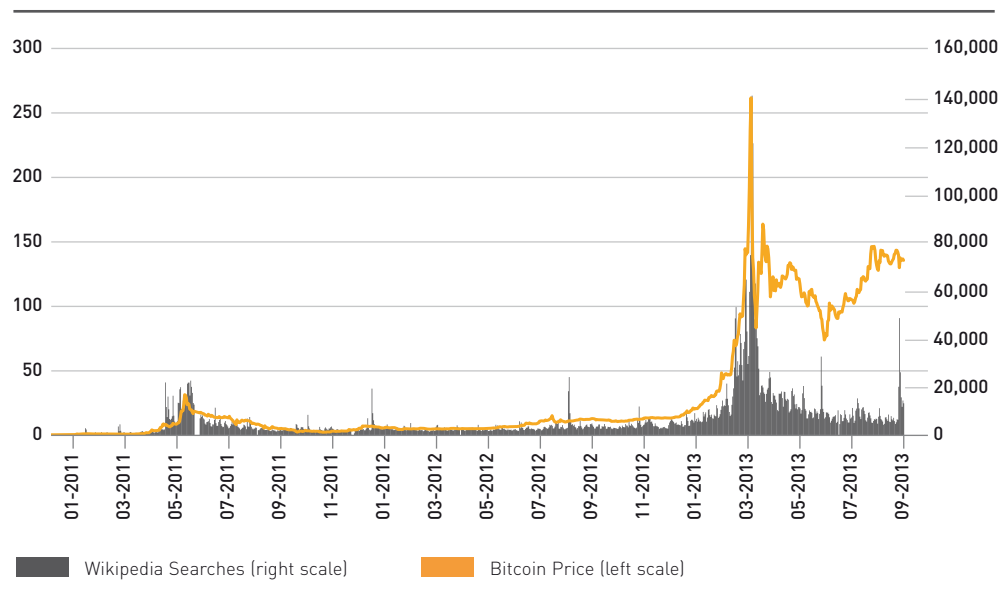


Figure 1: Bitcoin prices and Wikipedia searches