

## BUCHAREST STOCK EXCHANGE INDICES

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*Abstract: The paper aims to present aspects regarding stock indices on the national capital market (Bucharest Stock Exchange, BVB). The pages of this article contain information on the importance of stock indices, the ways of forming the twelve stock indices, as well as the impact of the COVID-19 pandemic and the war in Ukraine on their evolution.*

**Key words:** stock index, capitalization; capital market

**JEL Classification Codes:** G2.

### 1. INTRODUCTION

A stock index is an indicator that reflects the price evolution over time of a group of stocks that make up it. The role of stock indices is to allow the evolution of the respective market as a whole to be monitored. The increase in value of a stock index reflects the fact that the demand for securities is superior to the supply, indicating a positive activity of listed companies. By following the evolution of the stock index in question, an investor can create a picture of the market in that country or in a particular economic field.

Charles Dow created the first index in May 1896, the Dow Jones Index included the 12 largest companies in the United States. Today, the Dow Jones Index (DJIA) contains the 30 largest and most influential companies in the United States.

The indices of the Bucharest Stock Exchange (BVB) reflect the evolution of the prices of the most traded companies listed on the Romanian stock exchange or the evolution of certain representative sectors, such as the financial sector or the energy sector.

The criteria for selecting the securities that make up a stock market index are as follows (Mihaela Sudavceschi, 2013):

- High degree of market capitalization;
- High degree of dispersion, which shows a very large spread of securities among investors;
- Quotation to be made through the computerized stock exchange system;
- The structure of the securities in the composition of the index should follow the distribution by fields of activity of the securities listed in the official listing of the stock exchange.

Regarding the calculation methodology, all stock indices of BVB are indexes weighted with free float capitalization, with maximum limits for the weights of the component companies.

### 2. METHODOLOGY AND RESULTS

In order to carry out this study, various research methods were used, such as: analysis, synthesis, argumentation, comparison and deduction. Thus, the study and analysis of specialized



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literature, presentation of the synthesis of the obtained results were carried out. This article is the result of combining qualitative and quantitative research.

#### 1. Bucharest Stock Exchange indices

The twelve stock indices of BVB are: BET, BET-TR, BET PLUS, BET-FI, BET-BK, BET – NG, BET-XT, BET-TRN, BET-XT-TR, BET-XT-TRN, BETAeRO, ROTX. Of these, the first eleven are BVB's own indices, and ROTX is an index developed together with the Vienna Stock Exchange. Each index has an ISIN code. This code consists of:

- two alphabetic characters, representing the ISO 3166-1 alpha-2 code for the issuing country;

- nine alphanumeric characters, which identify the security;

- and a numerical check digit.

Therefore, the ISIN code is always 12 characters long.

All BVB indices are calculated in RON, EUR and USD and are distributed in real time.

The essence of each index is presented further.

#### **BET (BUCHAREST EXCHANGE TRADING)**

This was the first official index of BVB and was launched on September 19, 1997 with a starting value of 1,000 points (BVB.2012). The number of companies whose shares are taken into account to obtain the BET index varies between 10 and 20. The main criterion for selecting companies is liquidity. In addition, since 2015, criteria related to issuers' transparency, quality of reporting and communication with investors have been added to this criterion.

Currently, the BET index includes the following private or state-owned companies:

1. FONDUL PROPRIETATEA
2. BANCA TRANSILVANIA S.A.
3. OMV PETROM S.A.
4. S.N.G.N. ROMGAZ S.A.
5. BRD – GROUPE SOCIETE GENERALE S.A.
6. S.N. NUCLEARELECTRICA S.A.
7. MedLife S.A.
8. S.N.T.G.N. TRANSGAZ S.A.
9. DIGI COMMUNICATIONS N.V.
10. SOCIETATEA ENERGETICA ELECTRICA S.A.
11. ONE UNITED PROPERTIES
12. TERAPLAST SA
13. C.N.T.E.E. TRANSELECTRICA
14. TTS (TRANSPORT TRADE SERVICES)
15. ALRO S.A.
16. BURSA DE VALORI BUCURESTI SA
17. AQUILA PART PROD COM
18. PURCARI WINERIES PUBLIC COMPANY LIMITED
19. CONPET SA
20. SPHERA FRANCHISE GROUP

The formula of the BET index is (BVB, 2012):

$$BET_T = BET_{T-1} \times \frac{\sum_{i=1}^N P_{i,t} \times q_{i,T} \times E_{i,T} \times R_i \times C_{i,T}}{\sum_{i=1}^N P_{i,T-1} \times q_{i,T} \times E_{i,T} \times R_i \times C_{i,T-1}}$$

The following notations were used:

$BET_T$  - the value of the current BET index, T;

$BET_{T-1}$  - the value of the BET index at the previous time, T-1;

$P_{i,t}$  - the price corresponding to the shares of company i at the current time T;

$P_{i,T-1}$  - the closing price corresponding to the shares of company i at time T-1;

$q_{i,T}$ - number of shares at current time T;

$Ef_i$  - the free float factor corresponding to company i in the index; It is calculated to two decimal places and can take the following values: {0,1; 0,2; 0,3; 0,4; 0,5; 0,6; 0,7; 0,8; 0,9; 1}

$R_i$  - the factor representing at maximum 20% the weight of the components of the basket of the index, corresponding to the shares of company i; is calculated to three decimal places and belongs to (0,1] ;

$c_{i,T}$  - the price correction factor corresponding to the shares of company i at time T, on operational review days; is calculated to six decimal places;

$C_{i,T-1}$ - the price correction factor corresponding to the shares of company i at time T-1, on operational review days; is calculated to six decimal places;

N- Number of companies included in the index basket.

#### **1. BET-TR ((BUCHAREST EXCHANGE TRADING TOTAL RETURN INDEX)**

It is the first total return index launched by BVB, built on the structure of the market reference index, BET. The BET-TR index reflects both the price evolution of the component companies and the dividends offered by them.

#### **2. BET PLUS (BUCHAREST EXCHANGE TRADING PLUS INDEX)**

It is an index weighted with the capitalization of the free float of Romanian companies (except financial investment companies) listed on the regulated market, which meet a set of minimum selection eligibility criteria regarding liquidity and market capitalization adjusted with the free float.

#### **3. BET-FI (BUCHAREST EXCHANGE TRADING – INVESTMENT FUNDS)**

It represents the first sectoral index launched by BVB and reflects the evolution of financial investment companies (SIFs) and other entities assimilable to them.

#### **4. BET-BK (BUCHAREST EXCHANGE TRADING BENCHMARK INDEX)**

This index has been built to be used as a benchmark by fund managers, but also by other institutional investors, the calculation methodology reflecting the legal requirements and investment limits of funds.

#### **5. BET – NG (BUCHAREST EXCHANGE TRADING ENERGY & RELATED UTILITIES INDEX)**

It is a sectoral index that reflects the evolution of companies listed on the regulated market of BVB that have the main field of activity, energy and related utilities. The maximum weight of a symbol in the index is 30%.

#### **6. BET-XT (BUCHAREST EXCHANGE TRADING EXTENDED INDEX)**

This index reflects the price evolution of the 25 most traded companies on the BVB Regulated Market, including financial investment companies (SIFs).

#### **7. BET-XT-TR (BUCHAREST EXCHANGE TRADING EXTENDED TOTAL RETURN)**

It is the total return version of the BET-XT index, which includes the 25 most traded Romanian companies listed on BVB. The BET-XT-TR index reflects both the evolution of the prices of the component companies and the dividends offered by them.

#### **8. BET-TRN (BUCHAREST EXCHANGE TRADING NET TOTAL RETURN INDEX)**

This index is the net total return variant of the market reference index, BET. The BET-TRN index reflects both the evolution of the prices of the component companies and of the reinvestment of the net dividends offered by them.

#### **9. BET-XT-TRN (BUCHAREST EXCHANGE TRADING EXTENDED NET TOTAL RETURN)**

It is the net total return variant of the BET-XT index. The BET-XT-TRN index reflects both the evolution of the prices of the component companies and of the reinvestment of the net dividends offered by them.

#### 10. **BETAeRO (BUCHAREST EXCHANGE TRADING AeRO INDEX)**

BET AeRO is the first index of the AeRO market developed by BVB. It reflects the evolution of representative companies on the AeRO market selected according to liquidity and free-float capitalization criteria. It is a free-float capitalization-weighted price index, with the maximum weight of a symbol being 15%.

#### 11. **ROTX (ROMANIAN TRADED INDEX)**

It is an index developed by BVB together with the Vienna Stock Exchange (Wiener Borse AG) that reflects in real time the movement of 'blue chip'<sup>1</sup> shares traded on the Bucharest Stock Exchange (BVB). Only the most representative companies are eligible to be included in the ROTX index.

The selection criteria of these companies are:

- Market capitalization;
- Liquidity;
- Availability of market prices;
- Sectoral representativeness;
- Interest of market participants.

Each stock index has an index manual written by BVB.

Next, Table 1 presents information on the type of each index, its launch date, the number of companies included in its calculation, the starting value, as well as the revision period.

**Table 1. Features of BVB indices**

<i>INDEX</i>	<i>INDEX TYPE</i>	<i>RELEASE DATE</i>	<i>NO. COMPANIES</i>	<i>STARTING VALUE</i>	<i>REVIEW</i>
<b>BET</b>	Price index	19.09.1997	Variable between 10 and 20	1000 points	Quarterly (March, June, September, December)
<b>BET-TR</b>	Total yield index	22.09.2014	Variable between 10 and 20	4.910,39 points	Quarterly (March, June, September, December)
<b>BET PLUS</b>	Price index	23.06.2014	variable	1000 points	Quarterly (March, June, September, December)
<b>BET-FI</b>	Price index	31.10.2000	variable	1000 points	Quarterly (March, June, September, December)
<b>BET-BK</b>	Price index	03.07.2012	30	1000 points on 18.09.2009	Quarterly (March, June, September, December)
<b>BET – NG</b>	Price index	01.07.2008	Variable	1000 points on 2.01.2007	Quarterly (March, June, September, December)
<b>BET-XT</b>	Price index	01.07.2008	30	1000 points on 2.01.2007	Quarterly (March, June, September, December)
<b>BET-XT-TR</b>	Total yield index	23.03.2015	30	486,44 points on 28.12.2012	Quarterly (March, June, September, December)

<sup>1</sup> Common shares of large companies, recognized for increasing profits and paying dividends, as well as for the quality of management, products and services.

<b>BET-TRN</b>	Net total return index	11.10.2021	Variable between 10 and 20	22686 points on 8.10.2021	Quarterly (March, June, September, December)
<b>BET-XT-TRN</b>	Indice de randament total net	11.10.2021	30	2007.11 points on 8.10.2021	Quarterly (March, June, September, December)
<b>BETAeRO</b>	Price index	11.10.2021	Variable	1000 puncte	Quarterly (March, June, September, December)
<b>ROTX</b>	Price index	15.03.2005	variable	1000 points on 1.01.2002	Quarterly (March, June, September, December)

*Source: author's projection based on information provided by BVB*

## 2. THE IMPACT OF THE COVID-19 PANDEMIC AND THE WAR IN UKRAINE ON THE EVOLUTION OF STOCK INDICES

Following the spread of the COVID-19 pandemic, most global equity market indices recorded significant declines. While the real macroeconomic effects of the pandemic will realise over time, its impact on financial markets has been much faster and more dramatic. Most major global stock market indices have seen significant declines. Recognizing the short- and long-term economic impacts of COVID-19, many governments have announced multitrillion-dollar economic rescue packages since mid-March (U. Seven. F. Yilmaz, 2021). Following this positive signal, global equity markets began to bounce back with a gradual recovery. The results of their empirical research show that not all types of rescue packages are effective in restoring investors' valuation of capital markets. In particular, fiscal stimulus policies, inter alia (e.g. relaxation of financial market regulations, rate cuts, etc.), were found to be statistically significantly and positively associated with the recovery rate. Pandemic-related risks (e.g. more pandemic-related deaths) increase uncertainty and therefore market volatility, which weakens the future value of markets. The structure of economies also plays a role in affecting investor expectations.

Topcua and Gulalb (2020), quoted in C.C. Joldeş (2022), analyzed the impact of COVID-19 on emerging stock markets from March 10 to April 30, 2020. In the study, they divided the period into three sub-periods: (i) March 10-31, 2020, (ii) March 10-April 10, 2020, and (iii) March 10-April 17, 2020, to understand the changing impact of the pandemic over time. Empirical results show that the negative impact of the COVID-19 outbreak on emerging stock markets gradually declined and began to ease by mid-April. Asian emerging markets have been hit hardest, while in Europe the impact is modest. They also found that the impact of the pandemic is relatively smaller in emerging markets<sup>2</sup>, where governments have taken the necessary measures in time and announced larger stimulus packages.

The fact that capital markets have reacted negatively to the COVID-19 pandemic is also supported by F. Aslam et al. (2020). They argue with the negative evolution of globally known stock indices such as the Dow Jones Industrial Average<sup>3</sup>, which fell by 2353 points on March 12, 2020. Within a week, DJIA<sup>4</sup> (Dow Jones Industrial Average) fell nearly 3,000 points, its biggest one-day drop since the Black Monday crash in 1987. In just one month, other global stock

<sup>2</sup> On September 21, 2020, BVB passed from the status of Fringe Market to Secondary Emerging Market.

<sup>3</sup> It is one of the most famous stock indices in the world. The index, first calculated on May 26, 1896, tracks the evolution of the 30 largest blue chips (stable, large, profitable companies) in the United States.

<sup>4</sup> This index was first calculated on May 26, 1896 and tracks the evolution of the 30 most important blue chips (stable, large, and profitable companies) in the United States.

indices had a negative evolution. The UK-FTSE<sup>5</sup> fell 29.72%, Germany's DAX<sup>6</sup> 33.37%, France's CAC<sup>7</sup> 33.63%, Japan's NIKKEI<sup>8</sup> 26.85% and India's SUNSEX 17.74%.

Nguyen et al. (2021) examines the effects of COVID-19 on the international equity market. In particular, they study how volatility's spillover effects spread from the United States and China equity markets to other major international analogues. Structural changes in volatility and their resulting impact on yields are also analysed in Baek et al. (2020) and Just and Echaust (2020).

The Romanian capital market stood out through a particular resilience to uncertainties and brought significant potential benefits for investors who chose to place their savings in financial instruments listed on the Bucharest Stock Exchange. From the end of February 2020, when the first case of coronavirus was registered in Romania, until the end of February 2022, the Romanian capital market increased by 55% through the first BET-TR index, which also includes dividends, and by 39% taking into account the BET index (BVB, press release, 31.03.2022). During this time, Romanian investors present on the Bucharest Stock Exchange have become more and more numerous.

In order to support the Romanian capital market, starting with October 2020, the "National Strategy for the Capital Market" Project has been carried out at national level, with the involvement of the Financial Supervisory Authority (FSA), in partnership with the Ministry of Finance (MF), the consultancy being provided by the Organization for Economic Cooperation and Development (OECD). The project, funded by the European Commission, was carried out in three stages. The first stage, completed in February 2021, consisted of drafting a report on the key characteristics of the corporate sector, access to finance and the current state of the Romanian capital market. In the second stage, the Diagnostic Report on structural problems and significant barriers in the development of the Romanian capital market - "Developing a Capital Market Strategy for Growth in Romania" was elaborated, which included OECD recommendations aimed at supporting the development of the Romanian capital market, so that it occupies a central role in promoting economic growth, both in the context of the COVID crisis and in the long term. Based on the assessments and recommendations of the diagnostic report elaborated in the second stage by the OECD, the last stage of this project consisted in the elaboration of the National Strategy of the Romanian Capital Market by ASF and MF and in consultation with the OECD. Its general objectives are:

- Improving the conditions for listing on the capital market;
- Increasing liquidity on the secondary market;
- Promoting, developing and growing an active SME market;
- Promoting savings among individual investors;
- Increasing the role of institutional investors;
- Facilitating long-term financing through market-based mechanisms;
- Supporting digitalization and financial innovation;
- Supporting the development of the local private equity and venture capital markets;
- Stimulating green investment.

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<sup>5</sup> This index tracks the evolution of the top 100 blue chips, the companies with the largest market capitalization on the London Stock Exchange, which have a total market capitalization worth 81% of the UK stock market.

<sup>6</sup> It is the stock market index of the German stock market, which is made up of the 30 largest companies (blue chips) traded on the Frankfurt stock exchange. The DAX is the equivalent of the British FTSE 100 and the American Dow Jones. The DAX was created on July 1, 1988, with a starting value of 1000 points.

<sup>7</sup> It is the stock market index of France. It consists of the 40 largest blue chip companies traded at Bourse de Paris. The name of the index stands for Cotation Assistée en Continu. The initial value of the index - 1000 points - was set on December 31, 1987.

<sup>8</sup> It is the stock index of the Tokyo Stock Exchange of Japan. It is the most followed index in the Asian market.

The time horizon for achieving the objectives was set for each specific objective, taking into account, as appropriate, short (1 year), medium (2.5 years) or long (4.5 years) implementation deadlines. The deadline for implementing the National Strategy for the Development of the Romanian Capital Market in its entirety is December 31, 2026.

In early 2022, the post-COVID global economic recovery was becoming apparent and supply chain bottlenecks were easing.

In 2022, developments in international financial markets were influenced by the high degree of uncertainty that characterized the geopolitical and macroeconomic context, following the war in Ukraine, rising inflation rates, but also the situation in China (ASF<sup>9</sup>, 2023).

Amid the war in Ukraine, prices for most banks and financial institutions listed on European stock exchanges have fallen close to those at the beginning of the pandemic. Compared to the end of 2021, important decreases were recorded in March 2022, with stock exchanges in Austria (-20.94%), the Netherlands (-11.77%) and Belgium (-9.49%) (ASF, 2023) noted.

The BET index saw a rebound of 8.6% in November 2022 (a 20-month high), diminishing the negative return recorded by the index since the beginning of the year. Thus, based on the closing price on December 21, 2022, the BET index has a year-to-date yield of -6.1%. Although the evolution of BET was negative, it was nevertheless superior to the evolution of other European stock indices. At regional level, Poland's benchmark WIG and Hungary's BUX yields of -18.2% and -10.1%, respectively, for the same period. As for Western European stock markets, one of the benchmarks of the European market, STOXX 600, registered an annual decline of 11.8%, while Germany's benchmark index, DAX, depreciated by 11.2%<sup>10</sup>.

The BETAeRO index, which reflects the evolution of representative companies on the SMT (Multilateral Trading System) market, selected according to liquidity criteria and free-float capitalization, recorded the most important decrease, of 22.23%. The BET-NG index, which reflects the evolution of companies listed on the BVB regulated market whose main field of activity is energy and related utilities, recorded a weak evolution of approximately 4.98% on December 31, 2022.

The evolution of the twelve indices of BVB during 2021-2022 is shown in Figure no.1



**Figure No 1. The evolution of BVB indices on 31.12.2022**

Source : ASF Capital market evolution in 2022

<sup>9</sup> Financial Supervisory Authority

<sup>10</sup> Year-end report 2022, December 22, 2022, TradeVille, available online at [https://2.tradeville.ro/Documents/Analysis/RO/Rapoarte\\_Companii/Raport\\_final%20de%20an\\_2022.pdf](https://2.tradeville.ro/Documents/Analysis/RO/Rapoarte_Companii/Raport_final%20de%20an_2022.pdf)

One can easily observe the negative evolution of the twelve indices of BVB.

## CONCLUSIONS

Because it would be too difficult to track every stock in a country, stock indices were created. They highlight the most representative stocks of the market, most of which rank companies according to their capitalization. By analysing the performance of indices, an overview of the respective market can be obtained. It is important to note that an index is nothing more than a list of stocks and that they can be traded directly or used as underlying assets for index derivatives.

For global financial markets, stock indices are very important because they help investors evaluate stock market results – daily, weekly, monthly.

Being a barometer of the capital market, stock indices help us compare the performance of the national stock exchange (BVB) with European or international stock exchanges, thus being able to estimate what is the potential of our stock exchange compared to the major stock exchanges of the world.

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