

THE CLASSIC FORM OF THE RELATIVE STRENGTH INDEX (RSI) AND THE CRYPTOCURRENCY EGLD

Adrian MOROȘAN¹

¹Lucian Blaga University of Sibiu, 0000-0001-7621-7626

Abstract: *In this paper we will present the way the classical form of the relative strength index (RSI) functions on the Romanian cryptocurrency named EGLD. We will study the signals given to us by the values taken by RSI and the result obtained by us when we followed those signals. The period taken into consideration will cover the whole period since we can analyse the evolution of the price of EGLD taking into consideration the data published on the site Yahoo Finance so, the period that we will consider will be of almost three years. At the end of the paper we will present some concluding remarks about the classical forms of the technical analysis indicators and their actual capacity to give true or false signals regarding the totally new category of cryptocurrencies. The main scope of our paper is to verify if one of the most well-known and used old technical analysis indicator functions now as it should and could be used on a very young category of finance: the cryptocurrencies exemplified with the Romanian EGLD. In our research, we will analyse, at the end of it, whether higher yields can be obtained by using the RSI compared to those which result from applying the buy and hold strategy. In other studies that we will publish we will verify if other forms of the relative strength index resulted from its classical form adapted to all the information the market currently offers function better. The actual study empirically tests the RSI and the buy and hold strategy on the same set of data.*

Keywords: *technical analysis; the relative strength index; cryptocurrency*

JEL classification: *G11*

1. Introduction

The cryptocurrency is a digital currency that uses cryptography to secure its transactions. It has become very popular in the recent years and is used to buy goods and services online. However, many people know very little about cryptocurrencies. That's understandable since the technology is still in its early stages. That's why it's important to define what cryptocurrency is and how it works before diving into the details.

First, we will repeat, to fix the concept, what the cryptocurrency is. Simply put, cryptocurrency is, as we mentioned at the beginning of our paper, a digital currency that uses cryptography to secure its transactions. Since its creation, many have wondered if cryptocurrency would replace traditional money. To the current date, this hasn't taken place since cryptocurrencies are still in their infancy. However, this could change as more people learn about them and start using them for transactions.

As far as the cryptocurrencies work, there are a variety of different coins and tokens. The most common type of cryptocurrency is a blockchain platform for decentralized applications. Other popular types of cryptocurrencies include cryptocurrencies for payment processing and cryptocurrency tokens for gambling or social media websites. Cryptocurrencies are also used for virtual goods such as games or web services. In addition, there are even cryptocurrencies for inflation control and economic development in developing countries.

While cryptocurrencies seem alluring, there are some downsides to using them online. The first one is that there are no regulations or protection schemes for users in the cryptocurrency space. This leaves many people vulnerable to scams and fraudulent practices. It also makes it difficult to get help when something goes wrong with a website or application running on cryptocurrency software. In

¹ adrian.morosan@ulbsibiu.ro

addition, there's no guarantee that you'll be able to pay faster or cheaper with cryptocurrency than with regular financial transactions when buying goods or services online.

The cryptocurrency concept is still in its infancy and is attracting both users and developers. However, things are picking up steam as more companies adopt the technology to suit their needs. Ultimately, the cryptocurrency could revolutionize our current financial system by allowing us to easily transfer money between individuals, especially between the countries, without any middlemen. No matter where it goes from here, this is an exciting new technology!

2. The birth of the cryptocurrencies - Satoshi Nakamoto and the Bitcoin

Cryptocurrency has a short but exciting history and it has changed the world quickly. Bitcoin started the world of cryptography in 2008 and drove an industry that really changed the world. It now paves the way for a wide variety of decentralized services, making them accessible to many people.

Perhaps the easiest way to understand Bitcoin (and other cryptocurrencies) is to think of it as the currency of the internet. The internet is purely digital, no one person owns or controls it, it is borderless (meaning anyone with power and equipment can connect to it), it is 24 hours a day, 7 days per week and those who use it can easily exchange data with each other. If we imagine there was an "Internet currency" where anyone using the internet could use secure transactions to spend and pay to each other directly without going through a bank, this was essentially Bitcoin.

Bitcoin was launched in 2009 by someone who goes by the pseudonym Satoshi Nakamoto (Ghimire & Selvaraj, 2018; Clarke et al, 2020). To the current date, the identity of Satoshi Nakamoto has not been confirmed. Satoshi Nakamoto is only the pseudonym of the person who helped develop the first Bitcoin software and introduced the concept of cryptocurrency to the world in a 2008 publication. Satoshi Nakamoto published then a white paper entitled "Bitcoin: A Peer-to-Peer Electronic Cash System" (Nakamoto, 2008). The white paper explains the concept of Bitcoin. Satoshi Nakamoto was actively involved in Bitcoin and blockchain development until around 2010, but there has been no news since then.

This makes many people wonder now: Who is Satoshi Nakamoto? Is Bitcoin's creator still alive? Why doesn't he, she or she get in touch with the rest of the world? Will we know the truth about the anonymous genius behind one of the most important financial developments of the 21st century?

3. Literature review

3.1 The actual characteristics of the cryptocurrencies

3.1.1 Cryptocurrencies are quickly becoming a popular form of payment

The concept is new, progressing fast, and there seems to be no shortage of investment in its development. It is also worth noting that current payment processing, especially international payment processing, is not a simple, fast and cheap process without risk.

Businesses have no choice but to adapt to this shift and offer more options when purchasing. Some payment processors have also quickly upgraded their systems to allow cryptocurrency transactions, allowing merchants to offer cryptocurrency payment options to customers. Transaction volumes will continue to grow due to consumer pressure coupled with a strong response from multiple payment service providers, and established financial institutions may not be able to ignore this opportunity for long.

Although cryptocurrencies are not a commonly used payment method, many businesses have begun to accept them in exchange for their goods and services. More and more online purchases are made using cryptocurrencies. Many merchants now accept Bitcoin. You can buy, for example, furniture for your home and a lot of other products with paying with cryptocurrencies.

3.1.2 Cryptocurrencies are often used to make safe and anonymous transactions

Cryptocurrencies offer an unbanked way to access financial services without going through a centralized institution. There are many reasons why a person may be unable or unwilling to open a

traditional bank account. Using the cryptocurrencies makes it easy for people who don't use traditional banking services to conduct online transactions or send money to the loved ones.

One of the main reasons for the development of the cryptocurrencies is their use in anonymous payments. This reason is often lost in the media and financial sector hype about price rises and falls. Price is important, but knowing how to pay with cryptocurrencies is even more important because it has gained so much traction and popularity.

With the cryptocurrencies, the transaction costs are very low (especially between different countries) – unlike the fees implied by the use of the traditional banking systems. You can trade at any time of the day or night, and there are no restrictions on purchases and withdrawals. Instead of setting up a bank account, which requires documents and other paperwork, anyone can use the cryptocurrencies for free.

Synthesizing, the easiest way to understand Bitcoin (and the other cryptocurrencies developed on the blockchain system) is to think of it as the currency of the internet.

The internet is:

- purely digital;
- no person owns or controls it;
- it is borderless (meaning anyone with power and equipment can connect to it);
- it is 24 hours and 7 days per week and
- those who use it can easily exchange data with each other.

Now imagine if there was an "Internet currency" where anyone using the internet could spend and pay secure to each other directly without going through a bank. Those are essentially the cryptocurrencies.

The often mentioned advantages of the cryptocurrencies over the other means of exchange used are according to different papers written globally:

- the lack of the government's intervention (Janson & Karoubi, 2021);
- the reduced costs;
- the high speed;
- secured transactions given by the blockchain system (Blundell-Wignall, 2014; Mazonka, 2016).

Among the often mentioned disadvantages of the cryptocurrencies are:

- the distrust in all the cryptocurrencies given by their number - over 10.000 now (Statista, 2022);
- subjective preferences for one cryptocurrency over another;
- reduced security of transactions;
- high costs involved in exchanging cryptocurrencies between them.

3.2 The classic form of the relative strength index (RSI)

The RSI is a oscillator that is commonly used in the technical analysis because of its ease of use and interpretation. It was developed, in its classic form, by Welles Wilder Jr. in 1978 and described by him in "New Concepts in Technical Trading Systems" (a book) and in "Commodities Magazine" published in the month of June of the same year. The RSI involves comparing the increase of the closing prices with their falls within a certain period of time.

We consider that the prices of the cryptocurrencies evolve like this:

- in the long run, according to their economic fundamentals and,
- in the short term, according to the predominant market sentiment (Burggraf et al, 2020; Bouri et al, 2022), which can be measured by means of technical analysis indicators.

By the concept of "technical analysis" we understand that we can use the recent past trading activity and the price changes of a security to predict the security's future price movements.

4. Research methodology

In our study we presented and used a technical analysis indicator to forecast the evolution of the price of the cryptocurrency named EGLD.

EGLD is Elrond's token. According to Elrond whitepaper (Elrond, 2019), several challenges are manifesting in the process of the creation of "an innovative public blockchain solution designed to scale":

- the full decentralization, which eliminates the need for a trusted third party;
- the robust security, that allows secure transactions;
- the high scalability, that makes the network able to achieve performances equal to the centralized counterpart;
- the efficiency: that allows the network services to be performed with energy and computational resources which are minimal;
- the bootstrapping and the storage enhancement: which determine a small cost for synchronization and data storage;
- the cross-chain interoperability: that permits the external services to communicate without limits.

Taking into consideration the above mentioned challenges, Elrond mention that they've created "a complete rethinking of public blockchain infrastructure, specifically designed to be secure, efficient, scalable and interoperable".

To determine the RSI for EGLD we will follow these steps:

1. We determine the increase of the closing price (upward change) (U) or the decrease of the closing price (downward change) (D) for each day:

$$(1) \quad U \text{ close} = \text{CLOSE today} - \text{CLOSE yesterday};$$

$$(2) \quad D \text{ close} = \text{CLOSE yesterday} - \text{CLOSE today}.$$

If we have a U positive for a day we will replace D with 0 for that day and vice versa.

2. We determined the simple moving average (SMA) and the exponential moving average (EMA) for a number of 27 days according to Wells Wilder Jr. applying the following formulas:

$$(3) \quad \text{SMA } N = (X_1 + X_2 + \dots + X_N)/N$$

$$(4) \quad \text{EMA } N+1 = \alpha \times X_{N+1} + (1 - \alpha) \times \text{SMA } N \quad \text{where } \alpha = 2/(N+1)$$

3. The relative strength (RS) is:

$$(5) \quad \text{RS} = \text{EMAofU} / \text{EMAofD}$$

4. The relative strength index is:

$$(6) \quad \text{RSI} = 100 - 100/(1+\text{RS})$$

RSI takes values between 0 and 100.

5. Results

The classical interpretation of the indicator that we used in our case study is:

- when it takes values higher than 30, coming from bottom to the top, it is considered a buy signal;

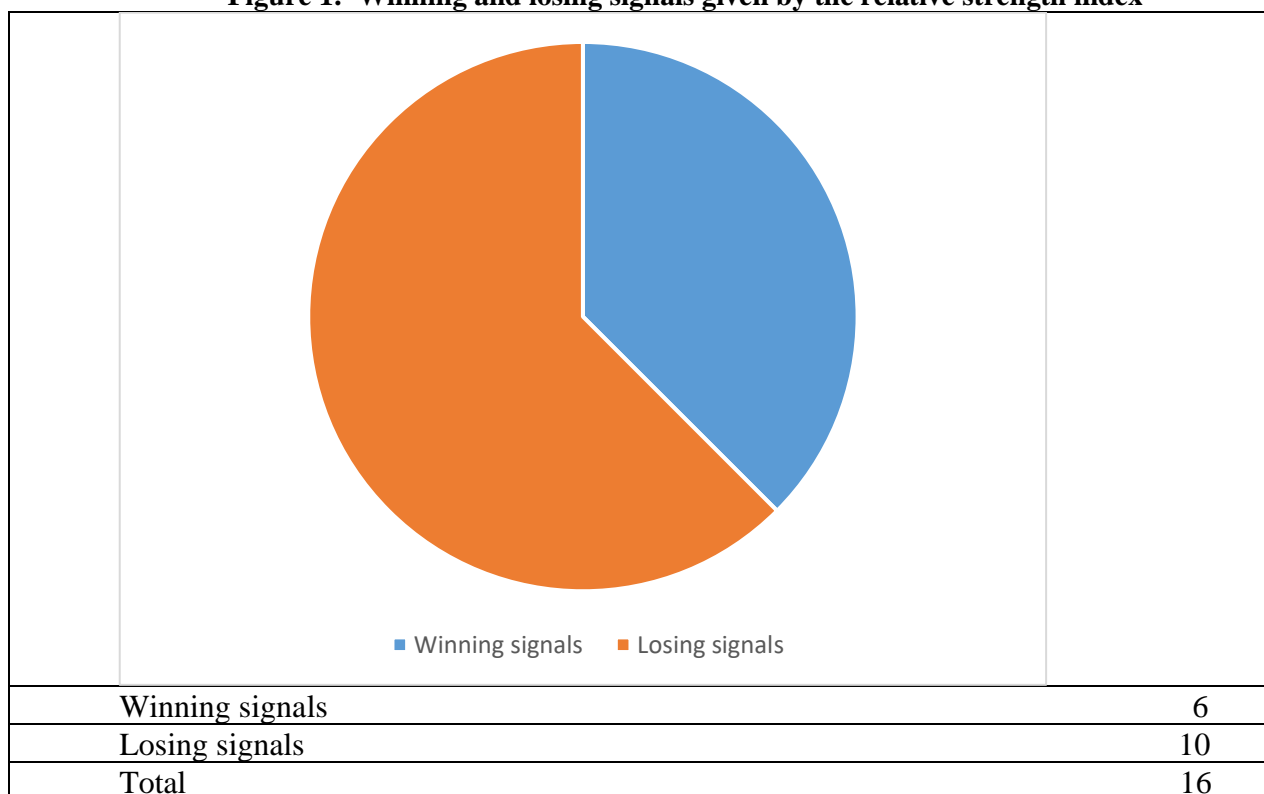
- when it takes values lower than 70, coming from top to the bottom, it is considered a sell signal.

The period taken into consideration in our paper was between 09.04.2020 and 30.04.2022 (the moment we started our study) so, we have taken into consideration the data knew for more than two years.

The total number of buying and selling signals was 16 inside the whole period that we have mentioned before, that we have taken into consideration.

From the total number of signals, the total of winning signals was 6 (37,5% of 16) and the total of losing signals was 10 (62,5% of 16), data that were described here and also in the following figure:

Figure 1: Winning and losing signals given by the relative strength index



Source: Author's own calculation

6. Conclusions

The profit obtained was bigger than the loss so, the conclusion of our case study is that we can use the classical interpretation of the RSI to obtain gains on the cryptocurrency named EGLD. In other words, we recommend to buy EGLD when RSI takes values higher than 30, coming from bottom to the top and to sell EGLD when RSI takes values lower than 70, coming from top to the bottom.

References

- Blundell-Wignall, A. (2014). The Bitcoin Question: Currency versus Trust-less Transfer Technology. *OECD Working Papers for Finance, Insurance and Private Pensions*, 37. <https://doi.org/10.1787/5jz2pwjd9t20-en>
- Bouri, E., Demirer, R., Gabauer, D., & Gupta, R. (2022). Financial market connectedness: The role of investors' happiness. *Finance Research Letters*, 44, 102075. https://www.researchgate.net/profile/David-Gabauer/publication/350971690_Financial_market_connectednessThe_role_of_investors%27_happiness/links/608085478ea909241e16c097/Financial-market-connectednessThe-role-of-investors-happiness.pdf

- Burggraf, T., Huynh, T. L. D., Rudolf, M., & Wang, M. (2020). Do FEARS drive bitcoin? *Review of Behavioural Finance*, 13(3), 229-258, <https://doi.org/10.1108/RBF-11-2019-0161>
- Clarke, N. S., Jürgens, B., & Herrero-Solana, V. (2020). Blockchain patent landscaping: An expert based methodology and search query, *World Patent Information*, 61, 101964, <https://doi.org/10.1016/j.wpi.2020.101964>
- Elrond, (2019). Elrond: A Highly Scalable Blockchain via Adaptive State Sharding and Secure Proof of Stake, <https://elrond.com/assets/files/elrond-whitepaper.pdf>
- Ghimire, S., & Selvaraj, H. (2018). A Survey on Bitcoin Cryptocurrency and its Mining, *26th International Conference on Systems Engineering (ICSEng)*, 1-6, doi: 10.1109/ICSENG.2018.8638208
- Janson, N., & Karoubi, B. (2021). The Bitcoin: to be or not to be a Real Currency? *The Quarterly Review of Economics and Finance*, 82, 312-319, <https://doi.org/10.1016/j.qref.2021.09.005>
- Mazonka, O. (2016). What is Blockchain: A Gentle Introduction. *Journal of Reference*, 16, https://www.researchgate.net/publication/311572122_What_is_Blockchain_a_Gentle_Introduction
- Nakamoto, S. (2008). Bitcoin: A Peer-to-Peer Electronic Cash System, <https://bitcoin.org/bitcoin.pdf>
- Statista, (2022), <https://www.statista.com/statistics/863917/number-crypto-coins-tokens/>