The economic evolution of the EU in the blockchain and big data era

Prof. Cons tantin ANGHELACHE PhD *(actincon@yahoo.com)*
Bucharest University of Economic Studies / „Artifex" University of Bucharest

Abstract

Blockchain is a concept that tends to revolutionize the world of finance in a technological leap that allows fast, secure and decentralized transactions. The Blockchain technology is used in virtual coins (bitcoin) conditions, with a high innovation potential, applicable in various areas, with the advantage of storing databases, resulting in an unprecedented level of transparency in the private or public area. The financial-banking field tends to become a critical infrastructure that can quickly change the state of affairs. The effects of the financial transfers represent the second flow of foreclosure in the free market. The economic circuit implies the existence of information specific to a private or public area. The term bank transfer has a broad and complex meaning, with rapid transfers without a "defined bank account", intra / interbank transfers, transfers between private companies and state institutions, or between the European Central Bank and the International Monetary Fund. International trade activity is quite well developed and developed in all countries, and even more so in the European Union. Market research is of particular importance for the realization of goods exchanges through imports and exports. All companies try to have access to the most complete databases in order to base their decisions on imports and exports on their basis. Usually, the study of the market and the investment fields is insufficient and as such the effectiveness of the project is reduced. Under the very big data base, investors will have the chance to have information that needs to be used in a short time, and such opportunities need to be endowed with ultra-modern information systems.

Keywords: *blockchain, big data, international trade, investments, information system,*

Clasificare JEL : *C55, E22, G14*

Introduction

In this article, the author attempteds to highlight the perspective of the evolution of the global settlement, payment system, and so on. Emphasis is placed on describing the Blockchain objectives and on setting the elements which give supremacy of the system in the future.

In the emerging world of the Blockchain, the issue of trust is an important one and it is widely described in this study. It is also noted that at present there is already a structure that controls the Blockchain and this, under the Big Data conditions, is the system that will surely ensure a great evolution.

In the context of the growth of the Peer-to-Peer global platform, trust and rationality is ensured for using the Bitcoin-based Blockchain system in the Big Data era.

The bank transfers are multiple, involve banking activity, involve production activity, and involve exchanges. A complex system of processing, transmission and protection of these bank circuits will be based on the worldwide use of the blockchain system. In fact, a large number of banks, a fairly large number of operators, are turning to this system.

Delicate details are given on the specialized service models that can be used. It also highlights the vulnerabilities that exist in these systems and, in particular, the emphasis is placed on the developments that will occur in the financial and banking area.

Starting from the fact that databases are important in international economic analyzes, at a time when they are quite bulky in the big data system, international economic exchanges have gained a new dimension. There is a huge volume of data that makes it possible to do a very fast international business transactions from anywhere in the world.

The international trade knows a wide variety, instantly making arrangements, payments, settlements and any other transaction that goes into this business transaction flow.

After presenting some specific aspects that was supposed to be big data, in the study undertaken in this article, we conducted a concrete analysis based on the evolution of international exchanges of Romania.

Redesigning and automating processes in peer-to-peer networks already provides benefits in the field of international investment, which can be summed up as follows: an extraordinary speed to solve the problem, which involves automation from one end to the other; a low cost associated with the transmission of almost infinite amounts of data to huge central facilities and the elimination of costly intermediates. What is currently being achieved through a series of possibilities now clearly results from this blockchain; revenue and efficiency are due to the extraordinarily high productivity of this Blockchain, which has greater effectiveness as the number of operations accessed is greater; the system provides increased security and integrity, trusting those who use it to be a well-polished system with low chances of falling as a system; thus eliminating the bottlenecks that may appear, the existence of an almost perfect system results; privacy is particularly protected because the intermediary can

not pass or ignore the rules defined in Blockchain, and thus ensures very high confidentiality.

The very interesting aspect is the ability of these devices to go beyond monitoring, measurement and relatively passive communication to perception, that is to record the most sensitive aspects.

The big data phrase, specific to the domain, describes the multitude of data it will generate in the physical world.

Another aspect that the computer system raises is that the blockchain can address the six obstacles to the operation of an Internet according to the new registry of all the works without any retention elements.

In this respect, in 2018, the Meeting of the Directors of Statistics Departments in European countries took place in 2018, which approached precisely this theme: *The role of statistics in the adaptation of methodology to the requirements of the large data volume (big data)*.

Literature review

Anderson and Semmelroth (2015) presented some aspects of the use of statistical tools in the Big Data era. Anghelache and Anghel (2017) analyzed the activity of international trade from the perspective of the contribution to the economic growth. Anghelache, Anghel and Bodo (2017) analyzed the importance of information in modeling decisions. Bohme, Christin, Edelman and Moore (2015) addressed a number of concepts related to Bitcoin technology. Branten and Purju (2013) studied the main aspects regarding the innovative financial instruments used in the European Union financing schemes. Guerrieri and Vergara Caffarelli (2012) referred to the international fragmentation of production in the EU. Kakushadze and Yu (2016) analyzed the main statistical models of risk. Li and Liu (2013) as well as Meng and Ci (2013) researched the essentials of Big Data. Viet (2014) analyzed the impact of trade facilitation on poverty. Xu, Jiang, Wang, Yuan and Ren (2014) analyzed information security issues in the Big Data era.

Research methodology, data, results and discussions

• Economy and blockchain in the Big Data era

As well known, the Blockchain technology is used in the context of virtual coins, such as bitcoin, but has much greater potential to innovate, applicable in many areas.

The advantage is that it can hold a public data shared areas, especially now, in the era of Big Data, where there is a large amount of data on which basis analyses can be made, a lot of issues that have significance in the financial and economic area can interpret be interpreted..

The big banks and some governments implement Blockchains as distributed registers to revolutionize the way in which the information is stored and the way in which the financial, economic, etc. transactions take place.

The Blockchains' objectives consist of rapidity, lower costs, security, fewer errors and the removal of the central attack and crash points, of penetration into the system.

The Blockchain uses bitcoin. Absolutely, all the distribution blocks work online, being made available around the world. There is no central database to be broken. That's why the Blockchain is public, seen by anyone at any time, because it's in the network and can intervene.

We can note that the Blockchain is, in our day, what the Internet represented at the time of its appearance a few decades ago.

Regulatory bodies are studying and enforcing Blockchain legislation in this area to avoid the emergence of the trade-threatening risks as well as the changes of the trade transfers.

The Blockchain also ensures transparency, meaning that any transaction, any operation is done in the light of the day, without any alterations in hidden or difficult to identify elements.

The Blockchain is similar to a superior stage, providing sightseeing transactions that ensure the rapid realization in the interest of those who succeed in making these transactions.

Presently, there are institutions that control and hold the means of production and social interaction, infrastructure, and everything else, and the Blockchain is the system that can become quite efficient and secure in doing this.

The experts often talk about a number of platforms like AIRBNB, UBER LYFT, TASK-RABBIT and others, as platforms for the economy of protecting the interests of those who apply to them.

The property rights are so linked to the capitalist market system that the first version is found in the Declaration of Independence and Inalienable Property Law. It is clear that most owners in the world can see their home or small property confiscated arbitrarily, rightly or unfairly resolved. The Blockchain program, providing a huge amount of data, quickly returns to the concrete situation, without delays, as is currently the case for commercial litigation, lawsuits and many other impediments.

The central idea of the Blockchain is that the property rights can be traded regardless of whether they are financial, physical assets or ideas. The objective is not only to register the ownership, but to consign to the database, documents, attributes of the property, and its immutability.

We can also talk about the cultivation of the Blockchain entrepreneurship. The entrepreneurship is essential for a prosperous economy and society. The

Internet has to release the entrepreneurs by offering them the tools and capabilities of the large companies, leaving aside obligations such as the inherited culture, oscillating processes, and all other elements that hinder progress.

We can also address the issue that the Blockchain, through the huge database and tracking the transaction spontaneously, very quickly, ensures the installation of government authorities by the people for the people. The Blockchain technology requires a culture and training level for the society members who can access and quickly see how the transactions evolve, how these issues are going.

Under the current circumstances, we can also discuss the prospect of initializing the future, taking into account the seven design principles of the Blockchain economy. The seven design principles are considered to be necessary in the context of discussing a Blockchain-based system.

The first is the network integrity. This principle is based on trust that expresses the possibility that everyone who wants to enter this system can use it for decision-making and information. A second principle is the distributive power, in the sense that the system can distribute and can use or be used by all those interested.

In other terms, the third principle would be the value as an incentive, in the sense that balancing and correlating the values of the transactions, of the traded items, it ensures the possibility of performing efficient operations.

According to the fourth principle, the Blockchain system ensures the security of the system in the sense that the access is available only to those who are directly interested in it and entered into the transaction.

The fifth principle is the confidentiality, which implies that the access of the others is limited in the course of this transaction or operations.

The Blockchain also assures, through the sixth principle, the conservation rights, that is, the right of ownership, which is imprescriptible and cannot be used because this Blockchain system stops you from going further.

The last principle of the Blockchain's economy is the inclusion, which assumes that the Blockchain encompasses the entire informational base.

There are six key reasons, explaining why the Blockchain technology will cause profound changes in the financial sector, breaking the monopoly of finances and providing both the individuals and the institutions with a real choice of how they manage value, because everything is needed be based on value, on evaluation, and then on value expression.

- First, the attestation; for the first time, two parties who do not know each other and do not trust each other, are able to enter into transactions and do business.

- Secondly, the cost; in the Blockchain there is a network that compensates and settle Peer-to-Peer the value transfers and does things continuously so its registry is always updated.

- Another key element is the speed; nowadays, the settlement of a monetary transfer is done within a few days.

- Another key element is the risk management. The Blockchain technology promises to mitigate some form of special risk. Here we are talking about the financial risks.

- Another issue is the innovation in value. The Bitcoin Blockchain was designed to move Bitcoins, not to process other financial assets, but to ensure the openness of open source type, transparency, and all other elements that are required in the trading system.

Last but not least, we can talk about value accounting. Accounting is the measurement, processing and communication of financial information about economic entities. In this sense, the Blockchain will make these cost accounting highlights instantaneous, i.e. to express the ability of the regulators and other stakeholders to thoroughly verify the financial actions carried out within a corporation.

Consequently, the Blockchain, as it is defined, will be for the world of finance comparable to what happened 25 years ago when the Internet captured the world of information.

• The role of informatics and bank transfers in the Big Data era

The Temporally Space of the Internet of Things (IoT), Artificial Intelligence (AI), and Machine Learning (ML) are in full swing and any developing infrastructure will have to relate to the risks developed by the entire process chain. The misunderstanding of the needs from the side of the decision-makers finally leads to the recording of losses.

It is not surprising that the US Department of Homeland Security and the Federal Bureau of Investigation announced in the early 2018 that destabilizing actions had been identified and that „for more infrastructures there is an imminent danger of deploying some attacks of a computer nature".

Since the beginning of the third millennium, there has been a growing debate about resource recycling, energy saving, increased productivity and efficiency.

The new technologies are trying to penetrate a competitive market and have attractive consumer benefits, trying to eliminate as many of the vulnerabilities identified during exploitation as possible. The distribution of the market segments will largely depend on the quality of the services versus costs.

The private cloud describes an IT infrastructure designed for the exclusive use by a single, multi-consumers organization. The public cloud is an infrastructure owned, managed and operated by a specialized service provider, having as its main feature that more independent users use the same physical

server resources. The community cloud is an infrastructure designed for exclusive use by a specific consumer community made up of organizations with common concerns or interests. It may be owned, administered and operated by one or more of the organizations in the community, a third party or a combination thereof and may exist physically inside or outside the organization. The Hybrid Cloud describes an infrastructure that is developed as a construction of two or more separate cloud structures that remain unique entities but are linked together by the same proprietary technology or standardized technology that enables the portability of data, information and the requested software.

A particular, highly sensitive area of the data protection is the financial one, including, of course, the banking field as well. Given the level of globalization and the dynamic business environment, many organizations outsource certain services.

The companies that have digitized too little their computer architecture have a certain reluctance to change, while the companies with experience and history in the field of database processing are more open to new challenges.

The most important elements in the good functioning of the financial institutions are the confidentiality, integrity, availability and, most of the time, the non-repudiation of the processed information.

There is a new trend in the criminal industry namely to use the cloud in order to control entire botnets networks through C & C type servers within the cloud itself. The subject has become quite abused at present, but the reality that processes are taking place with great rapidity, producing immediate effects cannot be denied.

The multinational companies are the medium of application of the new cloud accounting strategies. Data is uploaded from different countries; the group processing is greatly facilitated by the common platform and provides a clear picture of the overall situation. In order to be able to talk about an increase in that percentage of the cloud service users, we need to take into account the need for profound changes in this area.

This is done by means of a card which is an electronic payment instrument, i.e. a standardized, secured and individualized information carrier, which allows its holder to use his / her own cash resources from an account opened in his / her name at the issuer of the card or use a line credit within the limit of a pre-established threshold opened by the issuer in favor of the card for performing, cumulating or otherwise, the following operations: cash withdrawal; payment of goods or services purchased from accepting merchants and payment of obligations to public authorities; transfers of funds between accounts other than those ordered and executed by the financial institutions.

Big Data is a very voluminous data set that has become difficult to operate with normal software or hardware. In the last decades, the data volume

has experienced an explosion, reaching a level difficult to anticipate. Many areas, such as finance, marketing or commerce, are faced with a unprecedented "wealth" of data. Big data revolutionized even the most traditional areas, such as law and medicine. This evolution of data volume has led to the emergence of a new specialization, such as „data scientist", a specialist who can perform deep analyzes by comparing statistics with mathematics and highly complex scientific computers.

In the case of linearity, we can conclude that between two variables x and y, the bond is of the form $y = ax + b$, where „a" is the linear regression parameter, and „b" is a constant of the value of y when $x = 0$. We can also perform analyzes based on time series, predictive techniques, establishing the computational algorithm that quickly uses the huge data volume (bid data).

Under the big data, we distinguish three management systems by using databases (relational model, hierarchical model and network model). Big data is already used in a variety of areas, such as weather forecasts, health, insurance, finance, electricity, education, services, etc.

So, big data ensures a large amount of data that is electronically processed to fit the expected algorithm.

• International trade in the Big Data conditions

In order to facilitate the understanding of the text and the content of the statistical indicators used, we will present some methodological aspects that the National Institute of Statistics is considering in processing and obtaining published values on international economic relations.

The balance of the FOB / CIF trade balance is calculated on the basis of the FOB export value and CIF import as a difference between them. The FOB price (Free on Board) is the price at the Romanian border, which includes the value of the goods, all transportation costs to the point of embarkation, and all the charges that the goods have to bear to be loaded on board. The CIF (Cost, Insurance, Freight / Cost, Insurance, Navlu) price is the price at the Romanian border, which includes both the components of the FOB price and the cost of international insurance and transport.

International commodity statistics are established by aggregating the data from the INTRASTAT and EXTRASTAT statistical systems. INTRASTAT system for intra-EU trade and EXTRASTAT system for EXTRA-EU trade.

Intra-EU trade includes goods dispatches from Romania to another EU Member State and goods imports into Romania with another EU Member State as shipment country.

Consignments from Romania include: goods in free circulation leaving the statistical territory of Romania for another EU Member State; goods which

have been placed under the customs procedure of active processing or processing under customs control in Romania and destined for other Member States.

Starting from these aspects, we have expanded the analysis of Romania's commercial activity over a reasonable period (January 2013-June 2018) on total, intra-EU trade relations28 and EXTRA-EU trade relations28.

The study was conducted on exports and imports on the two geographical (economic) geographic areas, all of which resulted in the total international trade of Romania during the period considered.

Exports were considered as FOB, CIF imports, and FOB / CIF.

In tables no. 1, 2 and 3 summarize synthetic data on exports, imports, and the FOB / CIF balance of Romania's trade balance for January 2013-June 2018.

Romania (INTRA-EU28 and EXTRA-EU28) exports (FOB) between January 2013 and June 2018

Table no. 1

	Jan.13	**Feb.13**	**Mar.13**	**Apr.13**	**May.13**	**Jun.13**	**Jul.13**	**Aug.13**	**Sep.13**	**Oct.13**	**Nov.13**	**Dec.13**
Intra EU28	2634.8	2738.8	2847.0	2895.3	2799.7	2843.0	3160.0	2528.4	3016.2	3331.5	3252.1	2460.8
Extra EU28	1067.5	1134.7	1158.9	1192.7	1222.6	1180.4	1322.2	1300.7	1438.0	1370.2	1271.7	1394.9
	Jan.14	**Feb.14**	**Mar.14**	**Apr.14**	**May.14**	**Jun.14**	**Jul.14**	**Aug.14**	**Sep.14**	**Oct.14**	**Nov.14**	**Dec.14**
Intra EU28	2885.8	3026.8	3160.2	2954.9	3129.6	3155.5	3381.0	2549.4	3431.1	3572.7	3420.4	2648.0
Extra EU28	1050.9	1314.1	1321.1	1215.7	1216.9	1085.4	1394.6	1314.9	1475.4	1360.2	1245.5	1155.9
	Jan.15	**Feb.15**	**Mar.15**	**Apr.15**	**May.15**	**Jun.15**	**Jul.15**	**Aug.15**	**Sep.15**	**Oct.15**	**Nov.15**	**Dec.15**
Intra EU28	3110.6	3244.1	3588.6	3231.2	3212.8	3513.8	3628.4	2812.6	3706.9	3853.9	3606.4	2747.7
Extra EU28	1076.7	1152.3	1212.3	1168.5	1276.5	1253.8	1414.9	1110.9	1208.2	1139.5	1144.9	1194.3
	Jan.16	**Feb.16**	**Mar.16**	**Apr.16**	**May.16**	**Jun.16**	**Jul.16**	**Aug.16**	**Sep.16**	**Oct.16**	**Nov.16**	**Dec.16**
Intra EU28	3201.1	3601.7	3742.4	3580.7	3485.2	3684.0	3632.5	3148.2	4038.7	3839.3	4069.6	3056.8
Extra EU28	917.4	1211.5	1187.2	1123.9	1190.0	1257.8	1178.5	1297.7	1202.4	1247.4	1241.8	1256.4
	Jan.17	**Feb.17**	**Mar.17**	**Apr.17**	**May.17**	**Jun.17**	**Jul.17**	**Aug.17**	**Sep.17**	**Oct.17**	**Nov.17**	**Dec.17**
Intra EU28	3567.7	3839.5	4356.2	3609.1	4182.6	3926.1	3919.5	3683.2	4283.7	4351.6	4450.4	3312.0
Extra EU28	1111.3	1230.8	1371.6	1164.4	1396.3	1139.3	1306.8	1237.9	1274.0	1411.0	1335.3	1181.6
	Jan.18	**Feb.18**	**Mar.18**	**Apr.18**	**May 18**	**Jun 18**						
Intra EU28	4146.4	4217.7	4649.0	4057.9	4483.8	4520.3						
Extra EU28	1277.8	1238.7	1457.6	1175.9	1387.9	1363.9						

Source: National Institute of Statistics, Press release no. 199/09 August 2018

Regarding the Romania's buy-in (imports) from the EU-28 Member States, we find that the same trend was observed as for exports, in the sense that the imports increased, but at a moderate pace, from EUR 3,001 million in January 2013 to 5,3801 billion euro in June 2018. The increase of the access of the community goods on the Romanian market is also based on the disappearance of the import taxes, making the products of exporting (exporting) states of the EU28 competitive in quality and price compared to similar domestic products. In fact, Romanian producers no longer enjoy any protection.

Significant is the fact that large supermarkets (malls) belong to foreign investors, which operate on purchases with producers in their countries of origin.

Expanding the study to highlight other financial issues as well, but this is not the subject of this article.

Romania's INTRA-EU28 and EXTRA-EU28 imports (CIF) between January 2013 and June 2018

Table no. 2

	Jan.13	**Feb.13**	**Mar.13**	**Apr.13**	**May.13**	**Jun.13**	**Jul.13**	**Aug.13**	**Sep.13**	**Oct.13**	**Nov.13**	**Dec.13**
Intra EU28	3001.0	3118.9	3553.0	3719.0	3470.0	3369.7	3707.2	3318.8	3703.3	4039.2	3771.7	3144.2
Extra EU28	1003.8	963.1	1023.4	970.2	1044.3	1022.7	1348.0	1160.2	1168.9	1309.6	1174.6	1212.6
	Jan.14	**Feb.14**	**Mar.14**	**Apr.14**	**May.14**	**Jun.14**	**Jul.14**	**Aug.14**	**Sep.14**	**Oct.14**	**Nov.14**	**Dec.14**
Intra EU28	3145.9	3453.5	3860.0	3616.8	3693.5	3746.1	3882.5	3144.8	4000.8	4210.5	3906.9	3462.8
Extra EU28	1043.5	1202.4	1171.7	1197.5	1185.1	1050.7	1417.0	1161.6	1391.4	1289.4	1197.3	1090.7
	Jan.15	**Feb.15**	**Mar.15**	**Apr.15**	**May.15**	**Jun.15**	**Jul.15**	**Aug.15**	**Sep.15**	**Oct.15**	**Nov.15**	**Dec.15**
Intra EU28	3383.0	3721.4	4246.5	3943.9	3816.8	4233.0	4338.6	3584.3	4380.3	4632.8	4403.9	3913.3
Extra EU28	981.3	1060.8	1367.3	1104.0	1220.8	1257.0	1352.0	1190.9	1279.2	1233.7	1126.2	1199.8
	Jan.16	**Feb.16**	**Mar.16**	**Apr.16**	**May.16**	**Jun.16**	**Jul.16**	**Aug.16**	**Sep.16**	**Oct.16**	**Nov.16**	**Dec.16**
Intra EU28	3528.5	4254.6	4569.7	4382.4	4315.6	4358.9	4204.2	3998.6	4705.6	4743.6	4747.0	4141.8
Extra EU28	969.8	1170.5	1325.3	1165.5	1348.0	1278.7	1246.3	1471.9	1318.0	1320.9	1429.9	1369.1
	Jan.17	**Feb.17**	**Mar.17**	**Apr.17**	**May.17**	**Jun.17**	**Jul.17**	**Aug.17**	**Sep.17**	**Oct.17**	**Nov.17**	**Dec.17**
Intra EU28	3948.5	4378.4	5183.7	4432.8	5066.3	4835.0	4722.8	4435.0	5110.7	5373.4	5237.4	4555.1
Extra EU28	1335.7	1346.0	1584.2	1389.1	1618.2	1598.7	1492.3	1547.8	1473.2	1713.9	1671.4	1548.8
	Jan.18	**Feb.18**	**Mar.18**	**Apr.18**	**May 18**	**Jun 18**						
Intra EU28	4590.3	4829.2	5429.2	4800.9	5256.5	5380.1						
Extra EU28	1611.1	1511.3	1737.2	1444.9	1884.5	1806.7						

Source: National Institute of Statistics, Press release no. 199/09 August 2018

From the comparison of exports with imports on two market segments, INTRA and EXTRA Community, we calculated the FOB / CIF balances of Romania's trade balance, between January 2013 and June 2018.

The FOB-CIF balance of Romania's trade balance, from January 2013 to June 2018

Table no. 3

Intra EU28	**Jan13**	**Feb13**	**Mar13**	**Apr.13**	**May13**	**Jun13**	**Jul.13**	**Aug.13**	**Sep13**	**Oct.13**	**Nov13**	**Dec.13**
Extra EU28	-366.2	-380.1	-706.0	-823.7	-670.3	-526.7	-547.2	-790.4	-687.1	-707.7	-519.6	-683.4
	63.7	171.6	135.5	222.5	178.3	157.7	-25.8	140.5	269.1	60.6	97.1	182.3
Intra EU28	**Jan14**	**Feb14**	**Mar14**	**Apr14**	**May14**	**Jun14**	**Jul.14**	**Aug.14**	**Sep14**	**Oct.14**	**Nov14**	**Dec.14**
Extra EU28	-260.1	-426.7	-699.8	-661.9	-563.9	-590.6	-501.5	-595.4	-569.7	-637.8	-486.5	-814.8
	7.4	111.7	149.4	18.2	31.8	34.7	-22.4	153.3	84.0	70.8	48.2	65.2
Intra EU28	**Jan15**	**Feb15**	**Mar15**	**Apr.15**	**May15**	**Jun15**	**Jul.15**	**Aug.15**	**Sep15**	**Oct.15**	**Nov15**	**Dec.15**
Extra EU28	-272.4	-477.3	-657.9	-712.7	-604.0	-719.2	-710.2	-771.7	-673.4	-778.9	-797.5	-1165.6
	95.4	91.5	-155.0	64.5	55.7	-3.2	62.9	-80.0	-71.0	-94.2	18.7	-5.5
Intra EU28	**Jan16**	**Feb16**	**Mar16**	**Apr.16**	**May.16**	**Jun.16**	**Jul.16**	**Aug.16**	**Sep16**	**Oct.16**	**Nov16**	**Dec.16**
Extra EU28	-327.4	-652.9	-827.3	-801.7	-830.4	-674.9	-571.7	-850.4	-666.9	-904.3	-677.4	-1085.0
	-52.4	41.0	-138.1	-41.6	-158.0	-20.9	-67.8	-174.2	-115.6	-73.5	-188.1	-112.7
Intra EU28	**Jan17**	**Feb17**	**Mar17**	**Apr.17**	**May17**	**Jun17**	**Jul.17**	**Aug.17**	**Sep17**	**Oct.17**	**Nov17**	**Dec.17**
Extra EU28	-380.8	-538.9	-827.5	-823.7	-883.7	-908.9	-803.3	-751.8	-827.0	-1021.8	-787.0	-1243.1
	-224.4	-115.2	-212.6	-224.7	-221.9	-459.4	-185.5	-309.9	-199.2	-302.9	-336.1	-367.2
Intra EU28	**Jan.18**	**Feb.18**	**Mar18**	**Apr.18**	**May 18**	**Jun 18**						
Extra EU28	-443.9	-611.5	-780.2	-743.0	-772.7	-859.8						
	-333.3	-272.6	-279.6	-269.0	-496.6	-442.8						

Source: National Institute of Statistics, Press release no. 199/09 August 2018

- **The evolution of investments in the blockchain conditions and the Big Data era**

Generally speaking, one can appreciate that the economic development of a state is based on investments that can ensure sustainable development. In this context, taking into account the current large data system, comprehensive and well-correlated models need to be built. Thus, the IOT model is

recommended to be used in the big data conditions. By developing these ideas, the authors made an analysis using Romania's economic system in a concrete way. What started out as a click of crypto-initiates quickly transformed into the group of the largest and brightest venture capitalists. Titans in financial services play the role of venture capitalists.

An extremely significant example in this respect could be the programmatic objective of great accu- racy and topicality, to which the political class has been endeavoring to take efforts, steps and sacrificial decisions, namely Romania's accession to the economic and political structures west- European Union, respectively the European Union and NATO. In the context of the new geopolitical and economic situation in Europe, adherence to these structures was even an abstraction of the „hyperbolised" theme of „Romania's reintegration into Europe", a desideratum of profound objective determinations of an economic and political nature, as well important and much wanted by any of the Romanians. The way of approaching the accession issue by Romania, on the one hand, and by the two structures, on the other hand, was different. It is easy to understand that both NATO and the European Union have accepted in their entourage a country - Romania - that has economic stability, has a well-established infrastructure and also has a social and social peace verified and guaranteed internal policy, these being clearly stated performance criteria valid for all former candidate countries. These criteria necessarily trigger a causal relationship in the sense that their fulfillment leads to accession, which in turn has become a prerequisite for even greater economic, political and social stability, on the basis of which possible new developments of the structure, superstructure and infrastructure of the country. I think that the opinion of those who believed that Romania's integration into the European Union and NATO was a kind of panacea for all the problems and only secondly they thought about the development of the infrastructure and the other macroeconomics.

I have mentioned above as a vital solution for stopping the economic downturn and strengthening the recovery process, attracting foreign capital investment, as the prospect of real domestic capital growth can not be said too much. The realization of domestic capital investments due to bank loans can not be taken into account, both due to the legal provisions in force and due to the high level of interest rates applied, and why not due to the very crisis which is increasingly evident in the level of the banking system. In this context, attracting capital and foreign investment is the only way of real evolution in any economic situation, both in Romania and in the world in general, and in Europe in particular. Unfortunately, too little has been done in this area, and in many cases when something has been done, the opposite has been done.

Domestic legislation and fiscal policy were the two major obstacles to foreign capital entering the Romanian market. After things have settled somewhat and a number of foreign investors have shown their willingness to invest in Romania, a new bomb exploded. In the desire to balance the budget, we do not say for the rectification, in order to bring extra income, the simple way of arithmetic was used.

There must be no restraint in regulating the incentives to attract foreign capital and encouragement of domestic capital, because everything that is invested in Romania through Romanian trading companies, regardless of the origin of the capital, is national wealth.

Registration of companies with foreign participation in the subscribed share capital, between 1991 and June 2017

Table no. 4

	Înmatriculări de societăţi comerciale *Registrations of commercial companies*		Valoarea capitalului social total subscris exprimat în: *Value of total subscribed social capital expressed in:*					
			monedă naţională *national currency*		valută *foreign currency*			
	număr *number*	structură *structure* - % -	mii lei *lei thou*	structură *structure* - % -	mii dolari SUA *USD thou*	structură *structure* - % -	mii euro *euro thousand*	structură *structure* - % -
TOTAL / *TOTAL*	**212752**	**100,0**	**164455931,9**	**100,0**	**59915215,3**	**100,0**	**45510556,1**	**100,0**
1991	5499	2,6	258165,5	0,2	1058260,8	1,8	817975,6	1,8
1992	11765	5,5	65153,0	↓)	573271,2	1,0	443106,2	1,0
1993	10583	5,0	92793,2	0,1	417844,8	0,7	322970,3	0,7
1994	11053	5,2	230535,9	0,1	881673,3	1,5	681483,5	1,5
1995	3400	1,6	67893,9	↓)	237717,0	0,4	183741,8	0,4
1996	3630	1,7	229256,3	0,1	573594,2	1,0	443355,8	1,0
1997	5251	2,5	232229,8	0,1	359912,8	0,6	278192,2	0,6
1998	8801	4,1	728612,4	0,4	755475,3	1,3	583939,6	1,3
1999	7383	3,5	1214843,7	0,7	944365,3	1,6	729940,9	1,6
2000	8567	4,0	1870247,9	1,1	839143,8	1,4	648610,6	1,4
2001	7175	3,4	4820820,8	2,9	1540810,8	2,6	1190959,4	2,6
2002	7518	3,5	3541822,9	2,2	1078746,2	1,8	833809,6	1,8
2003	6609	3,1	4441402,8	2,7	1288885,0	2,1	996235,1	2,2
2004	10167	4,8	9040577,5	5,5	3032218,4	5,1	2343732,9	5,2
2005	11719	5,5	7173157,1	4,4	3149681,6	5,2	2434525,4	5,3
2006	12823	6,0	6646972,2	4,0	3127314,6	5,2	2417237,0	5,3
2007	15720	7,4	7737574,2	4,7	3314201,6	5,5	2389392,2	5,3
2008	12264	5,8	15034925,8	9,2	5924852,8	9,9	3984432,8	8,8
2009	6801	3,2	15303310,6	9,3	4817293,2	8,0	3512610,5	7,7
2010	6302	3,0	17430494,7	10,6	5144560,8	8,5	3914440,6	8,6
2011	6377	3,0	10190486,1	6,2	4659785,0	7,8	3329432,4	7,3
2012	6385	3,0	12704688,6	7,7	3678762,1	6,1	2856416,6	6,3
2013	6624	3,1	10428974,1	6,3	3150281,2	5,2	2355803,8	5,2
2014	6219	2,9	17241875,9	10,5	5011953,9	8,4	3877239,8	8,5
2015	5831	2,7	5521459,6	3,4	1428513,1	2,4	1239305,8	2,7
2016	5348	2,5	9030282,9	5,5	2169253,4	3,6	1999866,9	4,4
I.I.-30.VI.2017	2938	1,4	3177374,4	1,9	756843,0	1,3	701798,0	1,5

Notă: Coloana 1 reprezintă numărul de înmatriculări din perioada respectivă. Datele privind capitalul social subscris cuprind subscrierile de capital la înmatricularea de sociatăţi comerciale din perioada de referinţă la care s-au adăugat majorările de capital şi s-a scăzut capitalul social subscris de societăţile comerciale radiate din Oficiul Naţional al Registrului Comerţului, în perioada de referinţă.

Source: National Institute of Statistics and ONRC, Statistical Bulletin no. 6/2017.

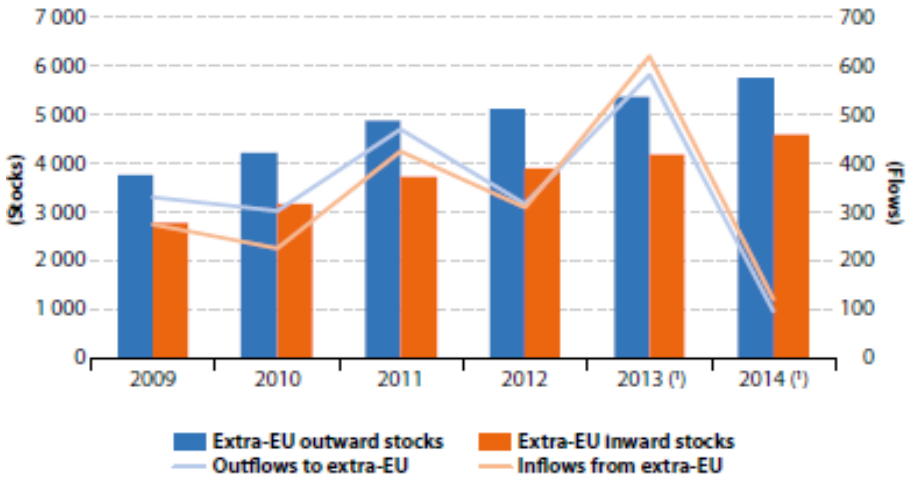
States sought to increase foreign direct investment, with Canada accounting for the most significant increase of EUR 11.8 billion in 2013 to

EUR 23.4 billion in 2014. Foreign direct investment by Member States of the European Union from non-member countries also declined in 2014. Again, we can appreciate that relations with the United States, which amounted to € 430.4 billion in 2013, fell by € 23 billion in 2014.

A closer and deeper analysis can be made on the basis of the data presented in Figure no. 1 in which foreign direct investments into and from the Member States of the European Union and non-member States of the European Union have been taken into account.

FDI flows and stocks, EU-28, 2009–14 (billion EUR)

Figure no. 1



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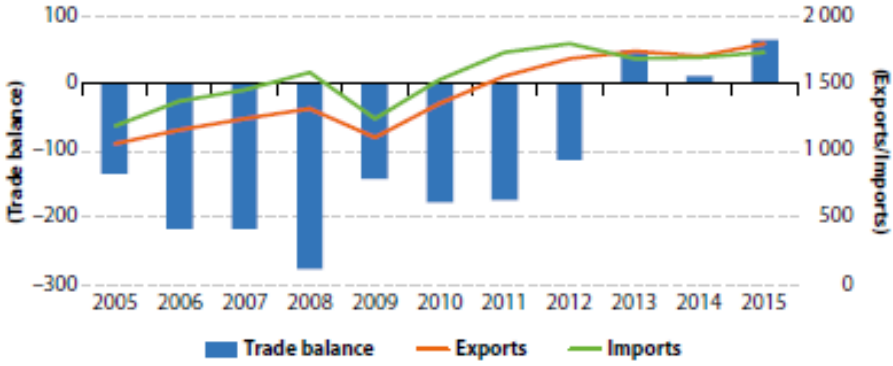
The development of external relations that we have discussed in the chapter or item on balance of payments is resumed and deepened in this perspective. Thus, the development of the international trade relations of the Member States of the European Union in the period 2005-2015, presented in figure 2, highlights on the total trade balance, imports and exports, that from 2005 to 2010 the balance of the foreign trade of the member countries registered A deficit. There was a slight increase of both imports and exports, but by 2012 the balance balance was still deficient. Starting in 2013, the external balance of trade balance, the trade balance was rising, registering a surplus in 2013, another one slightly, slightly above the equilibrium level (0), and in 2015 provisionally in 2016 saw a significant increase. As far as export

and import partners are concerned, from and to the countries of the European Union, in 2015 we can mention: they exported 20.7% to the United States, 9.5% to China, 4.4% to Turkey, Russia 4.1%, Japan 3.2%, and Norway 2.7%, 46.9% of all exports went to partners outside of those mentioned.

Development of international trade, EU-28, 2005–15 (billion EUR)

Figure no.2



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- **The economic evolution of the EU member states in the context of the Big Data**

In 2015, the European Commission set the main priorities facing the member countries. Ten priorities have been mentioned, which are of particular importance in the individual evolution of the EU Member States, but also of the Union as a whole. Of the established priorities, three have a particular importance in adjusting the national economies of the member countries in trying to bring economic and social conditions in perspective and in supporting East European countries that have had some difficulty in aligning with European standards and rhythms of evolution. In this respect, the following priorities are of particular importance and here we mention: job creation, investment growth, the re-establishment of the internal market in the European Union as well as the economic evolution based on consolidation and generalization of the European Monetary Union.

In the Member States of the European Union, statistics compose a very important indicator, namely the size of the deficit in the annual budget. To this end, the Stability and Growth Pact has been agreed for the Member States, indicating that they must keep a deficit of no more than 3% of gross domestic product and the total debt should not exceed 60% of gross domestic

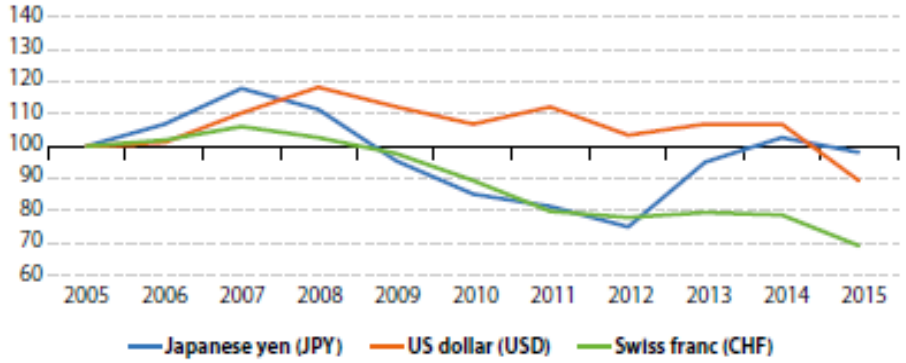
product. Those Member States that do not meet these limits will be in the category of countries with a deficit excess that is not acceptable.

In the European Union, the economic area was created in which the strong countries strengthened their position and switched to the use of the euro. Despite the fact that in France, even recently, there have been criticisms of this use of the euro, there is stability and confidence in the euro in all euro area European countries.

If we look at the situation of the tourism trade activity we will find that on the exchange rate diagram against the euro presented in figure no. 3 there have been increases or decreases in the inverse ratio between the countries considered.

Exchange rates against the euro, 2005–2015 (2005 = 100)

Figure no. 3



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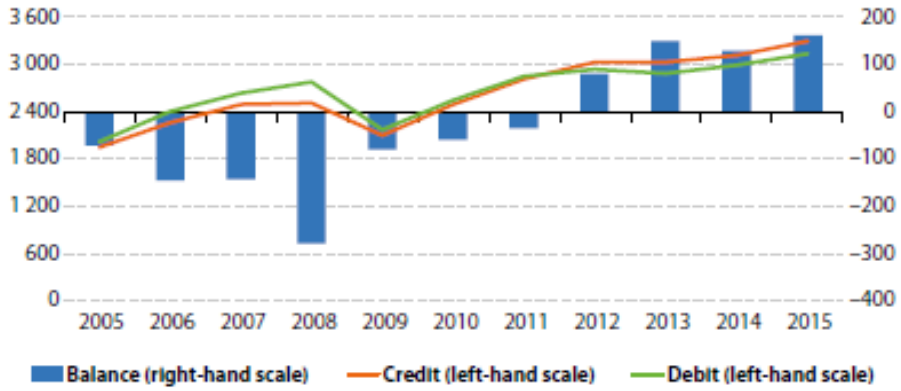
In some countries, as was the case for Romania, when reduced value added tax followed a stagnation and even price reduction, it could not be defined as deflation in general terms. That is why the consumer price index uses the Harmonized Index of Consumer Prices. It is considered to be the index that best measures the evolution of goods and services prices. After a time when we can talk about a relative price evolution and here we refer to the time interval 2008-2012 in which the economy of all countries was affected by the economic and financial crisis, the price index was 1.5% , In 2013 by 0.5% and in 2014-2015 when recovering and eliminating the effects of the economic and financial crisis, the harmonized index of consumer prices was constant, ie it remained 0.

The current account of the European Union for all 28 states in 2015 recorded a surplus of 161.6 billion euros, representing 1.1% of the gross

domestic product of all member countries. In 2015, the highest positive balance of external payments was registered. In this regard, we specify that in 2014, the current account surplus was 129, 6 billion euros. The latest developments started in 2008 when a deficit was recorded and then, gradually, this deficit diminished.

Current account transactions, EU-28, 2005–15 (billion EUR)

Figure no. 4



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The surplus has grown steadily since 2013, reaching the figures I have mentioned. In the figure 4, on the external current trades of the European Union over the period 2005-2015, taking into account the external balance of payments, Member States' appropriations and debits are highlighted.

Conclusions

From the study conducted and presented in this article a series of conclusions can be drawn. First of all, in the Big Data era, there is an abundance of data and information that is stored and can be processed and used to achieve rapid decision-making in this way.

The Blockchain is the system that ensures the concentration and then the processing, analysis and interpretation of data from the Big Data bases. The huge number, in the order of thousands of trillions, of information and data, no longer makes it possible to use office computers or the individual work of civil servants. From this point of view, the Bitchin-based Blockchain system will be the one that will ensure the transaction speed and all the rest.

Although this issue of the Blockchain in the Big Data appears a bit fanciful, it will be the one that replaces all the operating systems so far and will thus ensure the leap that mind and humanity accomplishes.

Informatics will play an increasingly important role in the financial-banking system.

At the moment, we can discuss the Big Data system where a huge amount of unprecedented information has accumulated and can be used on the widest scale.

There is a possibility that blockchain systems will require rapid transfers, complete analysis, and elements that will make the decision that the operator would like to take.

Nowadays, many companies and organizations use the Bitcoin protocol to reduce the cost of money transfers. Their goal is to bring millions of dollars into the hands of those who need or who they are addressing.

From the study on the evolution of the international trade, taking into account the situation registered by Romania, in the context of the large volume of information specific to the big data era, a series of conclusions are drawn. First of all, it is noted that under current conditions international commercial transactions can be achieved at a very fast pace, based on the fact that all the necessary data are available, which shortens the time of negotiations, contracting and exchanges.

Big data, correlated with the blockchain system, provides an unprecedented operational system in all international economic activity, but especially in the interbanking and trading system.

Currently, settlement in international trade is done through the letter of credit system that is guaranteed and operated by banks.

The online system provides verification, completion and adjustment of all data that should instantly facilitate settlements.

In the big data era, the bitcoin block system ensures that through the nodes and interferences that exist between the fields (transactions and transfers flows) to correct them or, moreover, if the algorithm used is complete, it also includes instructions check - compare, and then the operation resolves very quickly, without error, giving the two people who are dealing. Of course, bitcoin is still a virtual value system that can be used and can be used in the easiest way, especially in the big data context.

The author's study reveals a series of conclusions regarding the content and significance of the economic analysis in the context of the big data. Thus, in the field of financial services and insurance, this system is irrefutable. It is clear that in banking, the pre-analysis of credit systems is astonishingly simple by using this blockchain. This economic development of each state is easy to achieve on the basis of data provided by Eurostat, which are increasingly based on the big data.

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