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CONTENTS

RESEARCH PAPERS

1. Vesselina Dimitrova
   Special Issue of “Izvestiya” Journal Dedicated to the 30th Anniversary of the Establishment of the Specialty "International Economic Relations" ..........237

2. Virginia Zhelyazkova
   Circular Economy: International Policies and Practices ..............................239

3. Svetla Boneva, Filip Petkov
   The Multiannual Financial Framework of the European Union after 2020 ........256

4. Galina Boyanova Zaharieva
   International Services Trade Competitiveness of EU-27 Countries ..............273

5. Galin Petrov Stefanov
   Mundel Optimality of the Bulgarian Accession to the Euro Area ..................297

6. Consuela-Elena Popescu, Georgiana Vrînceanu, Alexandra Horobeţ, Lucian Belaşcu
   Managing Exchange Rate Risk with Derivatives:
   An Application of the Hedge Ratio .................................................................316

7. Petyo Boshnakov, Irina Kancheva, Georgi Marinov
   Wine Purchasing Drivers of Young Bulgarians – an Empirical Study ............328

8. Aleksandar Stoychev
   Reasons to Return During Global Pandemic: The Bulgarian Case ..............341

9. Ralina Dobrinova Mircheva
   A Crisis Within the Crisis: The Impact of Covid-19 and Brexit On Supply Chains in the Pharmaceutical Industry .........................352
SPECIAL ISSUE OF “IZVESTIYA” JOURNAL DEDICATED TO THE 30TH ANNIVERSARY OF THE ESTABLISHMENT OF THE SPECIALTY “INTERNATIONAL ECONOMIC RELATIONS”

Guest Editor:
Vesselina DIMITROVA¹,²

The specialty "International Economic Relations" in the University of Economics-Varna was created as a result of the changes in the Law on Academic Autonomy in the early 90s of the XX century in Bulgaria, Prof. Dr., which gives a legal basis for each university to develop new structures for competitive education in line with the democratic reality.

The decision to establish the specialty was taken by the Academic Council of VINS "D. Blagoev" on June 18, 1990. The interest in the specialty was vast and large-scale, regardless of the initial three admission exams. The reasons were related to the new market needs of the business and financial sector in the Varna region. Subsequently, there was a serious demand for qualified staff in foreign trade, diplomatic missions, and branches of foreign companies. After the accession of Bulgaria to the European Union in 2007, many students of the specialty started working in the European institutions.

Started with 20 students in the bachelor's degree, ten years later the specialty already formed 372 international economists in a bachelor's program in International Economic Relations, 110 master-degree students in the International Business program, and accepted 8 PhD students. For the period 2015-2020, 537 more students have graduated from the specialty, 108 people have obtained successfully a master's degree in this specialty, and 6 PhD students are studying and doing research.

¹ Deputy Head of the Department of International Economic Relations in the University of Economics – Varna.
² DOI: 10.36997/IJUEV2020.64.3.237
30 years after the establishment of the specialty "International Economic Relations" in the University of Economics-Varna, there is a good occasion for the scientific expression of academic capabilities of various colleagues who work in the field of international economic relations. Moreover, the main factor for the development of the potential of the specialty over the years is the effective cooperation of our department with the related departments of "International Economic Relations" in the Academy "D. A. Tsenov "- Svishtov and “International Economic Relations and Business” in UNWE-Sofia. The Department of International Economic Relations in the University of Economics-Varna also establishes fruitful partnerships with other academic structures such as VUZF-Sofia (Higher School of Insurance and Finance) and Bucharest University of Economics. That is why the current issue of “Izvestiya” journal of UE-Varna (written in English by the authors themselves) is the result of the established network of professional relations between all these five universities.

The topics proposed for discussion in the current issue cover important aspects of the European economic integration, including the financial framework of the European Union after 2020, the guidelines for the development of the circular economy in Europe and the world, the crisis in supply chains due to Covid-19, the challenges to trade in services in the EU-27, the research methodology for forecasting the future contracts using the ARMA (Autoregressive Moving Average Process) econometric model. The role of the UK with its consequences of the Brexit process has not been missed either. Other interesting headlines in the issue discuss Bulgaria's role in the European policy and in particular Bulgaria's readiness to enter the Euro area, the policy of emigration, return migration and reverse migration during a crisis, purchase decisions of young Bulgarians.

The authors present in the articles not only their views on the mentioned topics but also include the results of their independent empirical research. This is extremely valuable for assessing the quality of scientific activity in the professional field "Economics" in Bulgaria.

We remain with the expectation that the inquiring readers of “Izvestiya” journal of UE-Varna will use this special scientific forum in the field of international economic relations to broaden the horizon of their knowledge and get acquainted with the opinion of each author.
CIRCULAR ECONOMY: INTERNATIONAL POLICIES AND PRACTICES

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Abstract

In the past years the importance of the topics related to circular economy has gained momentum. This is understandable given the accelerating climate change, pollution and the numerous environmental and economic challenges that are arising as fallout of them.

The aim of the current paper is to outline the key features of the policies of the countries leading in the efforts towards shifting from a linear to circular economic model – Japan, China and the European Union. Reviewing the main characteristics of their policies and efforts could bring a lot of light into the main crux of the question related to circular change – how it can take place in practice and what is necessary for it to happen.

Key words: circular economy, governmental policies, linear economic model.

Introduction

“Circular economy” is a new term for a millennial-old concept. Historically, due to a number of circumstances mankind has followed mainly a circular economic model in which raw materials were used to create goods, and after the end of the useful life of these goods they were used to create new ones. The lack of technologies for processing raw materials as we know them today has necessitated this type of economic behavior. Scientific and technological progress leads to new opportunities
to create a variety of goods at affordable prices, which gradually leads to an expansion of consumption. As a result of these processes, the linear economic model slowly began to emerge. It is characterized by the disposal of goods in landfills after the end of their useful life. Thus over time a number of environmental issues arise together with the need to rethink the way the economy functions. This is the reason for governments around the world to seek opportunities and ways to manage the negative effects of the linear model and to gradually transform it into a linear one. The subject of the present study is some policies and practices in Japan, China and the European Union (EU) which are leaders in the efforts to transform the linear economic model. Each of them has adopted its own political line in the direction it has chosen. For the purpose of the analysis presented, qualitative methods have been used that allow for interpretation of data and information related to the research subject.

1. Japan’s efforts towards circular economy

Historically Japan was the first country in the world to systematically apply the principles of circular economy in its development. The basis of the policy pursued in Japan are the so-called 3 Rs (Reduce, Reutilize, Recycle) - reduction, reuse and recycling. The roots of this policy should be traced to the geographical, geological and historical features of this country. Territorial scarcity, combined with lack of natural resources, has forced Japanese governments over time to look for ways to organize the economy and society so as to consume minimal resources.

The Japanese shocks of the 1970s had a particularly strong influence on the formation of such a policy by the Japanese governments. These episodes clearly showed the country that in order to be a leading economic power, it must find a way to reduce as far as possible its dependence on fuel imports. However, this could only happen by redefining the economic model and directing it to the optimal use of different types of resources (Todorov, 2018). Of course, such an endeavor would not be feasible without the necessary knowledge and level of awareness in Japanese society. Governments are systematically working to build a comprehensive culture in the country aimed at optimizing the use of resources at all levels. This does not prove to be very difficult as such a way of thinking has been ingrained in the Japanese way of thinking for centuries.

Ji, Zhang and Hao highlight three steps in the development of the circular economy in Japan (Xiujun Ji et al., 2012).

The first phase covers the 1970s and 1980s and represents a transformation of the state's policy towards conventional energy sources. Following the oil shocks,
Japanese governments began to pursue a two-pronged policy. On the one hand, they aim to diversify the use of conventional energy sources, as the share of coal and gas in the country's energy mix increases at the expense of oil. On the other hand, active actions for energy efficiency are being launched at all levels of production. This is possible both due to energy saving measures and as a result of shifting industry from energy-intensive sectors such as metal production to high-tech sectors. In this way, the country is gradually making significant progress not only in terms of energy consumption, but also in terms of developing and using its relative advantages.

The second phase is characterized by the development of a strategy for the use of renewable energy sources (Todorov, 2017). In 1994 Japan drew up a plan for the exploitation of energy from alternative sources. For the purposes of the plan these sources are divided into categories according to the time required for their recovery. For example, solar, wind and hydro energy are recovered in a very short time, while biomass sources (forests, animal species, etc.) require a longer recovery period. The use of renewable sources is becoming a national priority and contributes to building a circular economy in the country.

The third phase is related to the formation of such public consciousness in Japan which will support the efforts of governments to achieve their goals. The Japanese state has been working hard in this direction over the years, so that through the educational system the perception of the need for the most efficient use of natural resources is achieved (Rangelova, 2014). One can say that at the moment (2020) in Japan there is practically no need for a public debate on whether the circular economy is an appropriate model of economic development.

As Ji, Zhang and Hao point out, the legal system in Japan is designed to support the functioning of the circular economy. Over the past 27 years since 1993, a number of laws have been passed that stimulate various aspects of circular economy. The first category is fundamental, the second - comprehensive and the third – specific.

In general, the legislative framework in Japan is built on three levels: the Framework Law of 2000 on the Establishment of a Circular Society, the Law on the Promotion of Resource Efficiency and the Law on Waste Management of the same year, together with some sectoral laws addressing specific aspects of circular economy (Études & documents, 2014).

It is characteristic of the Japanese legislation that it is developed in detail according to the specifics of the particular economic sectors. This is necessary due to the need to take into account the characteristics of individual products in terms of the materials from which they are made, as well as their lifespan. As waste treatment is organized by sector, regular monitoring of related activities is of great importance.
Another feature of the Japanese model is the continuous monitoring of the feasibility of the set goals for waste recycling by sector and type of products. This follow-up is carried out with the assistance of independent experts.

During the first stage in the development of the legislative framework for the transition to circular economy in Japan, in 1991 the Law on the Promotion of the Use of Recyclable Resources was adopted. This law operates in parallel with the Waste Management Act, adopted in 1970 and has since undergone numerous changes and additions. The Waste Management Act mainly deals with the stage of the product's life when it is obsolete and must be disposed of. In 2000, the Recycling Act was renamed “the Resource Efficiency Act” and was amended to add the topic of reducing the amount of waste and reusing it.

In fact, it was these two laws that became the basis for Japan's fundamental Law on the Establishment of a Circular Society. This law defines the principles of circular economy. These principles include the so-called hierarchy of waste, its cascading use and the specific responsibilities of the various parties in the process.

In order to implement the described requirements in the legislative framework, the Japanese governments initiate the preparation of plans which are supplemented by specific action programs in various areas. The first such plan was adopted in 2003. Interestingly, the progress of the policy thus undertaken by the Japanese governments on their own initiative has been discussed and evaluated at the G-8 in 2004 and 2008.

It is important to note that to support the success of the policy of establishing circular economy, the Government of Japan uses a number of measures to act as incentives for individual groups of economic entities. Different types of competitions have been created for the representatives of the different economic sectors, as well as awards for the organizations that achieve the best results. In this way, through the transparency of the results of everyone's efforts, the public consciousness is stimulated and the activities in the field of circular economy gain momentum. Examples of such initiatives are the top runner programs, the e-Mark eco-label, and the Eco Town program which are discussed below.

The "top runner" program aims to increase energy efficiency. It covers 21 product categories such as cars, various everyday goods and more. Once the minimum energy consumption has been established for each of the individual product groups covered by the program, it becomes a target, a standard for all other products in the same group. They must reach this goal within a certain period of time. These standards are set by a specially established Committee for Energy Consumption Standards at the Ministry of Economy, Trade and Industry.
The initiative to put labels, so-called eco-labels, on products showing how close they are to the energy standard for their class, although the placement of "e-Mark" is voluntary for companies, turns out to be widely used. Labeling contributes significantly to the achievement of energy efficiency goals in Japan, because it promotes the competitive element among individual companies. As Angelov (2018) rightly says, competition allows technological innovations to develop. Interestingly, the placement of labels and the achievement of energy saving targets per unit of product are very closely monitored by the Committee. In cases where the objectives are not achieved, it has the power to impose sanctions. At the same time, information on the products for which the highest level of energy efficiency has been achieved is published twice a year in a special catalog.

The next effective initiative aimed at realizing the circular economy is known as "Eco Town". It was implemented in the period 1997-2007 under the supervision and with the support of the two key ministries - the Ministry of Economy, Trade and Industry, on the one hand, and the Ministry of Environment, on the other. This initiative has two main objectives. The first is to create eco-industrial parks, i.e. places where it becomes possible the production cycle to be closed so that waste products from one production become a raw material for another, while minimizing waste. The second is within these parks to create the necessary conditions to revive some economic sectors, such as heavy industry, which will already function under the new conditions for treatment of waste products from the activities carried out by them. Currently there are over 60 such projects in Japan.

There are three types of eco-cities in the country. The first category is located in large urban agglomerations and in large cities. The second - on the islands. The third one is in areas that cover many secondary cities, for whose waste solutions are sought for centralization at the regional level of recycling activities.

The procedure for approving a project for obtaining the name "eco-city" is as follows: the municipality within which the construction of the eco-city is planned, together with the companies that wish to participate, prepare a plan in which they present their project. It argues the need for its implementation, its sustainability from an economic point of view, its profitability, what innovations are planned to be introduced and whether it will use the best existing technologies. In addition, the project must demonstrate a very important quality for the Japanese government - to be able to serve as an example of other similar initiatives, as this should be evident from the plan for its implementation. The plan is submitted for approval to the two ministries. If it is approved, the state provides funding, and in some cases local authorities support the project in the form of loans.
The main source of funding for projects aimed at the realization of a circular economy is the Development Bank of Japan. This specific activity is part of the Japanese state policy to promote sustainable governance in general. The specific financing of the individual projects is done through private banks. As Angelov (2020) points out, in the 21st century the role of banks has grown significantly, strengthening their influence as part of key business institutions. This is the reason why the role of banks is essential in the process of transition to circular economy.

Three levels of interest rates for loan beneficiaries have been set. The level at which funding will be received depends on the applicants' answers to 120 questions concerning various aspects of their activities that are relevant to the environment.

Essential for the achievement of the government's goals for expanding the scope of the circular economy is the active state policy, which, as it has already become clear, is expressed in a number of activities and most importantly - in the overall direction of the process. Through the Ministry of Environment and the Ministry of Economy, Trade and Industry, the state monitors compliance with the norms of energy efficiency set for individual groups of products and individual products, imposes sanctions for non-compliance and rewards those who excel in various ways, setting examples to others. In addition, as already mentioned, these two ministries review and approve the plans for eco-towns, which are provided to them by the individual municipalities together with the interested companies, and subsequently, upon approval, the Development Bank of Japan provides funding. In addition to these very important activities for the success of the policy, in 1994 the state prepared and introduced a special plan aimed at all supplies to the parliament, the government, its various agencies and all government institutions in general, to meet certain environmental conditions. This is a very powerful tool to encourage all suppliers for the huge state administration to move to new production standards. And not only this; with the introduction of such a plan the state gives an unambiguous signal to other economic entities in which direction they should orient their way of production and consumption, that the current (until the introduction of the plan) way of work becomes absolutely unacceptable for it, and that it will use any measures to achieve change at both the macro and microeconomic levels. Innovative solutions lead to higher efficiency and competitiveness and build a positive reputation of the company (Lazarova, 2018); thus this is a very strong rationale for all actions of the Japanese governments.

In addition to this plan, the Green Purchase Promotion Act came into force in 2000. Thanks to its active policy Japan stands out as a country that is ahead of the most active countries in this regard in Europe - Germany and Sweden (Études & documents, 2014).
Another important direction in the policy of the Japanese state is the introduction of standards for the quality of recycled products, as it turns out that their lack is a serious obstacle to market realization. Local authorities in Japan play a key role in this important step, as they actively inform the central authorities about this problem and demand a solution so that they can purchase recycled products. Thus, within the framework of Japanese industry standards, those for recycled products have been created. Inclusion in these norms is a kind of guarantee for consumers for the presence of certain qualities of the products.

Progress in establishing circular society is being monitored strictly and continuously. According to a report back from 2010, when considering the results of the measures taken under the foreground, Japan had achieved very high results. For example, in the packaging sector, almost 100% recycling of materials has been achieved, with the exception of cardboard and glass packaging. In the sector of household appliances 85% recycling is achieved, and in the segment of construction waste for some materials such as concrete and wood 95% recycling is achieved, in the case of batteries - between 50% and 80% in the individual categories.

It can be summarized that Japan is a pioneer in the efforts to establish a circular economic model. Long before the idea of a circular economy was theorized in detail and gained social significance globally, it had been embedded in the very foundation of the state philosophy of economic model of this country. Of course, the roots of this philosophy should be sought in the historical past of Japan, as well as in its geographical features. Awareness of the need to ensure optimal efficiency of all economic processes is part of Japanese culture. It is to this culture and public consciousness that the success of state policy in the realization of a circular economy should be attributed. Japan is an example of how public institutions can play a leading role in the economic development (Dobreva, J. 2019) and how high awareness at individual level leads to improved efficiency and efficacy of collective action (Dimitrov, 2019).

2. The policy of China for transforming the linear economic model

China is the second Asian country to demonstrate an active policy towards circular economy. This country is characterized by high economic growth over the past few decades. Growth means the growing creation of goods of all kinds, and this in turn is linked to both the extensive extraction and processing of resources and the increasing consumption and therefore disposal of waste.

Gradually, in the 1990s, the need to organize recycling activities and minimize waste in general became clear at the highest governmental level in China. In 1999, the
establishment of a special State Administration for Environmental Protection with the rank of a ministry was announced, which subsequently grew into the current Ministry of Environmental Protection in 2008. Since the beginning of 2000, the Chinese president has constantly proclaimed that circular economy is a priority of the state, and has insisted on working in this direction at all levels. The adopted policy was formalized in the Eleventh Five-Year Development Plan adopted in 2006, and the circular economy was declared a priority of the Chinese state.

As a result, in the same year intensive work began on drafting a law on the promotion of circular economy. This law was adopted in 2008 and came into force in the following year, 2009. The provisions in it are largely based on the Japanese and German experience. Special attention is paid to the support for the construction of industrial symbioses, eco-industrial parks and clean technologies. The field of action of this law is mainly waste, but it also extends to the use of resources - various raw materials, energy sources, water, soil and more.

Prior to the creation of this law there were several laws in China that dealt with the problems of circular economy by individual economic sectors. Six laws can be distinguished in this direction:

- Law on the Promotion of Clean Production (2003) and the methods for its auditing (2004);
- Law on the Prevention and Control of Environmental Pollution with Solid Waste (1995, amended in 2004);
- Energy Conservation (Good Governance) Act (1997);
- Law on Environmental Impact Studies (2003);

In fact, all these laws are practically integrated into the Circular Economy Promotion Act, and the principles enshrined in them are included in it. The existence of sectoral laws dating back to the second half of the 1990s and the first years after 2000 testifies to the active search for mechanisms to support the efficient management of all types of resources in the Chinese economy. This is entirely understandable, given the ambitions of the Chinese governments to establish the country as a leading world economic power, which today could not be achieved without taking into account the problems of resource consumption and waste treatment.

Economic growth, so characteristic of the Chinese economy for decades, is unthinkable without the accumulation of huge amounts of waste, so the topic of circular economy naturally emerges as a leading one for the Chinese state.
China's law to promote circular economy was followed by an important government decree on waste management from the production of various electrical and electronic products. It came into force in 2011.

The Law on the Promotion of the Circular Economy in China provides a general framework for action in this direction and is aimed at all economic entities: the state, local governments, companies, consumers. It outlines the specific measures to be applied by these economic entities, as well as sanctions for non-compliance. The measures to be implemented by local authorities are included in their action plans at regional level, which are subsequently summarized at national level. In this way, through law, the Chinese central government seeks to enforce the rules of action for all entities throughout the Chinese state, assigning them specific obligations within the process. Sanctions provided for non-compliance with this law include, as a last resort, the closure of businesses that use prohibited equipment, certain toxic substances, electrical equipment that does not meet Chinese standards, and more.

An important aspect of the application of this law at the local level in China is the obligation of local authorities to set up special teams to work in the direction towards circular economy. In addition, they are obliged to draw up detailed plans for the development of circular economy within the territories entrusted to them, setting out specific objectives in this direction, actions that will help to achieve them, as well as indicators showing the progress of efforts.

It is noteworthy that the subject of the Circular Economy Promotion Act in China has mainly the following aspects: on the one hand, the achievement of reduced use of certain resources, including through the application of clean technologies and renewable energy sources, and on the other - the opportunities for repeated use of certain raw materials in various projects in the field of industrial ecology and symbiosis, the latter relating primarily to heavy industry. Issues related to extending the life of products and improving their functionality (product design) are not subject to this law.

The provisions of the Circular Economy Promotion Act have been further developed in the twelfth five-year plan, which covers the period 2011-2015. In this plan some important aspects of the circular economy are highlighted, such as increasing energy efficiency, which includes electricity generation of hot air in cement plants, the use of methane, which is released during the operation of some coal mines, etc. In addition, the plan emphasizes the need to provide recycling conditions in the textile sector and also addresses the problems with the use of water used for industrial purposes. The Ministry of Trade sets a specific goal - to achieve 70% collection of recyclable resources so that their reuse (or reuse) can be made possible.
Another important point in the twelfth plan is the emphasis on the development of eco-technologies that use minimal amounts of carbon dioxide, such as nuclear power and hybrid and electric cars.

According to a World Bank study on the circular economy in China, there are several types of obstacles to its deployment at a larger scale and to its faster implementation. Among them is the lack of specific statistics on the progress of companies working in this field, the lack of financial and fiscal indicators ans the insufficient knowledge among the administration in the provinces, which is relied on to play a key role in implementing government plans.

Despite the real and diverse difficulties facing the development of circular economy in China, the strong commitment of the state's efforts in this direction is impressive. In China, a comprehensive legal framework for circular economy has been developed and is in place, which defines both specific incentives and sanctions for individual economic operators and thus supports micro-level efforts. Legislative progress in China is probably also due to the territorial proximity to Japan, which has historically implemented various circular economy policies for the longest time, and whose experience is undoubtedly of great practical value to all other countries in the world.

3. EU policy on circular economy

Resource efficiency is also a priority for EU Member States. It is enshrined in the 2020 Strategy and in the Roadmap for a Resource-Efficient Europe adopted in 2011. This document sets out the specific actions that each Member State must take to achieve the overall goal. As defined in the 7th Environment Action Program, this goal states: the EU should “become a resource-efficient, green and competitive low-carbon economy”. Dimitrova (2019) notes that EU has taken specific financial measures for shouldering together the risks when investing in eco-innovations, environment protection and innovative technology.

To date no specific targets have been set in the EU for either resource use or efficiency. Germany makes an exception, with clear goals. At the national level, the development of programs and strategies for efficient use of resources is observed - and in these documents, as a rule, the aim is naturally to address the problems of the specific economy. Initially, these problems covered energy consumption and waste recycling, but over time they gradually spread to other areas. Such are, for example, environmental pollution, the need to ensure security of supply of key raw materials, which are depleted over time, trends in rising energy and raw material prices, climate change and their impact on ecosystems, and more.
As a result of the already existing individual policies and initiatives in some of the countries, at the end of December 2015, with a decision of the European Commission, the European Union announced as its priority the gradual transition from a linear to a circular model of the economy (Vazov, 2019). Since then, work has gradually begun to build a comprehensive concept of how this transition will take place, and the analyses and documentation have been formed into a special package. The main emphasis is placed on the legislation in the field of waste treatment, as it is their improper accumulation and closure within landfills that leads to a number of negative consequences for both the economy and the environment. The analyses that are carried out show that the economic benefits of changing the model will be significant. In addition to measures aimed at waste management, the Circular Economy Action Plan created for this purpose covers the entire production cycle - from the creation of individual products to the ways of their processing. Specific objectives in this direction are outlined in the annex to the Action Plan.

Since waste management, as already mentioned, plays a key role in the transition to circular economy, it is important to note the new goals that the EU is setting in this area. First of all, by 2030 it is planned to recycle 75% of packaging waste and 65% of municipal waste. Secondly, it is envisaged that a maximum of 10% of the waste generated by municipalities will be disposed of in landfills. A ban on the operation of landfills for separate waste disposal is also introduced. In addition to these measures, various economic incentives are introduced to close landfills, specific measures to stimulate industrial symbiosis (the use of waste from one industry as a raw material for another), to support various recycling schemes, etc.

The implementation of the plan for the transition from linear to circular economy requires concentrated efforts in all areas of economic life. As Dimitrov (2014) notes, it is necessary and particularly essential for financial institutions as key players in the transition, to adopt the principles of good corporate governance. A document of the European Bureau of Ecology from March 2015 to the European Commission presents a concentrated analysis of the necessary measures to be taken in the EU.

The European Bureau has identified four main areas for action:

- durability of the products and the possibilities for their repair;
- stimulating demand;
- improving the product design;
- waste treatment through new approaches.

In the first area - increasing the durability of products and expanding the possibilities for their repair - a number of concrete actions are needed. For example,
even when the products are in the design phase, consideration should be given to how they are designed to extend their useful life. This requires a lot of analysis and experimentation. Extending the life of products has a number of other consequences. If a product is to be used for a long time, it must be designed in such a way as to provide opportunities for its relatively easy repair. In order for this to happen, it is necessary to provide and produce the required number of spare parts. There must also be organizations that are ready to carry out the necessary repairs. This includes, in addition to having the necessary spare parts in sufficient quantity, also a workforce with the appropriate qualifications. Therefore, the educational system must also be actively involved in efforts to provide a basis for the development of a circular economy. Educating specialists who have knowledge in the field of repair of various products is vital.

Another no less important issue is related to product design. If a product is to be used for a long time, it must not only be strong and resistant to damage (Vazov, 2018). The design should be emotionally durable, i.e. not aging quickly, in order to satisfy that part of the needs of the economic subjects which is related to the intangible benefit, i.e. with the pleasure of owning a product. Therefore, it is necessary to think about the development of such designs of individual goods that are durable to consumer desires. Here a very important role falls, on the one hand, on the educational system, on the other - on the media. These are the two systems that have the leverage to have the strongest impact on consumer habits, values, desires and therefore needs. The educational system (Vazov, 2019) should focus its efforts on educating young people in a culture that values circular economy in all its manifestations. Which means giving preference to durable objects, based on the understanding that using an object for a long time instead of throwing it away and replacing it with another one, without a real need, leads to negative consequences not only for the environment (contributes to increase in waste), but also for the personal economic well-being of the owner of the item. However, this means a major transformation in consumer thinking in Europe, characterized by a preference for continuous consumption and demand for new and new products. This way of thinking in Europe (and not only) is cultivated with the important help of the media, which receive funds for advertisement from the producers and distributors of the goods themselves. Therefore, manufacturers and distributors must have a strong economic incentive to change their own behavior in the market.

It is the creation of a comprehensive system of measures aimed at this area that is key to changing the public consciousness - directing it from consumerism to rationality, without which the success of any major political change is not possible.
In this regard, the Bureau's recommendations are aimed at creating two types of incentives. On the one hand, in order to encourage the companies that carry out and will carry out repair works, the tax burden for them should be reduced. This will create meaningful economic incentives that will be passed down the value chain of the services they offer. When the repair services of individual products are economically available and affordable, then relatively more consumers would prefer to give the items they use for repair than to spend money on new ones.

On the other hand, the tax burden on resource-intensive production sectors should be increased. This will lead to higher final prices of products in these sectors, and so when these prices are compared with the cost of repairing already acquired products, consumers will resort to buying new products only as a last resort.

There are many other aspects to using the products for a relatively long time. For example, consideration should be given to extending production guarantees, which will, of course, be different for different products. In addition, manufacturers need to be required to provide complete information on how products can be repaired, as well as spare parts to be available on the market for a long period (eg. 10 years) after the specific product has been put into service.

The next area of action in the EU for the transition to circular economy is related to stimulating demand for all types of services and related products (spare parts, spare software codes, etc.) related to maintaining a longer product life. To this end it is necessary to launch a broad public campaign to inform the people, as mentioned above, about the benefits of long-term use of individual products, as well as the use of individual elements or products made from recycled materials. When it comes to the individual consumer – a household or a small business - the choice is made on an individual level. However, the big consumers of various products are the powerful enterprises, the corporations with a large number of employees, the state and municipal administrations. It is very important to have specific conditions for selecting suppliers for the needs of such organizations according to strictly defined criteria, giving preference to companies that use durable products, work with environmentally friendly raw materials and/or recycled materials, or ensure the recycling of waste from the relevant activity.

Demand for the above group of goods and services can be stimulated indirectly through the wider deployment of various schemes, which involve the shared consumption of certain services and products or the use of leasing schemes. Shared consumption is one of the three modern trends that have changed the world in recent years, which aims to, as Andonov says (2014, p. 13), "maximizing the use of the planet's resources through shared consumption of products by more consumers." In
shared consumption the maintenance costs of an item are distributed between the users, and in leasing schemes, the use of the products is again based on the use of the products, not on their purchase.

In order to facilitate the activities related to the repair of individual products, it is necessary to oblige manufacturers to provide detailed information on the materials of which they are composed, the presence of hazardous substances in them, methods of repair, life expectancy of these products, all their functionalities, etc. This can be done by introducing a passport for each product, which describes its most significant features. If important information is missing, the repair of the products will become impossible and the consumers will start to return to the well-known linear pattern of behavior.

Improving product design is the next key area that needs to be worked on systematically in order to make the transition to circular economy.

By "improvement" in this case we mean several specific things that partially summarize some of the considerations presented so far.

First of all, the products must be designed from the very beginning to last for a long time. As already mentioned, extending the life of products is key to reducing waste.

Secondly, the design must allow for the products to be repaired. Each product must be created from separate elements so that, if one of them ceases to function properly, it is be able to be replaced by another.

Third, it is important that the design allows for upgrades. As the products will have a long life and over time there will be improvements in their functionality, it will be extremely important that they can be upgraded, and for this purpose only individual elements will be replaced, while the basis of the products will be preserved.

Fourth, the design must allow for modernization. At present, due to the low cost of a number of goods, especially those for everyday use, it is much easier for consumers to dispose of them and buy new ones in their place than to look for ways to repair them; also, as soon as a new model of goods appears, to replace the old one with it. Therefore, it is very important that the individual products are constructed in such a way as to allow their moral depreciation to be compensated by renewing their external characteristics.

The next area of targeted efforts to establish circular economy in the EU is to treat waste through new approaches so that it is reduced at the expense of two things - extending the life of products and recycling discarded materials and goods.

Organizing proper waste treatment is a key activity in the efforts to achieve circular economy. It could not be successful, if it were not based on various forms of economic incentives and sanctions to push individual economic actors in the desired
direction. Economic measures in this direction could be, for example, higher taxes on producers of goods that are not recyclable (or at least not with current technologies) and that contain ingredients harmful to human health and the environment, and, on the other hand, tax preferences for manufacturers of recyclable products.

In order for the management of the various processes contributing to circular economy to be successful, it is very important that they are measured. There are a number of models, including modelling sustainable development (Dobreva, 2019), that provide answers to questions related to measuring the impact of decisions towards model change.

Conclusion

Despite the declared desire to change the economic model, the efforts of individual countries, even within the EU, remain fragmented. In some countries outside Europe, such as Japan and China, circular economy can be said to be at the center of economic life. Comprehensive legislative frameworks have been established, which define the rights and obligations of the individual economic entities. A number of specific incentives and sanctions have been created for the individual actions taken. In the EU such detailed legislation is not a fact yet. Individual countries within its borders pursue their own national policies, have their own priorities and principles.

For change to take place, all countries in the world need to follow a common management philosophy. This is due to the fact that the modern globalized world is open and countries consume many goods that are not produced on their territory, so it is very difficult to pursue an effective policy aimed at circular economy individually.

End Notes

References


THE MULTIANNUAL FINANCIAL FRAMEWORK OF THE EUROPEAN UNION AFTER 2020

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JEL: F15, F36

Abstract

The objective of the research is to summarise and analyse the proposal of the European commission concerning the Multiannual Financial Framework (MFF) of the European union (EU) for the period 2021-2027. The temporal scope of the research comprises the initial pre-covid ideas of the proposal that will be kept in the final post-covid version of the MFF which is currently under debate and is expected to be approved in the end of 2020. The research methods that have been used in the current research are: content analysis of European institutions’ documents and of research papers analysing these documents; comparisons between different EU member states positions; and generalizations. As a result of the research the main conclusion is that the post-2020 MFF brings notable changes in structural terms. The most reformed category of expenditure is “Cohesion and Values” which combines several instruments from the MFF 2014-2020. Though there is no fundamental shift in the EU priorities, it can be argued that the cohesion policy and the common agricultural policy are seriously cut not only because of Brexit but also due to the redirection of budget resources to other priorities such as migration management, border control and security instruments.

Key words:
European union, Multiannual financial framework, European union budget.

Introduction

The present discussion on the European union (EU) Multiannual financial framework (MFF) after 2020 is aligned with article 312 of Treaty on the Functioning of the European Union (TFEU) which defines a legal obligation for the Council to act unanimously after obtaining the consent of the European Parliament in order to adopt the new MFF (European union, 2016). The EU budget shall be compliant for each year of the MFF. The process of negotiations is based on a legal framework that includes not only the treaty cited above but also the adopted Interinstitutional Agreement between the European Parliament, the Council and the European commission as major stakeholders in the budgetary process and fiscal performance (European union, 2013).


Notable increases in spending can be observed for Priority 1 – concerning innovation and digitalization, Priority 2 – focused on youth supporting initiatives (e.g. Erasmus+), as well as for the migration and border policies. The MFF after 2020, still under negotiations, reflects the geopolitical agenda of EU and the Union ambition to be strategic and foremost innovator holding and developing advanced know-how and to protect its borders through the Integrated Border Management Fund.

The MAF is an important asset for furthering the European integration process. It has been introduced by article 269 of the Treaty establishing the European Community (article 269 of the Treaty establishing the European Community is the predecessor of articles 311-312 of the Treaty on the Functioning of the European Union which is currently in force for the EU) which stipulates that that the EU budget shall be solely financed from own resources. In the fundamental legislative act, the system of own resources is highlighted as an option providing the necessary means to implement the Union policies. Those own resources evolve till nowadays as supranational resources and their structure is currently under discussion for the period after 2020 when EU will consist of 27 member states again. Their structure will not only affect the amount of contributions to the budget but also sensitive and socially important sectors such as the common agriculture policy, the cohesion policy etc. The budget for the common agricultural policy
will be cut by 5% for the period 2021-2027 compared to the budget allocation for 2020, according to an Impact Assessment, analysing the shrinking of the EU budget after the United Kingdom withdrawal from the EU (European commission, 2018 b).

1. Long-term multi annual financial planning in the European union: main implications

Public budgets have one essential trait which is vital for the market and has socioeconomic implications – they determine what would be the course of action in the economic policy (expansion or restrictive policy) as well as what benefits or duties will be assigned to the business entities and citizens. Current political events always reflect budget negotiations’ agendas, especially when it comes to budgets which carry supranational features in their nature – as it is the case of the MFF of the EU. The budgetary negotiation process is quite representative for the politics of a country (Wildavsky, 1992).

The above mentioned idea could be clearly tracked in the context of contemporary European affairs – EU institutions must produce a budget of high complexity considering national and regional specifics and expectations, protecting supranational strategic targets such as innovation, research, border integrity and market sustainability. This could be a point of intense political friction. “Spending priorities are discussed along national or party ideological lines, but the European council, the European commission, and the European parliament also have clear institutional interests”, Becker, Bauer and de Feo affirm (2017).

Multi-annual financial planning was introduced originally in 1988 as a measure of the European Communities to tackle the crises of the late 1970s and 1980s. Open political confrontation between the Council and the Parliament had led to non-adoption of the annual budgets for 1980, 1985, 1986 and 1988.

The EU MFF stages of negotiations follow an inter-institutional path which begins with the European commission. The initial ideas lying in the basis of the MFF have been launched on May 2, 2018 when the Commission presented its’ objectives and values in its’ communication “A Modern Budget for a Union that Protects, Empowers and Defends - The Multiannual Financial Framework for 2021-2027” (European commission, 2018) which is the logical continuation of the “White Paper on the Future of Europe” (European commission, 2017 a). Once proposed, the European parliament shall review the proposal and declare its favourable position on it (especially concerning the Own resources decision) – after achieving a majority (article 312 of TFEU, 2016). Once approved, the Council of EU shall act anonymously in order to adopt the new MFF. In case anonymous outcome is

258
impossible and under special circumstances, the European council could be empowered to act by a qualified majority.

**Fig. 1. Timeline of the MFF 2021-2027 negotiations**

*Source: the authors, based on information of the Interinstitutional Agreement of 2 December 2013 between the European Parliament, the Council and the Commission on budgetary discipline, on cooperation in budgetary matters and on sound financial management, OJ C 373, 20.12.2013, p. 1–11.*

Negotiations stages are related to a great extend to the Council of the European Union and its presidency. The initial ambitious plan of the Commission to have the MFF approved before the elections for European Parliament that took place in May 2019 could not be achieved due to differentiations in the political views and priorities during the Council’s presidencies.
Several rotating presidencies have passed after the initial MFF proposal was made: the Bulgarian presidency (January-June 2018), the Austrian one (July-December 2018), the presidency of Finland (July – December 2019), the Croatian presidency (January – June 2020), to give the lead to Germany (July-December 2020) which should adopt the final version of the long debated long-term Union financial plan. Looking back in time, we shall mention that the negotiations for the previous MFF (2014-2020) also lasted for more than 2 years.

The structural changes of the MFF are the main problematic area for several groups of countries in the present discussions on the post-2020 EU budget. A high-level group study evaluated the potential elements of reforms, new resources and new expenditures of the budget as well as the link between the EU budget policy and the Eurozone (Ferrer J.N., Cacheux J.L., Benedetto G., Saunier, M., Candau F., Emonnot C., Lachet-Touya F., Mortensen J., Potteau A. and Taranic I., 2016). There are no radical reforms for the MFF for the period 2021-2027 when it comes to budget size or principle priorities, however, critical point of the negotiations proves to be the cohesion policy and the reshaped financing for this policy (Bulgarian Presidency of the Council of the European Union, 2018).

Reviewing the financial scale of the Commission’s proposals, one could find a budget of 1,135 billion euro in commitments (2018 prices) for the period 2021-2027, equivalent to 1.11% of EU-27 GNI. This amount includes the “European Development Fund” (EDF), which was off-budget during the 2014-2020 programming period. Only the “African Peace Facility” (part of the “European Development Fund” so far) will be absorbed into the new “European Peace Facility” and remain outside the EU budget for the period 2021-2027. The budgeting of the “European Development Fund” through the MFF would increase its efficiency and effectiveness through enhanced visibility of the spending (D’Alfonso, 2014).

Apart from the cohesion policy, there is a decreased financing in the common agricultural policy. This led to joint memorandum between Ministers of agriculture from Finland, France, Greece, Ireland, Portugal and Spain highly regretting the proposed cuts and expressing concerns about the viability of European farms (National Rural network, 2018).

Another question of European budgeting and fiscal discipline incorporates the traditional political cultures of the member states (Brunnermeier, James and Landau, 2018). Germany raises concerns on the fairness of the burden-sharing mechanisms and the no-bail out clause which will serve as a reason for certain national economies to perform well and imply strict fiscal discipline. On 19th June 2018, the French and German leaders announced their joint support for a euro area budget, an idea that has
been periodically launched for discussions but has never been implemented so far (Mahreen, 2018). Regarding the spending part of the budget, it is worth mentioning the observation of White and Wildavsky (1989) on the budget deficits in the USA during the 80’s. The researchers claim that budget deficiencies are products of different value systems. They presume that moderate deficit is tolerable as we should not lose the focus on other questions.

The cohesion policy and the common agricultural policy are not the only areas where differentiations are observed. The increased size of the national instalments into the income part of the future EU budget will count for 1.3% of member states’ GNI – a fact that raises concerns in the Dutch, Swedish, Austrian and Danish governments.

Romania supports 1% contribution of GNI but does not reject opportunities for increase of this percentage in the course of negotiations on the MFF. The government, however, expresses concerns over the changes in the cohesion policy and highlights the necessity for basic infrastructure in all sectors (Romanian preliminary position, 2017).

Greece supports the current size of the budget and the new priorities as well as the introduction of a Common consolidated corporate tax (CCCT) and a tax on the global digital companies which Greece finds will be beneficial to the system of the own resources.

The political decision to proceed with Brexit has important consequences for the post-2020 MFF: the percentage of contributions based on GNI increases and there will be cuts in the cohesion policy funding (-10%) and the common agricultural policy budget (-15%), both socially viable policies of EU. Slovenia, Croatia, Portugal, Lithuania, Latvia, Czech Republic, Romania, Italy and Spain are among the countries benefitting and logically oppose cuts in the cohesion policy. Altogether, the tree funds that form up the cohesion policy (the European Regional Development Fund, the Cohesion Fund and the European Social Fund) are to be affected differently (European Court of Auditors, 2018):

- the European Regional Development Fund is to increase by 2%, in line with the evolution of the whole heading;
- for the Cohesion Fund will be reduced by 45% (according the European commission proposal);
- the allocations to the European Social Fund will be reduced by 7%.

The debate on the cohesion policy reform is not new to the European budgeting process and the EU agenda. It has been renewed back in 2015-16 when stakeholders were reviewing ex-post data from 2007-2013 period. The cohesion policy at that time has been divided into 14 packages. The macroeconomic modelling showed that
cohesion and rural development spendings in the EU-12 led to a GDP increase by 4% in 2015 above what it otherwise would have been (Applica and Ismeri Europa, 2016).

Another group of reforms that rise concerns are related to migration, asylum, border security and promoting stability in European union’s neighbourhood. Some of the measures in the financial framework proposed were proclaimed by the Bratislava declaration (September 2016) and the Rome declaration (March 2017) of the heads of the EU-27 member states. Netherlands, Sweden, Austria, Denmark and Finland are in favour of allocating more financial resources for migrant policies, innovation and climate. Portugal and Greece are as well supportive towards better migration management but not via old traditional instruments. Germany approves higher expenditure on migration, climate change, security and defence (Die Bundesregierung, 2018).

A proposal on engaging the “rule of law” as a criterion for member states which are net beneficiaries of EU funding sparked an intense political debate among the leaders of certain countries (Hungary and Poland) and the European commission (European Commission, 2018 c).

The main issues concerning the cohesion policy and the common agricultural policy were not resolved during the Bulgarian presidency of the Council of the EU which supported the Commission’s proposal for structural changes of the MFF and cohesion policy reforms, and have been forwarded to the Austrian presidency. Thus, the structure of the MFF proposal was kept the same. The issue remained pending in the Romanian’s presidency agenda and was not solved in May 2018 at the EU summit in Sibiu (Romania). It is of a high importance to continue the constructive negotiations on the MFF. This increases the hopes for significant outcome during the EU leaders’ meeting scheduled for the autumn of 2020 in Germany (during the German presidency of the Council of the EU).

Brexit is another hot issue of discussion for policy makers and economists who try to measure the impact of the United Kingdom’s departure from the EU. We should not deny the importance of this political event which is a step back after years of dedicated efforts for European integration by number of British cabinets and politicians. The United Kingdom was one of the countries benefiting most from the cohesion policy revised financial envelope for 2017 after Greece, Spain and Italy. Serious impact after the United Kingdom’s departure would be imposed on Germany which might have to increase its GNI based contributions with 9% followed by France with 7% (Nunez-Ferrer and Rinaldi, 2016).

There is also a positive effect stemming from the United Kingdom’s withdrawal from European Union. Enderlein (2016) suggests that such an event could lead to
detailed review of Europe’s budgetary framework, developing a stronger system of own resources and better distribution of power between the European commission and the EU member states.

While it can be assumed that the EU will adapt to the missing contributions from the United Kingdom through structural changes of the MFF and revision of the spending per policy areas, the UK might face quite serious trade pressure with immediate effect. Consumers might experience tariffs increases of 30-40% on cheese and wine which UK imports from EU-based producers (Van Berkum, Jongeneel, Vrolijk, Van Leeuwen, and Jager, 2016). The same research finds out that import tariffs could reach the interval between 70-90% for certain meat products. The expected budget receivables will go into the United Kingdom national budget, while their reciprocal taxes and tariffs levied by the EU Generalised customs tariff on the imports coming from the United Kingdom will contribute to the EU budget income part.

According to other group of authors, there will be a 94 billion euro Brexit-related gap in the EU budget for 2021-27 if the United Kingdom no longer contributes (Darvas and Wolff, 2018). To tackle the situation before increasing the MFF in absolute terms, restructuring and shifting spending between categories could be an option to explore (Busch and Matthes, 2018). Strong remarks that the newly proposed MFF is rather reactionary than future-oriented (Van Deuverden, 2018) bring concerns on the increased funding for new instruments (or instruments outside the budget) on the account of decrease in old policies. Measures supporting the euro shall also be applied by the member states. Van Deuverden (2018) concludes also that there should be some place for financial leeway in order to reach a consensus on the post-2020 issues.

2. Structure of the Multiannual financial framework for the period 2021-2027

The European Commission has proposed a new Multiannual Financial Framework for the period 2021-2027 fit for 27 member states. It has been revised regarding the United Kingdom departure from the EU and suggests also changes in the revenue side of the balance sheet which reflect the contemporary economic realities and opportunities.

The initial MFF post-2020 proposal is totalling 1 134 583 million euro in commitments and 1 048 805 million euro in payments (2018 prices). Comparisons of the proposed MFF with the current one as well as with previous budgets should be done with caution as the structure of the programs/instruments has changed over time.
However, we can easily compare the share of GNI that each country contributes to the EU budget. According the proposal (European commission, 2018), countries must deliver 1.11% of their GNI to compile the EU-27 post-2020 MFF own resources system. This is a slight increase compared to the MFF 2014-2020 with 28 member states where this percentage has been 1.03% of GNI.

Haas, Rubio and Schneemelcher (2018) come to the conclusion that the proposal is larger in nominal and real terms than the previous MFF, but smaller in terms of the EU-27 GNI, after the United Kingdom’s withdrawal. The consequences of this will inevitably cause changes among the EU priorities and programs such as the cohesion policy.

The proposed budget structure consists of seven thematic spending priorities that form policy clusters:

I. Single Market, Innovation and Digital:
   1) Research & Innovation;
   2) European Strategic Investments;
   3) Single Market;
   4) Space.

II. Cohesion and Values:
   1) Regional Development & Cohesion;
   2) Economic & Monetary Union;
   3) Investing in People, Social Cohesion & Values.

III. Natural Resources and Environment:
   1) Agriculture & Maritime Policy;
   2) Environment & Climate Action.

IV. Migration and Border Management:
   1) Migration;
   2) Border management.

V. Security and Defence:
   1) Security;
   2) Defence;
   3) Crisis response.

VI. Neighbourhood and the world:
   1) External Action (excluding the European Peace Facility which remains out of MFF);
   2) Pre-accession assistance.

VII. European Public Administration.
The following financial instruments remain outside of the post-2020 budget framework (Table 1):

- Emergency Aid Reserve;
- EU Solidarity Fund;
- European Globalisation Adjustment Fund;
- Flexibility Instrument;
- European Investment Stabilisation Function;
- European Peace Facility.

Table 1

EU programmes outside of the scope of the Multiannual financial framework 
for the period 2021-2027

<table>
<thead>
<tr>
<th>Programme</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emergency Aid Reserve (€280 million / year)*</td>
<td>Humanitarian operations and specific aid-requirements for non-EU countries (unforeseen situations)</td>
</tr>
<tr>
<td>EU Solidarity Fund (€500 million / year)*</td>
<td>Emergency financial aid allocated after major disaster occurred on the territory of member states or prospective candidate countries</td>
</tr>
<tr>
<td>European Globalisation Adjustment Fund (≤€150 million / year)*</td>
<td>Reintegration of workforce back into the labour market in case of disruptions / displacement in the global trade patterns</td>
</tr>
<tr>
<td>Flexibility Instrument (≤€471 million / year)*</td>
<td>Serves as a financial buffer assisting in covering clearly identified expenses which could not be covered by one or more budget headings without exceeding their expenditure ceilings on annual basis</td>
</tr>
<tr>
<td>European Investment Stabilisation Function (€600 million / year)**</td>
<td>Provides assistance to absorb asymmetric shocks and spill-overs between the member states; Non-euro area member states may voluntarily participate</td>
</tr>
<tr>
<td>European Peace Facility (€10.5 million / year)**</td>
<td>Off-budgetary instrument to support the military operations under the Common Security and Defence Policy as well as to prevent conflicts and instability in third countries</td>
</tr>
</tbody>
</table>

* – Calculations in 2011 prices by the European Commission
** – Calculations in 2018 prices by the European Commission


While composing the MAF proposal, the European Commission has been led by new challenges evolving in the socioeconomic reality as well as the European added
value principle meaning that pooling financial resources on EU level and allocating them into supra-national strategies would deliver better results to the EU strategic objectives than if this was done by single governments at national level.

That is why the first spending priority (“Single Market, Innovation and Digital”) is related to delivering efficient single market, supporting the innovation efforts and digitalizing the economy. The new research programme “Horizon Europe” will be the basic instrument to perform research activities and support innovation initiatives by government and non-government entities in strive to keep the EU as a world leading technology developer. The proposed European Innovation Council will be the administrative solution for regulating and coordinating the research and development activities which are essential for meeting the goals of the EU after 2020. The “InvestEU” facility will support the private investment while the “Connecting Europe Facility” will continue the development of cross-border infrastructure which is needed for expanding the business relations across Europe. Digitalization is also highlighted as one of the foremost action fields. An example with the 50-years Customs Union will be appropriate to demonstrate the necessity of digitalizing the governing processes. Practises of tax avoidance and tax fraud could be retrenched through better traceability and information exchange.

The second heading “Cohesion and Values” has been affected by several structural changes. As previously discussed, the Cohesion policy triggers the political discussions which impede the consensus on the MFF by the most affected member states. The purpose of the cohesion policy will remain to be tackling the disparities in the EU regions. The political priorities agreed in Bratislava and Rome will also be delivered through sustainable cohesion in the European commission’s view. The European Semester is considered important to review the country specific recommendations and to utilize the necessary tools from the existing programs in order to overcome the problematic areas.

Several instruments have been proposed to stabilize the Euro-area and to be incorporated in the post-2020 MFF (European Commission, 2017 b). They are important to complete the Roadmap for completing the Europe’s Economic and Monetary Union (European Commission, 2017 c). The budgetary instruments that directly or indirectly support the Economic and Monetary Union are briefly summarized on Figure 2.
European Monetary Fund (or European Stability Mechanism)  
European Investment Bank  
EU Structural and Investment Funds  
Reform Support Programme  
InvestEU

| National Reform Priorities (Country Specific Recommendations) |
| European Investment Stabilization Function |

**Fig. 2. The Multiannual financial framework 2021-2027 instruments in support of the EU Economic and Monetary Union**


Social cohesion is another aspect where the Commission sees possible area for improvement. Thus, an increase can be observed in the “Erasmus+” programme which reaches a budget of 30 billion euro.

The heading “Natural Resources and Environment” reveals changes in the common agricultural policy funding. The European commission intends to keep the instruments of direct payments to farmers (286.2 billion euro have been allocated for this) and the rural development programs (EUR 78.8 billion euro) however the funding for them will be decreased in comparison to the previous MFF.

The complex system of rebates will be gradually dissolved in the forthcoming years. An emphasis is made on the United Nations’ Sustainable Development Goals – the common agricultural policy will spend 25% of its budget for climate actions and eco-innovations (Gallucci, Dimitrova and Marinov, 2019).

There is a strong focus on the migration and border management in the post-2020 multiannual framework. The political will to effectively guard the EU borders and respond to the incoming migration flows will absorb 33 billion euro via heading IV “Migration and Border Management” compared to only 12.4 billion euro for similar activities for the period 2014-2020.

Increased spending in thematic priority V “Security and Defence” is in line with the overall efforts to manage the external threats and to improve the defence capabilities of the member states. The proposed “Internal Security Fund” will facilitate an efficient internal network to respond jointly to common threats as well as cybersecurity dangers. In addition to that the European Union Agency for Law Enforcement Cooperation (Europol) will be further enforced.
Bulgaria, Slovakia and Lithuania would benefit from the increased spending in this financial envelope as funds will be allocated to them for safe decommissioning of nuclear energy power plants. The European Defence Union has been a desired path for certain countries (France) as opposed to others (Talaga, 2017). In February 2018 the Commission once again emphasised the necessity to develop the European Defence Union through additional financial support: for 2017 – 2019 the European Defence Union budget has been increased to 90 million euro aimed at defence research and innovation (European Commission, 2018 d). The same idea is reconfirmed in the post-2020 MFF through the European Defence Fund which shall foster competitiveness in the defence and security fields. The Civil Protection Mechanism (“rescEU”) receives 2.5 times higher budget compared to the MFF for the period 2014-2020.

1.8 times more resources (in comparison to the previous MFF) are allocated for the “Internal Security Fund” while probably the most sensitive issue is the 22 times increase in the funding for the “Defence fund” which will receive 24 323 million euro (2018 prices). For comparison, the “Security and Citizenship” goal of the MFF for the period 2014-2020 equals to 18 003 million euro (2018 prices).

Significant changes have been proposed in heading VI “Neighbourhood and the World”. Striving to achieve efficiency and better interlinks between different instruments, the European commission proposes external action towards the EU neighbourhood and third countries to be transformed into three pillars: “Neighbourhood, Development and International Cooperation Instrument”; “Humanitarian Aid Instrument” and “Instrument of Pre-accession assistance” (European Commission, 2018 e). The incorporation in this heading of the European Development Fund (EDF) which provides assistance to the African, Caribbean and Pacific countries will ease the administrative burden and increase the transparency and flexibility. The debates here are provoked by the fact that the inclusion of the European Development Fund in this heading will increase the contributions of the member states in terms of the own resources ceilings.

Heading VI has a budget of 108 292 million euro (2018 prices) most of which will be spent on the “Neighbourhood, Development and International Cooperation Instrument” (over 79 million euro, 2018 prices). The structure of this heading is an example of the European commission’s new approach to restructure the MFF through inclusion of the EU foreign financial aid into it (the EDF is included within the budgetary ceiling). The “European Peace Facility” remains extra-budgetary and it will complement the Common Security and Defence Policy.

The “European Public Administration” (heading VII) has 75 602 million euro budget allocated for supporting the administrative structures, the pensions paid by the
EU and the European Schools. The agreement for reducing the staff in the EU institutions by 5% (signed back in 2013) has achieved its targets according to the European commission. Notwithstanding there is a slight increase in this spending priority – it comprises 6.7% of the post-2020 MFF while it is 6.2% of the pre-2020 MFF of the European union. Additionally the redistribution of certain functions as a result of Brexit will affect to some extent the European administration.

**Conclusion**

The negotiations for the MFF 2021-2027 will pave the way for the European Union in a landmark period. Through the new multiannual framework the EU will declare its strategic position as global centre for innovation, sustainable economy and growth. Brexit has brought changes in the structure of MFF. Along with the budgetary gap of 12-14 billion euro, there is however a positive effect stemming from Brexit – the European commission initiated modernization of the budgetary structure and gradual removal of the rebate payment schemes – considered obsolete and ineffective.

Changes in the MFF structure review the financial ceilings for certain headings and programs. The debate is predominantly related to the cohesion policy and the common agricultural policy which decrease their ceilings. Significant financial resources relocated to new priority areas as a result of recent events – and increase in the funding for priority areas such as single market, innovation, security, defence, migration and border management can be observed.

**References**


INTERNATIONAL SERVICES TRADE COMPETITIVENESS OF EU-27 COUNTRIES

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JEL: F14

Abstract

The aim of the current research is to assess the international services trade competitiveness of EU-27 countries. To assess the competitiveness of member countries we use market share competitiveness matrix, export value and structure and RCA indices. The research results show that EU-27 countries differ not only in terms of values of exports but also in structure, specialization and competitiveness. Using the market share competitiveness matrix we classified the countries in different groups according to the degree of competitiveness.

Key words: EU27, competitiveness matrix, services, export.

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Introduction

The economic developments during the last decades show a growing importance of services for both developed and developing economies. As it was pointed in the World Trade Report 2019 they have become the backbone of the global economy and the most dynamic component of international trade. According to World Bank data the value added of services accounts for 65% of GDP on a global scale in 2017 and the employment in the sector is about 50% of the total employment. The value of international trade in the last decade indicates significant increase in exports and
imports of goods and services but the percentage of increase of total trade in services calculated for 2018 based on 2010 is much higher (47.6%) compared to that of the total trade in merchandise (27.8%).

Services play a very important role for the development and economic performance of EU countries and are considered as a driving force of the Union. They account for more than two-thirds of the Union's GDP and create the majority of jobs in the economy (Coursed and Ruiz, 2014). The data show that employment in services in the EU for the period 2010-2018 increased from 68.5% to 71% and is significantly higher than the average for the world - over 50% in all member states (except Romania). The value added of EU-27 countries as a % of GDP is 63% in 2018.

All these trends in the service sector are the result of the influence of factors such as globalization, demographic changes, technological development and digitalization which lead to change in costs of trading, the volume and the way of trading and the greater access to foreign services and participation in production chains (Holleg and Suez, 2019). According to some publications trade in services can stimulate economic growth and enhance the firms' competitiveness and that of countries as a whole (Hoekman, 2017; Nordas and Kim, 2013). Hoekman and Mattoo (Hoekman and Mattoo, 2008; Hoekman 2017) analyze the relation between services trade and growth and come to the conclusion that the expansion in the size and diversity of service sectors is both a reflection of - and a precondition for - economic growth. According to them trade openness is an important channel for better services performance, transfer of technologies and an increase in competition. The last one is also a function of the regulations (national and international) which are specific for the different types of services.

Although the issue of competitiveness has already a rich history, most of the publications in the field are devoted to the trade in goods. Many researchers have focused in their works on the problems of defining and measuring firms' and national competitiveness and especially international trade competitiveness. Not so many are in the field of international trade in services competitiveness, including the focus on the competitiveness of EU countries. Some of the publications are related to the works of De la Gardia, Molero and Valadez. De la Gardia and Molero examine the international competitiveness of the service sector in some OECD countries tracing the changes in different variables of the external sector of each country and the world economy, over time (De la Gardia and Molero, 2003). Similarly, two years later De la Gardia, Molero and Valadez (de la Gardia, Molero and Valadez, 2005) assess the international competitiveness of services in some European countries using the
market share competitiveness matrix. Other authors that work on this topic are Bobirca and Miclaus (Bobirca and Miclaus, 2007) who apply a multilevel comparative assessment approach to analyze the international services trade competitiveness of Bulgaria and Romania. In the same year, Bobirca (2007) uses the competitiveness matrix proposed by de la Gardia at al. to assess the international competitiveness of tourism services trade. More recent publications by Wyszjowska-Kuna (Wyszjowska-Kuna, 2014, 2016) are dedicated to the competitiveness in knowledge-intensive business services of the new EU member states and Poland. More focused on the competitiveness of EU countries in trade in services is the research of Stefaniak and Bak (Stefaniak and Bak, 2018). Having studied 28 EU countries using a set of measures that describe four areas of competitiveness: general; price cost; non-price and trade the authors identified Ireland, Luxemburg, Cyprus and the United Kingdom as leaders and Bulgaria, the Czech Republic, Lithuania and Romania as low competitive for the examined period. The United Kingdom withdrew from the European Union on 31 January 2020 which will change the EU economy and its performance on the international stage. Based on this the aim of the current research is to assess the international services trade competitiveness of the EU-27 countries.

1. Methodology and data

National competitiveness depends on the ability of a country not only to produce goods and services effectively and to attract foreign direct investments but also to sell its products on the international markets. That makes export performance an important part of a country’s competitiveness. A range of indicators can be used to analyze trade performance. For the purposes of this research we will use the volume of exports, net trade and the export structure.

Further, we will apply the market share competitiveness matrix developed by de la Gardia and Molero (de la Gardia and Molero, 2003; Al-Majali and Adayleh, 2018). It allows us to classify the EU-27 countries from the perspective of their competitiveness. This approach is based on the changes in the market share of different types of services and the changes in the world imports over time. Based on the direction of changes in market shares and imports, the exportnig sectors can be classified as rising stars (RS), missed opportunities (MO), declining stars (DS) and retreats (R). The rising stars are those with increasing market share when the increasing importance in the world-wide commerce. The missed opportunities are the sectors which lose market share in circumstances of increasing world importance. The declining stars are the sectors in which the exporting country increases its market share.
while international trade in that sector is declining. Finally, the sector is defined as a retreat if the country loses its market share when international trade in that sector is declining.

Further, to assess the export competitiveness of a country we will use one of the most popular indicators - the Revealed Comparative Advantage, known as the Balassa index (Laursen, 1998; Sáez at al., 2014). The RCA Index is defined as:

$$RCA_i^j = \frac{x_i^j}{X_i^j} / \frac{x_i^w}{X^w}$$

where:
- \(x_i^j\) is the value of the export of product \(i\) of country \(j\);
- \(X_i^j\) - the value of total export of products of country \(j\);
- \(x_i^w\) - the value of world export of product \(i\);
- \(X^w\) - the value of total world export.

The index reveals a comparative advantage of country \(j\) in export of commodity \(i\) if its value is greater than one, and a disadvantage if the index’s value is less than one (Kanzar, 2007).

The data is retrieved from the statistical database of the World Trade Organisation. The data set is based on the Extended Balance of Payment Classification (EBOPS 2010) and covers the total services exports and imports (TS) and exports and imports of the four groups of commercial services (SOX): goods-related services (SPX4), transport (SC), travel (SD) and other commercial services (SOX1) and the subgroups of the last one which are: SE – Construction; SF - Insurance and pension services; SG - Financial services; SH - Charges for the use of intellectual property n.i.e.; SI - Telecommunications, computer, and information services; SJ - Other business services; SK - Personal, cultural, and recreational services.

2. Research results

The statistical data regarding the total trade show that the volume of trade in services in USD of the EU member countries is increasing during the period 2010-2018. This trend is valid for almost all EU countries in terms of exports and imports of services. An exception from the general trend make only Denmark and Sweden compared to the values in 2014 (see Fig. 1). The biggest exporters are Germany and France followed by the Netherlands, Ireland, Spain, Belgium, Luxemburg. The total services exports of Sweden, Austria, Denmark and Poland in 2018 amount to over 50 bln USD. At the same time total services imports in value are lower compared to exports. The biggest importer
is Germany with imports over 350 bln USD in 2018. It is followed by France, the Netherlands, Ireland, Belgium, Italy, Luxemburg, Spain, Sweden, Denmark and Austria. The other member countries’ services imports are less than 50 bln USD.

Statistical data show that the total imports of Finland, Germany, Ireland and Italy for the given years exceed the export and their net trade is negative. This is also valid for the net trade of Belgium in 2018. According to the data of the World Bank, due to the trade globalization and liberalisation processes, trade openness has increased in the period 2010-2018 for all EU countries, except for Malta. Nevertheless it varies among the countries. The highest values of this indicator are found for Malta, Luxemburg and Ireland and the lowest (below 20%) for Italy, Spain, Germany, Poland and Romania.
The export structure of services varies among the countries and changes over time (see Fig. 2 and Fig. 3). For most EU countries the biggest share in the export of services has the group of other commercial services. Despite the changes over time this type of services has the lowest share in the exports of Greece, Croatia and Lithuania and the highest in those of Ireland, Luxemburg and Malta. Its value for the Netherlands, Sweden, Finland, Belgium and Germany is also significant. Our findings also indicate that the export of other business services constitutes a significant part of other commercial services. Their biggest share in 2018 is in the services exports of Malta (50.7%), Ireland (38.9%), the Netherlands (32.7%) and Finland (31.7%). The financial services are an important part of the exports of Luxemburg (52.7%), Malta (26.9%) and Cyprus (15.6%). The share of telecommunications, computer, and information services in the exports of Cyprus, Estonia, Finland, Germany, Latvia, Romania, Slovenia and Sweden is over 10%.

A significant part of the exports of services of Ireland (38.6%) and the Netherlands (25.5%) consists of charges for the use of intellectual property n.i.e. The construction and insurance and pension services do not have a big share in the exports of the EU countries. Over time the export structure changes for all the countries. For the period 2014-2018 the share in services exports of Austria increased for travel construction, charges for the use of intellectual property n.i.e., telecommunications, computer, and information services and other business services, while for the other types it decreased.
Fig. 2. Export structure of commercial services in 2014
Belgium registered the biggest positive change in trade in insurance and pension services and much smaller in transport services. Travel, charges for the use of intellectual property n.i.e., telecommunications, computer, and information services and other business services increased their share of Bulgaria’s exports of services. Almost all types of services exported from Croatia show an increase, excluding insurance and pension services, transport, travel and goods-related services. The data for the exports of Cyprus show a positive growth in the share of goods-related services, travel, insurance and pension and other business services. Goods-related services, transport, other commercial services and telecommunication, computer, and information services increased their relative importance in the Czech Republic’s export. The data for the exports of Denmark show an increase in the share of goods-related services, travel, construction and financial services, charges for the use of intellectual property n.i.e, telecommunication, computer, and information and other business services. There was a positive change in the share of exports of Estonia's
construction, charges for the use of intellectual property n.i.e., telecommunication, computer, and information and other business services, also the personal, cultural and recreational services. Finland registered positive development for most of the services, except for travel and telecommunication, computer, and information services, insurance and pension services.

France experienced growth in shares of goods-related services, travel, insurance, charges for the use of intellectual property n.i.e., telecommunication, computer, and information and pension services and personal, cultural and recreational services. There was a positive growth in the shares of total exports of the services of Germany in goods-related services, transport, telecommunication, computer, and information, insurance and pension services and personal, cultural and recreational services. Statistical data show that only the shares of transport, telecommunication, computer, and information, other business services and personal, cultural and recreational services traded on the international markets by Greece have increased in comparison with the data reported for 2014. Negative change is observed in the shares of travel, construction, insurance and pension services, charges for the use of intellectual property n.i.e. and personal, cultural and recreational services exported by Hungary. The opposite trend is observed for charges for the use of intellectual property n.i.e. and telecommunication, computer, and information services in the export structure of Ireland. A positive change show the data for the shares of goods-related services, travel, financial services, personal, cultural and recreational services and charges for the use of intellectual property n.i.e. of Italy.

A positive change is observed also for almost all subgroups of other commercial services except for financial and insurance and pension services exported from Latvia. The share of transport, travel, insurance and pension services and charges for the use of intellectual property n.i.e. traded internationally has declined in Lithuania while for the other types of services it has increased. There is a positive change in the shares of the insurance and pension services, financial and other business services exported from Luxemburg. Statistical data show the same trend for transport and personal, cultural and recreational services traded internationally from Malta. The opposite change is observed in export shares of transport, construction, financial services and telecommunication, computer, and information services of the Netherlands. A positive change in the export shares is observed for transport, insurance and pension services, charges for the use of intellectual property n.i.e., telecommunication, computer, and information services, personal, cultural and recreational services and other business services of Poland. In the total exports of services of Portugal, charges for the use of intellectual property n.i.e.,
telecommunication, computer, and information services, travel and insurance and pension services have increased their shares. Growth is also found in transport, travel, telecommunication, computer, and information services and personal, cultural and recreational services traded on the international markets by Romania. An increase in the shares is registered for the exported from the Slovak Republic telecommunication, computer, and information services and personal, cultural and recreational services and charges for the use of intellectual property n.i.e. The same trend is observed for the transport, construction and other business services traded by Slovenia and for transport, telecommunication, computer, and information services and charges for the use of intellectual property n.i.e.. of Spain. Data show an increase in the shares of the exported from Sweden travel, insurance and pension services and personal, cultural and recreational services and a negative change for the remaining types of services. This dynamics in the structure is markedly expressed if the country is specialized in trade in knowledge-based services (2). It is not the same for the economy whether it loses or gains market share in such type of services.

EU countries play a different role on the international scene. The biggest shares in the world trade in services have Germany, France and the Netherlands but some other countries are also well presented in some types of services (see Table 1).

### World market share in the trade in services

<table>
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<th>Countries</th>
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<th></th>
<th></th>
<th>2018</th>
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<th></th>
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G. B. Zaharieva.
International Services Trade Competitiveness of EU-27 Countries

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**Legend:** SOX – Commercial services; SPX4 – Goods-related services; SC – Transport; SD – Travel; SOX1 – Other commercial services; S – Total services.

**Source:** Author's calculations based on data from WTO

For example in 2018 Ireland’s share in world exports of insurance and pension services is 7.8% and of telecommunication, computer, and information services - 16.7%, Luxemburg’s exports share of financial services in the world exports of these services is 13.1% and of personal, cultural and recreational services - 7.3%, and Malta’s exports share of personal, cultural and recreational services - 8.3% (see Table 2). Other EU countries have relative smaller shares in the export of services on the international markets. Of course the market share is not constant and changes over time. Data show that most of the EU countries have lost part of their market shares in trade with certain services and increased their shares with others. This can be additionally analysed using the rate of growth of market share.

The change in the market quotas that the countries hold in the world market of EU-27 countries is illustrated in fugures 4, 5, 6, 7, 8, 9 and 10. Data show that in the world markets of travel services 12 EU countries gained market share while at the same time these activities grew in the international trade (see Fig. 4). It characterises them as the rising stars in trade with travel services (see Table 2). The biggest positive growth rate is observed for Romania followed by Portugal and the biggest negative for Luxemburg followed by Estonia, Belgium, Finland and Germany. In the world markets of transport services most of the EU countries gained market share (excluding 6 countries) under conditions of reduced international trade (see Fig. 5) with the highest change for Malta. Because of that most of the countries fall into the
group of declining stars and six are classified as retreats. Similar is the situation with construction services. In the world markets of construction services 12 EU countries gained market share while at the same time these activities decline in the international trade (see Fig. 6). This allows us to classify countries either as declining stars or as retreats. According to the calculation results in the world markets of other business services 17 of the EU countries gained market share while at the same time these activities grew in the international trade (see Fig. 7). The highest change is observed for Malta. It means these are the rising stars in trade with other business services (see Table 2). The other 10 countries have registered a decline and are classified as missed opportunities.

Fig. 4. Export market share changes of travel services

Based on the calculations results we can say that in the field of insurance and pension services 16 EU countries have gained market share and 11 have lost (see Fig. 8). The biggest increase is registered for Cyprus and the biggest decline for Bulgaria. Because of the activities in international trade the countries are classified as declining stars or retreats. In the world markets of telecommunication, computer, and
information services 11 EU countries gained market share while at the same time these activities grew in the international trade (see Fig. 9). It means these are the rising stars in trade with that type of services (see Table 2). The biggest positive change in market share is observed for Latvia followed by Lithuania and the biggest negative for Luxemburg followed by Malta. Based on the calculation results we can say that in the field of financial services only 10 countries took advantage of the increased activities in the world. The others have lost part of their shares on the market. (see Fig. 10).

Fig. 5. Export market share changes in transport services
Fig. 6. Export market share changes in construction services
Fig. 7. Export market share changes in other business services
Fig. 8. Export market share changes in insurance and pension services
Fig. 9. Export market share changes in telecommunications, computer, and information services
Fig. 10. Export market share changes in financial services

In the trade with charges for the use of intellectual property n.i.e. 15 of the EU countries increased their market share while the international trade of that sector was growing and the others 12 countries lost part of their market shares.

Table 2

Market share competitiveness matrix

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<thead>
<tr>
<th></th>
<th>SOX</th>
<th>SPX4</th>
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</table>
For the period 2010-2018 in world-wide trade activities in the sector of personal, cultural and recreational services has declined. Because of that 14 EU countries are classified as declining stars and the rest as retreats.

Based on the observations on the change in world market share and changing demand for services for the period 2010-2018 we can say that the most frequent EU countries were in the position of missed opportunities, followed by rising stars, declining stars and retreats (see Fig. 11).
Every country has a specific competitiveness profile, but on the basis of export market share and its dynamics the biggest improvement in their competitiveness have made Hungary, Poland, Ireland, Lithuania, Romania, Slovakia, Croatia and the Netherlands. The countries which have suffered a set-back in their competitiveness among the EU-27 countries were Belgium, Denmark, Austria, Belgium, France, Greece, Sweden and Luxemburg. Of course, the results also depend on the level of data disaggregation.

Finally, we will analyse the EU countries competitiveness in terms of the trade specialization of the country. In this regard the values of RCA index for 2018 and
2014 show that most EU countries have not significantly changed their competitive advantages. All of them have RCA indices over 1 for commercial services as a whole. The other groups of services with RCA values higher than 1 vary among the countries (see Table 3).

### Table 3

Revealed comparative advantages in trade with services

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</tr>
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</table>

*Based on author’s calculations.*
For the period some of the countries have lost their advantages in trade with some services and gained in others. The highest RCA values near 3 or higher are those of Croatia for travel services, Cyprus and Luxemburg for financial services, the Czech Republic and Hungary for goods-related services, Denmark, Estonia and Slovenia for construction, Finland for construction and telecommunications, computer, and information services, Ireland for insurance and pension services, Latvia for transport, Malta for financial services and personal, cultural, and recreational services and the Netherlands for charges for the use of intellectual property n.i.e. When we compare the results from the market share competitiveness matrix and the RCA indices we see that even though some countries are classified as retreats or missed opportunities for some of the exported services they still have comparative advantages in foreign trade with them. That is the case for example with the trade in transport services of Denmark and Estonia. The results also show that in cases of retreats and missed opportunities sectors the RCA values have also decreased.

**Conclusion**

The services sector has an important role for the development and the economic performance of countries. In the last decades it has become the backbone of the global economy and the most dynamic component of international trade. The services sector is considered as a driving force for the European Union. At the same time the services sector is very heterogeneous, with many players and influences by many and varied regulations. That raises the question of competitiveness. From the perspective of a given country or a firm it is important to have a clear view of the market changes because this will allow us to make the right decisions and adapt the policies and the behaviour of both the governments and the enterprises.

EU is one of the important players on the international services markets. Of course the potential and the integration in the international markets of member countries are different. Some countries are in the role of main suppliers and buyers, like Germany, France and the Netherlands whereas others have smaller participation in terms of value in the market. Despite this it is not always a matter of volume of sales, but also of competitiveness.

The current research shows that EU-27 countries differ not only in terms of values of exports but also in structure, specialization and competitiveness. Using the market share competitiveness matrix we classified the countries in different groups according to the degree of competitiveness. The results show that the biggest improvements in competitiveness have been made by Hungary, Poland, Ireland, Lithuania, Romania, Slovakia, Croatia and the Netherlands. The countries which have
worsened their competitiveness among the EU-27 countries were Belgium, Denmark, Austria, Belgium, France, Greece, Sweden and Luxemburg. Of course competitiveness is not a one-sided coin and results depend on the methods used and the level of data disaggregation.

1. The years are chosen based on data availability.
2. Such are some financial services, telecommunication, computer and information services and some other business services.

References


19. WTO data. Available at: www.wto.com

MUNDEL OPTIMALITY OF THE BULGARIAN ACCESSION TO THE EURO AREA

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Abstract

This paper analyses the level of economic convergence within the EU and in particular within EMU. The main purpose is to assess the level of business cycles synchronisation between Bulgaria and the Eurozone. The research is conducted with data for the period 1995–2019 divided in different subsamples in an attempt to find important turning points in the synchronicity levels. Business cycles are identified through detrending of GDP time series with two alternative techniques – Baxter-King and Hodrick-Prescott filters. The empirical results of this paper reveal that in the period 1995–2002 Bulgaria did not form Optimum Currency Area with any of the EMU members and possibly suffered severe negative effects from the introduction of the Currency Board in 1997. The findings also identify substantial increase in the synchronisation between Bulgaria and the EMU members, and within the Eurozone itself in the first decade of XXI century, followed by deterioration, signalling for potential problems with the stability of the Common currency in the future.

Key words: business cycle synchronisation, EU integration, currency unions, optimum currency area.

Introduction

European monetary union (EMU) is undoubtedly one of the most prominent accomplishments of the ongoing European economic integration and the development
of the European Union. The Euro area or Eurozone as it is also called is a currency and bank union consisting (currently) of 19 EU member-states, formally created with the signing of the Maastricht Treaty in 1992 (officially Treaty on the Functioning of the European Union). The Eurozone full membership is available only for member states of the European Union and all members are obliged to join the monetary union once they comply all requirements. Only Denmark and United Kingdom (UK) have negotiated an exclusion of this rule and UK is no longer a member of the EU. In addition to the full members of the EMU there are four non-EU states that have negotiated formal agreements to use the Euro as their official currency and issue their own coins but without representation in the European Central Bank (Andorra, Monaco, San Marino, and Vatican City) and also Kosovo and Montenegro have adopted the common currency as their legal tender without a formal agreement and, therefore, without issuing rights.

The admission of member-states in the Euro area is governed by the Maastricht Treaty through the so called euro convergence criteria (The Official Journal of the European Union, 2020). The five main criteria listed in the treaty are:

1. Inflation rate: Applicant countries should have inflation rate no more than 1.5 percentage points higher than the average of the three EU member states with the lowest inflation.

2. Long-term interest rate: The nominal long-term interest rate in the applicant countries must not be more than 2 percentage points higher than in the three lowest inflation member states.

3. Annual government deficit: The ratio of the annual government deficit to GDP must not exceed 3% at the end of the preceding fiscal year.

4. Government debt: The ratio of gross government debt to GDP must not exceed 60% at the end of the preceding fiscal year.

5. Exchange rate: Applicant countries should have joined the exchange-rate mechanism (ERM II) under the European monetary system (EMS) for two consecutive years and should not have devalued its currency during the period.

The nominal Maastricht criteria are set with the purpose of achieving price stability within the Eurozone and to ensure it was not negatively impacted when new member states accede. Due to the normative nature of the Maastricht Treaty, it does not provide measures to assess if the adoption of the Euro will be beneficial for an applicant country. The benefits and costs for a country joining a currency union can be assessed within the framework of the theory of Optimum Currency Areas (OCA) developed by Robert Mundell in the 1960’s (Mundell, 1961). According to Mundell a Currency Area is a domain within all entities use a common currency or maintain
fixed exchange rates. Usually currency areas coincide with national borders but they also can be bigger or smaller than the national territory.

Mundell analyses two extreme examples: every person has their own currency and there is only one currency in the whole world. The first case is similar to barter economy and is generally viewed as not beneficial for any economy. The more currencies that exist, the more money will have to be exchanged in order to trade with others, thus increasing transaction costs. Also, the smaller the currency areas are, the more vulnerable each area becomes to speculation with its currency. If only transaction costs and speculation issues were to be considered, the whole world should have only one currency.

In the second case – only one currency for the whole world will not be beneficial either because it suggests uniform monetary policy for all entities. Monetary policy is used by governments as an anticyclical instrument – expansionary policy is used to combat unemployment and contractionary policy is employed to control inflation. Since the world is not homogeneous in terms of unemployment and inflation therefore a worldwide common currency implies an inability to react to shocks by adjusting exchange rates. If economic stability or adjustment to shocks is the only goal considered, as many areas as possible should trade with flexible exchange rates. The best decision in respect of both minimizing transaction costs and ability to adjust to cyclical shocks is to establish monetary unions within regions regardless national borders. In order to be optimal, Currency areas must meet the following requirements (i.e. OCA properties):

1. Labour mobility across the region – mobility of workforce equalises the level of unemployment within the area, which allows common policy.

2. Capital mobility across the region – foreign investments reduce the inflationary pressure and equalise prices within the region.

3. Entities within the region must have synchronised business cycle dynamics – allows uniform adjustment policy.

Some authors have suggested additional requirements for the optimality of currency unions. Ronald McKinnon (McKinnon, 1963) suggests price flexibility for goods and factors of production. Another contributor to the OCA theory is Peter Kenen (Kenen, 1969), who states that the participants in a currency union must have highly diversified economies (particularly external trade) because it would reduce the significance of random external shocks on exports.

Fulfilment of all these requirements suggests that the participation of a country in the monetary union will be beneficial due to reduced transactional costs and increase of mutual trade among the union members. When the OCA criteria are not
satisfied, idiosyncratic shocks cannot be adjusted with the instruments of monetary policy or the monetary policy itself may cause economic disturbances (inflation and unemployment).

Significant part of the fundamental European Union legislation is dedicated to the provision of factor mobility and price flexibility. Although the Rome Treaty and secondary legislation grant free movement of goods, capital and labour, in reality factor mobility within the Union is far from perfect. Capital is considered to be the more mobile factor among EU members, but its level is lower than the mobility within the US due to the different tax levels in EU countries (Wildasin, et al., 2000). The Rome treaty also postulates free movement of workforce but the mobility of labour is impeded by cultural and language barriers. All EU members are free market economies with negligible exclusions – in some of the members the price of electricity is regulated by the government and it is generally believed that there is no true wage flexibility (Sanz-de-Galdeano & Turunen, 2006). Since most of the OCA properties are not country specific due to the common European legislation, this paper is focused on the main Mundell criterion – business cycle synchronisation.

The objective of this paper is to assess if the accession of Bulgaria to the European Monetary Union will be beneficial or not. In order to achieve the goal of this paper, it is necessary to examine if the Bulgarian economy possesses the OCA properties.

The process of Bulgaria’s accession to the European Union started in 1990 with the signing of the Convention on Trade, Business and Economic Relations and a resolution of the parliament expressing the desire of the Republic of Bulgaria to become a full member of the European Community. In 1999 the European Council decided to start accession negotiations with Bulgaria, and in January 1, 2007 Bulgaria acquired officially the status of full member of the EU. Another dimension of the Bulgarian integration into the EU is the introduction of a currency board in July 1, 1997. After several failed stabilisation attempts and a period of hyperinflation, the Bulgarian currency was pegged to the Deutsche Mark at a fixed rate and in 2002 when Germany adopted the Euro, it became the anchor currency for the Bulgarian Lev.

Now 14 years since the gaining of full member status, the Bulgarian integration in the EU economy is far from complete. Free trade and factor movement within the Union failed to provide economic convergence for Bulgaria. Despite the relatively high economic growth Bulgaria remains one of the poorest members of the EU with the lowest income per capita, the lowest labour productivity, relatively high unemployment, inflation and interest rates.
In Bulgaria there is an ongoing debate concerning the necessity and the benefits of the eventual adoption of the Euro. There is a growing body of research articles, trying to assess the institutional (Mihaylova-Borisova, 2014), nominal (Yorgova, 2009), (Simeonov, 2007) and fiscal (Marinova, 2016), (Petkov, 2014) preparedness of Bulgaria for the EMU accession. This debate even fuelled the idea for revaluation of the benefits of the currency board (Hristozov, 2017) with the argument that Bulgaria needs independent monetary policy in accordance with its own economic conditions.

According to the biannual Convergence reports of the European Central Bank, Bulgaria (ECB, 2020) does not comply to the Maastricht criteria because of breaching the long-term inflation requirement and is not nominally eligible for applying to the ERM II. Nevertheless, the Bulgarian Central Bank has been maintaining fixed exchange rate with the Euro since 2002 and the Bulgarian government states that the adoption of the Euro from Bulgaria is a real possibility.

In order to evaluate if the adoption of the Euro will be beneficial for Bulgaria it is required to assess the level of synchronisation of the Bulgarian business cycle with the cycle of the Eurozone and the individual cycles of the EMU members.

I. Methodology and Data

Measuring business cycle synchronisation is a complex task and is carried out in two separate iterations: cycle identification and synchronisation estimation.

The economic activity in open market economies inherently fluctuates with different frequency. These fluctuations are subjected to intensive scrutiny since the seminal works of Simonde de Sismondi from 1819 (Simonde de Sismondi, 1991), and Clement Juglar from 1860 (Legrand & Frobert, 2009), which led to the discovery of economic cycles with different length; from the shortest – Kitchin cycles with length between 1 and 3 years (Kitchin, 1923), to longest – Kondratieff waves between 45 and 60 years (Kondratieff & Stolper, 1935).

In this paper, for quantification purposes, the definition and length of the business cycle are derived from the interpretation of the National Bureau of Economic Research in the USA (Stock & Watson, 1993) of the definition of Burns and Mitchell: “Business cycles are a significant fluctuation found in the aggregate economic activity of nations…a cycle consists of expansions occurring at about the same time in many economic activities, followed by similarly general recessions” (Burns & Mitchell, 1947).

In this paper, GDP is selected as the most inclusive measure for economic activity and its dynamics may be considered as sufficient approximation of overall business cycle. The source of the data is the European Commission statistical database – Eurostat.
(European Commission, 2020). We use quarterly data for the GDP of the 19 EMU countries and Bulgaria. The series are seasonally and calendar-day adjusted, because the non-adjusted data have cyclical properties and may distort the results. The timespan of the data is from the first quarter of 1995 to the last quarter of 2019. This period provides the longest possible sample from the given database, and includes data for most of the selected countries (Malta is reporting from the start of 2000 and Slovakia did not report quarterly data and is excluded from the sample).

1. Business Cycle Identification

Business cycle identification process usually requires a detrending procedure of the time series (Canova, 1998). The GDP data in this paper is detrended by filtering the time series with two different from theoretical point of view statistical transformations: Band-Pass Filter and Hodrick-Prescott Filter.

The Band-Pass Filter isolates the cyclical component of the time series by removing both low (which reflect the long term growth component) and high (which might be due to measurement errors and noise) frequency fluctuations from the data at a predefined level. The filtered series are computed as:

\[ z_t = \sum_{c=1}^{q+1} w(1,c) y_{t+1-c} + \sum_{c=2}^{q+1} w(1,c) y_{t+c-1} \quad t=q+1,..., n-q \]

where:
- \( z_t \) – filtered series
- \( y_t \) – original series
- \( q \) – lag length order
- \( w(1,c) \) – the corresponding element of the weight matrix

For the particular detrending procedure are used the “Ideal” settings of the Band-Pass filter recommended from Baxter and King (Baxter & King, 1999), with low band set at 6 lags and upper band set at 32 lags; the maximum lead/lag length of the filter is 10 lags. The Baxter-King Band-Pass Filter belongs to the category of the fixed length symmetric filters which share a well-known common deficiency – they significantly reduce the length of the filtered series (Christiano & Fitzgerald, 2003). These settings of the filter reduce the length of the time series with 10 lags at the beginning and additionally with 10 lags at the end of the series. Therefore, an alternative detrending technique is used, namely – Hodrick-Prescott filter.

The Hodrick-Prescott Filter is a smoothing method, which isolates the long-term trend component of time series (Hodrick & Prescott, 1997). The cyclical fluctuations
of the series are calculated as a difference between the trend component and the actual data. The Hodrick-Prescott filter is a two-sided linear filter that computes the smoothed series \((s)\) by minimising the variance of actual series \((y)\), subject to a penalty \(\lambda\) that constrains the second difference of the smoothed series. That is, the HP filter chooses \((s)\) to minimise:

\[
\sum_{t=1}^{T} (y_t - s_t)^2 + \lambda \sum_{t=2}^{T-1} \left((s_{t+1} - s_t) - (s_t - s_{t-1})\right)^2 \rightarrow \text{min}
\]

The penalty or smoothing parameter is set at \(\lambda = 1600\) according to the frequency power rule which is generally accepted in the literature (Ravn & Uhlig, 2002). Like the Band-Pass Filter the Hodrick-Prescott Filter also possesses some disadvantages, as pointed out from Baxter and King (Baxter & King, 1999) it is highly dependent from the sample length (samples with different length provide different results).

The Band-Pass Filter is preferable from a theoretical perspective (Stock & Watson, 1999), but its use on small sample series is questionable. Therefore, in order to increase the robustness of the results, both filtering techniques are applied independently and the produced two data sets are compared.

2. Estimation of Business Cycle Synchronization

Business Cycle Synchronisation between Bulgaria and EMU is measured with unconditional contemporaneous correlations. We compute correlation coefficients between the filtered series for Bulgaria and the EMU aggregate (independently for Band-Pass and Hodrick-Prescott filters). As a benchmark we calculate correlation coefficients between the EMU aggregate and every EMU member-state. Additional reference is provided from the bilateral correlation coefficients between Bulgaria and individual EMU members.

In order to study the development of the business cycle synchronisation over time, we divide the sample several overlapping sub-periods:


The length of the sub-periods has been chosen according the assumption of Baxter-King band-pass filter settings that the business cycle fluctuations are between 6 and 32 lags for quarterly data or between 1.5 and 8 years.

We are interested in the intertemporal comparison of the synchronisation because it shows the development of the European economic convergence over time, but also it allows us to test the assertion of Frankel and Rose for the endogeneity of the OCA criterion (Frankel & Rose, 1998). Using regression techniques, they found that the adoption of common currency itself causes synchronisation of the business cycle between the participating countries.

II. Results

The results from the described procedure are presented separately for the two filtering techniques for all sub-periods under investigation. The data obtained from the Hodrick-Prescott filter are displayed in three separate tables.

Table 1 includes the level of business cycle synchronisation between individual Eurozone members and EMU aggregate. Within the first sub-period – from 1995 to 2002, the overall level of synchronisation is low with 7 countries (Austria, Finland, France, Germany, Italy, Netherlands and Spain) scoring over 0.5 correlation with the EMU aggregate. The average synchronisation of all countries is 0.43 with highest score for Finland and Spain (0.85) and lowest for Greece (-0.18).

**Table 1**

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This period represents the macroeconomic circumstances before the establishment of the EMU – first 11 members of the EMU fixed their exchange rates from January 1, 1999 and the Euro replaced the national currencies from the start of 2002. In regard to the synchronisation between EMU aggregate and the individual states, the results indicate definite idiosyncratic properties of the business cycle for most of the countries in the selection. This means that at the time of the formation of the EMU it probably did not form an optimal currency area. The creation of the Eurozone most probably caused significant economic problems for most of its members due to the lack of independent adjustment monetary policy. At the end of the XX century the EMU looks more like a political decision than an economically sound project.

In the next period, representing the actual entry into force of the EMY – from the 1999 to the end of 2006 the results are radically different. All countries in the selection significantly improved their level of synchronisation with the EMU aggregate. This notion holds true also for countries that are not members of the EMU nor even members of the EU. The average level of synchronisation of all countries to the EMU aggregate is 0.73 with as many as 13 states having synchronisation score of 0.7 or above. The high level of synchronisation between the business cycles of the selected countries with the EMU aggregate continues into the next period – 2003 to 2010, with average measure of synchronisation of 0.84 and 12 countries with correlation higher than 0.9. These results are very interesting and imply a possible proof of the claim from Frankel and Rose for the endogeneity of the OCA criterion (Frankel & Rose, 1998).

The high level of synchronisation between the individual countries business cycles and the EMU aggregate in the first decade of the XXI century (the two sub-periods: 1999-2006 and 2003-2010) signify that after the initial adjustment shock from its creation, the Eurozone was largely beneficial for its members. In the time of the establishment of the EMU it did not form an optimal currency area according to the Mundell criteria, but after the introduction of the single currency, it generated

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</table>

Source: Author’s calculations.
positive effects in terms of increased trade, reduced transactional costs and risks without costs caused by lack of individual anticyclical policy.

The only country that stands out from the general trend of high synchronization is Greece. The level of synchronisation of the Greek business cycle is extremely low even negative in the first sub-period, even countries that are not members of the EU and the Eurozone demonstrate higher correlation with the EMU aggregate. This means that probably the Greek economy suffered severe economic problems from the accession to the Eurozone. The common monetary policy of the EMU was not optimal for the Greek economic circumstances and the Greek government probably had to compensate with other available policy instruments namely fiscal and government expenditure. This lack of synchronisation between Greek business cycle and the EMU aggregate could back the hypothesis that the adoption of the Euro is among the main causes of the Greek sovereign debt crisis from 2009.

The fourth sub-period (2007-2014) is described with radically different macroeconomic settings. The EMU accepted 7 new members and the world experienced the worst financial crisis since the Great Depression. During this period the overall level of synchronisation of selected countries with the EMU aggregate started to decrease slightly but maintained a relatively high value with average score of 0.79. But the last sub-period under investigation (2011-2019) shows substantial widespread deterioration of the individual level of synchronisation with the EMU aggregate. All countries in the selection decreased their correlation significantly lower than the respective highest scores in the previous sub-periods. The average overall level of synchronisation dropped to 0.47 – similar to the pre-Euro sub-period (1995-2002). The Baltic states are at the bottom of the list with negative synchronisation measure. The only exceptions are Cyprus and Greece, recording their highest synchronisation score for the period, respectively 0.69 for Cyprus and 0.6 for Greece.

This means that the Eurozone met the direct impact of the Global financial crisis relatively uniformly, but the long-term negative effects had severe idiosyncratic properties. The significant decrease of the level of business cycle synchronisation means that the Global financial crisis had radically differentiated effect on national economies in the selection or the anticyclical policy of the ECB and governments caused the individual countries’ business cycles to drift apart. Obviously the Stability and Growth Pact failed to ensure its main goals – facilitate and maintain the stability of the EMU and to increase the economic convergence within the Union. These results may signal substantial problems with Mundell optimality of the Eurozone and cast doubt over the economic benefits of the single currency, therefore threatening the future stability of the EMU.
The significant decrease of the overall level of business cycle synchronisation within the EMU also has theoretical implications. According to the prominent economist Milton Friedman, business cycles are a result mainly from monetary policy and should not be called cycles at all (Friedman & Schwartz, 1963). The idiosyncratic cycles of the EMU members in the last decade emerged under a common monetary policy and could not be explained with purely monetary factors. Also the hypothesis of Frankel and Rose for the endogeneity of the OCA criterion (Frankel & Rose, 1998) could be questioned because of the drop in synchronicity under a single currency. At least it is possible to state that the synchronisation of the business cycles is not a unidirectional process and is reversible even under a common monetary policy.

During the investigated period Bulgaria followed the general trend in a moderate extend. In the first sub-period Bulgaria experienced severe economic problems with hyperinflation and negative economic growth, which led to the introduction of the currency board in July 1997 (Gulde, 1999). The low value of the correlation coefficient (0.46) indicates the lack of synchronisation between Bulgaria and EMU countries and probably an idiosyncratic nature of the cycle. In comparison with the EMU members Bulgaria’s level of synchronisation higher than Belgium, Cyprus, Luxemburg and Portugal. The low level of synchronisation is natural and easy to explain – Bulgaria is not a member of the Eurozone and the EU, therefore its economy is not integrated yet into the Union.

The general conclusion for the observed sub-period is that Bulgaria does not meet the fundamental requirement for joining a currency union with the selected countries. Nevertheless, Bulgaria de facto entered a monetary union with Germany by introducing the Currency Board in 1997 and fixing its national currency to the German Mark. Table 2 presents the results for the level of business cycle synchronisation between individual EMU members and Bulgaria. The correlation between the Bulgarian and German business cycle is low and even negative (-0.0986). Therefore, we may assume that Bulgaria suffered substantial negative effects from the establishment of the Currency Board in 1997 due to the loss of the independent currency policy.

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Table 2

Level of business cycle synchronization between individual EMU members and Bulgaria – Hodrick-Prescott filter
Overall the level of synchronisation of Bulgaria with the EMU members across the selection may be defined as quite low (average value 0.26) even absent. The highest synchronization could be found with the business cycles of Italy (0.68) and Netherlands (0.73). From a theoretical perspective, Bulgaria should have chosen the Italian Lira or the Dutch Guilder as a base for the Currency Board, but that decision would prove meaningless because the ERM II mechanism started just 18 months later.

In the second sub-period – 1999 – 2006 Bulgaria increased the level of its business cycle synchronisation both with the EMU aggregate (0.70, Table 1) and the individual states in the selection (average 0.54, Table 2), indicating that the integration of Bulgaria to the EU economy has started even before the country joined the Union. The highest increase of the synchronisation measure is understandably with Germany (from -0.09.86 to 0.73).

The third sub-period – 2003-2010 is described with the accession of Bulgaria to the EU (January 1, 2007) and the first years of the Global financial crisis. Bulgaria increased its business cycle synchronization with individual EMU members to average measure of 0.62 and maintained a relatively strong correlation with the EMU aggregate at 0.63.

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</table>

Source: Author’s calculations.
During the next two sub-periods Bulgaria followed the general trend of slight decrease in 2007-2014, and significant drop in 2011-2019 synchronisation both with EMU aggregate and individual member-states. In the last sub-period the average synchronisation of Bulgaria to other countries plummets to 0.34. The lowest synchronisation for Bulgaria for the entire period (1995-2019) is with the Baltic states, Ireland and surprisingly with Greece, which is a neighbouring country and one of the biggest trade partners of Bulgaria, therefore, is expected to be closely synchronised.

The general conclusions from the results under the Hodrick-Preskott filter for the entire period is that Bulgaria did not comply with the Mundell optimality requirements in the first sub-period – lacking labour and capital mobility with other countries and having very low level of synchronisation of the business cycle with them and with the EMU aggregate. Most probably Bulgaria suffered negative consequences of the introduction of the currency board in 1997. In the first decade of the XXI century Bulgaria significantly increased its synchronicity with the EMU aggregate and obtained EU member status, thus receiving capital and labour mobility within the Union. Probably the best point in time for Bulgaria to enter the Eurozone was around 2010. After this point the synchronisation of the Bulgarian business cycle with the EMU members and the aggregate measure started to decline, reaching at the end of the period values, suggesting that accession to the Eurozone might not be beneficial.

The results for the Baxter-King band pass filter are presented in similar manner in Table 3 and Table 4. As it was stated earlier the Baxter-King filter is theoretically different from the Hodrick-Preskott filter, and because of its peculiarities the sub-periods are defined slightly different.

Table 3

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The result values of the level of synchronisation are slightly higher but the general dynamics are similar. In the first sub-period the average synchronisation between individual countries and the EMU aggregate is 0.58 – higher than the measure for the first sub-period for the Hodrick-Prescott filter. It is worth noting that under the Baxter-King filter a larger part of the sub-period covers the time, when the Euro already functions as an actual currency or as a system of mutually fixed exchange rates. In the next two sub-periods all countries in the selection, except Bulgaria increase their synchronicity with the EMU aggregate with average of 0.89 for 2001-2009 and 0.82 for 2005-2013. In the last sub-period there is a substantial decrease of the average synchronisation with the EMU aggregate to value of 0.62. The countries with lowest synchronisation measure for the entire period are Bulgaria, Cyprus, Portugal, and Greece.

Although the values and sub-periods are different, the general pattern is quite similar to the findings under the Hodrick-Prescott filter – relatively low synchronicity at the beginning of the period, rapid increase in the first decade of XXI century, followed from a decline in the last sub-period. This supports the initial conclusions from the previous procedure that at the time of its establishment, the Eurozone did not constitute an optimal currency area, but the synchronisation quickly increased to very high level of more than 0.90 for most of its members. At the end of the period there are obvious problems with the overall synchronicity, and therefore possibly with the Mundell optimality of the Eurozone, illustrated with the low correlation of Portugal

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</table>

Source: Author’s calculations.
(0.29), Malta (0.38), Lithuania (0.56), Latvia (0.41), Ireland (0.43), Greece (-0.44), Estonia (0.59) and Cyprus (0.52).

The results for Bulgaria under the Baxter-King filter are different in comparison with the previous procedure. The first sub-period coincides with the establishment of the Currency Board in Bulgaria. During 1997-2005 Bulgaria scores its highest measure of synchronisation with the EMU average (0.80). In this sub-period Bulgaria has an average synchronicity to individual EMU members of 0.53 (Table 4), with highest individual scores to Austria (0.89), Germany (0.70), Ireland (0.90), Latvia (0.85), Netherlands (0.87), Slovenia (0.73), Portugal (0.91). The relatively high results from the first sub-period infer that the Bulgarian integration to the EU started earlier than suggested from the findings under the Hodrick-Prescott filter. In the second and third sub-periods Bulgaria retained a moderate synchronisation level (around 0.58) to the EMU aggregate. The values are not substantially different from the ones derived with the Hodrick-Prescott filter, but signal for earlier and more substantial problems with the Bulgarian economic convergence and integration into the EU.

Table 4

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</table>
In the last sub-period (2009-2017) the synchronisation level of the Bulgarian business cycle to the EMU aggregate increases to 0.68, which is around the median for the selection of countries – it is higher than the Baltic states, Greece, Cyprus, Ireland and Portugal, but significantly behind the values of the “core” Eurozone countries Austria, Belgium, France, Germany, Italy and Netherlands – all scoring synchronicity level around 0.9. In the same time the average synchronisation of the Bulgarian business cycle to individual EMU members declined to the lowest value (0.43) for the entire period of 1997-2017. This is explained with the closer synchronisation of Bulgaria with the “core” Eurozone countries, therefore higher correlation with the EMU aggregate and lower synchronisation with the rest of the members, causing lower average score.

The results obtained with the Baxter-King filter for the entire period show that although Bulgarian business cycle is more correlated with the EMU aggregate than half of its actual members. Nevertheless, the level of synchronisation is not sufficient to ensure Mundell optimality of the Bulgaria’s accession to the Eurozone.

**Conclusions**

The main objective of this paper is to evaluate whether Bulgaria should join the EMU or it is more beneficial to abolish the existing currency board and have independent monetary policy. The empirical results show that at the time of the establishment of the Currency Board in 1997 Bulgarian business cycle was not synchronised with the German economy and probably Bulgaria suffered substantial negative effects loss of the independent currency policy.

In the first decade of XXI century, the Bulgarian economy quickly adjusted to the currency board and to the accession to the EU. At this point in time the level of synchronisation of the Bulgarian business cycle with the EMU aggregate was comparable with some of the actual members of the Eurozone. The results suggest that during this period Bulgaria benefited from the fixed exchange rate without damage from the lack of independent monetary policy.

Regrettably after the initial sharp increase, the Bulgarian economic convergence with the Euro area lost momentum and currently Bulgaria does not form an optimal currency area with the EMU. Also according to the last convergence report from the ECB, in 2020 for the first time in the last 10 years Bulgaria did not comply with the
nominal convergence criteria of the Maastricht Treaty. Bulgarian monetary policy is heavily influenced by the European Central Bank and the abolishment of the Currency Board is not a feasible option, therefore the Bulgarian government should increase the efforts to speed up the convergence with the Eurozone.

Although it was not within our tasks this paper gives some insight about the costs and benefits from the EMU for the member-states. Our results suggest that when the EMU was created the economies of the member-states were not synchronised and probably the introduction of the Euro caused severe economic disturbances at least for some of the members. Deprived of independent monetary policy they were forced to use only fiscal instruments to correct their problems, which probably led to the Euro sovereign debt crisis. Both filtering techniques in this paper show that after the initial adjustment shock the overall synchronisation within the EMU increased very fast, peaking at around 0.90 in 2010. In the last decade the synchronisation between the business cycles of the EMU members slowly deteriorates, reaching levels that pose a significant threat for the future stability of the Eurozone. No accession of a new member could be optimal if the Eurozone does not constitute an Optimal currency area. These results are signalling for the need of additional institutional reforms in the EMU, deeper economic integration within the EU and higher efficiency of the Stability and growth pact.

This research could be further improved by increasing the length of the observed time series because the applied procedures proved to be extremely sensitive to the selected length and scope of sub-periods. Also a causal investigation, identifying the main factors or hurdles of synchronisation, could be very valuable.

References


6. Available at: https://www.ecb.europa.eu/pub/pdf/conrep/ecb.cr202006~9efc8d4c0.en.pdf
7. [Accessed 10 June 2020].
9. Available at: https://ec.europa.eu/eurostat


33. [Accessed 7 June 2020].


MANAGING EXCHANGE RATE RISK WITH DERIVATIVES:
AN APPLICATION OF THE HEDGE RATIO

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JEL: G32, F23

Abstract

Risk management practices have become increasingly sophisticated. Derivatives have been developed and they can be widely used by economic agents in order to effectively hedge the risk, or by those who want to speculate on the evolution of prices. This study presents a hedging alternative with future contracts using an ARMA/ARIMA model. Employing five futures contracts on several exchange rates - AUD/CAD, EUR/JPY, EUR/USD, GBP/USD, RMB/USD - the actual value of the base at a future time (defined as the difference between spot rate and futures rate) can be predicted with a certain number of days until maturity. Apart from the classical calculation of the hedge rate this is another method for hedgers to use in order to reduce the volatility of their positions by trying to predict the future spot price in the currency market.

Key words:
exchange rate risk, hedging, ARMA, futures, stock exchange.

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Introduction

This paper presents various aspects related to hedging with futures contracts and, in particular, a special approach to hedging with derivative instruments, by using simple econometric models such as ARMA (Autoregressive Moving Average Process). The modelling part of the paper includes a case study, which exposes a different way to achieve hedging by trying to predict the base (the difference between the spot price and the futures price). Using data on five futures contracts and modelling the bases of these contracts in a time series framework, a methodology for forecasting the base is presented using the ARMA econometric model. The paper concludes with the main findings and recommendations of the case study.

Whenever a company's transactions cross national borders, exchange rate fluctuations influence those transactions. Exchange rate fluctuations can lead to large variations in relative costs between firms located in different countries and affect the prices of goods sold in domestic and foreign markets (Adler, 1984). Due to the uncertainty that often hovers over the financial markets, but not only, the volatility of commodity and stock prices, interest rates, and exchange rates, the need for economic agents to cover these risks arose (Andersen et al, 2003; Schena, 2007). Risk management has become an increasingly sophisticated process (Hagelin, 2003; Hennings, 2004; Su, 2018). Thus, derivative instruments (futures, options, swaps, etc.) and combinations of them have been developed, and they can be used by economic agents in order to effectively hedge the risk, but also by those who want to speculate on the evolution of prices, exchange rates or by those who want to take advantage of arbitrage opportunities. However, in this paper we delve into the use of derivative instruments to cover financial risks, a process called hedging in literature.

Hedging is a type of transaction that limits investment risk, using derivative financial instruments, such as options and futures. Typically, hedging transactions involve taking opposite positions in the market in order to ensure a certain gain or loss on a transaction (Alvaro et al, 2016). They are employed by portfolio managers to reduce portfolio risk and volatility, but also to increase profits through selective hedging (Solomon et al, 2000; Brown et al, 2006; Francis et al, 2007).

The central theory of hedging considers that the price of the underlying asset fluctuates in a manner similar to the price of the asset that is the subject of the futures contract (Hull, 2018; Johnson, 1976; Collins, 1997; Smith and Stulz, 1985). If an investor is long (short) on the underlying (usually, spot) asset and wants to protect himself against a decrease (increase) in the price, he can take a short (long) position on the futures. The sale (purchase) of futures contracts thus replaces the sale
(purchase) of the underlying asset. As the hedger is short on the futures contract, he can, depending on how effective the hedging is, buy again (resell) the futures contract at a lower (higher) price, thus generating a gain that compensates for the loss recorded on the spot market. If spot and futures prices are strongly correlated, hedging reduces a substantial part of the risk.

The hedging strategy depends on the risk faced by the hedger (Schweizer, 1994; Howe et al, 1996). This must be determined so that the position on the futures is profitable and offsets the loss recorded by the spot position. Hedging is effective when the potential losses on the spot market are minimized. In such situations, the profit (loss) on the futures market offsets the loss (profit) on the spot market, eliminating the hedger's risk. Perfect hedging is possible only when the base (the difference between the spot price of the asset whose risk is hedged and the price of the futures contract used) can be predicted with certainty and can only be achieved if the end date of the hedging period is the same as the maturity of the futures contract used and if the physical and financial characteristics of the asset or commodity whose risk it covers are identical to those of the asset or commodity that is the subject of the futures contract (Sheu et al, 2013). If one of these conditions is missing, it is not possible to achieve perfect hedging. Thus, the risk can be reduced, but not eliminated, because the relationship between the spot price and the futures price is indeterminate, except that the two prices converge on each other at the maturity of the contract (Geppert, 1995; Kroner, 1993).

As the optimal hedging rate is given by the regression coefficient in a linear regression, the coefficient of determination ($R^2$) can be used to evaluate the hedging effectiveness (Chroudhry, 2003; Markopoulou et al, 2016). The coefficient of determination of a regression expresses the fraction of the dispersion of the dependent variable which is explained by the independent variable over the estimation period. If the two variables are perfectly correlated, then $R^2$ is equal to 1. If they are uncorrelated, $R^2$ is 0.

In a regression with a single independent variable, $R^2$ is equal to the square of the correlation coefficient between the dependent and the independent variable. In the case of hedging with futures, its effectiveness is directly related to the correlation coefficient between the change in the spot price and the futures price (Brooks et al, 2002):

$$ h = \varphi \frac{\sigma_S}{\sigma_F} \Rightarrow \varphi = h \frac{\sigma_F}{\sigma_S} \Rightarrow R^2 = h^2 \frac{\sigma_F^2}{\sigma_S^2} $$

(1)

where $h$ is the regression coefficient, in our case the optimal hedging ratio and $\sigma_S$ and $\sigma_F$ are the standard deviations of the spot and futures prices.
R² shows the fraction of the spot market volatility explained by the hedging instrument. If R² is equal to 1, in which case there is no basis risk, the position obtained by hedging has no dispersion and therefore no volatility. If R² is equal to 0, the dispersion of the position obtained by hedging is equal to the dispersion of a position without hedging.

Hedging efficiency measures the fraction of the market dispersion on the spot market that can be eliminated by using the optimal hedging rate over the estimation period (Yang et al, 2009; Gagnon et al., 1998). Thus, the difference (1 - R²) expresses the fraction of the market dispersion of the position on the spot market that cannot be eliminated by hedging. As in the presence of the basis risk, a statistical relationship between the changes in the futures price and in the spot one is exploited, the hedging effectiveness depends on the random error (residue) associated with this statistical relationship. When R² is large, the volatility of the random error is small, so that the actual change in the spot price will be close to the change estimated by regression. As R² decreases, the volatility of the random error increases and large differences can occur between the actual and estimated changes in the spot market position. It can even happen that hedging does more harm than good. This is because the volatility of the residual becomes high and, even if a positive relationship has been estimated between the change in the futures price and that of the spot, during the hedging period the futures price may increase and the spot price may decrease. Thus, in the case of a short hedge, there is a loss in both markets (Harris et al, 2010).

1. Methodology and data

In the previous chapter we explained how by calculating the hedge ratio, which minimizes the variance of the value of the position on the spot market, a hedging is achieved that covers the risk of the position on the spot market to a greater or lesser extent given by hedging efficiency (R²). In order to calculate a hedging rate necessary to cover a risk over a period of time (for example one month), it is necessary to know the variation of spot and futures prices for as many such periods of time in the past (one month in this case) in order to capture the movement of the base and minimize the variance of the portfolio consisting of both spot and futures exposure. The hedging rate is a number that fixes the base at maturity, covering the risk to an extent equal to the hedging effectiveness. If the hedging efficiency is equal to 1, then by using a hedging rate equal to that obtained by regression, a perfect hedging can be achieved (the risk is fully covered by hedging). So, the purpose of calculating the hedging rate is to fix the price at which the transaction will be performed at time t2 by getting the base. The disadvantage of calculating and using the hedging rate is that it requires data on the
variation of spot and futures prices over periods equal to that of hedging and that also, in the vast majority of cases, the effectiveness of hedging is not 1.

Thus, if one could know the basis at maturity, a hedger could calculate exactly the gain or loss to which he is exposed by using hedging with futures contracts during the hedging period. Thus, he could achieve a perfect hedging or as close to perfection as possible, maintaining the position on the futures market only as long as he gains from hedging and closing his position on the futures, when he knows that he will lose. At the same time, the hedger can know if it is good or not good for him to perform the hedging for the desired period.

In order to observe to what extent hedgers can calculate their hedging gains or losses currently, we apply an ARMA econometric model. The model will be applied to time series consisting of average values of the basis of a futures contract at a certain number of days until its maturity date.

Five futures contracts were used on the following currency pairs: AUD/CAD, EUR/USD, GBP/USD, RMB/USD and EUR/JPY, collected from Bloomberg as closing prices from the quotation day.

The following days were taken as maturity dates of the futures contracts used: June 30, 2010 (for the contract maturing in June 2010), September 30, 2010 (for the contract maturing in September 2010), December 31, 2010 (for the contract maturing in December 2010) and so on, every 3 months until June 30, 2013 deliberately including part of the global financial crisis and the period close to its end. Subsequently, for each maturity of each type of contract, a number of 91 days was considered until the maturity day. The number of days to maturity was calculated as the difference between the maturity day and the quotation date. For each number of days until maturity, the quotation of the futures contract (futures price) and the quotation of the exchange rate (spot price) related to the quotation date were taken into account and the base was calculated as the difference between the spot price and the futures price.

After finding the basis for each of the 91 days until the due date for each maturity of each contract used, the average basis by number of days until maturity was calculated. Thus, if for each contract there are 13 different maturities and on each maturity there are 91 trading days, the mean of the base for each day until the maturity date was calculated. For example, for the 13 maturities of the AUD/CAD contract there were maximum 13 different bases. The mean of these 13 values was calculated and a basis value was obtained for the AUD/CAD contract 5 days before maturity. This was done because it was necessary to obtain an evolution of the base over time depending on the number of days until maturity. Because 13 different
maturities were used in order to better capture the evolution of the basis over as long a period of time as possible, the mean of the base values was calculated. Thus, 5 time series were obtained for each of the 5 futures contracts used, containing the evolution of the average base over a number of 91 days until maturity.

The purpose of this case study is to forecast the base for the 5 selected futures contracts with the help of the ARMA econometric model that will be applied to the time series obtained previously, which contain the evolution of the average base by number of days until maturity. Unlike classical regression models, in which \( Y_t \) is explained by \( n \) regressors \( X_1, X_2, X_3, \ldots, X_n \), the ARMA model allows the variable \( Y_t \) to be explained by its lagged values and by stochastic error terms.

It can happen that the random variable \( Y \) has both AR characteristics and MA characteristics, thus becoming a process of autoregression with moving average or ARMA (Autoregressive Moving Average). Thus, \( Y_t \) follows an ARMA process (1,1) if it can be written as

\[
Y_t = \theta + \alpha_1 Y_{t-1} + \beta_0 u_t + \beta_1 u_{t-1}
\]

where \( Y_t \) is the base at moment \( t \), \( \theta \) represents a constant, \( \alpha_1, \beta_0, \beta_1 \) are parameters, \( Y_{t-1} \) is the value of the base at \( t-1 \) and \( u_t, u_{t-1} \) are white noise error terms. In general, an ARMA stochastic process \((n, m)\) consists of an AR \((n)\) process and an MA \((m)\) process.

This model can be applied only if the series are stationary (mean and variance remain constant in time). In order to test if the series are stationary, the autocorrelation function ACF and Augmented Dickey-Fuller unit root tests were employed. The results show that all exchange rates are \( I(1) \).

2. Results and conclusions

The forecast was performed using an ARMA model for the AUD/CAD, EUR/USD, GBP/USD series and an ARIMA model for the EUR/JPY and RMB/USD series. The objective of this methodology is to identify and estimate a statistical model that can be interpreted as having generated the data sample used in the estimation. If this estimated model is subsequently used in forecasting, it is necessary that its various characteristics be constant over time and, in particular, in the future. So, with the help of the Box-Jenkins methodology applied on the 5 series containing the evolution of the average bases on number of days until maturity related to the 5 futures contracts, predictions can be made on the evolution of the basis. This, as stated above, helps to achieve a very good hedge, maybe even perfect, the hedger knowing if he will lose or gain through this method of hedging for the period he needs or if it would be good or not to do hedging on another period.
The equation related to this model, which will be used in estimating the base at a future time is:

\[ y_t = c + \alpha_1 y_{t-1} + \alpha_2 y_{t-2} + \beta_1 \varepsilon_{t-1} + \beta_2 \varepsilon_{t-2} + \varepsilon_t \]  

(3)

where \( y_t \) is the base at moment \( t \); \( c \) is a constant; \( \alpha_1, \alpha_2, \beta_1, \beta_2 \) are parameters; \( y_{t-1} \) and \( y_{t-2} \) are bases at \( t-1 \) and \( t-2 \); \( \varepsilon_t, \varepsilon_{t-1} \) and \( \varepsilon_{t-2} \) are the white noise residuals.

As a result, the value of a series in a given period depends on the value of the series in the previous period and on a random error term whose expected value is 0. Thus, the best forecast of the value of the series is its previous value.

By repeated tests we chose the model that recorded the lowest values for AIC and SIC and which has statistically significant coefficients (with p-value < significance level). We found that in the case of the AUD/CAD series the model can be written as \( c + AR(1) + AR(2) + MA(2) \).

The coefficient of determination equal to 0.4765 shows that the past value of the basis explains in proportion approximately 47.65% the future value of the base (see Table 1 below).

### Table 1

<table>
<thead>
<tr>
<th>ARMA model</th>
<th>c</th>
<th>AR(1)</th>
<th>AR(2)</th>
<th>MA(1)</th>
<th>MA(2)</th>
<th>S.E. of regression</th>
<th>Adjusted R-squared</th>
<th>F-statistic</th>
<th>AIC</th>
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<tbody>
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<td>(1,1)</td>
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<td>0.5514*</td>
<td>0.1643</td>
<td></td>
<td></td>
<td>0.0046</td>
<td>0.4114</td>
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<td>0.0494</td>
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<td>-7.936</td>
</tr>
</tbody>
</table>

*Source: Authors’ own calculation.*

The equation for AUD/CAD is:

\[ y_t = 0.0032 + 0.5514 y_{t-1} + 0.7867 y_{t-2} - 0.4179 \varepsilon_{t-2} \]  

(4)

In the case of the EUR / JPY series, the model will be an ARIMA type due to the I(1) integration of the series. Applying the same criteria, the resulting model is AR (1) + AR (2) + MA (1) + MA (2). The coefficient of determination equal to 0.1896 shows that the past base explains approximately 19% of the future value of the base (see Table 2).
Table 2

Coefficients’ estimates for series EUR/JPY

<table>
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<th>MA(1)</th>
<th>MA(2)</th>
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<th>AIC</th>
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<td>4.4430</td>
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</tbody>
</table>

Source: Authors’ own calculation.

The EUR/JPY equation is:

\[ y_t = 1.1543y_{t-1} - 0.6861y_{t-2} - 1.5422\varepsilon_{t-1} + 0.7445 \varepsilon_{t-2} \]  \hspace{1cm} (5)

Moving on to the EUR/USD contract, we will see that the independent variable explains about 13% of the evolution of the dependent variable. The ARMA model will be one of the type c + AR(1) (see Table 3):

Table 3

Coefficients’ estimates for series EUR/USD

<table>
<thead>
<tr>
<th>ARMA model</th>
<th>c</th>
<th>AR(1)</th>
<th>AR(2)</th>
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<td>(1,1)</td>
<td>0.008</td>
<td>0.158</td>
<td>0.21</td>
<td></td>
<td>0.005</td>
<td>0.1271</td>
<td>7.556</td>
<td>-7.642</td>
<td></td>
</tr>
<tr>
<td>(1,2)</td>
<td>0.008</td>
<td>0.855</td>
<td>-0.013</td>
<td>-0.546</td>
<td>-0.044</td>
<td>0.005</td>
<td>0.2000</td>
<td>6.563</td>
<td>-7.717</td>
</tr>
<tr>
<td>(2,1)</td>
<td>0.008</td>
<td>0.855</td>
<td>-0.013</td>
<td>-0.546</td>
<td>-0.044</td>
<td>0.005</td>
<td>0.2000</td>
<td>6.563</td>
<td>-7.717</td>
</tr>
<tr>
<td>(2,2)</td>
<td>0.008</td>
<td>0.089</td>
<td>0.136</td>
<td>0.005</td>
<td>0.0389</td>
<td>2.803</td>
<td>-7.554</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Authors’ own calculation.

The equation becomes:

\[ y_t = 0.0089 + 0.8555y_{t-1} \]

The equation for the GBP/USD contract is:

\[ y_t = 1.1616y_{t-1} + 0.839y_{t-2} - 0.2961\varepsilon_{t-2} \]  \hspace{1cm} (6)
It is important to mention here that the coefficient of determination shows that the base of the future is explained in proportion of about 65% by the base of the past. And the best performing ARMA model is $c + AR(1) + AR(2) + MA(2)$ (see Table 4):

**Table 4**

Coefficients’ estimates for series GBP/USD

<table>
<thead>
<tr>
<th>ARMA model</th>
<th>c</th>
<th>AR(1)</th>
<th>AR(2)</th>
<th>MA(1)</th>
<th>MA(2)</th>
<th>S.E. of regression</th>
<th>Adjusted R-squared</th>
<th>F-statistic</th>
<th>AIC</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1,1)</td>
<td>0.0029</td>
<td>0.7345</td>
<td>0.1684</td>
<td>0.0058</td>
<td>0.6448</td>
<td>82.698</td>
<td>-7.4256</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(1,2)</td>
<td>0.0039</td>
<td>1.1616</td>
<td>-0.2108</td>
<td>-0.3229</td>
<td>-0.2961</td>
<td>0.0057</td>
<td>0.6500</td>
<td>42.326</td>
<td>-7.4302</td>
</tr>
<tr>
<td>(2,1)</td>
<td>0.0039</td>
<td>0.8555</td>
<td>-0.0135</td>
<td>-0.3229</td>
<td>-0.2961</td>
<td>0.0057</td>
<td>0.6500</td>
<td>42.326</td>
<td>-7.4302</td>
</tr>
<tr>
<td>(2,2)</td>
<td>0.0041</td>
<td>0.8390</td>
<td>-0.4045</td>
<td>0.00074</td>
<td>0.4117</td>
<td>32.151</td>
<td>-6.9321</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Source: Authors’ own calculation.*

The equation of the series corresponding to the RMB / USD contract is:

$$y_t = 1.1543y_{t-1} - 0.6861y_{t-2} - 1.5422\varepsilon_{t-1} + 0.7445\varepsilon_{t-2}$$  \hspace{1cm} (7)

So, the best performing ARIMA model is $AR(1) + AR(2) + MA(1) + MA(2)$. The coefficient of determination of 0.1896 shows that the change of the independent variable explains in proportion of about 19% the evolution of the dependent variable (see Table 5).

**Table 5**

Coefficients’ estimates for series RMB/USD

<table>
<thead>
<tr>
<th>ARMA model</th>
<th>c</th>
<th>AR(1)</th>
<th>AR(2)</th>
<th>MA(1)</th>
<th>MA(2)</th>
<th>S.E. of regression</th>
<th>Adjusted R-squared</th>
<th>F-statistic</th>
<th>AIC</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1,1)</td>
<td>-5.22E-07</td>
<td>0.4410</td>
<td>-0.8415</td>
<td>0.0002</td>
<td>0.1460</td>
<td>8.6078</td>
<td>-14.04</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(1,2)</td>
<td>-1.30E-06</td>
<td>1.1543</td>
<td>-0.6861</td>
<td>-1.5422</td>
<td>0.7445</td>
<td>0.0001</td>
<td>0.2653</td>
<td>8.9465</td>
<td>-14.16</td>
</tr>
<tr>
<td>(2,1)</td>
<td>-1.30E-06</td>
<td>1.1543</td>
<td>-0.6861</td>
<td>-1.5422</td>
<td>0.7445</td>
<td>0.0001</td>
<td>0.2653</td>
<td>8.9465</td>
<td>-14.16</td>
</tr>
<tr>
<td>(2,2)</td>
<td>-1.10E-06</td>
<td>0.3244</td>
<td>-0.6316</td>
<td>0.0002</td>
<td>0.0725</td>
<td>4.4430</td>
<td>-13.95</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Source: Authors’ own calculation.*

In this paper, a different way of approaching hedging with futures contracts was presented using an ARMA econometric model. It was shown that the classical
approach of calculating the optimal hedging rate is equivalent to some extent to forecasting the base, because in both cases it is fixed, the ultimate goal being to set the price at which the transaction will be made. Thus, knowing the base for the future, a hedger, depending on its position on the futures market (long or short), can say whether it will win or lose by hedging for the desired period. He can thus figure out whether or not it is appropriate to hedge and for what period of time.

In order to forecast the base at a future time t, data was taken for 5 futures contracts and 5 time series were created containing the evolution of the average base by number of days until maturity. Subsequently, in order to be able to apply the forecasting methodology with the help of the ARMA econometric model, their stationarity was tested with the help of the analysis of autocorrelations and partial autocorrelations and with the help of the “unit root” tests. It was found that 3 of the 5 series are stationary, the other two being stationary only after calculating the first difference, resulting in an integrated series of degree 1. Using the ARMA methodology, respectively ARIMA, we could predict the base and calculate, based on standard errors, the actual values of the base with a certain number of days before maturity with a 95% confidence intervals. Thus, hedgers can use, in addition to the classical approach to calculating the hedging rate that reduces the volatility of their position, this econometric methodology for forecasting the base, using a hedging rate equal to 1. However, despite the fact that the econometric model found is an adequate application of the series data, its application in forecasting is risky and this is because: the coefficients of the regression equations are in turn estimated with a standard error, there is a risk that the use of the average base does not capture in the best possible way the evolution of the base on a certain contract for x days until maturity, the lack of data for certain days reduced the data selection used in the calculation of the average base and last but not least, because unforeseen events, which can greatly affect spot and futures prices, were not and cannot be taken into account.

References


WINE PURCHASING DRIVERS OF YOUNG BULGARIANS – AN EMPIRICAL STUDY

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JEL: D12, Q13, Q17

Abstract

In recent years there has been a generational shift, and wine consumption of Generation Z is emerging. In our study we aim to explore the main drivers of wine purchase decisions of young Bulgarians. We explored a sample of 176 Bulgarian residents, aged 19-25, living in Northeastern Bulgaria. The results of our study show that in their wine consumption young Bulgarians are not differentiated by variables like sex, place where they live and living in couples or single. Among the main sources of difference in the perceptions of young Bulgarians towards wine are their predisposition to buy expensive wines and the practice to mix wine drinking with the drinking of other alcoholic beverages.

Key words:
Bulgarian Generation Z, alcohol purchases, decision-making process, bottled wine purchases.

Introduction

In our study, we aim to explore the driving forces in wine purchases of young Bulgarians (aged 19-25). This age group falls within the emerging wine consumers,
and given that the legal age for drinking in Bulgaria is 18, the respective individuals are part of a young generational cohort. A generational cohort is a group of individuals who are born in the same time period and share similar experiences due to the influence of same external events during their life, and developing unique values, preferences, attitudes and buying behaviour that remain over a lifetime (Schewe and Meredith, 2004). Established in the U.S., the principal generational cohorts are used around the world. Common beliefs about generations are that they differ as characteristics, lifestyles, and attitudes of the group, and should be treated differently by marketers (Williams and Page, 2011). We explore the Generation Z, a global and diverse generation, who lived its entire life with the Internet, accustomed to multiple information sources and to a flood of messages.

Our study reveals some of the purchasing patterns concerning some primary points in the decision process.

The rest of the paper is organised as follows: section 2 represents a literature review, section 3 describes the methodology used, section 4 is a discussion of results, section 5 outlines conclusions drawn from the study.

1. Literature review

Generation Z, or Gen Z for short, is the demographic cohort succeeding the Millennials, or Gen Y (Turner, 2015; Wood, 2013; Dolot, 2018). Demographers and researchers typically use the mid- to late-1990s as starting birth years, while consensus has not been reached on the ending birth years. Generation Z is regarded as substantial part of emerging, newer consumer segments. For most practical tasks, it is comprised of persons born after the mid-1990s (Williams and Page, 2011; Dimock, 2019) and consists of individuals in their formative years. Cutoff points are not exact, but for analytical purposes mid-1990s are meaningful, due to the formatively acting key political, social and economic factors for the generation. Key features of Generation Z differ from previous generations, thus an exploration of its purchase drivers makes sense.

Priporas, Stylos and Fotiadis (2017) argue that members of the young generation seem to behave differently as consumers and are more focused on innovation. Therefore an enhanced smart retailing experience may be important for wine promotion.

Exploring the Generation Z wine consumers, Bede, Massa and Maumon (2019) underline the central role of the 'pivot' generation (the 30-65 age group) concerning wine-related learning and education. However, their study is undertaken in France, a country with very strong wine production and consumption traditions, and the
discovered tendency of this generation to maintain Old-School values and to construct themselves by active learning may not be the case for other countries. These findings are in line with the general characteristics of Generation Z found by Dolot (2018), that members of this generation perceive the communication process as bidirectional - they give feedback, but they also expect feedback. Wine-based studies underline that motives for consumption are related to the joy of the taste of wine, the related social aspects, lifestyle patterns and factors like health concerns.

Exploring US respondents, Chang, Thach and Olsen, (2016) find differences between generations in concerns about health, in general it is believed that wine is a healthier beverage than beer or spirits. Also found is that health consciousness appears to have a strong influence on personal choices related to food and beverage consumption, with health consciousness increasing among newer generations. Thach, Riewe and Camillo (2020) find that Generation Z US individuals in their wine consumption are much more engaged in social platforms.

From the level of expertise, wine quality is assessed at two levels: from the viewpoint of wine makers and experts and from the viewpoint of the consumers, as Vannevel et al. (2018) underline. Most wine consumers are not experts, therefore the quality perception process is important for marketers, with quality being a multi-dimensional construct. Consumers want and need to receive more detailed information about wine, from the ingredients used to the wine-making process, about brand history, and sustainability (Castellini et al., 2014; Castellini and Samoggia, 2018).

For people of Generation Z, Foroudi et al. (2019) find interesting changes in wine consumption, concerning the country-of-origin effect. Their results suggest the existence of wide possibilities for educational marketing initiatives. In their experiment, half of the participants changed their opinion on the preferred wine after receiving more information about the notion of wine quality.

New formats are of interest for the contemporary marketers (Castellini and Samoggia, 2018) - among new types of offer there is different packaging (bag in box, small six-pack bottled wines, each 1/4 of the traditional bottle, wine in cartons, bags or cans are among the variety of variants), different colours and flavours (i.e. blue wine, taste of mocha or vanilla etc.), different types of wine (i.e. low alcohol, 8%).

France and Italy are among the world's leaders in wine production, Italy quantitatively, and France commercially (OIV, 2019; Nelgen and Anderson, 2011). The countries are regarded as global 'extreme cases'. Prices differ roughly twice, with average French wine prices being about the double of average Italian wine prices (for details, see i.e. Nomisma, 2017). For Italy, Castellini and Samoggia (2018) find a
statistically significant relationship between experiencing wine as a special drink, convivial drink, easy to purchase, recommended and online purchase. Persons neophilic to wine perceive it as a social and accessible drink, and are more inclined to purchase it online. Data from Italy (ISTAT, 2020) shows that for the last decade alcohol consumption dropped nearly twice for people under 18 years, but remained in general stable for people of legal age for alcohol consumption, with a slight growth for people aged 18-25.

For Bulgaria and the neighbouring countries, wine culture seems to be low. For Bulgaria, Noev (2005) shows that wine prices are significantly and positively influenced by wine quality. Also shown is that product differentiation is important in transition markets. Lyubenov, Neykov and Vergilova (2016) underline the importance of internationalization in the wine industry for the development of the Bulgarian economy. Good prerequisites for internationalization exist in Bulgaria (Zaharieva et al., 2012). High taxes and resulting high prices could contribute to limiting the consumption of excise goods amongst the young generation (Boneva, 2014).

Vlachvei (2011) finds price for Greece to be one of the most important self-reported criteria of wine selection. For Turkey Gunay and Baker (2011) argue that demographic profiles influence wine consumption patterns of consumers. They also find the wine market in Turkey is blooming. For Hungary, Szakal (2008) finds that the level of Hungarian wine culture is relatively low and improving the wine culture should be supported. The latest studies have shown that the average consumer in Serbia knows very little about wine, i.e. wine culture (Radovanovic et al. 2017), with demographic factors (gender, age, education) affecting the decision on the purchase of wine, and the age group having the most significant impact on the choice of wine.

Using a questionnaire survey and a biometric method - eye-tracking, Nemcova and Bercik (2019) find that information on a label (brand, variety etc.) is the most important factor influencing the selection of wine for young people in Slovakia. Szabo (2019) argues that event marketing, incl. wine tourism and wine events are among the most efficient ways to introduce wines to international consumers.

Culture and attitudes strongly influence the consumption of wine. Wine is among the markers of cultural identity for countries like Bulgaria and Romania, it is regarded as an "asset" (Kaneva and Popescu, 2011). Wine is a very important part of agriculture in Bulgaria - the country is among the top 10 as share of total agricultural crop area under vines (Anderson and Nelgen, 2009).

However, wine consumption does not have the same distribution among all the people in a country, with some social categories consuming and spending more money on wine than others. Moreover, ordinary consumers identify wines mainly
from the well-known origin countries, as Boshnakov and Marinov (2013) show. Consumer expenditure strongly varies also among countries - e.g. for Bulgaria in 2011 wine expenditures were only 11.25% of alcohol expenditures and 0.308% of disposable income, representing a contrast even to neighbouring and similar countries: Romania - 23.46%/0.651%, Croatia - 46.24%/0.849%, Greece - 37.08%/0.332%, Turkey - 2.76%/0.005% (Stancu, 2015). For Bulgaria, a multivariate analysis of data on patterns of alcohol consumption from a multi-stage nationwide survey shows that drinking is less common among the elderly and those who live in villages (Balabanova and McKee, 1999).

2. Methodology and data collection

We aim to explore the forces driving wine purchases of young people, therefore we limited the age up to 25 years. Our choice of this upper age limit is motivated by the fact that international classifications associate young people with this age limit - i.e. for the purposes of studying unemployment or poverty. In contemporary Bulgarian reality, people below 25 years are at least to some extent dependent on their parents. In many cases the typical high unemployment rate is substituted by university studies - enrolment rates in universities are rather high. There is relatively low marriage rate for this age group, and few young people have their own children. According to official statistics for 2019 (NSI, 2020a), only 25.7% of the wives, and only 12.8% of the husbands in new marriages were below 26 years of age. The unemployment rate for young people is also higher than the average for the country - 12.5% vs. 4.6% total (NSI, 2020b). The mean age of the mother at the first birth in Bulgaria in 2019 was 27.3 years (NSI, 2020c). Therefore our typical respondent is a non-married person, with no children. However, some people of that age do live in couples, our sample covers such cases, too.

Our other age limit (the lower one) is 19, because in Bulgaria alcohol purchases are not legal below the age of 18, and since we strive to uncover the purchasing driving forces of young Bulgarians, we believe that one has to have at least one year of possible choices to build some views about what and when to buy, to gain some experience in the matter.

Our sample consisted of 176 Bulgarian residents, aged 19-25, living in Northeastern Bulgaria, 127 women and 49 men, all of them having at least a secondary education, 144 of them living in a city, and 32 living in a small town or village.

The study was conducted online, in the period February-March 2020, in choosing our respondents we used the "snowball" sampling method, thus our sample is of convenience type.
The questionnaire consists of 4 classification questions (sex, age, years of living as a couple or marriage, place of living) and 19 closed answers questions and Likert-type items, covering various aspects of the drinking and purchasing habits of the respondents. For the Likert-type items, we do offer a neutral option, so that the answers are obtained with no "forced choice". However, the weakness of our method is the possible undecidedness of the respondents.

To explore the driving forces in wine purchase decisions we use a bunch of 9 questions, covering the consumer's preferences for wine in relation to variety, country of origin, type of wine (dry/sweet), price, brand/producer, year, purpose, food and the colour of wine (white/rose/red).

We also ask about the drinking habits of the respondents (whether they can mix drinking of wine with drinking of other alcoholic beverages, whether they drink wine in a non-typical manner, i.e. white wine with red meat, their preferred alcoholic beverage), their typical wine preferences, their purchasing habits (frequency of wine purchases, frequency of higher grade wine purchases, typical price of purchased wine, last wine bought).

We aim to make different cuts of data in order to form clusters of respondents using the drinking habits as pivots.

Given that our collected data consists of ordinal values, we are limited to the usage of non-parametric tests and statistics. In the analysis we use the commonly used classical tests - the chi-squared test, the Mann-Whitney-Wilcoxon (MWW) test (Mann and Whitney, 1947; Wilcoxon, 1945) and the Kruskal-Wallis (KW) test (Kruskal and Wallis, 1952). It has been shown in the literature that using the MWW test in reasonably large samples can take place without loss of power (towards the t-test, for details see de Winter and Dodou, 2010). To measure the effect size, we use the Vargha and Delaney A test (Vargha & Delaney, 2000).

3. Results and discussion

We begin our study with an assessment of the activity of wine purchases. In general, in the whole population of Bulgaria, men drink alcohol more often and in bigger quantities than women, thus our initial expectations were that perhaps men are more likely to buy wine. But in the cohort of young people there is an adverse situation: women appear to be more interested in wine purchases (see Table 1).
Wine purchases by frequency of purchase

<table>
<thead>
<tr>
<th>Frequency of purchases</th>
<th>Total</th>
<th>Women</th>
<th>Men</th>
</tr>
</thead>
<tbody>
<tr>
<td>Several times weekly</td>
<td>34</td>
<td>32</td>
<td>2</td>
</tr>
<tr>
<td>2-3 times per month</td>
<td>79</td>
<td>55</td>
<td>24</td>
</tr>
<tr>
<td>2-3 times per year</td>
<td>43</td>
<td>31</td>
<td>12</td>
</tr>
<tr>
<td>I don't buy</td>
<td>20</td>
<td>9</td>
<td>11</td>
</tr>
</tbody>
</table>

Pearson's Chi-squared test shows that differences in purchasing frequencies by sex do exist (p-value = 0.001), with women being more active buyers.

The distribution of the answers to the core questions about purchase drivers (Table 2) demonstrates no contrast situations, there are no overwhelming answers in either direction in any one of the core questions.

Distribution of scores given on core questions in the total sample and by sex

<table>
<thead>
<tr>
<th>Score</th>
<th>Variety</th>
<th>Origin</th>
<th>Dry/ sweet</th>
<th>Price</th>
<th>Brand</th>
<th>Year</th>
<th>Purpose</th>
<th>Food</th>
<th>Colour</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Total</td>
<td></td>
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<table>
<thead>
<tr>
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<th>Variety</th>
<th>Origin</th>
<th>Dry/ sweet</th>
<th>Price</th>
<th>Brand</th>
<th>Year</th>
<th>Purpose</th>
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<tr>
<td></td>
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<table>
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<th>Dry/ sweet</th>
<th>Price</th>
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<th>Purpose</th>
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<td>14</td>
<td>9</td>
</tr>
<tr>
<td>4</td>
<td>17</td>
<td>16</td>
<td>10</td>
<td>17</td>
<td>12</td>
<td>8</td>
<td>11</td>
<td>13</td>
<td>10</td>
</tr>
<tr>
<td>5</td>
<td>6</td>
<td>4</td>
<td>7</td>
<td>9</td>
<td>9</td>
<td>7</td>
<td>14</td>
<td>8</td>
<td>21</td>
</tr>
</tbody>
</table>

Note: 1 - "Not at all", 2 - "Weakly", 3 - "Neither weakly, nor strongly", 4 - "Strongly", 5 - "Very strong".
More formal tests about the possible differences (Table 3, Mann-Whitney-Wilcoxon tests) reveal that in fact neither the sex, nor the origin of last wine bought nor the place of living influence the decision making process - all the test results are non-significant for these variables. Respondents with different couple status (single or living in a couple/marriage) perceive differently the influence of variety and origin of wine when they make decisions about wine purchases. However, strongest differences are discovered between respondents who do not mix and who combine different alcoholic beverages - for all characteristics of wine studied (variety, origin etc.) test statistics are strongly significant.

Table 3

<table>
<thead>
<tr>
<th></th>
<th>Sex</th>
<th>Single</th>
<th>Place</th>
<th>BG/other</th>
<th>Combine</th>
<th>Expensive</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variety</td>
<td>0.14</td>
<td>0.04</td>
<td>0.68</td>
<td>0.18</td>
<td>.</td>
<td>0.03</td>
</tr>
<tr>
<td>Origin</td>
<td>0.31</td>
<td>0.01</td>
<td>0.62</td>
<td>0.79</td>
<td>0</td>
<td>0.03</td>
</tr>
<tr>
<td>Dry/Sweet</td>
<td>0.57</td>
<td>0.43</td>
<td>0.46</td>
<td>0.36</td>
<td>.</td>
<td>0.00</td>
</tr>
<tr>
<td>Price</td>
<td>0.09</td>
<td>0.28</td>
<td>0.78</td>
<td>0.06</td>
<td>0</td>
<td>0.96</td>
</tr>
<tr>
<td>Brand</td>
<td>0.40</td>
<td>0.11</td>
<td>0.53</td>
<td>0.16</td>
<td>.</td>
<td>0.08</td>
</tr>
<tr>
<td>Year</td>
<td>0.07</td>
<td>0.24</td>
<td>0.29</td>
<td>0.28</td>
<td>0.43</td>
<td>0.00</td>
</tr>
<tr>
<td>Purpose</td>
<td>0.25</td>
<td>0.40</td>
<td>0.50</td>
<td>0.54</td>
<td>0.02</td>
<td>0.12</td>
</tr>
<tr>
<td>Food</td>
<td>0.48</td>
<td>0.23</td>
<td>0.42</td>
<td>0.09</td>
<td>0.01</td>
<td>0.00</td>
</tr>
<tr>
<td>Colour</td>
<td>0.19</td>
<td>0.46</td>
<td>0.86</td>
<td>0.11</td>
<td>.</td>
<td>0.57</td>
</tr>
</tbody>
</table>

*Note: in the last three columns there are the results from tests by the last wine bought (Bulgarian or foreign), by whether the respondents mix wine with other alcohol beverages, and by how often they buy wines priced over 15 lv.*

Another source of differences in attitudes towards wine characteristics is the predisposition to buy expensive wines. Respondents who more often bought wines priced above 15 lv., demonstrated differences in their attitudes, compared to the rest of the sample, for most wine characteristics, with the exception of price, brand, purpose and colour.

Established drinking habits may play a significant role in the magnitude of importance of different aspects of wine purchase. People who do not drink wine with other alcoholic beverages have different preferences about wine than those who do mix drinks (with rakia/vodka/beer/cognac/other). All of the test statistics are significant at 0.05 level, with the exception of the test statistics of the production year.
Kruskal-Wallis tests for the questions about purchase decisions (p-values)

<table>
<thead>
<tr>
<th></th>
<th>Most</th>
<th>Favourite</th>
<th>Price</th>
<th>Foreign</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variety</td>
<td>0.77</td>
<td>0.17</td>
<td>0</td>
<td>0.11</td>
</tr>
<tr>
<td>Origin</td>
<td>0.47</td>
<td>0.10</td>
<td>0</td>
<td>0.06</td>
</tr>
<tr>
<td>Dry/Sweet</td>
<td>0.56</td>
<td>0.26</td>
<td>0</td>
<td>0.06</td>
</tr>
<tr>
<td>Price</td>
<td>0.41</td>
<td>0.65</td>
<td>0</td>
<td>0.23</td>
</tr>
<tr>
<td>Brand</td>
<td>0.29</td>
<td>0.25</td>
<td>0</td>
<td>0.27</td>
</tr>
<tr>
<td>Year</td>
<td>0.89</td>
<td>0.03</td>
<td>0</td>
<td>0.40</td>
</tr>
<tr>
<td>Purpose</td>
<td>0.35</td>
<td>0.35</td>
<td>0</td>
<td>0.80</td>
</tr>
<tr>
<td>Food</td>
<td>0.73</td>
<td>0.78</td>
<td>0</td>
<td>0.07</td>
</tr>
<tr>
<td>Colour</td>
<td>0.36</td>
<td>0.06</td>
<td>0</td>
<td>0.80</td>
</tr>
</tbody>
</table>

Note: "Most" - most frequently consumed type of wine (red/rose/white), "Favourite" - the preferred type of wine (red/rose/white), "Price" - the typical price of purchased wine, in lv. (0-5, 5-8, 9-12, 13-25, 25+), "Foreign" - frequency of foreign wine purchases, times (0, 1-2, up to 10, frequently).

Tests (Kruskal-Wallis tests) about the influence of the favourite type of wine (red/rose/white) show that respondents have differences only about the year of production. The year of production is more important for the amateurs of red wines, with "large" size effect of 0.969, as shows the result of the Vargha and Delaney (2000) A test. This result is in line on the one hand with the common understanding in oenology that red wines are able to mature, and on the other hand the typical wine for Bulgaria is the red wine, therefore red wine amateurs are naturally viewed as "classical" consumers, who are expected to be more informed about the quality and features of wine.

Conclusion

The results of our study show that in their wine consumption, young Bulgarians are not differentiated by variables like sex, place where they live and living in couples or single.

Among the main sources of difference in the perceptions of young Bulgarians towards wine are their predisposition to buy expensive wines and the practice to mix wine drinking with drinking of other alcoholic beverages.

As a direction for future research, a comparison to perceptions of Bulgarians of higher ages could shed some light on intergenerational learning and whether there is a sustainable relationship between wine consumption of different generations, revealing the strength of tradition. The findings could be helpful for the elaboration of new wine brands, with new characteristics.
References


21. Unemployed and unemployment rates of population aged 15 years and over for the first quarter of 2020.


**Appendix**

The questionnaire

1. Sex.
2. Year of birth.
3. How many years do you live in a couple/marriage?
4. Where do you live?
5. How often do you buy wine from a supermarket or another shop?
6. The last wine you bought was? (country of origin)
7. What wine do you drink more often? (white/rose/red)
8. Did it happen for you to drink red wine to fish or chicken (they are traditionally consumed with white wine)? (yes/no)
9. Did it happen for you to drink white wine to beef or pork (they are traditionally consumed with red wine)? (yes/no)
10. What type of wine do you prefer? (white dry/ rose dry/ red dry/ champagne/ fortified)
11. What is the price of the wine you buy most often?
12. How many times in the last year did you buy wine priced above 15 lv.?
13. How many times in the last year did you buy a bottle of foreign wine?
14. If you drink wine, there is no problem to drink also... (rakia/ vodka/ beer/ cognac/ other/ nothing).
15. When you buy wine in a supermarket to what extent are you influenced by: the variety. (Likert 5-point item)
16. When you buy wine in a supermarket to what extent are you influenced by: the country of origin. (Likert 5-point item)
17. When you buy wine in a supermarket to what extent are you influenced by: the type of the wine (dry/sweet). (Likert 5-point item)
18. When you buy wine in a supermarket to what extent are you influenced by: the price. (Likert 5-point item)
19. When you buy wine in a supermarket to what extent are you influenced by: the brand/the producer. (Likert 5-point item)
20. When you buy wine in a supermarket to what extent are you influenced by: the year. (Likert 5-point item)
21. When you buy wine in a supermarket to what extent are you influenced by: the occasion. (Likert 5-point item)
22. When you buy wine in a supermarket to what extent are you influenced by: the food. (Likert 5-point item)
23. When you buy wine in a supermarket to what extent are you influenced by: the type of wine (white/rose/red). (Likert 5-point item)
REASONS TO RETURN DURING GLOBAL PANDEMIC:
THE BULGARIAN CASE

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JEL: F220

Abstract

The aim of this paper is to examine which factors indicate a greater influence over Bulgarians regarding their decision to return home due to the COVID-19 Pandemic. For this purpose an online survey among Bulgarians abroad examines their expectations towards the economic consequences in their country of residence and how it will affect their attitude regarding possible remigration.

As the main question is not whether, but when the economic crisis will happen, many emigrants decided to return to their home countries. This strongly affected the international labour migration. The biggest factors prompting emigrants to leave could be divided into two main groups – social, based on emotions and willingness to be close to their families, and economic, related to employment and income changes. There is a lack of studies on the examined problem – how crises are affecting the remigration processes, which is author’s contribution to the researched problem.

Key words: Remigration, Return migration, Reverse migration, Bulgarian migrants, COVID-19, Global Pandemic.

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Citation: STOYCHEV, A. (2020). Reasons to Return During Global Pandemic: The Bulgarian Case. Izvestiya Journal of Varna University of Economics, 64 (3), p. 341 - 351. DOI: 10.36997/IJUEV2020.64.3.341

Introduction

One of the main driving forces of globalization is the international labour migration (Salimano, 2010). Influenced by various social, political and economic
changes in the past decades, the globalization processes are increasing human mobility in a global aspect. A problem nowadays that affects international labour migration is the Global pandemic caused by COVID-19 which took over in March 2020.

Since its outbreak in March 2020, the COVID-19 Pandemic faced the world with many challenges. Governments across the globe conducted restrictions as a protective measure against the spread of the infection. Guided by the instructions of the World Health Organization, they were similar in almost every country. Some of them were the closure of international borders, travel bans, suspension on free mobility of people and services (WHO, 2020).

This paper studies one of the aspects of international migration experiencing big movement during the crisis – the remigration, referred to also as reverse migration and re-emigration.

1. Literature review

Remigration is the act of returning back to the home country from a migrant after a significant period of time (Dustmann et al, 2007). According to the United Nations Statistics Division for collecting data on international migration, returnees are „persons returning to their country of citizenship after having been international migrants (whether short-term or long-term) and who are intending to stay in their own country for at least a year” (OECD, 2008).

The motives to return back to the country of origin could be several, depending on the individuals’ reasons. The theories put them in a few groups. The International Organization for Migration (IOM) group them as voluntary, forced, assisted and spontaneous migration (IOM, 2019).

According to the neoclassical theory, the motives for returning to the country of origin are two – economic and social (Constant et al, 2003). Failed attempt to settle permanently in the host-country and meeting the financial expectations of the emigrant are considered in the first group. When looking at the sociological motives, the economic aspects are not considered that significant. In this group, the individuals are affected more by decisions related to their ethnic origin - relatives and families. Neo-classicists consider that if they prevail over the economic ones, the possibility of return is much higher. External factors such as economic changes, political changes, war and other crises are also taken into consideration in this theory.

On the other hand, the New Economics of Labour Migration (NELM) take return migration not as a failure of settlement, but as a successful achievement of the household goal based on an individual migrant risk strategy (Cassorino, 2004; Constant and Massey, 2002; Stark, 1991). Unlike the Neo-classicist, NELM focus not
as much on the economic consequences, but on the social impact of the household which extends the context of the analysis (King and Christou, 2008). Some theories even deny return as part of the migration process. They consider it either as a failure or success of migration (Cassarino, 2004). On the other hand, a study from 2019 puts motives for remigration in twelve reasons for individuals to leave (Stark, 2019). The list contains economic and social motives. Stark comes to the conclusion that the motives are more complex than simply putting them in success or failure.

Many other studies on the topic examined the diasporic migrants (Tsuda, 2009a). They state that even if the economic motives are primary for the return, ethnic ties and emotional reasons are also important. The relative importance of economic and social motives is different in every ethnic group (King et al., 2011).

Push and Pull factors are also being considered and emphasized as motives for remigration (Gmelch, 1980). In some cases, the decision to return is influenced by the negative Push (repulsive) factors in the host country. Lack of work and lower incomes can be mentioned as such. At the same time, Pull (attracting) factors from the sending country may also have impact on individuals’ motives to leave - for example, proximity to the family (Makni, 2010).

2. The Bulgarian case

According to data from 2019, 1.3 million Bulgarians live abroad (Angelov, 2019). The net migration rate in Bulgaria for 2019 is -5.03 per cent (-2 012 people) according to the National statistical institute of Bulgaria. These numbers show and confirm the long-term trend in the international migration in Bulgaria, which has been increasing over the past few decades. However, as of the current problem, we can assume that the Pandemic might be a driving force for remigration to become more intense. An Open Society Institute - Sofia report from 2010 includes a study of the migration processes in Bulgaria during and after the 2008 economic crisis. The study shows that despite the severe economic consequences during that period, Bulgarians who decide to stay abroad long-term are very unlikely to return because of the crisis. (Krasteva et al, 2010)

However, the current crisis with the COVID-19 pandemic is different. Even though the economic downturn might be the same, or even worse, the reasons to remigrate would be different.

3. Research methodology

An online survey was conducted at the beginning of April 2020. The questionnaire consists of open-ended and closed-ended questions and was conducted
on social media among 28 Bulgarian emigrant groups. After reaching the target of 600 respondents, the collection of answers was suspended.

The respondents are Bulgarian citizens living in 23 countries on 5 continents – Europe, North America, Africa, Asia and South America. The most answers were received from the Netherlands (21.6%), Spain (16.3%), Denmark (15%) and the USA (8.5%) (Fig. 1) which covers nearly 60% of all respondents.

![Respondents by country of residence](image)

**Fig. 1. Respondents by country of residence**

*Source: Author’s survey.*

The survey aims to examine the observations of Bulgarian migrants regarding the COVID-19 pandemic and how the current situation affects their motives for returning to Bulgaria. Two main groups of factors are considered - social and economic. The first group includes health concerns and willingness to be close to the family. The second group – employment and income change.

In this line of thinking, the first hypothesis suggests that during a global pandemic and an impending economic crisis, emigrants are much more likely to return to their home countries. Especially when some of the main factors for them to migrate in the first place are being affected. The second hypothesis suggests that the economic motives would be in prevail for remigration over the sociological ones like
health concerns and being close to the family. The third hypothesis suggests that factors as employment status and length of stay abroad are the most important when making the decision to return. The statistical software SPSS has been used for data processing as $\chi^2$ test has been applied to analyse the results.

4. Analysis and interpretation of the results

The sample involved 443 women (73.8%) and 157 males (26.2%). Of all 600 respondents, 49.2% have secondary education, 45.2% have university degree, 4% - primary education and 1.7% - PhD. The respondents are a diverse sample, both in terms of age and occupation. All participants are over the age of 18; most are from the 40-49 age group (36.5%), 49.8% of respondents are employed full-time and 20% are unemployed. Table 1 shows the structure of respondents by individual demographic characteristics – sex, age, education.

**Table 1**

<table>
<thead>
<tr>
<th>Socio-demographic characteristics of respondents in Bulgaria</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Characteristics</strong></td>
</tr>
<tr>
<td><strong>Sex</strong></td>
</tr>
<tr>
<td>Male</td>
</tr>
<tr>
<td>Female</td>
</tr>
<tr>
<td><strong>Age</strong></td>
</tr>
<tr>
<td>18 - 29</td>
</tr>
<tr>
<td>30 - 39</td>
</tr>
<tr>
<td>40 - 49</td>
</tr>
<tr>
<td>50 - 59</td>
</tr>
<tr>
<td>60 +</td>
</tr>
<tr>
<td><strong>Education</strong></td>
</tr>
<tr>
<td>Primary</td>
</tr>
<tr>
<td>Secondary</td>
</tr>
<tr>
<td>University</td>
</tr>
<tr>
<td>PhD</td>
</tr>
<tr>
<td><strong>Length of stay abroad</strong></td>
</tr>
<tr>
<td>Less than an year</td>
</tr>
<tr>
<td>1 – 3 years</td>
</tr>
<tr>
<td>3 – 5 years</td>
</tr>
<tr>
<td>More than 5 years</td>
</tr>
</tbody>
</table>

*Source: Author’s survey.*
The motives for migration are listed in seven groups including social and economic reasons for leaving the country in first place. The respondents had the opportunity to choose more than one answer, according to their personal motive to migrate. As seen from the figure below, it can be easily concluded that most accurate are the “Pull” factors such as better standard of living, higher income and family reasons.

In a 2018 study, examining the attitudes towards labor migration of Bulgarians, it was found that better income is the most important motive for leaving the country. (Alexandrova, 2019). On the other hand, a survey obtained in 2011 among Bulgarian students, shows that income is not the main reason for young people to leave the country. For them, the biggest incentive is employment (Makni, 2011).

Therefore, from the obtained data the following conclusion can be made: Bulgarian motives to migrate are strongly influenced by the idea to achieve better economic benefits abroad. With this knowledge it can be assumed that one of the main reasons to return would be if any of these indicators got worse.

**Fig. 2. Migration motives**

*Source: Author’s survey.*

Hypothesis 1 suggested that during the Pandemic, most of the migrants would plan or already returned home. Considering the total number of respondents in the
study, 49.5% indicated that they remain firmly abroad, regardless of the circumstances, 34.5% said they would return in a short period of time, 15% were likely to return for the long term, and 1% have already returned to Bulgaria. Therefore, half of the respondents (50.5%) are somewhat hesitant and will return, whether for a short or long period (Table 2). That partly confirms the statement that many Bulgarian emigrants will return to Bulgaria because of the pandemic.

It is noteworthy that we could divide the correspondents into two groups – those who are firmly staying abroad and the other half which will remigrate sooner or later.

Through the χ² analysis we test Hypothesis 2. For this purpose we study the presence of a statistically significant difference between the two groups in terms of social and economic reasons defining their decision to return or stay abroad. The test lead to the solution: adoption or rejection of the null hypothesis which states that economic factors have bigger influence.

Table 2

<table>
<thead>
<tr>
<th>Reasons to return</th>
<th>Willingness to return</th>
<th>Total:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Staying abroad</td>
<td>Planning or already returned</td>
</tr>
<tr>
<td>Sociological (Family reasons etc.)</td>
<td>70</td>
<td>112</td>
</tr>
<tr>
<td>Economic (Income change etc.)</td>
<td>227</td>
<td>191</td>
</tr>
<tr>
<td>Total:</td>
<td>297 (49.5%)</td>
<td>303 (50.5%)</td>
</tr>
</tbody>
</table>

Source: Author’s survey.

The test shows significant correlation (Chi-Square p<0.01) and weak connection (Cramer’s V = 0.146 at p <0.01). The factor having bigger influence on migrants to return are the economic ones – 63% of those planning to or already returned, made their decision influenced by economic reasons (Table 2). By economic we consider income change, employment status, and by social– family reasons and global pandemic or a crisis. On the other hand, overall 70% of the migrants put economic factors as most influential when it comes to plan their stay or leave. This confirms that the economic motives are prevalent in terms of making a decision for remigration.

Concerning the period of time spent abroad, the European commission defines three groups of migrants – long-term (permanent), short-term and temporary migrants (European commission). International migration can be classified also as short-term
(seasonal), medium-term and long-term (Marinov, 2007). A vast majority of the respondents in the survey are long-term migrants – 70% (longer than 5 years), followed by Bulgarians who are abroad for a period of 1-5 years (23%) and least are those for less than one year (7%).

Using the same χ² analysis we test **hypothesis 3** which suggests that employment and length of stay abroad have biggest influence over the decision about remigration. It turns out that only the length of stay is an essential factor (Chi-Square Pearson p<0.01) and the correlation is weak (Cramer's V = 0.152 at p <0.01). The employment shows insignificant connection (Chi-Square Pearson p>0.01). From the test, the null hypothesis is being rejected and the alternative is adopted. This suggests that from those indicators only the length of time abroad can be taken as statistically significant when it comes to make a decision to return during the pandemic.

The respondents were asked if they felt their workplaces endangered and what the crisis impact on their income was. The results were implemented by the 5-point Likert scale where 3 is neutral, answers over 3 suggest agreement that the crisis is having a negative impact on their income or workplace safety. While answers below three rather suggest disagreement. One third of the respondents don’t feel their workplace endangered and 23% are strongly concerned of being left unemployed. The same trend can be found regarding income. 35% of the migrants haven’t seen any change in their disposable income and 23% already feel negative consequences of the economic crisis. From those who already experience decrease, 68% state that might return for a long or short term. The rest 42% are firmly staying abroad even though more than one third of them are unemployed. Long-term migrants are supposed to have better settlement in their current country of residence and have built stable social connections throughout their stay, compared to those who are abroad for a shorter period. Short-term migrants are still insecure and unsettled. This partially confirms that unemployment is an essential factor for remigration.

**Observations regarding workplace safety and income change**

<table>
<thead>
<tr>
<th>Workplace endangerment</th>
<th>Income change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly No</td>
<td>208 (35%)</td>
</tr>
<tr>
<td>Rather not</td>
<td>90 (15%)</td>
</tr>
<tr>
<td>Neutral</td>
<td>130 (22%)</td>
</tr>
<tr>
<td>Rather yes</td>
<td>37(6%)</td>
</tr>
<tr>
<td>Strongly Yes</td>
<td>135 (23%)</td>
</tr>
</tbody>
</table>

*Source: Author’s survey.*
It’s noteworthy that Bulgarians who live abroad for a period of time less than one year are more likely to return. Only 24% of them are firmly staying abroad and the rest 75% will return or already have. Also, migrants who are in the same group feel a greater negative impact on their income (31%) compared to those being abroad for a long time (24%). It is the same with securing the workplace. Despite that, a conclusion can be made that most of the Bulgarian migrants in the study are not experiencing negative consequences amid the pandemic.

An interesting paradox is being observed. One fifth of all the respondents are unemployed (20.5%). However, 40% of them are definitely staying abroad, as the rest are planning to or already returned. It’s noteworthy that when asked why most Bulgarians return home during the Pandemic, they state that being left without a job because of the crisis is the number one factor. Then there comes the following question – why, if they consider that as the most important reason, they are decisively not returning despite of their employment status? It can be assumed that the sample is not representative and probably the unemployed migrants benefit from the social policies in their current country of residence. Here as well one can consider the fact that most of the respondents are in countries such as Denmark, the Netherlands and Spain, where the governments have stronger support for the unemployed than in Bulgaria. Confirming that are some of the open-answers given by respondents, stating that most of the Bulgarians remigrating during the crisis are from the minority ethnic groups, who are probably not in the researched social media diaspora.

The results from the study clearly indicate that economic factors and motives are the main drivers of the remigration processes during the COVID-19 pandemic among Bulgarian migrants. Social factors, such as health concerns and willingness to be close to their families are left behind.

**Conclusion**

A conclusion could be drawn that most of the Bulgarian migrants are still not affected by the COVID-19 pandemic in way of changing their current place of living and economic well-being. Although half of the respondents are decisively staying abroad, the other half are planning to or have already returned to Bulgaria. These results partially support the first hypothesis that migrants are more likely to remigrate during a pandemic.

Most significant for the remigration processes are the economic factors. Social factors such as health concern and panic, as a result of the pandemic, have a minimal effect on the remigration decisions, which confirms hypothesis number two.

Length of stay is also a factor influencing individuals’ decisions to return. This can be assumed as a result of long-term settlement of Bulgarians in their current place
of residence. It turns out that, opposite to the author’s expectations, employment is not a significant factor for making the decision to return. Likewise, most of the migrants who feel a negative impact on their disposal income are planning to or have already returned. Migrants feeling most vulnerable regarding disposal income and their workplace are those living abroad for a period of time less than a year. The chance for them to return is bigger.

Despite the great number of unemployed migrants staying abroad, Bulgarians consider loosing one’s job as the biggest reason for individuals to return. This gives reason to assume that the social policy in the countries of origin is supporting the unemployed better than the Bulgarian government, which makes migrants to stay abroad. On the other hand, a large part of the migrants who have already returned are not covered by the study.

End Notes

1 Purchasing power; Strategic accumulation of human capital; Occupational status and social prestige; Asymmetric information; Social comparisons: ordinal preferences; Relative deprivation: cardinal preferences; Matching in the marriage market, and divorce; Receipt of inheritance; Meeting a target; Shocks at home; Costly separation caused by migration; Failure.

References


A CRISIS WITHIN THE CRISIS: THE IMPACT OF COVID-19 AND BREXIT ON SUPPLY CHAINS IN THE PHARMACEUTICAL INDUSTRY

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JEL: F23, F61, L65, M16

Abstract

The United Kingdom’s decision to leave the European Union creates a situation which will be observed by researchers and economists for quite a while. Keeping in mind that the UK and the EU were already facing many difficult challenges, the global pandemic took the world by storm and sparked disputes about the economic stability of countries around the globe. In the beginning of 2020 the unknowns surrounding Covid-19 and the two crises in the EU caused a “black swan” phenomenon (Taleb, 2007).

Some of the questions which concern many European countries are where and how the deliveries of medical supplies (which are crucial during these times) will be arranged. The main goal of this paper is to examine the measures taken by the pharmaceutical industry in the United Kingdom related to supply chains: on the one hand, the measures taken after the declaration of Brexit, and on the other – at the onset of the pandemic. It’s also important to mention China and India as both countries exert massive influence on the chemical and pharmaceutical industry.

Key words:

Brexit; Covid-19; Pharmaceutical supply chain; UK pharmaceutical companies; China.

Introduction

The United Kingdom left the European Union on 31 January 2020 after three years of negotiating exit conditions. Brussels and London have agreed on a transitional period until the end of 2020, during which all European standards apply to the United Kingdom. The parties must agree on procedures that will regulate their future relationship. Meanwhile, in early February 2020, Europe was shaken by the Covid-19 pandemic. In this crisis situation, one of the main issues is related to the provision of medicines and medical equipment. Since a large number of the world’s pharmaceutical companies are based in the UK or have a huge presence on the island, the article looks at how pharmaceutical companies organise their supplies in the event of a probable exit from the EU. The study is also oriented to the possibilities of the pharmaceutical business to respond adequately and to reorganise their supply chains under the dynamics provoked by the virus. An attempt will be made to draw a parallel between how the pharmaceutical business in the UK reacts to the clarity of Brexit and how it works at the onset of the pandemic crisis.

The survey includes the period from which the results of the referendum are formalised, to the current moment when the pandemic has not yet subsided. The fact that the epidemic originated from Wuhan, China, is indicative and defining. China dominates the pharmaceutical business world. Following these two statements the paper focuses on the impact of the Chinese pharmaceutical supply industry on the EU and the UK. The negative effects caused by the pandemic will be perceived on the one hand as a problem and on the other as an opportunity to optimise processes and improve planning activities in such crisis situations. The paper aims to clarify Britain’s dependence on the supply of medicines and medical supplies from China. We pose the question, what the possible measures that can be taken to restore pharmaceutical supply chains are. The analysis relies on comparative research methodology.

1. General state of world pharmaceutical trade

The global pharmaceuticals market was worth $934.8 billion in 2017 and will reach $1170 billion in 2021, growing at 5.8%, according to a recent pharma market research report by the Business Research Company (2018). Healthcare as a whole is growing at over 7% year on year. The factors that affect the pharmaceutical market size include disease prevalence, drug affordability, consumer attitudes, government policies and some supply-side factors. Disease prevalence is related to population size, age, genetic inheritance and behaviour (infectious disease incidence is lower
where sanitation practices are better; sedentary lifestyles also encourage chronic disease). Affordability is related to income but also to drug prices. Consumer attitudes include willingness to use alternative therapies or distrust of taking drugs. Government (and insurance company) policies affect reimbursement and who the payer is. A major supply-side factor is availability of an appropriate treatment, which may be a matter of quantity, as in an epidemic, or of drug discovery and development.

The pharmaceutical industry accounts for tens of billions of dollars in international trade each year, the bulk of which comes from Europe and the United States. Though many people around the world are concerned about the growing demand for pharmaceuticals, this demand is fuelling the growth of massive pharmaceutical companies. As such, the industry is likely to continue to play a major role in the global economy in the coming years.

Figure 1 shows the world leaders in the pharmaceutical markets for 2018. The market leader is the USA, followed by almost 30% difference from China. The UK holds almost 2.4% of the market share.

![Market share of top 10 pharmaceutical markets worldwide in 2018](image)

**Fig. 1.** Market share of top 10 pharmaceutical markets worldwide in 2018. Source: IQVIA. (n.d.)
As the subject of the paper is the supply chain after the announcement of Brexit and after the appearance of Covid-19, we focus on the pharma trade in the UK and China. According to WTO the UK ranks 5th in the EU in exports of medicines and medical devices (Table 1). As Boshnakov (2006) states, the EU negotiation process with third countries depends on the political situation and current trade priorities. The value of exports of medical devices and medicines accumulated by the United Kingdom is $33,585.5 million.

Table 1

<table>
<thead>
<tr>
<th>Exports</th>
<th>Imports</th>
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</thead>
<tbody>
<tr>
<td><strong>Country</strong></td>
<td><strong>Million US dollars</strong></td>
</tr>
<tr>
<td>Germany</td>
<td>84,679.7</td>
</tr>
<tr>
<td>Switzerland</td>
<td>71,706.2</td>
</tr>
<tr>
<td>United States</td>
<td>49,693.7</td>
</tr>
<tr>
<td>Belgium</td>
<td>45,685.0</td>
</tr>
<tr>
<td>Ireland</td>
<td>40,041.3</td>
</tr>
<tr>
<td>Netherlands</td>
<td>35,871.7</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>33,585.5</td>
</tr>
<tr>
<td>France</td>
<td>32,231.4</td>
</tr>
<tr>
<td>Italy</td>
<td>27,021.5</td>
</tr>
<tr>
<td>China</td>
<td>15,066.6</td>
</tr>
</tbody>
</table>

Source: WTO (n.d.).

Total exports of protective products, including face masks, hand soap, sanitiser and protective spectacles, were valued at $135 billion on average for the period 2017–2019. About 17% or $23 billion came from China, the top exporter, followed by Germany and the US. These three exporters account for more than 40% of world exports of protective supplies (Fig. 2).
Fig. 2. Trade in medical goods in the context of tackling Covid-19

Source: WTO (2020).

2. Worldwide trade difficulties as a result of Covid-19 pandemic

In early April 2020, the World Trade Organization announced that global merchandise trade was set to plummet by between 13% and 32% in 2020 as a result of the Covid-19 pandemic. With concerns rising about medicine availability during the global Covid-19 coronavirus pandemic, European Pharmaceutical Review explores how the pharmaceutical supply chain is faring. Among the problems for pharmaceutical supply chains during this pandemic are the restrictions and impact of Covid-19 on two of the largest global producers of active pharmaceutical ingredients (APIs) and generics: China and India. According to Rincon-Aznar (2020) the world is undergoing an unprecedented shock as a result of the Covid-19 pandemic and the widespread lockdowns. As major world economies are being put on hold, millions of jobs and incomes are being lost, which has created an imperative for economic policy actions to counteract the falls in demand and increased market uncertainty. As Covid-19 constitutes a vivid example of an unexpected shock with global reach, Brexit will continue, once this crisis is over, to shape the domestic and EU economies, as a new economic and political relationship is established between the UK and the EU. Both these events, in sequence and taken together, undoubtedly imply widespread changes
to the way in which countries and firms will trade in future decades. It is becoming clear that the economic and social consequences of the current crisis will be profound and long lasting, given the extent to which the economic crisis is transmitted not only through domestic policies but through disruptions to global supply chains.

McGuinness (2020) claims that the UK is approaching negotiations on the basis that it is now fully independent and sovereign and does not want to be tied to the EU. The pandemic demonstrates that, as much as the UK might want to take back full control, the ability to make decisions completely on their own of the rest of the world is not always wise or even possible. And we see there is real value in working together. Severing an existing relationship to go it alone may be more painful than profitable.

3. China as a major player in the supply of pharmaceuticals and medical devices

It would not be an inaccurate statement if we say that China is the biggest factory of the world. The pharmaceutical sector also plays a huge role in the Chinese industry. Most of the pharmaceutical companies have established production bases in China. According to Ti (2020) the vast majority of the active ingredients used in pharmaceutical products consumed in the West are manufactured in China. Despite the turmoil, caused by the pandemic, China has shown an incredible resilience in terms of its production. Many factories returned to work immediately at the end of April. The high levels of inventory which exist in the pharma supply chain (typically 180 days plus) should mean that the disruption is kept to a minimum. According to Manners-Bell, Ti’s CEO, Chinese exporters provide Active Pharmaceutical Ingredients (APIs) – and the chemicals which are used to make them – to the manufacturers in other countries for processing (Ti, 2020). One of the issues with drug manufacturing is that it can be difficult to speed up, therefore companies need to maximise available capacity to meet backlogs. Large part of the production of medicines takes place in China in order to realise two goals – a cheaper medicine for the manufacturer and respectively for the consumer. In addition, China is a major producer of intermediate ingredients for the medicines. This is explained by the fact that Europe has stricter regulations regarding heavy productions. So for environmental reasons and lower barriers, large British companies, and not only, are adapting production bases in Asia.

In early 2020 the world learned that a novel and deadly coronavirus had appeared in the Chinese city of Wuhan. In February many chemical plants across China were ordered to close for a one-week extension of the New Year holiday, after which quarantines impeded the return to work. By the end of that month, a significant break in the
A pharmaceutical supply chain appeared imminent as the virus and Covid-19, the disease it causes, spread across the Northern hemisphere. As Mullin (2020) has identified, as of April, the chain remains yet largely functional and intact. Chinese suppliers are back in operation, and US and European API producers continue to operate without serious impediment. Manufacturers generally keep emergency stocks of ingredients on hand, and most claim they are not yet threatened by a slowdown in deliveries of raw materials.

In this line of thought it can be said that the pandemic can be a cause for Europe to reorganise its supply process. The danger of the oldest continent being dependent on China's reserves has been recognised. In recent years, more and more western pharmaceutical corporations, such as Pfizer, GSK, Roche, Novo Nordisk, have set up commercial operations and R&D centres in China. Many world leading pharmaceutical companies have established joint venture manufacturers in China. Some have even set up their own manufacturing facilities. The main reasons for overseas companies going to China have been to save costs by using the extensive science and technology research bases currently in place in the country, the abundant human resources, and less expensive medical and clinical trials. China is a huge market for big pharma. Chinese stability and integrity of the supply chain also make a lot of sense to them. After this, China is maybe the only country to resume normal work and normal manufacturing.

The protection of human health is a priority for the countries concerned, so the supply of medicines is carried out at a local level first. The crisis situation in the face of the pandemic has shown that in the event of economic closures and huge delays in the supply of medicines, countries can rely only on their meat stocks.

4. Disruptions of the supply chain in the United Kingdom

The pandemic provoked the global forces, and as a result of the restrictive measures taken by large entities and structures, a global socio-economic crisis was caused. The challenge for societies was to protect the health of the residents. The main question was how medicines and medical supplies would be delivered given the fact that the states were literally closed. Goods movement restrictions, imposed by the majority of EU countries at their borders to control the spread Covid-19, are disrupting supply chains, including crucial medicines and medical equipment supplies. Whereas imposing internal borders had never been in the EU’s plans before the Covid-19 outbreak, the UK – which is due to leave the bloc by the end of the year – needs to keep a close eye on supply chain issues to avoid the same problems once customs checks are imposed between the EU and the UK. The Senior Director of Market Research at GlobalData U. Jakimaviciute says:
“For pharma it would mean continued pressure on the UK’s medicines supply chain, as despite the scale of the UK pharmaceutical industry, the UK imports a significant amount of medications from the EU, with Dover and Folkestone being main entry points. To cope with the supply issues, the EU has introduced fast-track lanes – priority channels for the transport of much needed goods, including medicines. For freight transport going through these lanes, border crossings should be accessible 24/7 and, according to the EU guidelines, border processing time should take no more than 15 minutes. While the ‘green lanes’ are easing up the pressure of supply shortages in Europe, including critical hospital medicines used to treat Covid-19 patients, the wait times are still not down to the 15 minute target at the busiest checkpoints. If a similar system is implemented in the UK, the waiting time may be much longer, as carriers are required to undergo only minimal checks in the EU. Currently the UK’s pharma sector is part of the integrated EU supply chain that ensures frictionless transfer of pharmaceutical ingredients and finished goods within the bloc. Whereas the UK’s politicians praised the idea of implementing a high-tech digital border and electronic identification to ease up custom checks post-Brexit, it may not happen within the current transitional period time frame. Any digital borders require technological uniformity and legislative framework to be established before the digital check can take place.” (GlobalData, 2020)

As prof. Vesselina Dimitrova (2014) claims, transport services in one country could be offered by foreign companies. This is due to the opening of national markets to foreign companies. However, the delivery of pharmaceutical products has been affected by Covid-19, especially those medicines that address its symptoms (paracetamol/aspirin) and the underlying health conditions that the virus exploits (diabetes medication, asthma inhalers, heart medication) (Roscoe, 2020). The pharmaceutical supply chain is more global than that of standard grocery staples and is therefore more affected by Covid-19’s quick spread around the globe. Many of the active ingredients that go into pharmaceutical products are sourced and manufactured in China and then shipped to India for formulation and packaging. When the virus emerged in China it quickly shut down pharmaceutical manufacturing facilities, directly impacting medicine supply. Pharmaceutical supply chains therefore face two major supply disruptions within a three-month period. Pharmaceutical supply is further restricted due to labour shortages in the wholesale and distribution of generics and other pharma products to UK pharmacies, as well as shortages with pharmacy staff. Finally, panic buying has led to a spike in demand for medicines directly linked to the symptoms of Covid-19 and the upper respiratory system. Long globalised supply chains, with already disrupted supply, will have difficulty in quickly
responding to huge spikes in demand. The one saving grace of the pharmaceutical industry is that pharma companies tend to hold significant amounts of inventory in the supply chain, often up to six months, meaning that they can fill demand if the panic buying situation stabilises in the next few months. However, if excessive demand in the UK couples with decreased supply from India, there could be significant shortages of key medicines in the near future.

As most of the pharmaceutical ingredients are manufactured in China and packaged in India, the pharma supply chains are disrupted at the first level: Raw Material Suppliers (Fig. 3). The Wuhan pandemic and subsequent border closures in almost all of Europe have caused huge supply delays. This proves once again Europe's dependence on China for raw materials.

Fig. 3. Disruptions of the supply chain in the UK caused by Covid-19

However, China recovered relatively quickly from the pandemic and regained its normal productivity. The fact that there is cyclicality in crises, however, should not be underestimated. If the restrictive measures due to the coronavirus had lasted longer, then Europe and the UK, respectively, would have met serious supply problems.
5. Case studies

In order to monitor the processes resulting from the announcement of Brexit and the appearance of Covid-19 crisis, it is necessary to pay particular attention to pharmaceutical companies that are taking steps to interact with the rest of the world.

The Association of the British Pharmaceutical Industry is in regular contact, both with its members and the government about any impact that the coronavirus could have on medicine supply in the UK and EU. According to the ABPI (2020) there are robust procedures in place to manage the supply of medicines in the UK, and companies will be taking all possible measures to secure supply for patients – in line with government guidance. Pharmaceutical companies continue to work to understand any impact that closures of global manufacturing facilities (particularly in China and India) may have on supply chains. Companies continue to review this on a daily basis and are working with global colleagues to understand any potential impact. However, this should not be seen as an alternative to information received directly by the relevant competent authorities and government from marketing authorisation holders or suppliers, which should continue to be the primary means of intelligence on continuity of medicine supply. Every day millions of patients rely on medicines supplied by the pharmaceutical industry. Manufacturers know that any medicine shortage is extremely worrying for the people affected by it. Companies work to prevent shortages happening in the first place, but despite the best efforts of all concerned, supply problems can happen for unforeseen reasons. In this report I will focus in particular on pharmaceutical companies with a large presence in the UK on how to deal with retail supply chains.

Pharmaceutical companies in the UK began preparing their supply chains as early as the announcement of Brexit in 2016 due to the ambiguity that arose from this decision through the referendum. At the same time the emergence of Covid-19 has brought the world to a standstill. This health crisis has brought an unprecedented impact on businesses across industries. Firstly, companies have organised their trade for no-deal Brexit and after the beginning of the pandemic, they reorganised their supply chains.

- **AstraZeneca**

According to Leonard (2020) the company is making changes to packaging, getting the necessary licenses, duplicating testing in the UK and EU and lobbying the EU to accept UK testing standards for drug makers. They have moved stock from the UK to European distribution centre to be as close as possible to customers on Brexit day and built an additional six weeks of stock for UK supply, in line with the
government request and four weeks extra stock for EU supply. AstraZeneca is looking at alternative transportation routes.

On the other side, according to AstraZeneca’s official site, the company guarantees that medicines supply chain is robust, and the team continues to monitor the situation closely and that they ensure the needs of patients first. They minimise any potential disruption. They are seeing higher than expected demand across some of their medicines. As the UK’s leading global biopharmaceutical company and investor in life sciences, the company is working closely with the UK Government and the NHS to support the national response to the Covid-19 pandemic in every way. AstraZeneca has been active in the Chinese market for years. Just last year, it announced it was setting up a one-billion-dollar fund in China to accelerate work in the life sciences. General Manager Michael Lai said that Covid-19 won’t interfere with AstraZeneca's plans for a global research and development centre (Tong, 2020). The company also plans to set up regional headquarters in five other cities. Even during the pandemic, China has shown very strong resilience. The company has invested in the past more than one billion dollars overall and an additional 1.5 billion in research and development. From this, they have made China their second-largest market, and they continue to expand their footprint locally.

• **GlaxoSmithKline**

GSK (2020) has evaluated the impact of Brexit on their business operations, including their supply chain and quality oversight. The priority for the company is to maintain the continuity of GSK’s supply of medicines, vaccines and health products to our patients and consumers in the UK and the EU. Uncertainty remains about the future relationship between the UK and the EU. As a result, they have agreed a risk-based approach to mitigation across the organisation. Implementation of their contingency plan has been underway since January 2018, with an immediate focus on our supply chains. This includes expanding their ability in the EU and the UK to conduct re-testing and certification of medicines; transferring Marketing Authorisations registered in the UK to an EU entity; updating packaging and packaging leaflets; amending manufacturing and importation licences, and securing additional warehousing. The company anticipated that the cost to implement these and other necessary changes could be up to £70 million over the next two to three years, with subsequent ongoing additional costs of approximately £50 million per year, including additional customs duties and transaction or administration costs. These charges represent the estimates of the impact of Brexit based on the information currently available. At the same time GSK Consumer Healthcare is prioritising actions in its supply chain to deliver more products that are in high
demand, due to Covid-19. This includes increasing production for pain relief brands such as Panadol and multi-vitamins and dietary supplements such as Emergen-C and Centrum. The company experiences some delays with distribution and delivery of products to customers as countries around the world introduce different virus containment measures, such as border closures and flight suspensions.

**Pfizer**

Pfizer is a company with a major presence in the UK pharmaceutical industry. Because of Brexit the costs to revise its manufacturing and supply chain is about $100 million (Palmer, 2020).

Because of Covid-19, Pfizer has increased the production, shifted demand to the most critical products, and authorised overtime at many sites to meet patient needs. The company also implemented an enhanced demand monitoring and order management process and instituted a heightened logistics control program to ensure the products get from their sites to the customers. They have expanded the use of Digital Operations Center, which is a Pfizer-developed digital solution that enables their supply operations. The expansion provides visual management and action tracking capabilities that allow colleagues at their sites either physically or virtually – to stay connected and work collaboratively while maintaining social distance guidelines (Pfizer, 2020).

**Novartis**

Switzerland-based Novartis warns over huge impact of “no-deal Brexit”. Novartis has joined many other rival pharmaceutical companies – including Sanofi, Roche, Pfizer, and AstraZeneca – in starting to draw up plans which will protect Britain’s stockpiles of life-saving medication, should a “no-deal” Brexit scenario occur. DeArment (2019) says that Novartis has begun securing additional warehousing in the UK in order to increase the amount of stock medicine they can store. It’s presently sufficient to keep ten weeks’ worth of stock at any one time, but the new warehousing would enable this buffer to be increased to 14 weeks, allowing the industry to more comfortably absorb any potential delays in re-stocking. It has also been suggested that some manufacturing operations will be moved out of the UK and into Europe to help guarantee supplies in the EU. More than 2,600 drugs presently have some stage of manufacture in the UK.

As Novartis continues to closely monitor the coronavirus situation, their primary concern is the health and safety of their patients globally. They will continue to deliver their medicines to patients around the world and they do not anticipate supply chain disruption at this time. Novartis has also put the following measures in place: they are implementing general international travel restrictions; they have issued guidance on how their associates can protect themselves against coronavirus
infection; they have enacted mitigation plans where needed to protect the integrity of their trials and help ensure continuity of treatment (Novartis, 2020).

The information on the organisation of the supply chain carried out by the largest pharmaceutical companies in the United Kingdom, can be summarised in Table 2.

### Table 2

<table>
<thead>
<tr>
<th></th>
<th>AstraZeneca</th>
<th>GSK</th>
<th>Pfizer</th>
<th>Novartis</th>
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<tr>
<td>Brexit</td>
<td>- making changes to packaging;</td>
<td>- re-testing and certification of medicines</td>
<td>- revise its manufacturing and supply</td>
<td>- securing additional warehousing</td>
</tr>
<tr>
<td></td>
<td>- getting the necessary licenses;</td>
<td>- transferring Marketing Authorisations</td>
<td></td>
<td>- increase the amount of stock medicine</td>
</tr>
<tr>
<td></td>
<td>- duplicating testing in the UK and EU</td>
<td>registered in the UK to an EU entity</td>
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<tr>
<td></td>
<td></td>
<td>- updating packaging and packaging leaflets</td>
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<tr>
<td></td>
<td></td>
<td>- amending manufacturing and importation licences</td>
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<tr>
<td></td>
<td></td>
<td>- securing additional warehousing</td>
<td></td>
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</tr>
<tr>
<td>Covid-19</td>
<td>- expanding their activities in China</td>
<td>- increasing production for pain relief brands such as Panadol and multi-vitamins and dietary supplements such as Emergen-C and Centrum</td>
<td>- increasing the production of the most demanded drugs</td>
<td>- implementing general international travel restrictions</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- expanded the use of Digital Operations Center</td>
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6. **Recommendations for stabilising pharmaceutical supply chains**

The consequences of Britain leaving the EU are already obvious. The supply chain is hampered at all levels. However, it is possible to say that pharmaceutical companies have taken timely and adequate measures to ensure guaranteed deliveries to all other EU countries, and not only. Undoubtedly, this leads to many additional costs for the companies linked to making changes to packaging; getting the necessary
licenses; duplicating testing in the UK and EU and so on. If we put Brexit aside and take into account the pandemic, we will notice that pharmaceutical companies are reorienting their activities into the global economic leader – China. Amid challenges brought by Covid-19, China's pharmaceutical industrial chain remains competitive and resilient, playing an integral part in continuously bringing stability to the global healthcare ecosystem. The British pharma industry companies rely on their Chinese reserves to be maintained without a shortage of pharmaceuticals during this epidemic period. Even in a pandemic period, supply delays are almost non-existent due to pre-existing supply chain facilities in China.

The management of pharmaceutical supply chains has become more complex because it involves the life-saving interest of human beings and requires the participation of different stakeholders such as pharmaceutical manufacturers, wholesalers, distributors, customers, information service providers and regulatory agencies. However, the pharmaceutical companies in UK could take additional measures to ensure the supply chain process: 1) could replenish raw material stocks, so that they can meet greater demand in the event of a crisis; 2) could return at least a part of the production of medicines back to Europe, for example in Germany; 3) could provide storage facilities in some countries in European Union in order to transport and cross the borders as faster as they can; 4) maintaining additional stocks; 5) planning the supply chain network design; 6) planning the delivery networks, online regulation of the supplies; 7) implementation of more air supplies in order to speed the transport of emergency medical products; 8) implementing additional “green lines” for trucks, transporting priority goods.

Undoubtedly, Covid-19 will lead to a reorganisation of medical supplies in Europe and particularly those from the UK. In times of crisis, there can always be a shortage of certain goods. In such a situation, the local economy needs to adapt quickly to those specific needs. This is why it is necessary to make a preliminary plan for action in an emergency situation. As regards Europe’s dependence on China, it is possible to stimulate the production of medicines and pharmaceutical products in the UK through tax relief. It is necessary to ensure a sustainable pharmaceutical industrial ecosystem that stimulates Europe, including the UK. That would be the key driver for stimulating economic growth and workplaces.

Conclusion

We live in a time of deep crises that leave irreparable economic and social damages. As Katsarski (2019) mentions, Brexit is a symbol of the dominant tendency for disunity, conflict and insecurity. Brexit is the most visible, but certainly not the
only sign of centrifugal tendencies in Europe over the last decade. Following the previous statements, the transformations in trade processes are inevitable. This became clear during the Brexit process, and even more clearly when the Covid-19 epidemic has occurred. Meanwhile, the pharmaceutical industry is taking steps to balance retail chains so the supply of medicines reaches all EU countries. Undoubtedly, China is proving to be the force by which the effects of the pandemic leave an almost zero mark on their retail chains. Many pharmaceutical companies with a major presence in the UK, are looking to locate warehouses in China to ensure the supply of medicines and medical devices so they can be prepared in the event of subsequent adverse situations. In this way, the pharmaceutical business seeks certainty in the indefinite future. Leaving Britain and the lessons of the difficult process of separation have a sobering effect on the great expectations of civilisation and place a clearer emphasis on the balance between national interests and the idea of the future of European integration with its strategic coherence during the years with funding, growth and jobs, notable research and innovations (Boshnakov, 2013). Britain will try to position itself as a world-class financial centre, independent of the EU, but ensuring its interaction with China, India and the Union.

References


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✓ **Abstract** – it must resemble a summary and include the objectives of the research, methodology and results;
✓ **Key words** – precise and sufficient, not more than five.
✓ **Introduction** – it should state the objectives of the research and the relevance of the scientific problem; it should review the condition of the issue and review references; it should also give the theoretical framework of the research, lead to research questions and hypotheses.
✓ **Methodology and data** – the methods used should be correct and include also appropriate references on similar, already published methods. The data shown must come from reliable sources.
✓ **Results and outcomes (conclusions)** – the results should be presented clearly and elaborated correctly; they must show a better way of using the data. Conclusions must be significant, valid and supported by proofs.
✓ **Bibliographic sources (references).**

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✓ Manuscripts typed in Word for Windows, font - Times New Roman, font size – 14 pt, line spacing – 1.5 lines.
✓ Size of tables and charts – not larger than A4. The numeration of tables and charts should be consecutive in the wording of the paper. The use of colour charts, graphs and pictures are not accepted. All tables, figures, charts and images should be editable.
✓ Margins in cm: top – 2.5, bottom – 2.5, left – 2.5, right – 2.5.
✓ The title should be typed in caps, without abbreviations (font - Times New Roman, font size - 14 pt, line spacing - 1.5 lines, Bold – Center).
✓ At the right top corner above the title it is typed EconLit index in JEL (Journal of Economic Literature) classification system.
✓ After the title articles must include an abstract (10-12 lines) and up to 5 key words. The abstract and the key words should be written in Bulgarian and English (for articles in Bulgarian) and only in English for the articles submitted in English.
✓ Listing the used sources and citations is done in compliance with the Harvard short reference system (See examples of description and citation). The Quoted sources of a scientific research paper should be at least 20 and transliteration is obligatory. Footnotes are not recommended, except when necessary. If so-called “notes” need to be used, they should be indexed with Arabic numerals and are explained at the end of the article, before the references.

✓ The papers should be written without any handwriting and crossing out words, in good Bulgarian and, respectively, English.

After the article is received, it is edited language- and style-wise. As for the Language the editor makes insignificant corrections since it is supposed that the papers are written in good Bulgarian and English. The articles in English can be returned for another check by the author. Authors confirm the suggestions for changes in style or mark what they disagree with.

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