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ИНСТИТУТ ЗА ИКОНОМИЧЕСКИ ИЗСЛЕДВАНИЯ НА БЪЛГАРСКАТА АКАДЕМИЯ НА НАУКИТЕ

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ИКОНОМИЧЕСКИ ИЗСЛЕДВАНИЯ
ECONOMIC STUDIES

Volume 29 (3), 2020

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MACROECONOMIC IMPLICATIONS OF THE FIGHT AGAINST COVID-19: FIRST ESTIMATES, FORECASTS, AND CONCLUSIONS[5]

The COVID-19 pandemic has triggered a massive spike in uncertainty all over the world. Bulgaria is no exception. Major uncertainties surround almost every aspect of human life: the infectiousness, prevalence, and lethality of the virus; the capacity of healthcare systems to meet the challenge; how long it will take to develop 'herd immunity'; how long and how strong should social distancing be; how long it will take to develop and deploy safe, effective vaccines etc. On top of all this comes the economic uncertainty. There is no doubt the pandemic is having immediately visible effects on economic activity. The rapid contraction in economic activity, the collapse of trade, and the dramatic increase in the unemployment rate are without precedent. Our goal here is to assess the near-term macroeconomic effects of these COVID-induced uncertainties. To this end, we look at the measures taken worldwide and in the EU in particular, focusing on Bulgaria's main trading partners. We develop three different scenarios for the economic development by the end of 2020 based on different assumptions with regard to the severity of the external shock as well as the duration of the social distancing.
JEL: E27; E60; I15; I18

1. Socio-Economic Nature of the COVID-19 Problem

At present, there is not enough mass testing for the population to effectively isolate people that have been affected by the virus. This finding is valid not only for Bulgaria but also for countries that are in a much more advanced stage in their economic development. For this

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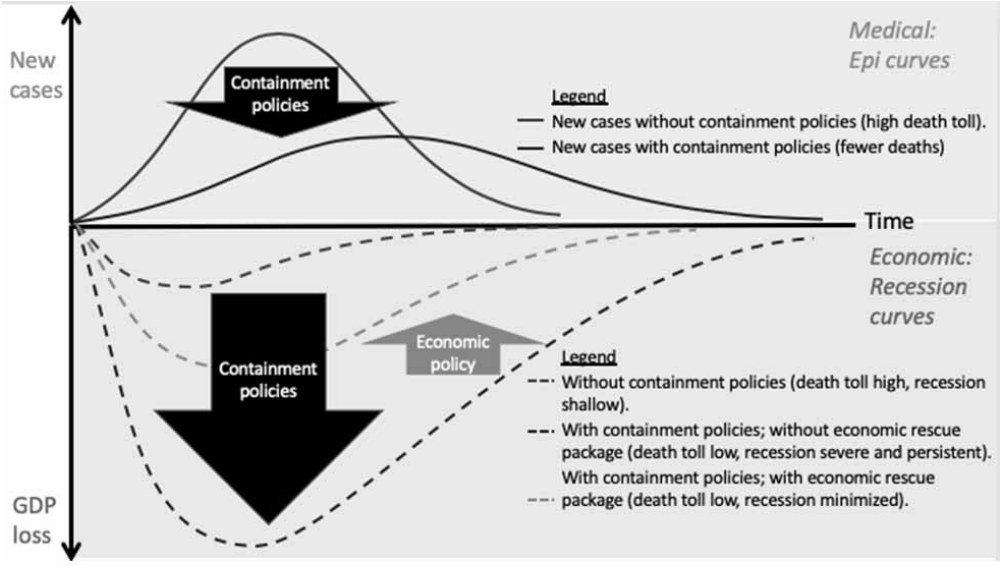
reason, the only possible way to physically separate the healthy from the sick is through the introduction of serious restrictive measures. With regard to the economy, this requires the closure of a number of manufacturing plants, shops, hotels, restaurants, etc., which inevitably leads to a deep economic crisis. Moreover, the longer and more restrictive the measures are, the longer and deeper the economic recession will be. The figure below gives a clear idea of the current processes.

Figure 1

The spread of the infection and the effects on economic activity



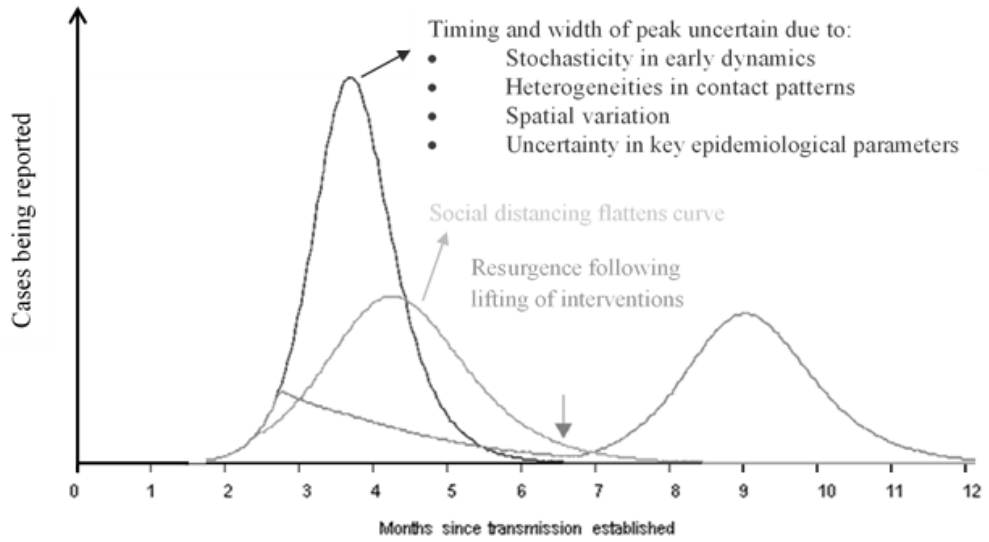
Source: Baldwin, March 22, 2020.

So far, the only infection control measure, that has proved effective, is the so-called 'social distancing', which severely restricts people's daily lives. Indeed, restrictions lead to fewer people being infected, which prevents undue pressure on the health system. From an epidemiological point of view, in the absence of a vaccine, at least two-thirds of the population needs to be immune for the epidemic to abate. The alternative is to look for some cyclicality in the severity of restrictions, alternating cycles of tightening and loosening of measures until herd immunity is attained (Figure 2). At this stage, there is insufficient information on how long these cycles can last.

Obviously, the government faces the difficult dilemma of choosing between a healthy population and a healthy economy. Given the priority of preserving as many lives as possible, a key challenge is devising adequate economic and social measure (in terms of size, structure, and duration) to minimize the economic damage.

Figure 2

Possible reaction models



A baseline simulation with case isolation only (red); a simulation with social distancing in place throughout the epidemic, flattening the curve (green), and a simulation with more elective social distancing in place for a limited period only, typically followed by a resurgent epidemic when social distancing is halted (blue). These are not quantitative predictions but robust qualitative illustrations for a range of model choices.

Source: (Atkeson, March 2020)

The purpose of this analysis is to assess as accurately as possible the negative consequences for the economy as a whole and (at a later stage) for the main sectors and industries. We share the understanding that the coming recession is unusual because it is not triggered by a downturn in demand (countered by appropriate policies aimed at increasing it), but rather by supply problems that lead to a secondary effect in demand. Emergency quarantine and social exclusion impede or even halt the activities of significant economic sectors, reducing both demand and supply. This leads to rising unemployment, falling incomes, depreciation of capital assets and real estate. There are certainly other negative effects that go beyond economic analysis.

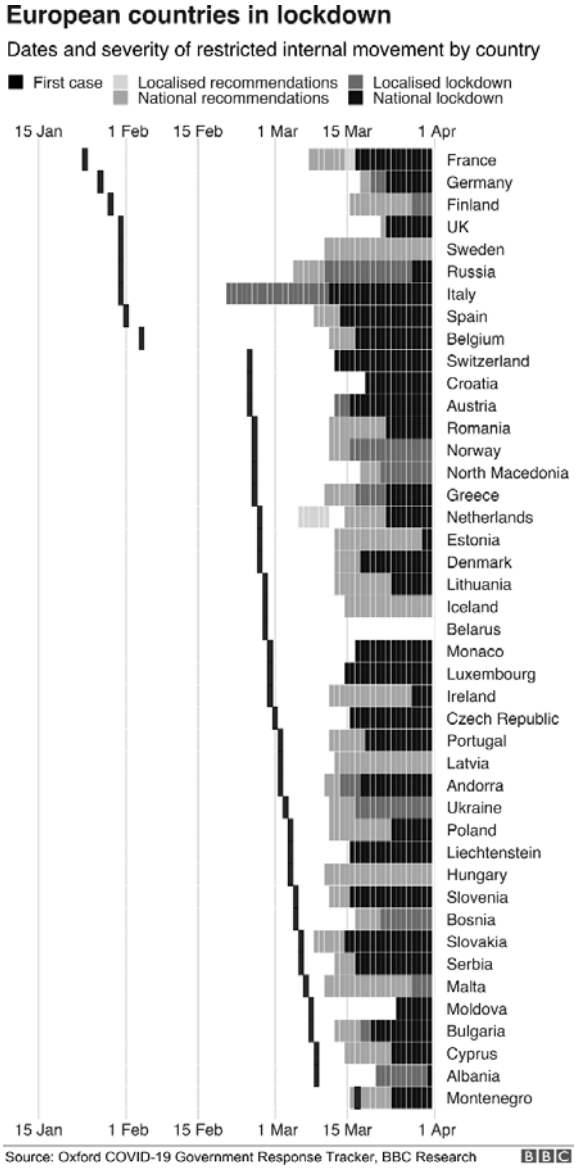
2. The Spread of the Infection in Bulgaria

Although the emergence of the new virus has been reported since late 2019, the first proven case of infection in Bulgaria was in early March. Despite the relatively late appearance of the virus, some precautions, including the creation of a special headquarters, were taken in advance. Figure 3 clearly shows that in countries where the time between the first proven

case and the imposition of restrictive measures is shorter, there are significantly fewer cases of infected and deceased. In this regard, it should be emphasized that Bulgaria is one of the countries in Europe that imposed extraordinary measures very early (just five days after the first case). It is also evident that countries such as Italy, Spain, France, Germany, and especially the UK delayed those measures and the spread of the infection in these countries is proceeding at a faster rate and with more deaths.

Figure 3

Time to detect the virus and introduce restrictive measures



3. Economic Consequences of the Infection

What is unique about the current situation is that the underlying recession is based on the vulnerability of the human factor. From this point of view, it can be assumed that, with regard to aggregate supply, sectors in the economy where the human factor is dominant (e.g. national and international tourism, transport, retail trade, parts of healthcare, culture and art, sports) will be affected more severely. Sectors with a high degree of automation, robotics and digitization have the capacity to be less affected. However, in a number of them, the activity is vulnerable to interruption of the relevant production and technological chain (e.g. in the field of the auto industry). Other sectors can be quickly reconfigured and should not experience supply pressure (services, administration and management, education). Finally, there are activities and industries that will reap benefits (pharmacy, certain sectors of the food industry, production and trade in essentials, manufacturing of protective clothing and protective equipment). This said, all of the above applies to supply only, and just to the first stage of the recession. Much of the upcoming issues will be related not only to aggregate supply but also to aggregate demand. The mechanism is very simple – a more significant contraction of the labour force from the most endangered sectors will lead to a permanent shock on aggregate demand with a probable secondary effect on supply and subsequent downward pressure towards further reduction of an even greater share of the labour force. In this way, the primary effects of the reduced demand are reproduced and amplified in the supply side, and the openness of the Bulgarian economy is an additional aggravating factor in this case. Without adequate intervention (by the state, employers, and trade unions), a 'vicious circle' can occurs. Escaping such a cycle will be more difficult if measures are delayed, and the recession can quickly develop into depression.

4. Measures Adopted for Crisis Consequences

4.1. Measures, taken by the EU

- The Commission created SURE (**S**upport mitigating **U**nemployment **R**isks in **E**mergency), a new EU solidarity instrument to help workers keep their income and help businesses stay afloat and retain staff. SURE will provide financial assistance up to €100 billion in EU loans and will be an EU-wide scheme to mitigate unemployment risks;
- The Fund for European Aid to the Most Deprived is adapted to ensure that food deliveries can continue going to where they are needed, while making sure those delivering and those receiving stay safe;
- Specific measures are introduced to support Europe's fishermen and farmers. An additional set of measures is expected to ensure that farmers and other beneficiaries can receive the support they need from the common agricultural policy;

- All available resources from the European Structural and Investment Funds to be used on the response to the Coronavirus, i.e. no limit on transfers between funds or between regions, no limits on spending per policy objective, no requirements on co-financing;
- Redirection of all funds from the 2020 EU budget to help save lives through a new EU solidarity instrument. This will ensure that €3billion is directed to supporting member states to manage the public health crisis.
- The European Regional Development Fund, the European Social Fund and the Cohesion Fund will be mobilized to deal with the effects of the public health crisis. Transfers between the Funds as well as between the categories of regions and between the policy objectives will be possible. Co-financing requirements are eliminated;
- The Emergency Support Facility is targeted to support health facilities, equipment, support for mass tests, medical research, new treatments and production, purchase and distribution of vaccines across the EU. The emergency support instrument will include €3 billion, of which €300 million will be made available to RescEU in support of total equipment stocks.

4.2. Measures, taken by ECB

The ECB clearly stated that its short-term goals are to support employment and to mobilize the banking system to provide firms with working capital to keep paying staff and bills. To this end, two types of measures were introduced.

- First, targeted measures on a massive scale to make sure that liquidity gets through to those that need it the most. The new targeted lending facility provides up to around €3 trillion in liquidity to banks at a negative rate, which can be as low as -0.75%. To ensure that banks make full use of this new facility, the ECB has also introduced a targeted collateral easing package, with a special focus on smaller businesses, the self-employed and private individuals.
- Second, the ECB has started buying public and private sector bonds in large volume to ensure that all sectors of the economy can benefit from easy financing conditions. The PEPP (Pandemic emergency purchase programme), together with other asset-buying programmes, allows purchasing more than €1 trillion of bonds until the end of this year.

4.3. Measures, taken in Bulgaria and some systemically important countries

The overview of the measures taken shows that a mix of fiscal and monetary measures is in place in the countries concerned. With regard to Bulgaria, however, it must be stressed that restrictions stemming from the currency board arrangement make it impossible for the central bank to conduct active monetary policy to maintain a stable money supply. The same applies to interest rates which are not set in a discretionary manner, but closely follow those of the ECB. The lack of monetary instruments for macroeconomic management puts an additional burden on fiscal ones. From the perspective of the banking system as a whole,

there are no grounds for concern at this stage. Problems could arise in particular banks with lower levels of capital buffers and/or with large exposures to threatened sectors of the economy.

Table 1

Review of measures, taken by country

% of GDP 2019	Fiscal	Monetary and Macro-Financial
Bulgaria		
~ 2%	• Coverage of 60% of the wages and the social security contributions of the employees in affected sectors • Deferment of the payment of corporate taxes until June 30. • Additional salary for directly involved medics and police officers; • Possibility for registered unemployed to sign labour contracts with agriculture producers without losing their unemployment benefits.	• Capitalization of the 2019 profit in the banking system; • Increase in the liquidity of the banking system by EUR 3,5 million; • Cancellation of the increase of the countercyclical capital buffer; • Capital increase of the Bulgarian Development Bank (BDB) by EUR 350 million; • Voluntary (for banks) moratorium up to 6 months on credit contributions for regular payers; • Up to EUR 2250 interest-free loan for each unemployed due to COVID-19; • Allowing for a budget deficit of EUR 1.75 million and increased ceiling on newly incurred public debt of EUR 5 million for 2020
USA		
~ 11%	• Transfers for hospitals • Provide one-time tax rebates to individuals; • Expand unemployment benefits; • Provide a food safety net for the most vulnerable • Prevent corporate bankruptcy by providing loans, guarantees, and backstopping • Forgivable Small Business Administration loans and guarantees to help small businesses that retain workers • For international assistance	• Reducing the federal funds rate • Reduced cost of swap lines at major banks and extension of foreign exchange maturity • Facilitate the issuance of securities by companies • Provide liquidity for lending to depository institutions • Suspension of foreclosures/expulsions and plan for reduction/suspension of mortgage payments up to 12 months
China		
2.5%	• Increased costs for prevention and control of epidemics; • Manufacture of medical equipment; • Tax relief and cancelled social security contributions; • Greater investment in public health emergency management.	• Increasing liquidity in the banking system • Support for manufacturers of medical supplies, micro, small and medium-sized enterprises and the agricultural sector at low-interest rates • Delayed payments on loans • Facilitating housing policy by local authorities
Italy		
1.4%	• Funds for health and civil protection systems	*From ECB*:

% of GDP 2019	Fiscal	Monetary and Macro-Financial
+ECB	• Measures to preserve jobs and support the income of laid-off workers and self-employed persons • Deferral of taxes and utilities • Measures to support the supply of credit aimed at improving liquidity	• Additional asset purchases • Providing temporary auctions for the temporary liquidity facility • Permission to work temporarily under the Pillar 2 Guidelines, the capital buffer and the liquidity coverage ratio • Flexibility in classification requirements and expectations for provisioning for non-performing loan losses *Government*: • State guarantees for loans to SMEs • Moratorium on mortgage and overdraft payments for some households and SMEs
Spain		
1% +ECB	• Budget support from the Ministry of Health's reserve fund; • Transfer for regional health services; • Funding research related to the development of drugs and vaccines; • Employment benefits for temporary workers; • Funding the nutrition of children affected by school closures; • 50% exemption from social security contributions from February to June for workers in the tourism sector and related activities;	*From ECB*: • Additional asset purchases • Providing temporary auctions for the temporary liquidity facility • Permission to work temporarily under the Pillar 2 Guidelines, the capital buffer and the liquidity coverage ratio • Flexibility in classification requirements and expectations for provisioning for non-performing loan losses *From government*: • Government loan guarantees for companies and self-insured persons • Government guarantees for exporters through the Spanish export credit insurance company • Extension of the deadlines for repayment of loans to farmers. • Introduction of a special credit line for the tourism sector • Moratorium on mortgage payments for the most vulnerable population groups • Postponement of the disbursement of loans granted to enterprises from industry, trade and tourism; • Prohibition of short selling of Spanish stocks on the stock market. • Resolution on special government screening of foreign direct investment in strategic sectors
France		
4% +14% +ECB	• Increasing the level of health insurance for patients • Increase in health insurance costs • Postponement of social security and company	*From ECB*: • Additional asset purchases • Providing temporary auctions for the temporary liquidity facility

% of GDP 2019	Fiscal	Monetary and Macro-Financial
	tax payments • Direct financial support for affected SMEs and independent workers • Postpone rental payments and utilities for affected SMEs • About 14% of GDP government guarantees for bank loans to companies	• Permission to work temporarily under the Pillar 2 Guidelines, the capital buffer and the liquidity coverage ratio • Flexibility in classification requirements and expectations for provisioning for non-performing loan losses *From government*: • Decrease in the countercyclical buffer • Prohibition of short selling of shares • Support for renegotiation of SME bank loans
Germany		
4,9% +ECB	• Expenditure on medical equipment and development • Subsidies to preserve jobs and workers' incomes • Extension of childcare benefits for low-income parents. • EUR 50 billion in the form of grants to small business owners and self-employed persons • Tax deferral until the end of 2020 • Extending access to public guarantee loans for companies	*From ECB*: • Additional asset purchases • Providing temporary auctions for the temporary liquidity facility • Permission to work temporarily under the Pillar 2 Guidelines, the capital buffer and the liquidity coverage ratio • Flexibility in classification requirements and expectations for provisioning for non-performing loan losses *From government*: • Decrease in the countercyclical buffer • Acquisition of shares of larger than the affected companies and strengthening of their capital positions
Austria		
9% + 8,5% +ECB	• Financing the healthcare system • Financing short-term work and compensation for self-employed, family and micro-enterprises that have lost income due to illness • Guarantee system established for exporting companies • Financing of companies in the export sector and tourism • Deferral of income tax on natural and legal persons • Allowing companies to compel workers to take up to two weeks of leave accumulated in previous years • With reduced working hours, employers will only pay the hours worked and the rest will be paid from the budget	*From ECB*: • Additional asset purchases • Providing temporary auctions for the temporary liquidity facility • Permission to work temporarily under the Pillar 2 Guidelines, the capital buffer and the liquidity coverage ratio • Flexibility in classification requirements and expectations for provisioning for non-performing loan losses *From government*: • Willingness to provide liquidity • Prohibition on short-selling of shares
Hungary		
NA	• Expenditure on the health sector • Employers' contributions will be eliminated in the most affected sectors	• Advanced access to liquidity • Introduce long-term unlimited secured credit lines

% of GDP 2019	Fiscal	Monetary and Macro-Financial
	• Health care contributions will be reduced • About 80,000 SMEs (mainly in the services sector) will be exempted from small business tax • Payment of taxes in the sectors concerned will be postponed until after the state of emergency • Contributions to tourism development will be suspended • The media service providers will receive tax relief due to the loss of advertising revenue • Tax collection procedures will be suspended	• Suspension of penalties for failure to comply with the required reserves • Provide financial assistance to home and corporate borrowers • Moratorium on the repayment of all current loans by the end of this year • Limiting the average annual interest rate on new unsecured consumer loans
Romania		
3%	• Additional healthcare • Partial coverage of the salaries of parents who stayed home during school closure • Partial coverage of workers' salaries at risk of redundancies • Guarantees and subsidized interest on working capital and investments of SMEs • Accelerated VAT refund • Stopping the collection of arrears • Delaying the payment of real estate tax for three months	• Reduction of the basic interest rate • Ensure the liquidity of credit institutions • Acquisition of government securities on the secondary market.
Serbia		
7%	• 10% increase in public health wages • Increasing healthcare costs • Lump-sum payment for all pensioners • New investments in public infrastructure projects • Additional measures to support private sector activities and employment	• Reduction of the basic interest rate • Building of banks' liquidity • Purchase of government securities • 3-month moratorium on all payments on bank loans and finance leases
Greece		
7.5% +ECB	• Increase in health care costs • The hiring of 2000 new doctors and nurses • Transfers of vulnerable persons, including a financial stipend of EUR 800 to 30 April for employees working in highly affected companies • Extension of unemployment benefits • Paid leave for parents whose children do not attend school • Support for the liquidity of heavily affected businesses through subsidized loans, credit guarantees, interest subsidies and late payment of taxes and social security contributions	*From ECB*: • Additional asset purchases • Providing temporary auctions for the temporary liquidity facility • Permission to work temporarily under the Pillar 2 Guidelines, the capital buffer and the liquidity coverage ratio • Flexibility in classification requirements and expectations for provisioning for non-performing loan losses *From government*: • Subsidies for interest payments • Postponement of large payments on existing loans for severely affected individuals and companies by the end of September

% of GDP 2019	Fiscal	Monetary and Macro-Financial
Turkey		
2%	• Doubling the credit guarantee fund • Raising the minimum pension and financial support for families in need • Reduction/deferral of taxes for the industries concerned (especially tourism) • Direct support for Turkish Airlines and other organizations involved • Extending the deadlines for filing personal and corporate tax returns • Increasing the flexibility of work	• Reduction of the basic interest rate • Liquidity assurance • Decrease of reserves on foreign currency deposits for some banks • 3-month moratorium on repayment of bank loans (principal and interest) for the affected companies. • Support for lending to export companies • Debt and bankruptcy proceedings have been suspended.

As mentioned above, in combating the consequences of COVID-19, the ECB has taken unprecedented measures. Unfortunately, access to this liquidity will be for the euro area member states only. This reminds us once again that any delay in applying for the ERM II furthers Bulgaria away from full membership in the euro area, which means a continued absence of a 'lender of last resort'. In crisis times, the lack of such a lender feels very acute.

5. Global Consequences

5.1. The global economy in stress

The coronavirus attacks the global economy in a period of weak economic growth, high recession risk, oil wars, high levels of sovereign debt in many of the world's leading economies, and depleted monetary instruments to promote growth. All this happened in the first quarter of the year, which is traditionally less dynamic economically.

At the beginning of March, there were still analysts who thought that the spread of the coronavirus was more of a temporary shock, which could be offset at least partly during the rest of the year. These hopes were also based on the experience of the other epidemics like bird flu and SARS, whose economic consequences were local, short-term, and weak. The virus itself surprised the economies not prepared to face its spread and persistence. It has produced an economic contagion that spans the world, regardless of how widespread the virus is in one country or another.

There is no doubt that the global economy will enter a recession this year. What is not known is how deep and how long it will be.

5.2. China: The first sick economy

Total production in China (including industry, mining, and utilities) fell by 13.5% in the first two months of 2020, while analysts had forecasted a decline of 3%. Retail sales declined by 20.5% in the first two months, while projections before were for 4%. Although

95% of large companies outside the most contaminated region returned to normal operation in March as well as 60% of small and medium-sized enterprises, the Chinese economy is expected to decline at an unprecedented rate since WWII. The service sector is recovering but very slowly. More than 60% of restaurants and hotels operate at reduced capacity. About 70% of large import and export companies resumed work in March, according to the Chinese Ministry of Commerce.

The extent to which the next quarters will offset the first-quarter decline remains unclear, as the Chinese economy is yet to experience external shocks from the collapse of the European and American economies. The Chinese economy will likely experience an additional economic shock from the crisis in countries affected by the virus after China. By breaking the value chains, the collapse of China's imports of important goods is creating new shocks for the economy. Direct investment in China collapsed due to the virus by 15% and particularly in the industry by 34%. The return of confidence of investors will take time.

China's economic measures are rather modest at this stage, targeting small and medium-sized businesses. However, it is envisaged to extend the deadlines for loan repayment, tax cuts, social security contributions, and rent payment assistance.

The Chinese government still has not (by early April) reformulated its economic target for 2020, which was to reach 6% GDP growth for this year. The political message is that during the rest of the year, the economy will be able to compensate the decline from the first two months. Despite Chinese leadership's assurances that the Chinese economy is recovering, EU and US data show that China's orders have not yet been restored, meaning the shock of the Chinese economy's collapse will continue to unbalance the economies of the rest of the world.

5.3. The European economy

The European economy is highly vulnerable. Against the background of anemic economic growth, the difficulties that the ECB is experiencing to revive growth and delayed measures at a supranational level, it may prove that there will be many physical casualties as well as large and long-lasting economic losses.

The biggest losses for the European economy will come from tourism, which has a high share of GDP and is the third largest sector in the European economy, generating 10% of European GDP with 27 million employed, which is nearly 12% of the European workforce.

The package of measures under the Green Deal is being implemented and as expected, the first important documents have already been published, requiring prompt and firm reaction from state institutions, businesses, academia, and the non-governmental sector.

- On 4 March, the EC published the draft Regulation on the European Climate Law. This is the first of a set of EU acts to implement the Green Deal. The public consultation is open until 27 May. The project defines the basic obligations of the member states in fulfilling the ambitious objectives of the agreement.

- The Circular Economy Action Plan was published on 11 March.
- The Farm-to-Table Strategy is also published.
- A 2030 Biodiversity Strategy is underway.

Developing national positions and organizing a public debate on these fundamentally important issues requires the investment of huge administrative resources, which are not available in the coming months due to the focus on the pandemic and its economic effects. **Therefore, delaying the Green Deal initiatives is crucial to preventing the European economies from new regulatory risks in the current crisis situation.**

6. The Economic Consequences for Bulgaria

6.1. State of the economy before the onset of the virus

In assessing the economic effects from the pandemic, the starting point of the Bulgarian economy must be taken into account. Despite the slowdown in 2019, it managed to achieve relatively high growth of 3.1%. Unlike other European economies, the Bulgarian economy was not expected to have a recession in 2020, although the trend was down. A number of internal factors have a downward pressure on growth, which, even without external shocks, would have significantly slowed down the economy.

The macroeconomic framework remained stable in January and February. The restrictive measures regarding the movement of people imposed came into force in the second half of March, so the first quarter is unlikely to see a very large economic decline. The question is how the second quarter will end, given that during the first two months, the economy developed normally, and whether this normality will be sufficient. According to preliminary data, in January 2020 the seasonally adjusted index of industrial production registered a growth of 1.6% compared to December 2019 but compared to the average monthly value for 2019 a decrease of 0.7% was observed. The trend is expected to continue in February with a slight decrease.

- Tourism started successfully at the beginning of the year. In January 2020, the total number of nights spent in all accommodation establishments was 19.8% higher than in the same month of the previous year. Since mid-February, the tourism sector started experiencing a severe decline.
- According to preliminary seasonally adjusted data in January 2020, the turnover in 'Retail trade' at constant prices decreased by 0.4% compared to the previous month. Turnover increased by 3.2% in January 2020 compared to the same month of the previous year.
- In January, the Production Index in the Construction Sector was 0.8% above the level of the previous month and 1.7% higher than the same month of 2019. Construction's contribution to GDP in the first quarter of the year is usually around 3.7%.

- Inflation in the first two months of the year was low – in January it was 0.9% and in February it was 0.1%. However, for foodstuffs, there was not only a seasonal but also a permanent trend of a rapid price increase. The inflation of these goods accelerated since mid-February due to the consumers' behaviour to build reserves.
- The Unemployment Fund has faced a difficult financial crisis. It has been operating at a deficit of more than 25% in recent years, despite high economic growth and close to full employment rates.

A good macro framework in the first two months of the year may reduce the negative effects of the closure of entire sectors of the economy in March, but the inability of social funds to encounter a recession of this magnitude poses serious challenges. At the end of 2019, the labour market looked relatively good and several improved labour market indicators were recorded.

- Employment is increasing and the target of 75% employment of the population aged 20-64 set in the 2020 Strategy has been reached.
- The number of unemployed persons sharply decreased in absolute numbers and as a relative share of the labour force. In 2019, historical lows of these indicators were reached 140,000 and 4.1% respectively.
- The number of discouraged persons and economically inactive people of working age who want to work is greatly reduced.

6.2. Initial effects of the crisis on the economy

It is too early to assess the economic effects of the crisis. The lack of recent data makes this exercise rather theoretical, given all the uncertainties involved. The impact will vary across the sectors. Two major groups of factors will determine the impact of the epidemic on the economy – internal and external. That is, the economy faces external shocks (contraction of the global economy and that of the EU) and internal shocks (closure of sectors and industries). The combination of these two groups outlines not only a fast and significant, but also a prolonged period of deterioration of the economic environment and the Bulgarian economy.

Due to well-established seasonal factors, during the first quarter of the year GDP growth is weakest. The effects of the forced closure of enterprises and reduction of their activity happened in the second half of March and therefore may not have a significant impact on GDP for the entire quarter. The dynamics of internal factors during the crisis period are determined by which sectors and industries will cease operations altogether and for how long, which ones will continue at reduced volumes, and which will expand or restructure their production. With the expected shutdown of the entire subsectors of services, overall March growth will be negative, despite the inertia of the economy.

- Tourism is expected to decline significantly in the first quarter of this year. The introduction of a ban on organized tourist trips in Bulgaria and abroad on 13 May

essentially closed the sector and has led to significant losses. For example, 63 million BGN of revenues from overnight stays will not be realized.

- During the first quarter of last year, in the hotel industry employed about 108,000 people, which represents about 5% of total employment. The number of enterprises in this sector is just above 27,000, 90% of which employ less than nine workers. Supporting and maintaining employment in this sector under the 60:40 scheme will be difficult to administer because of the expected large number of businesses that will become involved. On the other hand, 40% of wage costs alone will be a big burden for this sector, considering the high operating costs of the sites.

- Trade, together with tourism, make up 16.5% of GDP. Due to seasonal factors, these sectors also grow at a slow pace in the first quarter of the year. The trade sector will be affected by restricting access to retail outlets and the closure of large shopping malls. The monthly wholesale of foodstuffs is on average about BGN 2.3 billion, which is about 40% of the total wholesale trade, while the retail trade of foodstuffs is about BGN 1.5 billion a month and 37% of the total retail sales. The data show that the retail and wholesale of food must be increased more than twofold to compensate the reduction of non-foodstuffs, which is over 60% of total trade. While this may be possible in the retail sector, the drop in the wholesale trade will be significant due to the absence of the entire restaurant sector in the market. Due to its significant share of GDP, the trade will contribute to the economic downturn as early as the first quarter. As China's experience shows, trade is recovering slowly and the downturn will carry over into the second quarter even at the most optimistic end of the epidemic.

- Both the construction and agriculture sectors (again due to the seasonal pattern) have their lowest contribution to GDP growth in the first quarter. So, the effects of the decline in activity in the first quarter will be rather weak but will aggravate in the second and third quarters.

- Increased demand for food is expected to increase overall inflation in March, with speculative trends in some commodity groups also contributing to higher inflation. But this shock may be overcome in the coming months and inflation will remain moderate, driven by the reduction of incomes. After the initial mass stockpiling of food and necessities, the growth of purchases slowed. The decrease in imports is likely to be offset by a recent demand for Bulgarian food and other goods.

- In 2020, the total budget of the Unemployment Fund is about BGN 437 million with a planned deficit of BGN 94 million. After the budget revision in late March, the transfer to this fund was increased by over BGN 1 billion. It is unlikely that the fund has sufficient resources to respond to the rapid growth of registered unemployed. It is possible that a new update will be needed.

The biggest long-term risk to the economy is the high exposure of entire sectors and industries to exports (imports) to (from) some of the most affected countries – Italy, Spain, as well Germany. These countries are Bulgaria’s leading trading partners. According to NSI data, exports to Germany and Italy alone in 2019 accounted for 22% of total commodity exports, and imports from those countries accounted for 18% of total commodity imports.

Due to the key role that foreign direct investments from these economies play for the Bulgarian economy, the expected decline over the next two-three quarters will cost at least 1% of GDP growth (according to the methodology of ERI at BAS).

The high degree of openness of the Bulgarian economy creates conducive conditions for a rapid transmission of external shocks. Even if the normal pace of work of the Bulgarian enterprises closed due to the epidemic is restored in May or June, delayed and falling volumes of external orders will generate a significant downturn in the economy.

6.3. Specifying the preconditions for three possible scenarios

It must be acknowledged that the experience gained so far in dealing with such situations relates mainly to developing economies which have been exposed to natural disasters that have led to supply shocks. It is strange, but currently, the most affected countries are mostly large and highly developed economies with well-functioning health systems. In spite of numerous publications and all kinds of opinions from a number of experts, neither the severity nor the duration of the coming recession can be estimated at this stage. Everything will depend on the success of the health-policy response aimed at keeping the number of infected and deceased (including those of working age) as low as possible for as long as feasible. This will allow the health system to succeed in identifying and limiting the spread of the virus, treating patients and boosting immunity, and ultimately saving as many lives as possible. At the same time, as we await some more tangible progress in the medical dimension of the crisis, fear and insecurity are deepening, and the adverse effects on financial stability and prospects for economic recovery are increasingly gloomy.

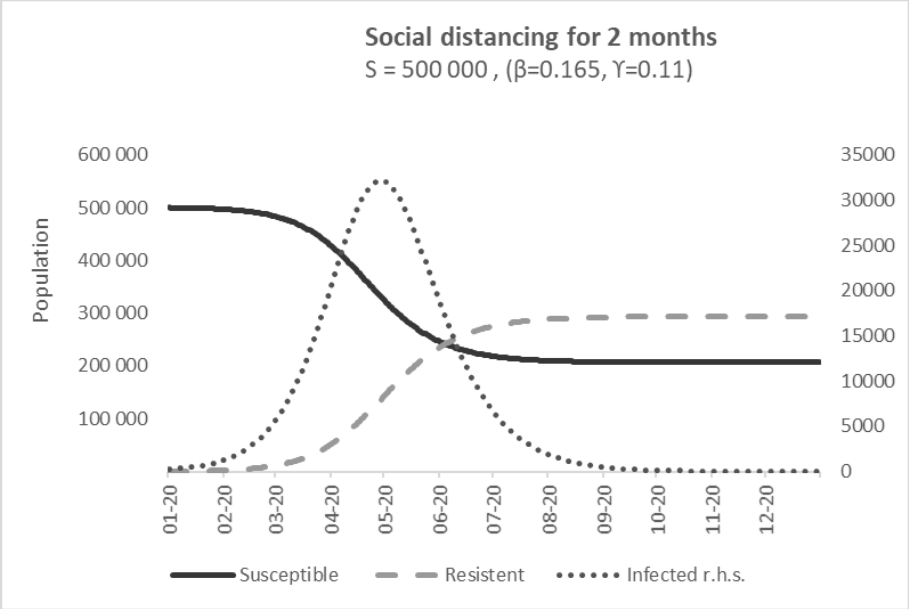
The circumstances listed above make it extremely difficult to come up with a reliable forecast. The ambiguities regarding the duration of the restrictions, as well as the lack of experience in assessing the impact of such shocks, force us to develop three different scenarios based on three different assumptions for the development of the pandemic in the short term. Projections cover only the current year. As more data become available (especially for the second quarter), the forecast for 2020 will be more accurate, which will also allow us to build a longer-term macroeconomic framework.

In drawing up the different scenarios, we have used some of the conclusions made in (Eichenbaum et al., March 2020), which in turn are based on the canonical SIR model (susceptible (S), infected (I), and recovered(R)), proposed by (Kermack & McKendrick, 1927). According to this research, stopping the infection requires that about 60% of the population be eventually infected, which will ensure the creation of the so-called ‘herd immunity’. With this in mind, the different scenarios in the forecast are based on the duration of this process. As shown in Figure 1, with more active measures to contain the spread of the infection, the time to reach herd immunity is prolonged, and the recession is deepened, while the health system remains operational and there are fewer deaths. Conversely, if herd immunity were reached sooner, the recession would be shorter. However, this would come at the expense of a large number of deaths and a health system that is unlikely to be able to cope with other diseases in full, which is why deaths will not be limited only to those due to the coronavirus. Obviously, the latter scenario is not socially

acceptable and should be rejected regardless of the more severe economic and possibly social problems. Instead, efforts must be made to limit the casualties from the virus, and the economic losses must be countered with an appropriate economic package.

The scenarios are as follows[6]:

- **First scenario** – Assumptions are that social distancing measures continue until mid-May, after which they are gradually phased out, with the economy functioning normally during the second half of the year. There is no second wave of contagion. The summer tourist season is moderately affected (up to 20% decline). The global economy is declining slightly, but both economic growth rates and global trade rates remain positive. External demand shrinks in the first half of the year but will offset losses (to some extent) in the second half, leaving physical volumes of exports and imports just slightly affected.



Source: Author's estimations.

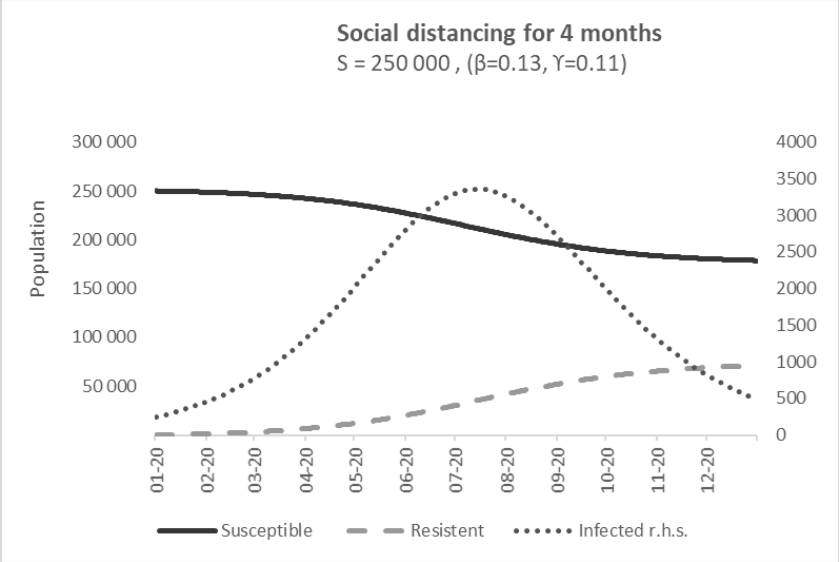
The main features of this scenario are:

- GDP falls in real terms by 2.4%. With the exception of government spending, all other final expenditure items have negative contributions to growth;
- Inflation marks only a slight increase compared to the previous year;

[6]The scenarios are not intended to accurately identify the number of infected and do not claim medical correctness. They serve as a guideline for the duration of social distancing measures. However, an attempt has been made to bring it as close as possible to epidemiological models.

- Foreign trade volumes shrink, more markedly for imports. The current account (mainly due to the weak tourist season) is deteriorating.
- The labour market experiences a modest shock, with unemployment rising to 6.9%;
- Budget revenues are lower than projected by 1.9% and expenditures are higher by 1.7%. Instead of a balanced budget, there will be a deficit of 1.5% of GDP. The deficit is covered by the issuance of new debt of BGN 2.5 billion. The fiscal and foreign exchange reserves remain at approximately the same levels.
- Government debt increases to 21.7% of GDP.

❖ **Second scenario** – Assumptions are that there will be some cyclicality in the measures introduced (tightening and relaxation periods), which will continue until the beginning of the third trimester. The summer tourist season is severely affected (a decrease of about 50%). The global economy is declining (1-3%) with negative growth rates for both global GDP and global trade volumes. All EU countries are affected, which leads to a significant decline in external demand.



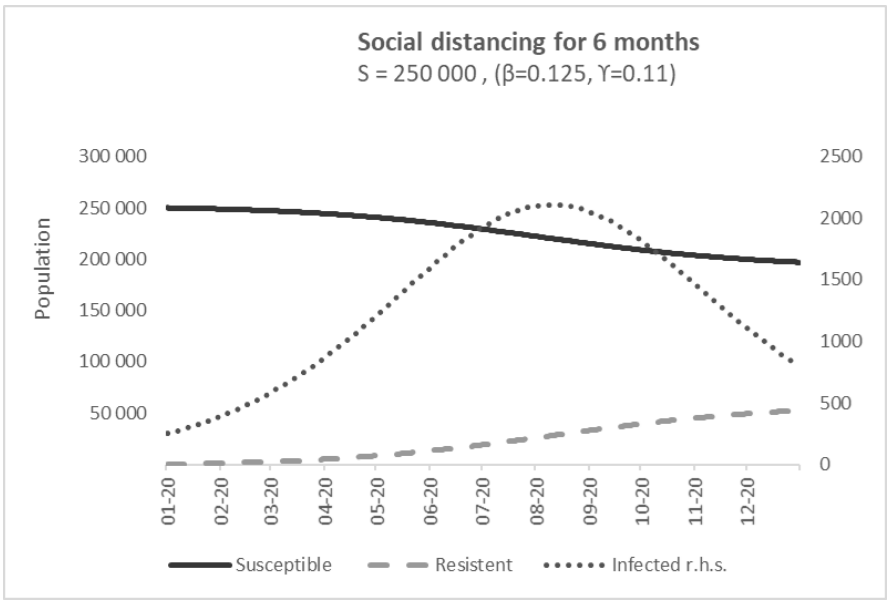
Source: Author's estimations.

The main features of this scenario are:

- GDP falls in real terms by 4.3%. With the exception of government expenditures, all other final expenditure items have a negative contribution to growth, with capital formation being affected the most severely;

- Inflation accelerates to 4.2% on an annual basis. The counteracting factor for higher inflation (caused by the possible shortage of some mainly imported goods) is the lower consumption and lower energy prices;
- Foreign trade volumes fall sharply and the current account (mainly due to the weak tourist season) has deteriorated by more than €1 billion.
- The labour market suffers a severe negative shock, with unemployment doubling from the previous year and reaching 10% of the workforce;
- Budget revenue is lower than projected by 9% and expenditure remains within the original projection made by the consolidated fiscal program. A reallocation of expenditure will be needed towards the health and social security sectors at the expense of capital expenditure. The budget deficit reaches 2.5% of GDP and is covered by the issuance of new debt amounting to BGN 3.8 billion. Foreign exchange reserves decrease by about €500 million.
- Government debt increases to 23% of GDP.

❖ **Third scenario** – The cyclical application of the measures is assumed to continue for the most part of the third quarter, alternating between tightening and loosening periods. The summer tourist season has failed (a drop of 50% to 70%). The global economy has declined sharply (3-6%), with economic growth and global trade volumes strongly negative. All EU countries are severely affected, leading to a sharp drop in external demand.



Source: Author's estimations.

The main features of this scenario are:

- GDP fall in real terms by 5.7%. Only government spending has a more favorable contribution, which cannot compensate for the huge decline in exports (8%) and consumption (3.6%);
- Inflation accelerates even higher to 5.2% on an annual basis, while the import of some basic necessities has been disrupted. A counteracting factor for higher inflation is reduced consumption and lower energy costs;
- Foreign trade volumes shrink significantly, and the current account deteriorates by more than €2 billion.
- The labour market is distressed, experiencing a strong negative shock, with unemployment reaching 350,000, about 12% of the workforce;
- Budget revenues are lower than projected by about 10%, while expenditures (mainly current expenditure supporting different programs maintained by the Ministry of Labor, the National Revenue Agency and the National Health Insurance Fund, as well as various governmental business support programs) increase by 5.5%. There will also be a reallocation of resources, with current expenditure increases at the expense of the capital ones. The budget deficit reaches 5% of GDP and is covered by an issuance of new debt of BGN 8 billion. Foreign exchange reserves decrease by about €1 billion.
- Government debt increases to 26.5% of GDP.

In all the scenarios, the epidemic ends when a sufficiently high proportion of the population acquires immunity[7]. At the same time, the lack of vaccine means that the only way to gain immunity is to go through an infection phase that involves multiple deaths. Given the negative effects on the economy (both demand and supply shocks), the optimal policy from the perspective of the government is to consciously limit economic activity in order to reduce the number of infected. The problem with this approach is that the achievement of herd immunity is prolonged. From this point of view, some cyclicality (Figure 2) is likely to be required in the restrictive measures imposed – weakening when there is a decline in new infections and tightening with a tendency to rise. In any case, this means that it will take a long time to tackle the infection permanently. The time interval can only be shortened in the presence of proven medication for treatment, as long as the vaccine is expected to take at least one year.

6.4. Labour market development projections

There are already unambiguous indications for the labour market turmoil at the very beginning of the second quarter of 2020. The number of people registered as unemployed at

[7] Note that an underlying assumption is that recovered individuals are immune to the disease and cannot be re-infected.

employment offices is increasing and more than half of them have lost their jobs[8]. In contrast to other periods of crises, this time, *the labour market has not responded with a delay, which is one of the unique characteristics of this economic recession.*

The subsequent scenarios for labour market developments are based on the following:

- The projection of the working-age population is according to the NSI demographic forecast;
- The projection does not consider the influx of former emigrants returning to Bulgaria[9];
- The projection does not include any speculations on eventual changes of wages and salaries in the observed period.

Scenario 1: Employment rate is 62.6%; unemployment rate is 6.9% and economic activity rate is 67.2%. This unemployment rate is similar to the one proposed by the Ministry of Finance[10] and is close to the already registered unemployment rate in 2009. According to this development, the number of unemployed at the end of the year will be 203,300 persons, or by 63,200 more than that in 2019. The number of the employed will decrease by 369,500 (Table 2).

Scenario 2: Employment rate is 60.0%, unemployment rate is 10% and the economic activity rate is 66.7%. These rates will lead to 2,651,900 employed and 294,700 unemployed. The number of unemployed will be by 154,600 more than that in 2019. The employed are expected to be fewer by 484,400. This is an option that does not imply a significant improvement of the economic and labour market situation as it is observed in April.

Scenario 3: Employment rate decreases to 58.0%, the unemployment rate goes up to 12% and the economic activity rate is 65.9%. This scenario will lead to 349,600 unemployed, or by 209,500 more than in 2019. The employment decrease will be by 572,800. This option suggests a continued escalation of unemployment in 2020.

Table 2

Labour market forecasts until the end of 2020

	2019	2020		
		Scenario 1	Scenario 2	Scenario 3
Population 15-64 years (in thousands)	4474.1	4419.8	4419.8	4419.8
Active	3276.4	2970.1	2946.6	2913.0
Employed	3136.3	2766.8	2651.9	2563.4
Unemployed	140.1	203.3	294.7	349.6

Source: NSI and author's calculations.

[8] Preliminary data.

[9] Employment Agency still does not present the number of the ex-emigrants that have already registered as unemployed. It is not clear what their plans for the near future are and whether they are motivated to stay in Bulgaria.

[10] This increase of the unemployment rate is in the suggested grounds for updating the State Budget (April 2020) presented by the Government at the Parliament.

Each of the proposed scenarios implies that, by the end of the second quarter of 2020, there will be a strong increase in unemployment and employment restrictions on the basis of dismissals, including mass redundancies. Also, the increasing group of unemployed will include people that lost their jobs because of (i) preventive closure of small commercial and other establishments in order to minimize losses, (ii) inactive persons that will register as unemployed with a view to preserving social rights, and (iii) ex-emigrants returning from abroad. Under these circumstances, the high number of registered unemployed at the end of March and the beginning of April is a reasonable result. It eventually can be contained in the second half of 2020.

In the third quarter, employment can be positively influenced by the seasonal factor. Sectors such as tourism, hospitality and restaurants, trade, and construction will try to compensate for losses. In May, employers in these sectors are expected to announce their intentions and start re-accepting part of already released workers, or these that were temporary out of the production process (on paid or unpaid leave and for other reasons). At the end of the year (fourth quarter), the unemployment problem can intensify in case of a compromised winter tourism and poor domestic demand.

It is necessary to underline that any of the assumption made above should take into account the already achieved control on the spread of the disease. The most important challenge and priority is preserving human lives. Any economic recovery can be expected only upon getting firm guarantees about achieving positive results in fighting the virus.

6.5. Macroeconomic forecast for 2020.

The model we use is a structural one and relatively simple. We are fully aware that we cannot cover all the effects of the epidemic. We also ignore the nominal rigidity of the economy, which in principle plays an important role in determining the short-term response of an economy to external shocks, in this case, an epidemic. We are also unable to gauge whether and how large the feedbacks are – the epidemic is causing a recession, but it is not clear what the impact of the recession is on the spread of the infection. There is reason to believe that the higher the unemployment rate (provided that restrictions are strictly observed), the slower the spread of the infection, i.e. all things equal, a greater recession would cushion the spread of the infection.

Table 3

Key Macroeconomic variables

		2016	2017	2018	Preliminary data	Forecast 2020		
					2019	I scenario	II scenario	III scenario
GDP, current prices	BGN mln.	94 130.0	101 042.5	109 694.8	118 668.8	119 643	118 695	118 112
Real growth rates								
GDP	%	3.8	3.5	3.1	3.4	-2.4	-4.3	-5.7
Consumption	%	3.5	3.8	4.4	5.8	-0.8	-2.2	-3.6
Gross fixed capital formation	%	-6.6	3.2	5.4	2.2	-13.9	-17.7	-20.5
Export of goods and services	%	8.6	5.8	1.7	1.9	-0.8	-4.6	-8.0
Import of goods and services	%	5.2	7.4	5.7	2.4	-1.3	-5.2	-8.5
Prices								
Average annual HICP inflation	%	-1.3	1.2	2.6	2.5	3.2	4.2	5.2
GDP deflator	%	2.4	3.7	5.3	4.7	3.3	4.5	5.5
Labor market								
Employment rate (15+ 64)	%	63.4	66.9	67.7	70.1	62.6	60.0	58.0
Unemployment rate (15+ 64)	%	7.7	6.2	5.3	4.3	6.9	10.0	12.0
Foreign sector								
Current account	EUR mln.	1 244.0	1 537.4	773.7	2 452.3	1 930.7	1 355.4	317.6
Trade balance	EUR mln.	- 984.4	- 765.8	- 1 858.0	- 1 685.7	- 1 136.9	- 1 654.2	- 2 129.0
Capital account	EUR mln.	1 070.9	530.4	789.8	891.3	988.5	988.5	988.5
Financial account	EUR mln.	4 445.6	2 324.3	3 017.1	2 562.6	2 919.1	2 343.8	1 306.1
FDI, in	EUR mln.	1 312.5	1 759.4	1 520.2	1 348.0	1 078.4	943.6	674.0
Gross external debt	EUR mln.	34 221.4	33 397.4	33 475.9	34 071.3	34 984.3	35 382.7	35 947.3
Current account	% GDP	2.6	3.0	1.4	4.0	3.2	2.2	0.5
Trade balance	% GDP	-2.0	-1.5	-3.3	-2.8	-1.9	-2.7	-3.5
Capital account	% GDP	2.2	1.0	1.4	1.5	1.6	1.6	1.6
Financial account	% GDP	9.2	4.5	5.4	4.2	4.8	3.9	2.2
FDI, in	% GDP	2.7	3.4	2.7	2.2	1.8	1.6	1.1
Gross external debt	% GDP	71.1	64.6	59.7	56.2	57.2	58.3	59.5
Financial sector								
M3	BGN mln.	79 581.5	85 727.3	93 255.7	102 469.3	107 061.8	106 390.0	105 976.8
Credit to non-financial enterprises and households	BGN mln.	51 676.3	54 025.2	58 857.8	64 589.0	72 467.1	70 403.6	70 900.5
M3 growth	%	7.6	7.7	8.8	9.9	4.5	3.8	3.4
Credit to non-financial enterprises and households	%	1.8	4.5	8.9	9.7	12.2	9.0	9.8
Foreign currency reserves	EUR mln.	23 898.6	23 662.1	25 072.2	24 835.6	24 517.6	24 263.0	23 755.6
Fiscal sector								
Budget revenues	BGN mln.	33 927.8	35 313.6	39 647.9	44 086.9	45 921	43 854	43 546
Budget expenditure	BGN mln.	32 059.8	34 441.3	39 745.6	45 386.8	47 676	46 781	49 412
Budget balance	BGN mln.	1 868.0	872.3	- 97.7	- 1 299.9	- 1 755	- 2 928	- 5 866
Budget balance	% GDP	2.0	0.9	-0.1	-1.1	-1.5	-2.5	-5.0
GDP/M3		1.18	1.18	1.18	1.16	1.12	1.12	1.11
Employed	thousand	2 954.3	3 073.4	3 068.9	3 136.3	2 766.8	2 651.9	2 563.5
Unemployed	thousand	245.3	204.1	170.7	140.1	203.3	294.7	349.6
Revenue/GDP	%	36.0%	34.9%	36.1%	37.2%	38.4%	36.9%	36.9%
Expenditure/GDP	%	34.1%	34.1%	36.2%	38.2%	39.8%	39.4%	41.8%
Public debt (domestic)	EUR mln.	3 507.6	3 899.2	3 122.2	2 983.5	3 750	3 900	4 500
Public debt (foreign)	EUR mln.	10 273.7	9 198.3	9 093.9	9 058.7	9 560	10 000	11 500

Source: NSI, BNB and author's estimations.

7. Measures, Taken in Bulgaria

There should be no doubt that ***a working economic package will be expensive, with uncertain economic effects***. It is not yet clear which economic sectors and groups of society will be most in need of support – there is no such experience. For the first time, modern humanity is confronted with such a large scale and rapidly spreading infection. The analogies with previous episodes of recession (especially the so-called 'Great Recession' of 2008-2009) are misleading insofar as they were triggered by human activity. It is more reasonable to look for analogies with natural disasters, but they are related to material destruction and are largely local phenomena, which also makes them inapt for comparisons. What is more, the situation now is quite different from previous episodes of recessions (whether they were caused by human errors or natural disasters) since, despite the desire and the opportunities for consumption, people cannot fully realize it, and are forced to forfeit their usual patterns of behaviour and spending. On the other hand, the manufacturers themselves and much of the sales network are progressively detached from both customers and suppliers. As a result, there has been a rapid contraction in economic activity and economic growth rates have fallen dramatically.

In this regard, measures taken so far should be carefully worded and viewed from different angles, using diverse criteria:

- **Speed of implementation** of ancillary measures. The revision of the state budget took place on 9 April 2020, which can be considered a relatively quick response. Other measures, mainly in the financial sector, were announced even earlier;
- **Depth of measures**. Against the background of the already announced economic packages in some of the leading countries (for example the US and Germany), which reach and even exceed 10% of GDP, the fiscal measures of the Bulgarian government (at the moment about 2% of GDP) are rather modest, but they respond to the capabilities of the country and will certainly change as the crisis progresses. At this stage, it is difficult to make an accurate assessment as a significant part of the aid will be provided on demand and only after proving some mandatory conditions were met. Here we have to appreciate the government's intentions rather than the actual support provided. ***Our understanding is that the measures taken so far can only be useful in the implementation of the first forecast scenario. From this point of view, another budget revision will likely be needed, given that neither the planned revenue nor the expenditure in the current revision would be adequate in the implementation of the other two scenarios.***
    - We welcome the decision to increase the maximum amount of the new government debt to BGN 10 billion. Although the budget deficit is unlikely to reach such levels (this is not foreseen even in the third scenario), this the provision creates flexibility, which is extremely important in times of crisis. A separate question is whether in practice this debt will be realized, in what amount and in what form it will be. Even if the whole amount were, it does not mean it will be spent altogether.
    - The forecast for the third scenario indicates that budget expenditures exceed 40% of GDP, which is a formal violation of Art. 28 (1) of the Public Finance Act. In the

event of a prolonged crisis, Art. 28 (2) would be violated as well. It may be appropriate to consider an appropriate legislative change.

  - With regard to the measures taken by the central bank (no matter how conditional they may be given the currency board arrangement), we believe that they are adequate at this stage. As the crisis deepens, the minimum required reserves may be lowered. In an extremely deep recession, it is possible to look for ways to utilize the funds of the banking department deposit (currently about BGN 6.3 billion). This may be done only if the principles of the currency board are preserved;

- **Scope of the measures.** Some of them – such as deferral of corporate tax payments – are broad and universal as they apply to the entire business sector. Others are targeting some vulnerable groups, whose scope at this stage can only be estimated (e.g. patronage care with food and medicine for tens of thousands of single adults and people with disabilities in the country; food packages for about 40,000 socially disadvantaged). The scope of other measures will manifest in the coming weeks – e.g. the '60:40' measure, by which over 2,000 applications for 30,000 workers had been submitted by 11 April 2020; interest-free loans of BGN 1500 / month for persons affected by the crisis; a lump sum of BGN 375 for single parents, etc.

- **Saving jobs**. For decades, Bulgaria has experienced a shortage of human capital, which has deepened in recent years. This means that all companies that are laying off staff are now likely to have problems recovering. Every effort should be made to retain staff, especially in small and medium-sized enterprises. In this respect, the assessment of the '60:40' measure is ambiguous. It is helpful that the government is making efforts to support the business, but the measures should be bolder and more explicit. In this form, many of the most affected companies are unlikely to be able to benefit, as they will not be able to do their part, which limits the scope and impact of the scheme. It is worth assessing whether it will not be economically justifiable for the state to absorb 60% of wages without requiring business involvement. Thus, the funds that the state will have to transfer to the State Social Security at a later stage can be saved. Another point should be made with regard to the inactive population. In their past behaviour, some of those inactive in the economically active age (and especially young people) had been inclined to postpone starting work and waiting for a suitable opportunity to be employed abroad for a better pay. In the current conditions, however, they will not risk such a delay and will likely appear on the labour market, i.e. will be recognized as job seekers. A similar scenario is to be expected in the shadow economy, which is also shrinking in a crisis. These shadow workers may also prefer to register as unemployed, which will allow them to maintain social rights and access to social benefits. In this regard, the burden of public finances should be expected not only to cover the unemployment fund deficit and possible transfers to it, but also to a greater extent with increased costs of targeted social assistance. Mechanisms for this support also need quick adaptation to the new situation. The one-off social assistance, announced by the Government on 4 April 2020, of BGN 375 for single parents with an income below BGN 610 per person per family is a measure in this direction, but it should be further developed in order to ensure a higher degree of social protection of the poor and vulnerable population groups.

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ИКОНОМИЧЕСКИ ИЗСЛЕДВАНИЯ
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CHINA'S SILK ROAD TO EUROPE – STRATEGIES AND INVESTMENT

This article argues that Chinese overseas direct investment is not so much market-driven, but a result of long-term strategies and policies. These are an important basis in any analysis of the status and trends of Chinese investment in Europe. Therefore, the article aims to describe the most important strategies and policies that determine Chinese foreign investment in general, different market entry models, and to analyze the situation in Europe.
JEL: F42; F64; F68

1. Introduction

1.1. Importance of the Research

China's outward investment has drawn the attention of foreign business, governments, academic institutions and business consultancies in recent years, especially after 2009 when the country became the fifth by OFDI in the world. Chinese outward investment flow increased from USD 2.7 bn in 2002 to USD 55.9 bn in 2008 and continued rising adding a new digit in 2013 to USD 107.8 bn and becoming the second country by outward investment flow in 2015 with USD 145.7 bn. Meanwhile investment stock rose steadily from USD 29.9 bn in 2002 to USD 183.9bn in 2008 and reached USD 1809bn in 2017.

The period between 2013 and 2015 marks a milestone in the investment trends of Chinese companies overseas. Investment focus shifted steadily to Europe and Africa, away from countries in North and South America, while keeping relatively the highest portion in Asia. This shift was marked by an annual growth of around 72% in the investment flow from China in both continents in 2017, and inevitably drew the highest attention of European business and government. New restrictive policies have come up in the following years in key recipient countries, in the aim to protect their markets, resources and technologies from Chinese investors.

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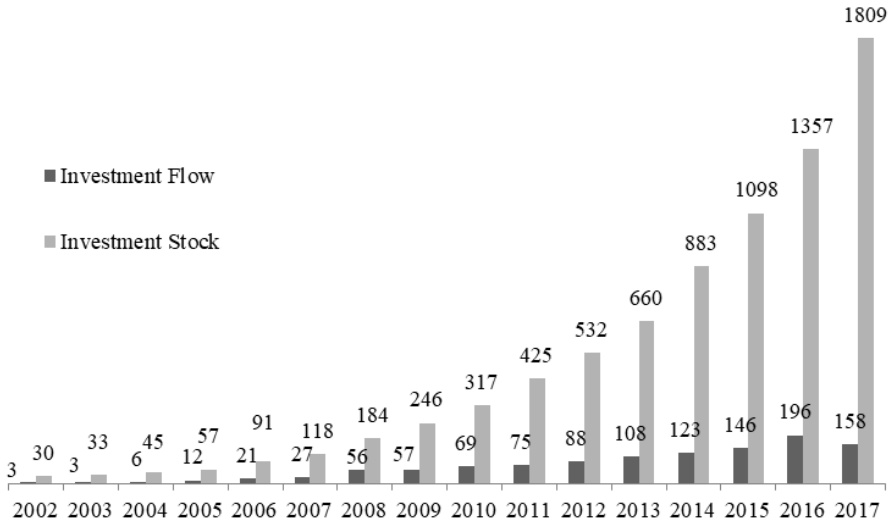
Figure 1

Chinese Outward Investment, USD bn



Source: Ministry of Commerce of China (MOFCOM).

At the same time, there was an increase in Chinese M&A deals, in the acquisition of technologies and mature businesses with productions basis with access to resources. The market saw more aggressive participation of Chinese companies in biddings for infrastructure and energy projects. Natural resources imported to China are re-exported with higher value-added, but met constraints with the newest trade restrictions and local protectionism in Europe and other markets. Investment in production basis out of China once allows for market access for these products, decreases resource transport cost in some cases, and at the same time resolves production overcapacity problem in mainland China.

It is not easy, however, to understand and explain all these trends just by the market rules and economic principles. Trends such as underuse of local stuff in overseas projects, running projects at zero profit, or even at negative financial performance, inability to perform projects in specific cases, rose concerns about the market orientation of Chinese investment, and cause misunderstanding of various forms.

This article aims at explaining the routes of the investment, its origin in China's strategies and policies, the fundamentals for overseas investment. This requires a detailed look at the specific regulations and development directions, so as to understand the current situation in a more comprehensive manner, and be able to foresee future development.

1.2. Research Methodology

The article is a political economy research. It uses documental analysis method to describe and summarize the main government strategies for China's going global, specific policies

concerning incentives for overseas investment and restrictions for some industries, financial instruments and regulatory support for Chinese companies in their overseas business. The article aims at including all fundamental principles of each strategy, its scope, target, indicators to monitor efficiency, timeline for completion, involved parties in the strategy/policy, detailed instruments. The analysis includes a linkage between strategies and explains the natural logic for the development of each next regulatory step.

The first part of the article makes a historical review on the main strategy for Chinese outward investment, the "Go Global" strategy, updating all recent developments in the political course of the strategy.

The second part of the study deals with four additional strategies in close connection with the "Go Global" strategy, that enable the realization of the overall goal of becoming a leading economic power in the global market. The article includes description and analysis on the "Made in China 2025", "Central and Western China Development", "One Belt, One Road", and "17+1" strategies. Each strategy includes goals, scale, data on realized investment, sectors covered, and overview of key projects. Analysis on the connection between the different strategies and their role in the overall Go Global strategy goes together with the data and facts.

The third part of the article focuses on Chinese investment in Europe. It uses statistical analysis, presenting data into graphs. This part shows the results of the strategies in the real economy, indicating some trends and directions that relate to the already described strategies in the previous parts.

2. Historical Review of China's Go Global Strategy

2.1. China's Go Global Strategy

Dun Xiaoping laid the foundations of China's strategy to enter the global market in the late 1970s with the introduction of a reforming policy to open the country's economy to the world (CCPIT, 2007). China became aware that it cannot develop without the world, and must seek active economic cooperation with countries around the world. The boom in investment from the last few years to 2019 is precisely the result of this strategy, and it shows the long-term policy of the country, the relentless search for models to enter the world market, and the pursuit of ever more ambitious goals. Initially, the strategies were driven by the country's need for resources, technology and capital, but after 30 years of economic development, China started seeking its place as a global leader in the major sectors of human development and civilization.

Whether this will happen is not a question anymore, the question is when it will happen. How it will happen is also not a question, because if it doesn't work this way, it will work that way. One can find the argument for this hypothesis in the historical overview of the strategic framework for China's going global.

The models of going global have evolved in several stages, characterized by different governance (China Policy, 2017).

Phase One

Between 1978 and 1992, under the government of Deng Xiaopin, the focus was on developing international trade, gradually reducing trade deficits, and a increasing exports. The leading model included the export of Chinese goods to the world market, export of mainly low value-added resource products, produced by labour-intensive industries. This was a phase of exploring the depth of the international market and commercial practices.

This was also a period of active construction and operation of special economic zones in China. Since 1980, China has begun setting up special economic zones first in Shenzhen, Zhuhai, Shantou, and Xiamen to create a favourable investment climate and attract foreign investors. In 1984, the creation of 14 coastal special economic zones began. This was a result of the following measures:

- Creation of a complete set of infrastructure facilities in the zones;
- Implementation of preferential tax policies for foreign investors, such as abolishing import tariffs on equipment and reducing corporate income tax;
- Providing incentives for export-oriented projects with foreign investment, such as further reducing the corporate income tax on export output by 50% for those enterprises where exports account for 70% of income.

The establishment of industrial development zones of new and high technologies, zones for processing of export goods, and zones with different functions has started.

In order to stimulate exports and upgrade the added value of goods, a preferential policy was introduced for products with imported materials for processing in China and re-export as finished products. For this purpose, processing and re-exporting enterprises were exempted from import duties on raw materials and from taxes related to imports such as VAT and others.

In the mid-1980s, a dual exchange rate system was introduced to promote exports. The Chinese government allowed exporters to retain some of their earned foreign currency and sell it at exchange rates higher than official foreign exchange swap rates, where exchange rates are determined by the market rather than the government. Import-substitute sectors could import equipment and technology at officially quoted exchange rates, which were artificially overestimated to reduce import costs. In 1994, China reformed its currency exchange system, abolished the currency swap market, and introduced a single, manageable floating rate system.

China began implementing a policy to reduce indirect export taxes in 1985. The initial practice was to refund the product tax imposed on the export products of the exporting companies. Following the reform of the tax system in 1994, China abolished product taxes and levied VAT and excise duties; in this way, the tax rebates were altered to the reimbursement of VAT and excise duties imposed on the exported products.

Phase Two

Since 1992, under the government of President Jiang Zemin, the Go Global strategy has been decoupled as a stand-alone. The experience of recent years was summarized and the importance of investing abroad in developing international business activities was highlighted. Politicians appreciated the importance of setting up production bases abroad and using local markets and resources abroad. Chinese companies started gradually establishing their own sales channels abroad, or their own branches, or sales offices.

The business scope and scale of Chinese companies abroad gradually expanded. The overall business model and management system were reorganized. Chinese companies started setting up a number of operations abroad, including research and development centres, manufacturing facilities, sales/after-sales centres, and more. They wanted to have potential markets closer and diversify their industrial chain services abroad.

Phase Three

The third period is during Hu Jintao's government starting in 2002, marked by several important trends and developments that outline the following directions for opening China to the world:

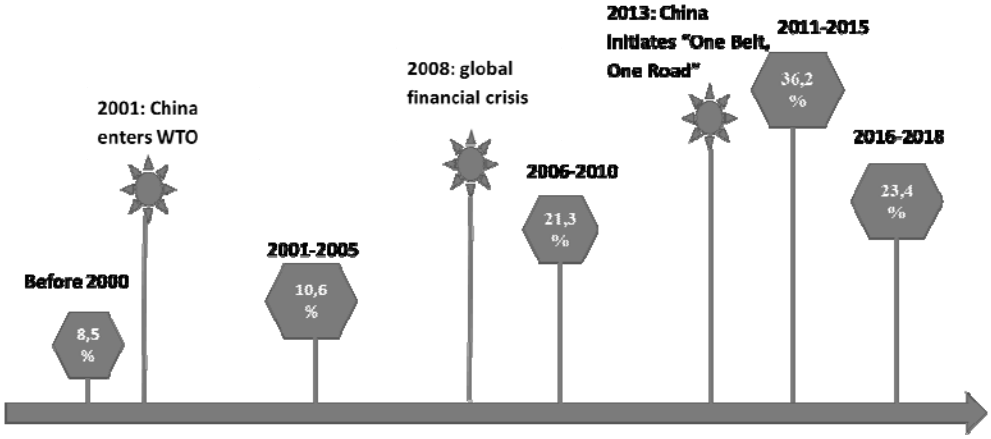
1) China's commitment to World Trade Organization with its entry in 2001, including the phasing out of part of the financial and foreign exchange markets restrictions, opening up more sectors to foreign investors and reducing trade barriers to foreign goods;
2) prioritization of the development of the national economy and informatization of the society, active development of the technological sector and increased interest in acquiring foreign technologies, launching of strategies for digitalization of all sectors, etc.;
3) prioritization of the revitalization of the old industrial system in the period up to 2005, which is a prerequisite for the development of subsequent strategies for launching large companies on the world stage;
4) launching of environmental protection policies in China at the expense of rapid economic growth.

Since 2005, China has introduced several policies and measures to reduce exports of polluting, energy-intensive and resource-intensive products. These policies include reducing or waiving the export tax rebate, introducing export tariffs, banning processing trade and even export quotas (for certain types of chemical fertilizers, for example).

This stage is often referred to as “the era of globalization”. In addition to state and private capital, it includes the process of going abroad. Investment areas are diversifying, taking a new strategic direction. The direction is shifting from the integration of the industrial chain to the distribution of assets on a global scale and moving up the global value chain.

Figure 2

Percentage of Chinese companies operating abroad



Source: AON, 2018, BAS.

The Central and Western China Development Strategy was launched in the early 2000s, setting a number of goals and instruments to balance the uneven regional distribution of economic activities in the country (State Council, 2013). In order to achieve the goals of this strategy, the "**One Belt, One Road" initiative** was developed in 2013, aiming at infrastructure connectivity and facilitation of transportation of goods and services from central and western China to Europe via the Silk Road (Cai, 2017). The strategy seeks to revive the old Silk Road by investing in infrastructure and facilitating transport links. This is an impetus for new government investment abroad and the creation of a number of platforms for the exchange of cooperation and ideas in the political, economic, educational and cultural fields.

A new stage in the development of the strategic framework for Chinese companies going global comes with the government of President Xi Jinping in 2013. Several specific strategies are being launched to achieve the goals of China's Go Global strategy. Among them is "**Made in China 2025**", which directly affects the development of the manufacturing sector in China. The strategy aims to form key industrial sectors in which China to be the No. 1 in terms of market share in the world and reduce its dependence on foreign technologies, stimulating innovation in the country (Consulting Council on SCSMC, 2015). Supporting strategies or strategies-tools to achieve the "Made in China 2025" goals are:

1) *China's regional development strategies*, including the development of the central and western China and the regions along the Yangtze River, the Pearl River Delta, and the Beijing-Tianjin-Hebei Region – in the south and east China;
2) *One Belt, One Belt Strategy* (Cai, 2017); linking central and western China with central Asia and from there with Europe, aiming to build infrastructure and facilitate transport links for exporting goods from manufacturing enterprises.

3) *The 17+1 Strategy*, building a platform for economic cooperation with the "door of Europe" – namely 17 countries in Eastern Europe, from Estonia in the north to Greece in the south and from Bulgaria in the east to Bosnia and Herzegovina in the west.

Since 2013, China has launched the creation of Free Trade Zones in order to free up import and export rights and expand free currency and bandwidth zones. In 2018, the Customs Administration of China announced the operation of special customs surveillance zones with warehouses for the release of goods in 37 cities in China. The creation of these zones facilitates cross-border trade with China, and e-commerce.

Supporting investment policies abroad by 2015

The state pursued a targeted policy even before the strategies mentioned above were created. Chinese companies' entry into the global market has been governed by specific guidelines and policies since 2003-2004 through priorities for the lending of projects abroad by the Chinese Export and Import Bank of China (EXIM), which finances Chinese activities companies abroad.

In 2004, the National Reform and Development Commission (NDRC) published "Administrative Measures for Investment Projects Abroad" (NDRC, 2004) and a little later in 2006, the State Council of China published an opinion on the measures, adding more specific criteria and priorities for EXIM.

In 2009, the NDRC published a new document on the administrative measures developed with the Ministry of Commerce (MOFCOM, 2009). This document decentralized the power to approve foreign investment and delegated it to the local departments of the Ministry of Commerce, with the exception of a few sensitive strategic areas. The investment approval procedure was simplified with only one application form and the response time was reduced to no more than three working days. Investors were allowed to evaluate the feasibility of their proposed projects abroad, while maintaining the role of the Ministry of Commerce in negotiating bilateral and multilateral investment agreements. Last but not least, the document set out guidelines for how investors should conduct business in the host countries.

New guidelines and policies were set out in the **12th Five-Year Development Plan 2011-2015** (APCO, 2010) It stimulated the boom in Chinese investment abroad. It contains two interrelated documents, which are the basis for the subsequent two strategies for launching a global market (Sauvant 2014).

The first document is *the Industrial Plan for the 12th Five Year Period*, which sits at the heart of the development of the "Made in China 2025" Strategy, published at the end of the period, effective in 2015.

The second document is the *12th Five-Year Plan for Foreign and Domestic Foreign Direct Investment*. These documents identify five priority areas for industrial sectors with potential for investment abroad. The areas are as follows (Sauvant 2014):

- outsourcing production to places where technologies in the local market are developed and global demand is high;
- establishing industrial parks abroad in regions where conditions are favourable;
- developing/participating in international projects for the exploration and collaboration of important energy and natural resources, such as oil and gas, iron ore, uranium, copper and aluminium, as well as the construction of long-term, stable, safe and diverse multi-channel natural resource delivery systems;
- establishing research and development centres in technology-intensive regions abroad and cooperation with foreign R&D institutions and innovative enterprises; and
- developing complete engineering projects by capable and wealthy large corporations; acquisition of units and companies and greenfield investments; international registration of intellectual property rights; creation of global marketing and sales networks and regional sales centres; and global resource configuration and integration in the value chain.

The government also identifies three priority areas for outward investment:

1) support for the active involvement of Chinese companies in natural resource projects abroad in order to ensure a sustainable, stable, economical and secure supply of energy and natural resources;
2) accelerating the implementation of technological advancement;
3) effective expansion in foreign markets.

Additional support was also provided by the State Tax Administration in the form of regular deductions and corporate tax exemptions to avoid double taxation, tax reductions on oil and gas revenues from overseas Chinese enterprises, and special corporate income tax (reduced from the normal tax rate of 25 to 15%) for high-tech enterprises certified by the Ministry of Science and Technology (Sauvant 2014).

Additional provisions are also available from the central bank for approval of project lending and some specific operational documents as follows (Sauvant 2014):

- Notice from the People's Bank of China on issues related to the macroeconomic management of all cross-border financing;
- Catalogue of Countries and Industries for Top Investment Abroad (updated as of July 28, 2017, March 10, 2015, etc.);
- Global Investment and Cooperation Information Services System;
- Guide to Chinese Outbound Investment Report (2017).

In reality, until the advent of special supplementary policies, many state-owned companies entered the global market, but in fact, did not have a clear strategy and the necessary management level. There are few companies with international competitiveness and well-known and influential brands. This trend began actively after 2015, with the launch of

several important strategic courses – "One Belt, One Road", "Made in China 2025", and "16+1" (now "17+1"). Until then, the following activities abroad were typical:

- *Greenfield Subcontractors and Investments*: Unfortunately, when bidding, Chinese companies do not always understand the situation properly, and they appear to have insufficient risk management mechanism, and managing the post-auction project is challenging. Therefore, they reorient themselves to BOT and PPP performance models. Yet, it is doubtful how profitable are these projects for Chinese companies, and whether it is more a matter of stepping into the market, and building experience, rather than economic stimulus. There are also barriers to protectionism for local enforcement firms, especially in European Union countries, and especially for infrastructure projects, which on one side is hindering the development of such projects, on the other side, makes these projects a necessary step for the market, even without any profit.
- *Mergers and Acquisitions of Foreign Companies*: The result of numerous mergers and acquisitions is not particularly good due to poor management. There are also commercial and financial risk management challenges. There is rarely information about how companies are coping with the business of foreign companies they have purchased, whether they are retaining market positions, whether they are expanding their business, or simply buying technology and know-how.
- *Imports and Exports:* Most of China's exported goods and services are low value-added products such as textiles; and the export of high-end equipment is only just beginning, represented by high-speed rail and nuclear power. From 1978 to 2009, the percentage of raw materials / primary commodities in total exports fell to 5.3 from 54%, and the percentage of manufactured goods increased from 47 to 94.7%. by production volume of more than 170 types of products and first of all by volume of exports of 774 types of products.

Since 2014, the National Development and Reform Commission (NDRC), the Ministry of Commerce and the State Currency Administration have promulgated a number of regulations and policies to encourage foreign direct investment by Chinese companies, which greatly simplified the administrative process for approving investment abroad, for approval of foreign exchange operations. The number and scale of investment projects of Chinese enterprises abroad grew rapidly. However, since the second half of 2015, due to the impact of the RMB exchange rate fluctuations and to curb some illegal and non-compliant activities such as money laundering and currency arbitrage in the name of investing abroad, regulatory authorities started to tighten the control of investments abroad.

Sectoral policies during the 13th five-year planning period

On December 6th, 2016, the NDRC, the Ministry of Commerce, the People's Bank of China and the Currency Bureau announced measures to control some irrational external investment trends in specific areas. The government supported local capable and skilled enterprises to carry out real investment activities abroad; supported enterprise-based and market-oriented investment abroad in line with business principles and international practices, especially in support of corporate investment and construction under the One

Belt, One Road strategy and international capacity cooperation. The purpose of the new measures is to strengthen the financial management of foreign investment by state-owned enterprises, prevent financial risks from foreign investment and improve investment efficiency.

In August 2017, "*Notice No. 74 on Guidelines on Further Guiding and Regulating Overseas. Investments"* (Guobanfa [2017] No. 74) was published. This document regulates the direction of investment abroad by enterprises by dividing investment projects abroad into three categories: promoted, restricted and prohibited. According to the list, the industries that should limit the investments of companies abroad are:

(1) Real estate

(2) Hotels

(3) Cinema

(4) The entertainment industry

(5) Sports clubs

(6) Creation of investment funds or investment platforms without specific industrial projects abroad.

Shortly afterwards, in November 2017, the NDRC, the Ministry of Finance, the Central Bank and the Ministry of Commerce published "*Guidance on Strengthening the Credit System in the Field of Foreign Economic Cooperation*", "*Memorandum of Cooperation for Joint Disciplinary Actions against Entities with Serious Distrust in the Field of Foreign Economic Cooperation*". This opinion is in addition to the already announced notice of the State Council on establishing a social credit system in all areas of economy and society for the period 2014-2020, supplementing the system with the manifestations of enterprises in foreign economies.

Since the beginning of 2018, a number of ministries in China, incl. the Ministry of Industry and Information Technologies, the Ministry of Agriculture and Rural Areas, the Ministry of Culture and Tourism, the State Radio and Television Administration and other regulating bodies of certain sectors actively apply the working conditions and requirements of the State Council, promulgate and introduce a number of policies encouraging businesses to "go global" and target countries specifically in the "One Belt, One Road" initiative.

The Ministry of Commerce's *Overseas Investment Report* (MOFCOM, 2018) summarizes the most important sectoral policies of the three ministries (agriculture, culture and industry), with most policies affecting the industry sector. Some of these are presented here to clarify the direction of promoting investment abroad:

Guiding Opinions on the Financial Support for Building a Strong Manufacturing Country [2] aims at expanding the channels of financing the manufacturing industry to go global. Supports foreign investing companies to borrow through the use of foreign assets and equity as collateral, supports cross-border financing of manufacturing enterprises, the

[2]关于金融支持制造强国建设的指导意见

creation of currency pools, cross-border two-way RMB funds, under the macro-prudential framework of the management policy. Supports qualified domestic manufacturing companies to use overseas markets for issuing shares, bonds and asset securitization products. Improves the support policy for manufacturing enterprises to enter the global market. Continuously optimizes currency management to meet the real and reasonable needs of manufacturing companies' currency purchases when entering the global market, encourages the creation of investment funds abroad for RMB, and encourages the further expansion of short-term export credit insurance.

Notice on the Work for Quality Industrial Brands in 2017[3] aims to extend the social impact of Chinese industrial brands. Encourages the promotion, exhibitions and exchanges of local and industrial brands, enhancing consumer confidence and promoting the promotion of Chinese industrial brands abroad. The document also calls for alignment with the One Belt, One Road initiative (OBOR) by extending methods of cooperation between Chinese and foreign businesses, using innovative business models to enhance overseas business and branding ability.

Action Plan to Promote the Development of the Automotive Battery Industry[4] encourages mutually beneficial cooperation between high-level local and foreign enterprises and encourages the exchange of battery and talent technologies, project collaboration and industrialization of achievements. Supports local battery companies in technology production, product exports and overseas investment to build factories, encourages skilled enterprises to set up R&D institutions in developed countries.

An Innovative Plan for the Development of a Modern Carbon Industry[5] An innovative plan to develop a modern coalition encourages China's pragmatic cooperation with OBOR countries, taking advantage of China's technology, equipment, engineering and human resources to apply pressure in countries with rich coal resources and environmental capacity on internal resources and the environment. chemical industry

Additional Notices on the Medium and Long Term Development Plan for the Automotive Industry guides automotive companies to formulate international development strategies. It is deepening the reform in managing investment abroad and building a "green channel for international cooperation in the automotive industry". Encourages profitable enterprises to choose a differentiated path of development and gradually move from export-oriented to in-depth modes of cooperation, such as investment, technology and management, so as to 'become global' for products, services, technologies and standards. It underpins the synergy of cars with Chinese brands and international engineering projects.

Emergency Industry Growth and Development Action Plan (2017-2019) aims to strengthen international cooperation with the emergency industries of the OBOR countries and with developed countries such as Germany, the USA, Japan and others. Encourages businesses to actively explore markets abroad, to offer complete solutions from system integration,

[3]关于做好 2017 年工业质量品牌工作的通知
[4]关于印发 促进汽车动力电池产业发展行动方案 的通知
[5]现代煤化工产业创 新发展布局方案

through product delivery, emergency services, and to the operation and maintenance of overseas rescue facilities.

Special Support for the Participation of Small and Medium-sized Enterprises (SMEs) in the Construction of OBOR[6] aims to build a service system to support the international development of Chinese SMEs, deepen cooperation between Chinese SMEs in trade and investment, technological innovation and cooperation with production capacity in OBOR countries.

Three-year Action Plan for the Development of Industrial E-commerce[7] encourages the further development of a comprehensive e-commerce pilot area, encourages increased cooperation between industrial enterprises and e-commerce platforms, the expansion of international markets, and the promotion of Chinese products exports and the entry of Chinese enterprises into the global market.

Three-year Action Plan for the Creation of the Double Innovation Platform[8] in line with the state strategy to support manufacturing companies, internet companies and telecommunications companies. The plan envisages strengthening international cooperation and expanding international markets in support of the platform's construction, using actively bilateral and multilateral mechanisms for international cooperation.

Opinion on Accelerating the Development of the Production of Environmental Protection Equipment[9] encourages environmental protection companies to enhance cooperation abroad through alliances with foreign companies, to actively expand foreign markets, to introduce technology from abroad through joint research, development, direct investment, construction and operation of conservation projects of the environment.

All these policies and timely measures are an important prerequisite for the development of Chinese investment abroad. One can also notice the special attention that the government is receiving specifically for investments in OBOR countries that are prioritized as a guide for development and promotion in almost every new policy or regulation. At the same time, the elimination of unhealthy projects and investments is also the reason for the decline in Chinese investment abroad in 2018, as an additional effect of the already tightened regulatory measures in the EU countries with the highest inflow of investments.

3. Strategies Review

3.1. "Made in China 2025" Strategy

The "Made in China 2025" strategy was officially announced on May 8th, 2015. The strategy proposes to achieve strategic goals for a country with a strong manufacturing sector in three steps:

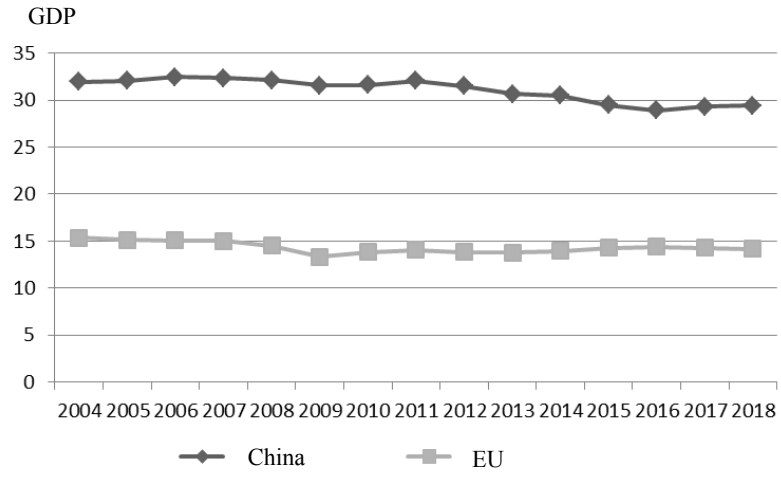
[6]关于开展支持中小企业参与"一带一路"建设专项行动的通知
[7]工业电子商务发展三年行动计划
[8]制造 业"双创" 平台培育三年行动计划
[9] 加快推进环保装备制造业发展的指导意见

- *The first step* is to include China in the list of strong manufacturing sectors by 2025.
- *The second step* is to become one of the strongest countries in the manufacturing sectors by 2035.
- *The third step* is to have China at the forefront of the strongest manufacturing sectors in the world by the 100th anniversary of the establishment of New China (2049) (Consulting Council on SCSMC, 2015).

The manufacturing sector in China is the economic field with the most developed market mechanism, with the main engine being the private economy, which plays an extremely important role in China's economic development.

Figure 3

Contribution of the manufacturing sector to China's GDP



Source: World Bank.

There are three main arguments for the creation of the strategy:

- The strategy is necessary to meet the needs of the new global technological and industrial revolution;
- After the financial crisis, all countries take steps to develop their manufacturing sectors.
- China's manufacturing sector has already achieved competitiveness and global market integration in many areas, which is an important prerequisite for considering overall improvement.

The "Made in China 2025" Strategy defined nine strategic objectives and priorities for development (Consulting Council on SCSMC, 2015):

1) Improving the capacity for innovation in the country's production;
2) Encouraging deep integration of computerization and industrialization;
3) Strengthening of industrial infrastructure;
4) Building strong brands;
5) Comprehensive promotion of green production;
6) Promoting breakthroughs in 10 key areas focused on the next generation of:
    - the information technology industry,
    - high-tech micro-controlled machines and robots,
    - aerospace equipment,
    - offshore engineering equipment and high-tech ships,
    - modern railway transit equipment,
    - energy savings and new energy vehicles,
    - energy equipment,
    - agricultural machinery and equipment,
    - new materials,
    - biomedicine and highly efficient medical equipment;
7) Restructuring of the manufacturing sector;
8) Active development of production for the service sector and production type of services;
9) Improving the level of international production development.

The implementation of these tasks is monitored by specific indicators for the development of the 10 areas (Table 1).

Table 1

Main indicators for the MFG sector 2020 and 2025

№	Indicator	2015	2020	2025
1	**Category: Innovative abilities**			
	R&D share of total expenditures in the income of manufacturing companies above the specified size (%)	0.95	1.26	1.68
	Number of discoveries and patents for every 100 million RMB in revenue of companies above the specified size*	0.44	0.70	1.10
2	**Category: Quality Efficiency**			
	Manufacturing Sector Competitiveness Index**	83.5	84.5	85.5
	Increasing the value added of the manufacturing sector	-	2% over 2015	4% over 2015
	Growth rate of productivity of all employees in the manufacturing sector (%)		~7.5[10]	
3	**Category: Digitization and Automation**			
	Broadband popularization (%) ***	50	70	82
	Popularization of design tools for digital development (%)****	58	72	84
	Digitization and automation of key workflows (%)	33	50	64
4	**Category: Ecological Development**			
	Decrease in energy consumption of the added value in the production of companies above the specified size (%)	-	18% down from 2015	34% down from 2015
	Reduction in carbon consumption per value added in production (%)	-	22% down from 2015	40% down from 2015
	Decrease in the water consumption per value added production (%)	-	23% down from 2015	41% down from 2015
	Utilization of solid waste in the industrial sector (%)	65	73	79

** Number of valid patents for inventions per 100 million RMB basic business income of manufacturing enterprises above the specified size = number of valid patents for the invention of manufacturing enterprises above specified size / basic business income of manufacturing enterprises above the specified size.*

*** The Production Quality Competitiveness Index is calculated from a total of 12 indicators.*

**** The degree of penetration of broadband networks is represented by a fixed frequency of penetration of broadband households.*

***** It is calculated by dividing the number of enterprises for design tools and projects above a certain income scale / by the total number of enterprises over a given income scale (the corresponding data come from 30 000 sample companies.*

Source: State Council of PRC, (State Council, 2015).

3.2. Central and Western China Development Strategy

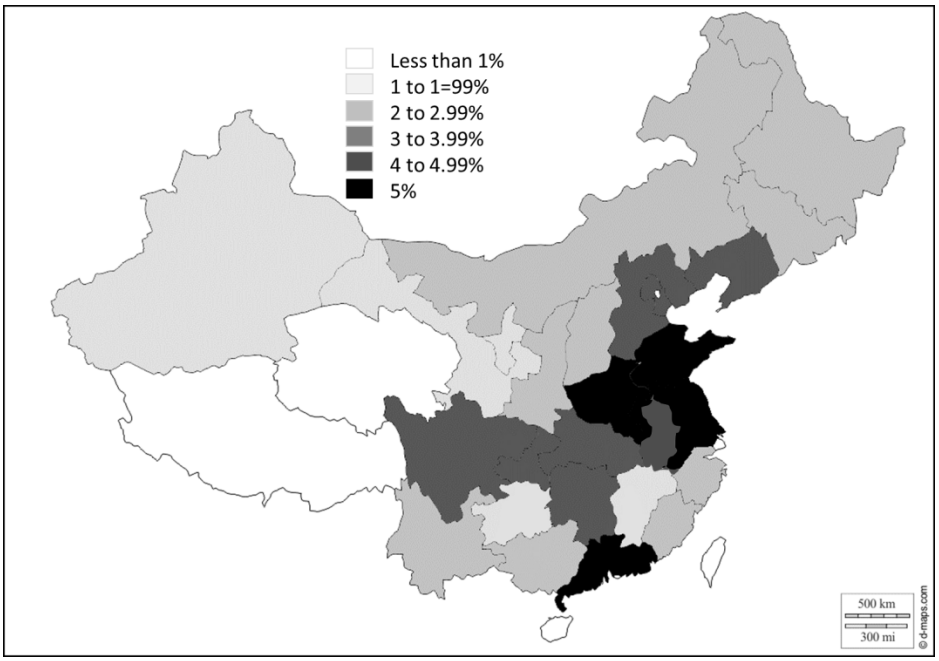
The Central and Western Development Strategy aims to balance regional differences in the country's economy. The distribution of population, economic resources, and product output

[10] Average value for the 13th Five Year Plan period.

differ radically in eastern and western China. The central and western parts of the country occupy about 60% of the country, but include mainly high mountain areas and the Gobi Desert. The land is large, with only about 400 million people (less than 30% of the total population) living in it, generating about 20% of the country's GDP in 2017.

Figure 4

Regional distribution of China's GDP in 2017



Source: Rob Gamesbay, http:/www.coolgeography.co.uk, BAS.

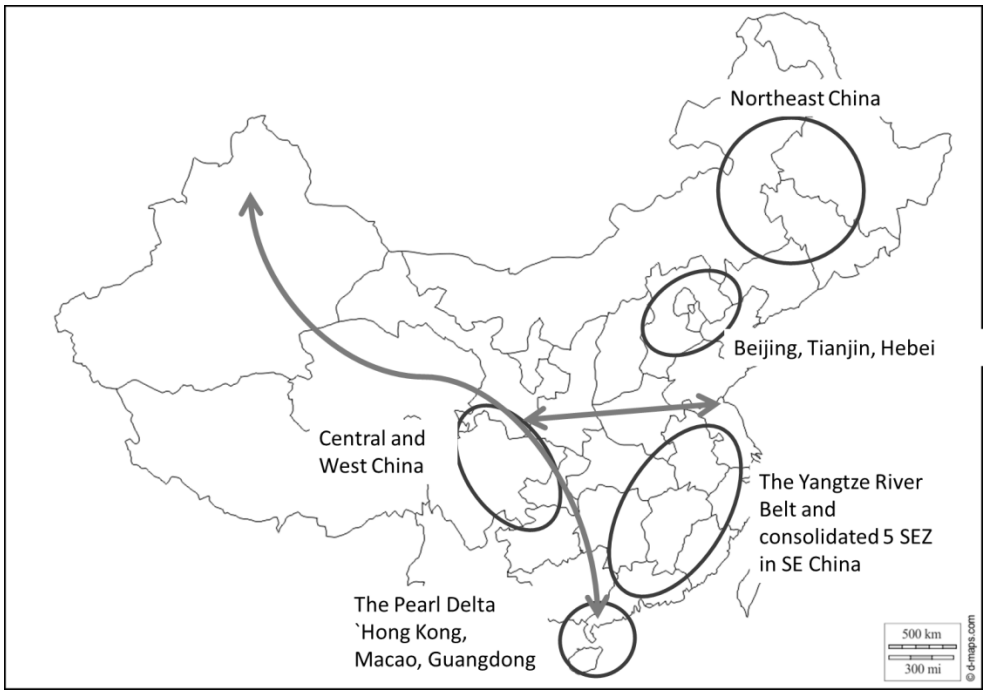
The concept of the central and western regions development was developed in the late 1990s, but was formally published in 2000 and entered into force in 2001. Special economic zones and free trade zones were built around the cities of Chongqing and Chengdu in central China and consolidation of the eastern zones. In 2009, the Western Triangle Economic Zone was formed.

The zone alone generated 40% of Western China's GDP as defined by the strategy. From 2000 to 2016, the Chinese government invested 6.35 trillion RMB (USD 914 billion) in 300 major projects, mainly infrastructure, education and talent retention, according to NDRC publications.

The strategy aims to ensure the sustainable development of the regions in western China through public investment in infrastructure that connects the region with southern and eastern China. This is also the place where the land transportation links with the countries of the One Belt, One Road initiative start. The initiative subsequently becomes a strategy, directly affecting Bulgaria and the countries in Eastern Europe.

Figure 5

Main Areas of Regional Development Policies



Source:BAS.

The main objectives of the strategy include the construction of logistical corridors between Nanning-Chongqin-Urumqi, rail and land transport by 2020, and the construction of river ports and logistics hubs. By 2025, the strategy aims at a highly efficient, green economy with multifunctional transport corridors.

A new plan released in January 2017 and new targets in the country's 13th five-year plan by 2020 strengthen coordination between the Western Development Strategy and other important strategies such as One Belt, One Road and Economic Development the Yangtze River Belt.

As a result of the consistent implementation of the objectives of the strategy over the last 10 years through 2018, central and western China regions show higher economic growth than eastern China regions (Xu, 2018). For the period 2012-2017, GDP per capita increased by 7.2, 8, 8.2 and 5.4% respectively in eastern, central, western and northwestern China. From 2000 to 2017, GDP in the western region increased from 1728 billion RMB to 17.1 trillion RMB and its share in China's total GDP rose from 17.5 to 20%. GDP per capita in the western region increased from 4,948 RMB to 45,522 RMB in the same period, or 62.3% from the average of China in 2000 to 76.3% from the average in 2017 (Xu, 2018).

3.3. "One Belt, One Road" Strategy

The One Belt, One Belt Initiative (OBOR) was launched in 2013 and entered into force in 2014. The OBOR is a comprehensive new national strategy for economic development and opening up to the world, proposed by President Xi Jinping during his visit in countries in Southeast Asia as an initiative to build the Silk Road Economic Belt and the 21st Century Silk Road on March 28th, 2015. The NDRC, the Foreign Ministry and the Ministry of Commerce jointly announced their intention to take action to build a silk belt and a 21st-century silk road.

The initiative and its core concepts are documented in documents by the United Nations, the G20, APEC and other international and regional organizations. In July 2015, the Shanghai Cooperation Organization issued a "Ufa Declaration to the Heads of State of the Shanghai Cooperation Organization" showing support for the Silk Road Economic Belt initiative.

By the end of March 2019, the Chinese government had signed 173 cooperation agreements with 125 countries and 29 international organizations. The strategy is expanding from Asia and Europe to include more actors in Africa, Latin America and the South Pacific (OBOR, 2019).

It is a global strategy based on political dialogue, infrastructure interconnection, trade opening, capital sharing, and people-to-people connection.

The strategy is an additional policy instrument for the development of the western regions, creating an opportunity to continue the infrastructural connectivity of western China with the countries along the Silk Road. This connectivity is clearly evident from the map of rail links between central and northwest China, and central and southern China.

Better transport links go hand in hand with the Standard Connectivity Action Plan 2018-2020, which is a follow-up to the 2016-2018 Plan (Action Plan, 2018). The main objective is to create a new situation by 2020 for the development of international standardization through exchange and mutual learning, openness, inclusion, interconnectedness and sharing of results and to create a new model of work on the internationalization of standardization. The area of mutual recognition of standards is expected to expand, with a target of at least 1000 standards by 2020, and possibly 2000.

The map also clearly shows the final destination of the Silk Road, namely the markets in Western Europe, the countries that currently, and in the last few years, have received the largest volume of Chinese investment. In this sense, one can see the involvement of Bulgaria in the construction of the infrastructure connection – the corridor on the west coast of the Black Sea, which, however, is not specified in the new plan of the NDRC for the development of the transport corridors for the period 2019-2025, with a perspective until 2035.

Figure 6

New Corridors for the Transport Connectivity of the Silk Road

Source: Sohu, 2019, http://www.sohu.com/a/327856621_118392.

The OBOR strategy subsequently integrates with the goals of “Made in China 2025” and is a strategic guideline for the regional and sectoral development of the Chinese economy. Another feature of the OBOR is that it relies on moving China’s production abroad as a measure to overcome China's overcapacity problems and lower demand in the global market for various reasons. Therefore, the structure of investment in Europe is different from that in Asia or other parts of the world. In Europe, the share of investment in the manufacturing sector is relatively higher than in all other parts of the world. A comparison of the data is presented in the next section of this article.

The countries involved in the strategy increased in the years to 2019, as did the scope of investment. According to data from the Ministry of Commerce of China, in the period from 2013 to 2017 China invested USD 82 billion in the OBOR countries, and a total of USD 7.4 billion in the first half of 2018. Investment in the region is up 12% year-on-year and China is expected to build 82 areas for foreign economic and trade cooperation. The newly added investment in the cooperation area is 87% of the total investment; the host country's taxes and fees paid reach USD 3.3 billion.

In 2017, Chinese companies made investments in nearly 3,000 firms in the OBOR countries, in 17 large sectors, with a total investment value of USD 20 billion, an increase of 31.5% compared to 2016 (USD 15.3 billion), etc. The share of Chinese foreign direct

investment in OBOR countries is 9.5% of all overseas in 2016 and 12.5% in 2017 (MOFCOM, 2018).

The main investment recipient countries are Singapore, Kazakhstan, Malaysia, Indonesia, Russia, Laos, Thailand, Vietnam, Pakistan and others. The total value of investment from the beginning of the strategy to the end of 2017 reached USD 154 billion. The Chinese map also shows the connectivity of the two roads through central and western China.

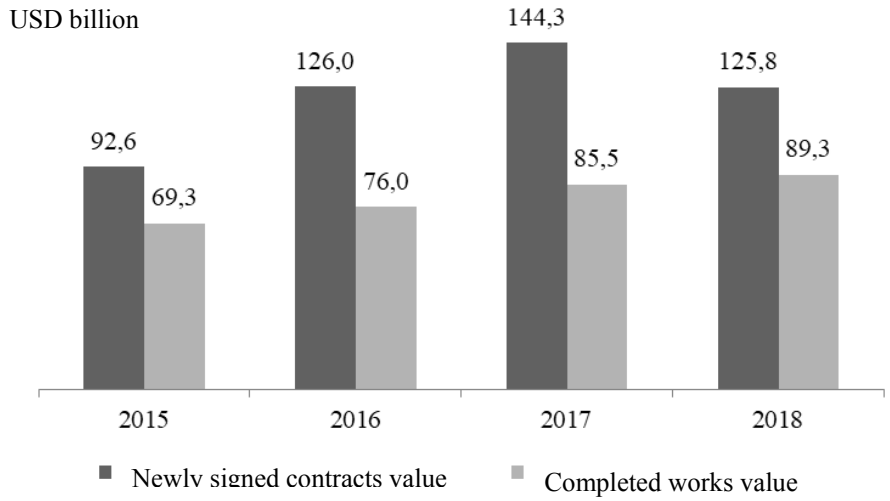
China's state support for OBOR projects includes:

- National Railway Express Company Plan for the construction of 43 hubs and 43 railway employees lines.
- Construction of a sea express line to shorten deliveries from China to Europe by 7-11 days.
- Construction of railway line Serbia-Hungary voted in 2016 as a key element of the China-Europe land and sea express line.
- Synergy between the OBOR Initiative and the Hungarian Open East Initiative, the Polish-Croatian Three Seas Cooperation Initiative and the EU Danube Strategy.

Following the launch of the initiative in 2013, in the context of infrastructure connectivity, China is further enhancing cooperation with countries and regions along the route in infrastructure investment. In 2018, Chinese enterprises completed USD 89.33 billion in contracted foreign projects in countries along the OBOR region, representing 52.8% of the total for the same period. The cooperation areas include mainly infrastructure construction, capacity cooperation, energy and industrial parks construction and more.

Figure 7

Chinese Investment Flow in OBOR countries



Source: UNDP 2019.

3.4. „17+1“ Strategy

This strategy started as an initiative for a multilateral cooperation platform between China and the first 16 countries from Central and Eastern European (CEE). In 2018 Greece was included in the initiative, making it 17+1. The initiative started in 2013 as a stand-alone component of the OBOR Strategy. It is the first of its kind “strategy in strategy”, at the same time an independent platform, organization and coordination mechanism.

The strategy also integrates successfully with the region's local strategies, including the Danube Strategy, the Three Seas Strategy (Adriatic, Black and Baltic Seas) and the initiative to restore the ancient trade route linking the Baltic Seas with the Amber Road.

Figure 8

Map of 17+1 Initiative Countries

Source: BAS.

As a result of the creation of the platform, the following meetings are held on a frequent basis, and the following projects were carried out:

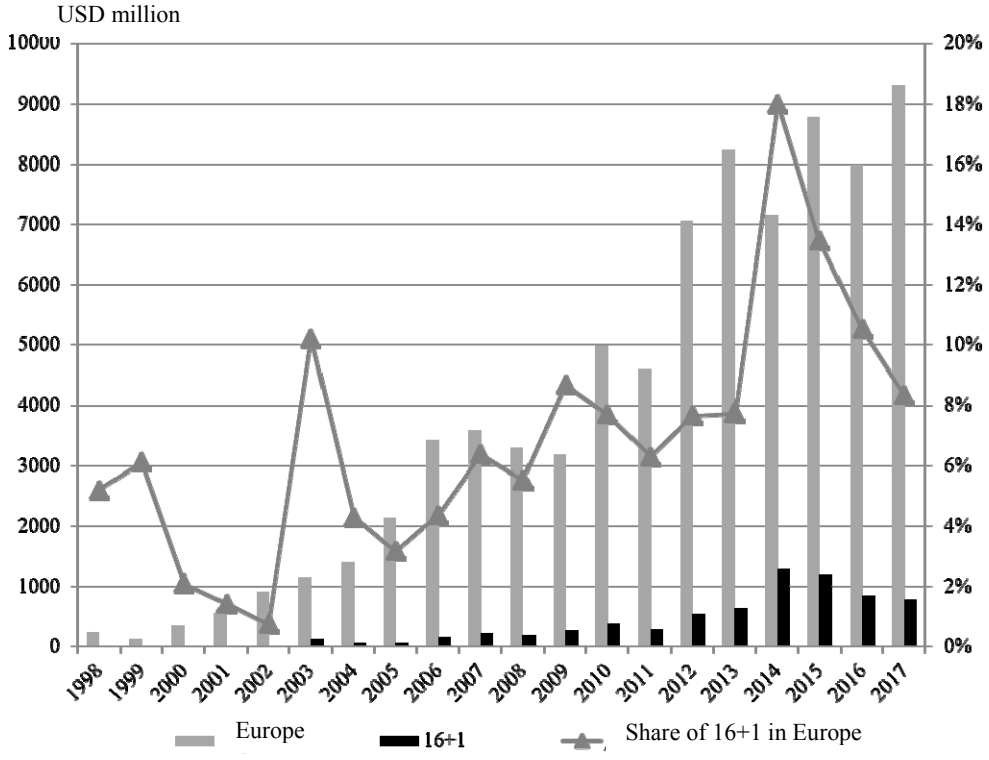
- Summits at three levels: prime ministers and ministers, district governors, municipal governors;
- 20 professional coordination mechanisms and platforms;
- Creation of the China-CEE Fund of EUR 10 billion in 2017 for the investments in the region with a plan to attract an additional EUR 50 billion;

- Twin Cities: 60 large and 100 small cities in 16+1 by December 7th, 2017;
- Direct flights: Beijing-Warsaw, Beijing-Budapest, Beijing-Prague, Shanghai-Prague, Chengdu-Prague, Beijing-Belgrade;
- Railway Express: Suzhou-Warsaw, Yi WU-Riga, Chengdu-Lodz, Changsha-Budapest;
- Other: visa-free regime for Chinese in Serbia, RMB clearing bank in Hungary, Chinese RMB bonds in Hungary, exchange in education, tourism.

Although serious efforts have been made to develop the platform, so far, investment in the 16+1 countries (until 2017, before Greece joins) hold a low share of total Chinese investment in Europe, from around 8-10% for the last few years until 2017. This share is volatile, changing with each new project as the base is low.

Figure 9

Turnover of Completed Project Contracts by Chinese Companies



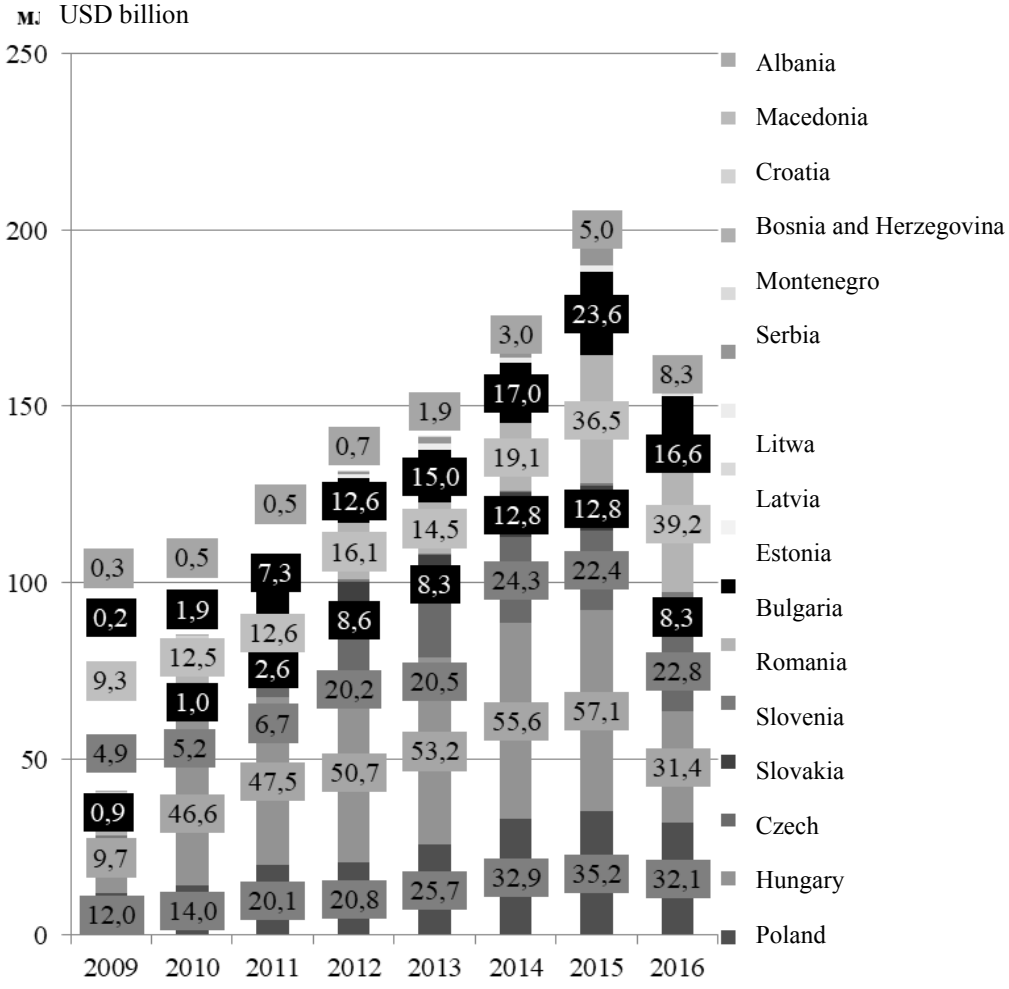
Source: Ministry of Commerce of China.

The turnover of the executed contracts in Europe amounts to USD 9.32 billion in 2017, of which 8.3% are in the 16+1 countries. The turnover of the executed project contracts is a

separate indicator from the Chinese direct private investment, and covers only the concession projects realized, BOT projects and public-private partnerships mainly in the field of infrastructure construction (the Serbian part of the Belgrade-Budapest railway line, the investment of Shanghai Electric Ltd. in the construction of the 160 MW Serbian power plant in Pancevo and the expansion project of Maribor Airport in Slovenia (MOFCOM, 2018).

Figure 10

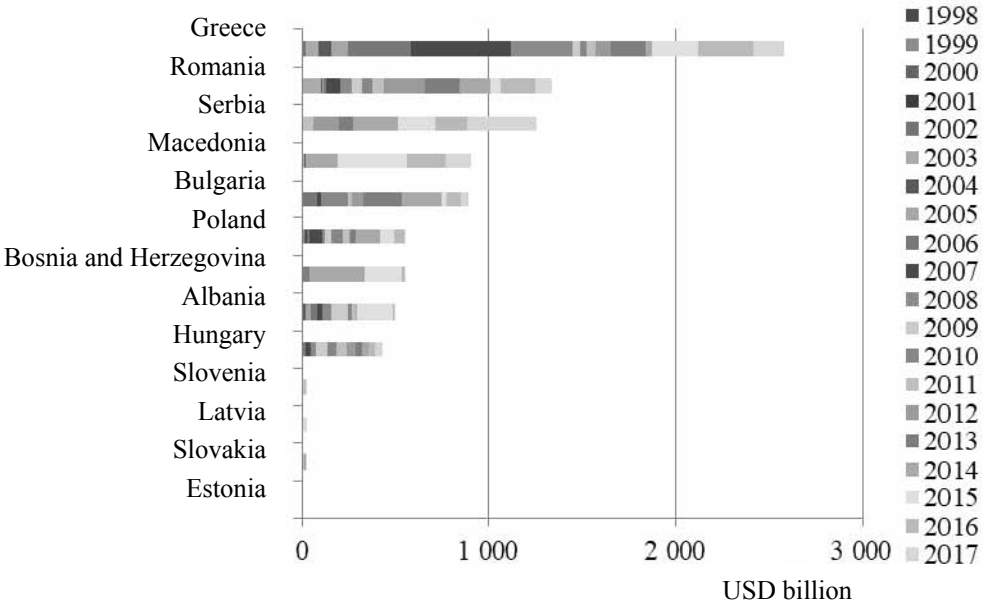
China's Investment Volume in 16+1



Source: Ministry of Commerce of China.

From both the investment data and the executed contracts data below, it can be seen that the amount of investment in the different countries is very different. If the total amount of investment is concentrated mainly in the Visegrad Four countries and Romania, then the draft contracts are executed mainly in Greece, Romania, Serbia and Macedonia, and then Bulgaria. Increased investment in infrastructure projects in non-EU countries such as Macedonia and Serbia in recent years underpin this data, with the inclusion of Greece and the expansion of the platform to 17+1 also linked to the implementation of infrastructure connectivity from the Piraeus port to Central Europe and then to Western Europe.

Figure 11
Turnover of the Executed Contracts of Chinese Companies in Selected Countries of 17+1
million USD



Source: National Bureau of Statistics of China.

4. Chinese Investment in Europe

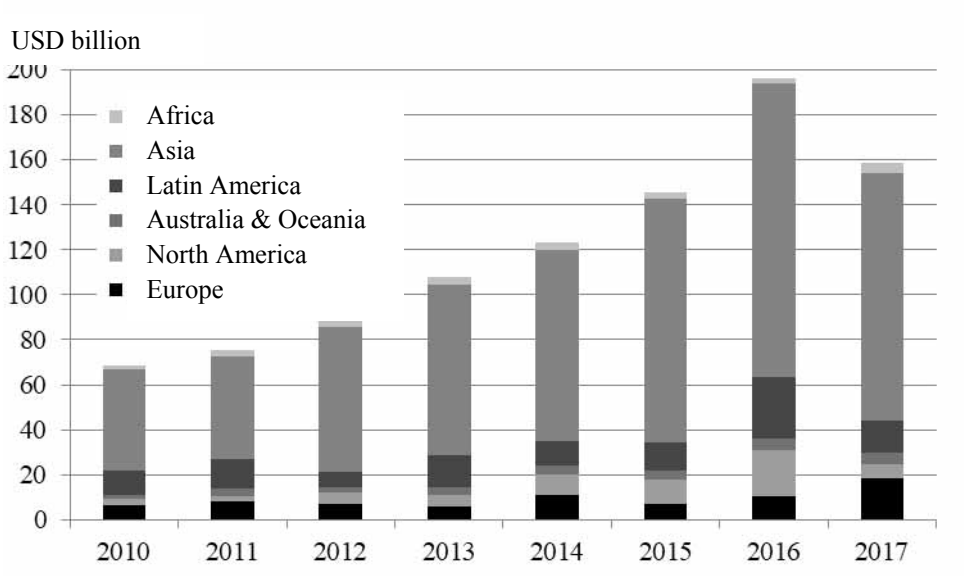
4.1. General Trends and Characteristics

In recent years, China's investment in Europe has generally shown an upward trend, and the investment fund has increased 3.1 times in the last five years to 2017, according to a 2018 report by the Ministry of Commerce. The recipient sectors diversified to include basic manufacturing, mining, finance, leasing and business services, wholesale and retail. The investment structure is constantly being optimized and investment methods are becoming more flexible (MOFCOM, 2018).

Chinese investments in Europe accounted for only 11.7% of total Chinese foreign direct investment (FDI) abroad in 2017, reaching $ 18.46 billion, an increase of 72.7% compared to 2016 (MOFCOM, 2018). Although this share is small, it has grown steadily over the last few years, especially since the launch of the OBOR and 16+1 strategies.

Figure 12

Chinese Investment Flow by Continent



Source: Ministry of Commerce of China.

It is considered that production close-to-market can replace the export pattern from China, especially for sectors where the commodity base is scarce in China. The EU is China's largest trading partner for 14 consecutive years to 2017, and China is the EU's second largest trading partner. Economic and trade relations between China and the EU form a model of mutual interest, but in order to be sustainable, moving China's production capacity to the market is an inevitable step. At the same time, Europe has quality assets and a need for capital, which is proving extremely attractive to Chinese investors. The report of the Ministry of Commerce states that China considers the OBOR initiative as a factor of investment, and believes that the implementation of the countries' integration and cohesion projects in the initiative, and more specifically the connectivity of Europe and Asia, is a strong factor for deepening of trade and economic relations.

Other factors for the development of investments in the region are the deteriorated trade relations with the US, as well as the difficulty of importing goods into the EU due to a number of imposed trade barriers.

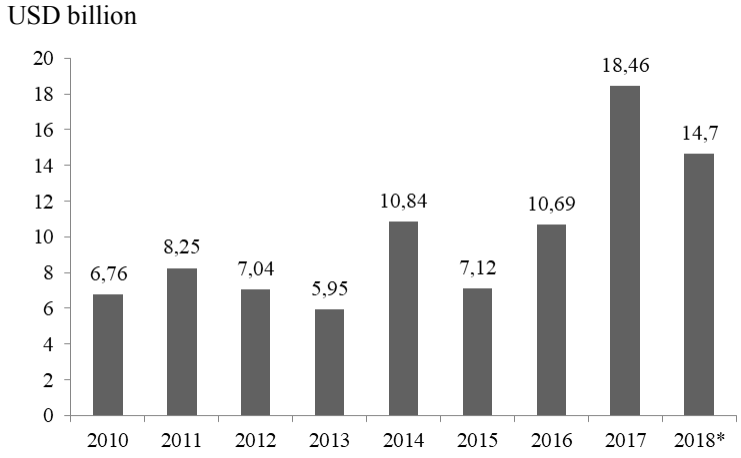
It is important to note that the share of Chinese investment in Europe is increasing in global total, albeit slightly, at the expense of a decline in investment shares in America. The

OBOR strategy plays an important role in this, leading to an increase in the share of Chinese investment in Africa as well (MOFCOM, 2018).

The March 2019 report of the Mercator Institute for China Studies (MERICS, 2019) shows a 40% decline in Chinese transactions in Europe in 2018 compared to 2017 to EUR 17.3 billion, and above 50% of the level in 2016, from EUR 37 billion (XINHUA, 2019). In 2018, Chinese investments in the acquisition of units or entire companies in Europe for the second consecutive year will fall, but not the investments in Germany.

Figure 13

Chinese Investment Flow in Europe

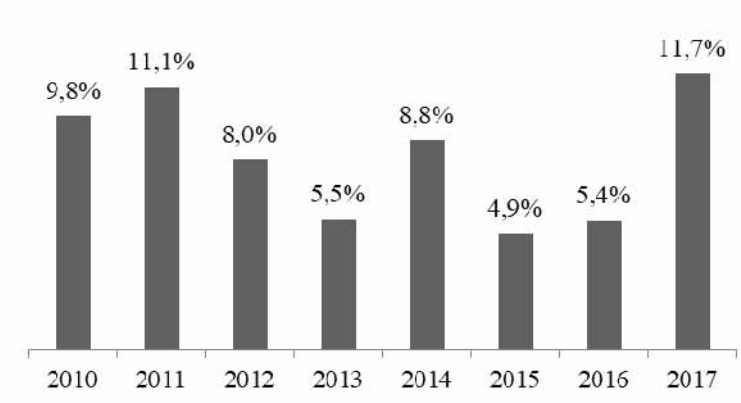


** 2018 – MERICS*

Source: Ministry of Commerce of China.

Figure 14

Share of Chinese Investment in Europe in the Total Chinese ODI

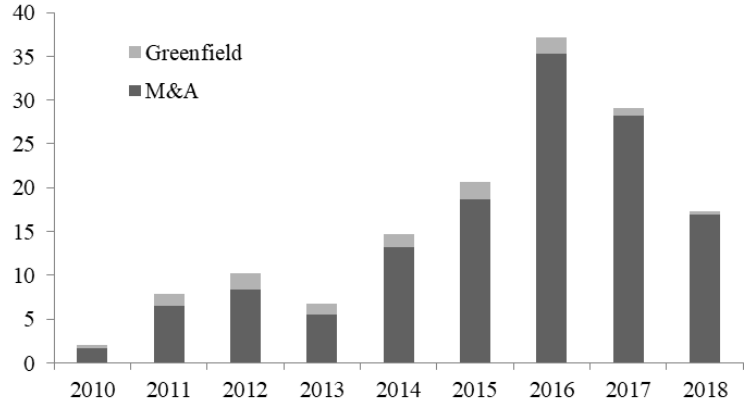


Source: Ministry of Commerce of China.

Another characteristic of these investments is that most of them are in the form of mergers and acquisitions through the purchase of corporate units in technology and finance companies and business services companies (MERICS, 2019).

Figure 15

Chinese Investment Flow in the European Union, (EU-28), billion EUR



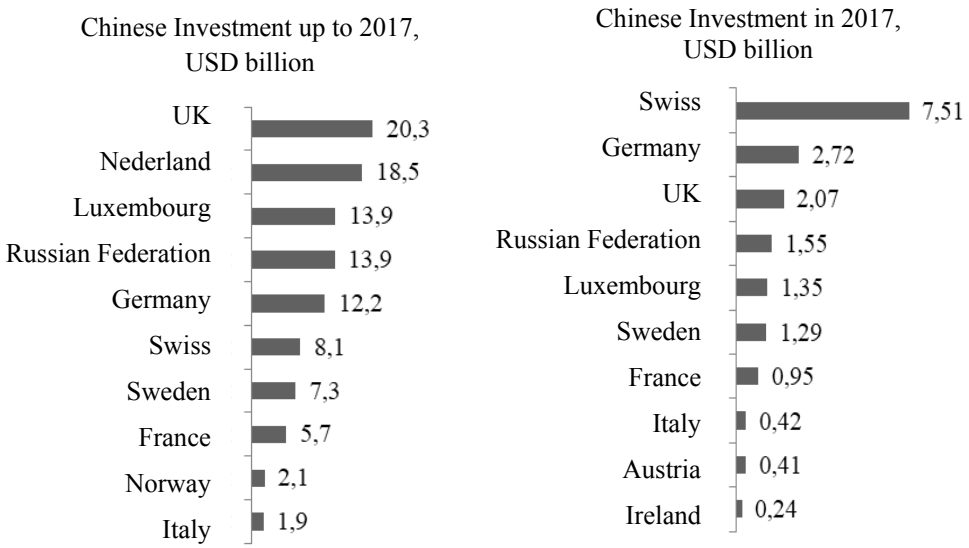
Source: Rodium Group (MERICS, 2019), BAS.

In 2017, of the 10 countries and regions with the highest number of Chinese mergers and acquisitions, three are in Europe, namely Sweden, Germany and the United Kingdom. Chinese group ChemChina acquired Swiss Syngenta for USD 42 billion, which is China's largest investment abroad since the start of China's global market entry strategy. It is also the second largest deal in the world this year. The same year, China's State Electric Network Ltd. acquired a 24% stake in the Greek national electricity company for USD 320 million, and China Investment Ltd. bought a 10% stake in London's Heathrow Airport. Beijing-based Jiengong Corporation is involved in a straight-line development in the Manchester port city, and Junyuan Marin Transport Port Ltd invests 200 million euros in a 51% stake in a Spanish port company (MOFCOM, 2018).

Characteristic of Chinese investments in Europe is their concentration in Western European countries and Russia, mainly Germany, France, the United Kingdom, and more recently Luxembourg and Sweden. As mentioned above, investments in Eastern Europe are extremely small, due to a number of factors, but for the whole 16+1 region they are equal to those in a Western country.

Figure 16

China's Investment Stock in the Top 10 European Countries



Source: Ministry of Commerce of China (MOFCOM, 2018).

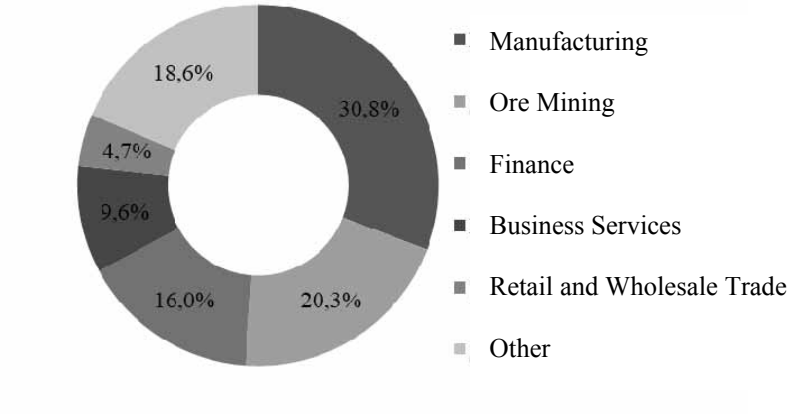
4.2. Trends by Sector

More than 30.8% of Chinese investment in Europe is in the manufacturing sector, followed by the finance sector with about 20% of total Chinese investment, business services and leasing by 16% and wholesale and retail trade with about 9.6% of all Chinese investments in Europe in 2017 (MOFCOM, 2018). In comparison, this structure in the total Chinese investment in the world is much different. According to a report from the Ministry of Commerce, in the same year, these sectors occupied 19, 12, 34 and 17% respectively, showing greater interest in business services and leasing as well as trade in other regions. More investments have been made in energy, real estate, agriculture and communications and transport, which are small in Europe.

Chinese investment in manufacturing in EU countries reached USD 24.62 billion in 2017, realized mainly in Sweden, Germany, the Netherlands, France. The manufacturing sector mainly includes the automotive industry and the production of medical equipment. The financial sector accounted for 19.9% of all Chinese investment in 2017, or USD 17.13 billion mainly in Luxembourg, UK, Germany, France. The mining sector generates USD 14.13 billion in the Netherlands, Luxembourg, Belgium, and investments in the business services and leasing sectors are concentrated in the United Kingdom, Luxembourg, Germany, France, the Netherlands, which include investments in the wholesale and retail trade, amounting to approximately USD 4.49 billion (MOFCOM, 2018).

Figure 17

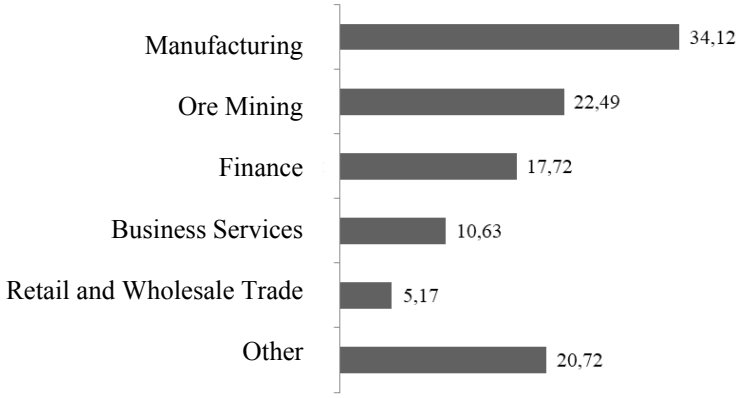
Breakdown of Chinese Investment Stock in Europe by Sector, 2017



Source: Ministry of Commerce of China.

Figure 18

Chinese Investment Stock in Europe (incl. Russia) in 2017, bn USD



Source: Ministry of Commerce of China.

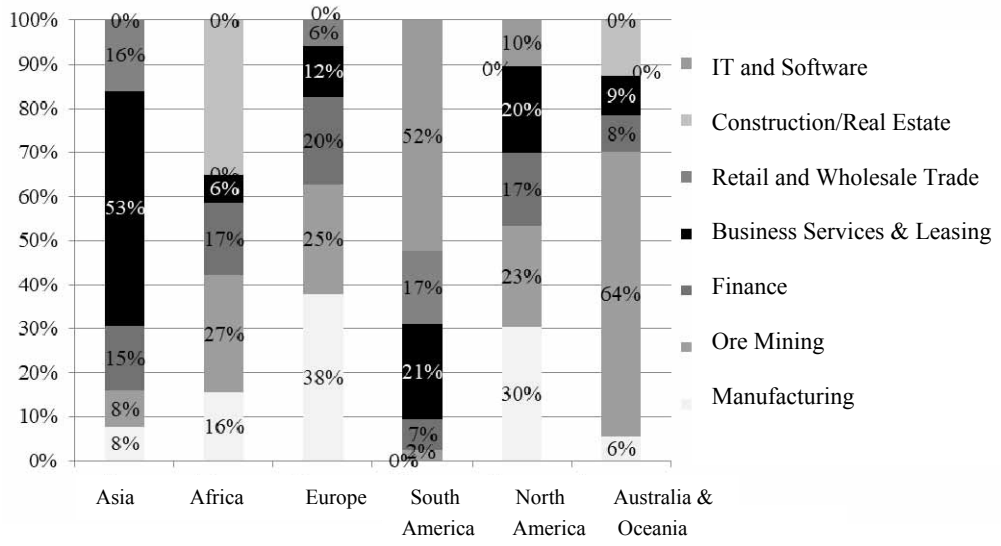
The predominance of investment in the manufacturing sector of Europe and ore mining, which is not so typical of other continents, clearly shows the principles of China's strategy to enter the global market through using local market resources. A comparative chart of investments by sector in different continents clearly presents the directions of investment.

It is clear that investment in the manufacturing sector in Europe has the largest share of all sectors, for example in South America this share is 0%, in Australia and Oceania only 6%, and in Asia 8%. In Asia, on the other hand, the share of investment in business services and

leasing is the largest, and the share of investment in ore mining is the largest in Australia and the oceans.

Figure 19

Chinese Investment Structure by Continents and Sectors in 2017, %



Source: Ministry of Commerce of China.

5. Conclusions

The analysis ends with two main conclusions. The first is that China's overseas investment increased in a direct relation to the issue of the specific government strategies and policies. This starts with the Go Global strategy at the very beginning in the 1980s, and continues all along with the supportive and further developing strategies, and is particularly obvious with the adoption of the 12th Five year plan starting in 2010 and all supportive strategic documents coming in the years after 2013-2014. Each next strategy refined the direction of overseas investment, focusing on the three priorities – technologies, resources, infrastructure and energy at the beginning, and later on cutting off sport, culture, real estate investment in 2017. Increasing rates of investment were observed in Europe along with the acquisition of companies and factories, to quicken the process and achieve results according to the targets set. It can be concluded, that all real investment was done according to the goals set, using the mechanism provided, and reaching the results asked by the government, set with specific criteria in terms of sectors, technologies, number of working personnel abroad, etc. Removal of administrative barriers for overseas investment in 2014 also resulted in boosting the Chinese companies' expansion globally.

The second conclusion is that investment varies by region and is determined by the specifics of local markets, which corresponds to the priorities set by the strategies. Variations by sectors differ in the different continents, with the European market gathering

the most investment in production bases and technology companies, unlike the Asian market, with more focus on trade investment and business and leasing services.

To quicken the process, China mobilized all possible means. The government introduced policies that encouraged expansion in the external market with the active participation of private companies, small and medium-sized enterprises as well. It also allowed the use of foreign finance as a resource to achieve the goals. Despite the large decline in Chinese investment in Europe in 2018, which was due to the increased restrictive approval regime for Chinese investment in many countries such as the UK, France, Germany, Italy and others, Chinese investment in Europe was extremely resilient to pressure (BAKER, 2019).

In response to increasing protectionism in some developed countries and higher barriers to investment from China, the Ministry of Commerce announced five areas of enhanced work to support Chinese enterprises in October 2019:

1) strengthening policy guidance and promoting high-quality foreign investment;
2) establishment of a system for promotion, supervision, servicing and guarantee for entering into the regulatory framework of investments;
3) improvement of the business environment for negotiations with the host country in support of the enterprises;
4) servicing and guarantee of performance, innovative methods of supervision and provision of the most appropriate public services for enterprises;
5) risk prevention, enhancing the accountability of security companies abroad, and timely and effective response to various risks.

Chinese companies could also possibly redirect efforts to countries with weaker investment constraints, non-EU countries, such as those in the 17+1 initiative. Among them, the recipients of the most Chinese FDI have been Hungary, Poland, Romania, Slovenia and Croatia for the past two years. However, as the markets of these countries do not contribute to the Made in China 2025 targets largely, investment there is done as long as it is in line with and helps achieving the targets set for the Western European markets.

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ИКОНОМИЧЕСКИ ИЗСЛЕДВАНИЯ
ECONOMIC STUDIES

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AREAS AND MEANS OF FORMATION OF TRANSPORT REGIONAL COMPLEXES AND MECHANISMS FOR MANAGING THEIR COMPETITIVENESS IN UKRAINE

The entry of Ukraine into the European Union significantly expands the boundaries of cooperation with different countries of the world. Compliance with the European requirements in the marketing sector will greatly increase the efficiency of its operation in the regions of Ukraine. The method of estimating the development of social infrastructure in the resource support of the management mechanism aimed at increasing the competitiveness of the transport system of the region by the integral indicator, which characterizes the level of social development of the region, is developed in the work. The integral indicator is defined as the sum of the ratios of the current and maximum partial indicators of population security by type of services in the region. The components of the process of social development assessment have been introduced: a limitation on the magnitude of each type of resource used to improve social development indicators; specific expenses of each type of resource in the region in support and improvement of the indicator of social development; the magnitude of the growth of the provision of the region for each indicator of social development; the function of the priorities of social development in the region for each indicator. It is believed that using the results of calculations using the proposed method will increase the validity of relevant management decisions.
JEL: L91; R42; O52

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1. Introduction

The deepening cooperation between Ukraine and the EU is based on the principles of political and economic cooperation. As a result of the Association Agreement between Ukraine and the European Union, an important benchmark is the creation of a legal framework for the free movement of goods and services, as well as the gradual entry of Ukraine's economy into the European Union's common market. Trans-packet networks and services play an important role in the effective life of the country's population.

The growth of the pace of scientific and technological progress leads to a constant complication of the major processes in the transport industry. The study of most scholars shares the view that there is a direct relationship between the levels of development of transport infrastructure and the economy as a whole [1]. As a result, the regional aspect of development and management in the transport sector was clearly distinguished. It has been proved that within the framework of separate regions (districts) infrastructure can and must evolve in different ways [2]. Particularly relevant is the problem of infrastructure development for countries with large territories (in particular, Ukraine), where there are significant differences between regions in natural conditions, socio-economic development, population density, etc.

In this regard, research in the direction of improving the functioning of the transport complex of the region in the conditions of modern Ukraine is of considerable interest and can have wide practical application. Consequently, the further study of production complexes is relevant, and the study of the management process and its operation becomes especially important in practical terms. At the present stage of development of the regional economy in the aspect of increasing their competitiveness transport industry requires a significant increase in the efficiency of production and the scope of services, their intensification [3]. Among the measures aimed at solving these problems, special attention is paid to the creation and management of the transport complex of the region (TKR).

In the process of managing such a complex, the traditional approach is mainly used: a relatively closed system of production or services is provided, the inputs of which are provided with all necessary resources, in order to reach the required level of satisfaction of services in the set time [4]. The effectiveness of the final result under the conditions of TKR operation is mainly ensured by eliminating economic barriers that hinder the balance of capacities of technologically interdependent subdivisions and the coherence of decisions about their activities. At the same time, most of the potential opportunities for TKR to intensify production and service provision remain unused [5].

2. Description of the Model for the Formation of Methods of State Administration in the Transport Region at the Regional Level

Maximizing the efficiency of the transport complex of the region is a multifaceted problem related to solving a complex of economic, legal and production issues [10]. The most significant among them, in our opinion, are:

1) determination of the long-term goal of the transport complex activity;

2) creation of an effective organizational structure for management;
3) to ensure the balance of production capacities of certain sectors of the transport complex in accordance with this purpose;
4) development and implementation of rational development or improvement programs taking into account aspects of increasing the competitiveness of the region;
5) development of a system of economic levers that enable to effectively manage the development and activity of the transport complex in terms of increasing the competitiveness of the region.

First of all, attention is paid to the first two issues and the construction of an effective incentive system, namely the strategic planning of the development and operation of the transport system in the regions, which is usually carried out by traditional methods. All this, in the final analysis, leads to the fact that the management of the transport complex in the regions does not differ from the management of individual industries and industries in the region, which has developed in the conditions of their market functioning. That is why the necessary prerequisite for a significant increase in the efficiency of the transport system in the regions is the development of qualitatively new methods of strategic planning, which ensure balanced development of capacities of individual sectors and units of the transport complex in the regions in terms of increasing competitiveness, implementation and rational programs of their activities by sectors and industries.

The main stages of the process of forming a strategy for the development of a transport complex in reggones in terms of increasing competitiveness are to determine, first, the long-term goal, and secondly, the trajectory of its development in the assumption of the absence of restrictions (such a trajectory will be referred to as a trajectory of poorly developed development) third, the trajectory in the presence of real constraints (it will be called the trajectory of limited development of the transport complex in the regions) (Figure 1).

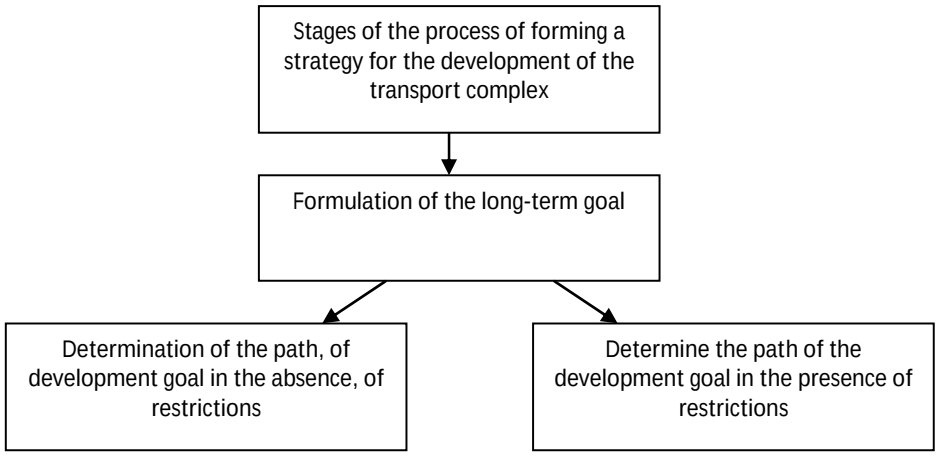
The trajectories of development of the transport complex in the regions imply a set of parameters that reflect the production capacity, the effectiveness of their use, as well as the results of the complex at a given time interval.

Let′ s consider the socio-economic essence and the procedure for building mutually agreed and balanced development trajectories in the aspect of increasing the competitiveness of individual sectors and the transport sector in the regions as a whole.

Trajectories of limited development reflect the achievement of the goal of the transport complex in the regions in different conditions that may arise in the region. In the first case, there are not the restrictions on resources, it is only needed to ensure economically rational duration of the creation (restoration) of technically progressive production capacity in the region. At the same time, it is believed that the efficiency of the use of all resources in the region is at a certain steady level. In the second case, restrictions are imposed on all types of resources, and the effectiveness of their use is determined in such way as to obtain the maximum speed of achieving the goal of the transport system activity in the region.

Figure 1

The main stages of the process of forming a strategy for the development of the transport complex in terms of increasing its competitiveness



The initial task of strategic planning of the development of a transport complex in the regions in the aspect of increasing competitiveness is an analysis of the capabilities of its individual sectors to identify existing and expected "bottlenecks" that may arise in the development of the complex of the region. It is necessary to determine which sectors and when will hinder the accelerated development of the transport complex in the regions in terms of increasing competitiveness. The first step in solving this problem is to identify a trajectory of weakly limited development. On its basis, a trajectory of limited development is constructed, which reflects the real dynamics of key characteristics in terms of increasing the competitiveness of the transport complex in the regions.

The definition of the trajectory of weakly limited development of the transport complex precedes the establishment of the dynamics of its purpose [6,7]. We will assume that the target reflects the level of satisfaction of the needs of the services of the transport complex. In order to reach the goal in theory, the minimum transport term in the regions should be developed along the specified trajectory of the limiting intensity ($P_0P_1P_2P_3P_4$). Such development in the aspect of increasing competitiveness can take place only in exceptional cases, when it is necessary to have the necessary services for the given term and no restrictions on both resources in the region and the effectiveness of their use are not raised.

The trajectory of the weakly limited development of the transport complex ($P_0P_1P_2P_3P_4$), according to the conditions of its construction, can be combined with the trajectory of extremely intensive development ($P_0P_1P_2P_3P_4$) only after a period of time determined by the economically rational duration of introduction (restoration) of production capacities in the region.

In real conditions for the development of the transport complex in the aspect of increasing competitiveness are always allocated limited resources. The timing of the arrival of

resources and the implementation of measures for the development of capacities in the region, for various reasons, deviates from the optimal. Therefore, the trajectory of limited of the transport complex development ($P_0P'_1P'_2P'_3P'_4$) is essentially "lagging" behind the trajectory (P0P1P2P3R4) and, moreover, from ($P_0P_1P_2P_3P_4$).

To move to the accelerated development of the transport complex in aspect of increasing competitiveness, consideration should be given to minimizing the distance between trajectories of weakly limited ($P_0P_1P_2P_3P_4$) and limited development ($P_0P'_1P'_2P'_3P'_4$). To do this, the intermediate trajectories of Mij which are, obtained during the construction of the trajectory ($P_0P_1P_2P_3P_4$) and characterize the development of the transport complex in the next period and after the removal of the restriction j. Their analysis allows to determine the amount of additional resources of specific species, as well as the optimal moment of their introduction in the region for the timely removal of this "bottleneck."

Trajectories of the limited development of the transport complex in terms of increasing competitiveness are combined: the initial state of the transport complex, the ultimate goal of its functioning, the structure of potential "bottlenecks" and the sequence of their occurrence in the purposeful and balanced development of the complex.

Differences between trajectories are manifested because in the first case "bottlenecks" are eliminated by additional input of resources, and with in situation limited development in terms of increasing competitiveness, the time moment and ways to eliminate "bottlenecks" are determined by real resource opportunities in the region.

Detected in the process of constructing a trajectory of weekly limited development in the aspect of increasing competitiveness the sequence of bottlenecks is maintained and with limited development, if the goal of functioning of the transport complex and the efficiency of the use of resources in the region remains unchanged. It should be noted that the change in the efficiency of the use of resources within the limits of the elimination of another "bottleneck" does not affect the subsequent sequencing of the elimination of potential "bottlenecks". Compliance with the above conditions does not cause any particular difficulties and enables to create the necessary information base for constructing a trajectory of limited development in the aspect of increasing competitiveness.

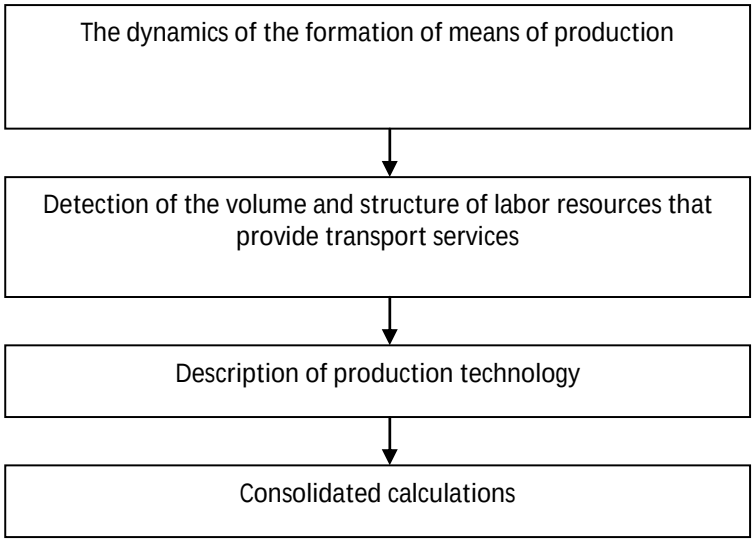
A complex of simulation models can be used to identify the trajectories of the transport complex development [8]. It consists of a block determining the purpose of the transport complex, local simulation models for the development of production capacity of individual sectors and a block of consolidated calculations. The interconnections between local models are determined by the technological sequence of participation of sectors and production units in the process of providing final services in the transport complex. Therefore, the number and structure of the interconnections of local models depends on the peculiarities and scale of the functioning of the transport complex. But in principle, the composition and scheme of the functioning of the whole complex of models and each local model are common to the transport complex of different types and correspond to the basic theoretical position of constructing trajectories of the weakly limited development of the transport complex in terms of increasing competitiveness. Therefore, these provisions can be considered as the only theoretical basis of simulation of transport complex development in the aspect of increasing competitiveness.

The content of the calculations carried out in the block definition of the goal of development and operation of the transport complex, depends to a large extent on the specifics of the services of the transport complex, which are provided to them by the territorial communities of the region. Therefore, universal mathematical apparatus is not suitable here, but at the same time, in accordance with the construction of the transport complex development path in the aspect of increasing competitiveness, it is necessary to take into account the dynamics of changes in the demand for services of the transport complex. In view of this, methods that can reasonably set goals for the long term should be used.

The local simulation model of the infrastructure and resource components of the transport complex consists of the following four blocks: means of production, labor resources, production technology or activities in the area of providing services to the territorial communities of the region and consolidated calculations (Figure 2).

Figure 2

General algorithm of calculations in the local simulation model of the infrastructure and resource components of the transport complex



The first two blocks simulate the dynamics of production potential, which is expressed by the fund of working time, as well as the work of the main occupations. The third block serves to assess the effectiveness (norms) of the use of productive resources in the areas of production activities of sectors and units, the fourth identifies the potential bottlenecks and the sequence of their occurrence in the purposeful development of production capacity of the sector or subdivision, additional need for resources to eliminate bottlenecks "As well as a rational production program for this sector or a transport complex unit in terms of increasing competitiveness.

The algorithm of a local simulation model is constructed in such a way that, with the help of iterative calculation cycles, the dynamics of the key parameters of the simulated unit is detected. It should be noted that in the process of implementing iterative cycles the values of the investigated parameters are determined at the beginning of the forecasting period, then on the basis of the corresponding computational schemes - their value at the end of the year, and thus the necessary information base creates for the implementation of the next cycle of calculations.

Let's consider the most important tasks that are solved by separate blocks of the local simulation model of sector development or production unit of the transport complex in terms of increasing competitiveness.

The Block of "means of production" serves to determine the dynamics of capacity of the main types of vehicles serving the region. In the model, these capacities are expressed by the annual fund of working time, which requires the identification of the dynamics of a number of characteristics of key aspects of the process of reproduction of fixed assets. These include the indicators of the main types of vehicles (taking into account the normative duration of their service and the actual degree of wear), as well as the state of new ones introduced into the work (taking into account the normative duration and the actual stage of introduction) both in the natural and in value form.

The main result of the unit is the annual fund of working time by their individual types.

In the "Labor Resources" section, calculations are conducted to identify the scope and structure of labor resources used in this sector or subdivision of the transport complex. The main performance indicators of the bloc are the annual fund of working time of workers of individual professions and the number of employees at the end of the planned year.

The final result of the transport complex's activity is a set of certain products and services for the regional communities of the region. For the production and production capacities in the sphere of services rendering it is possible to use a different composition of the primary resources, that is, a number of technologies. But it is difficult to fully describe this activity by operating technologies. Therefore, in the block "Production Technologies" they are supplemented by fictitious, through which the production reserves of resources, non-productive losses of working time, materials, products, etc reflect.

The nomenclature of resources used in the description of production technologies includes the main types of machinery and equipment, the professions of workers, the most important types of material resources and energy, as well as financial resources. The results of calculations for this block are expressed by matrices, the elements of which reflect the efficiency of the use of resources.

The "Consolidated Settlements" block serves to identify "bottlenecks" in the production potential of the sectors and units of the transport complex in their purposeful development in terms of increasing competitiveness. In addition, the final results of the transport complex and the additional resource requirements for implementing a rational production program, as well as for further development of the transport complex in terms of increasing competitiveness, are determined here.

The central place in the block is an optimization task. The coefficients of the linear target function in it reflect the level of dissatisfied needs in services provided by sectors or units of the transport complex, and the variables are the intensity of technology use.

The target function is inherent in the following properties: the higher its value, the more effective the set of technologies in terms of achieving the goal; the rational production program is dominated by the types of products and services the need for which is maximal.

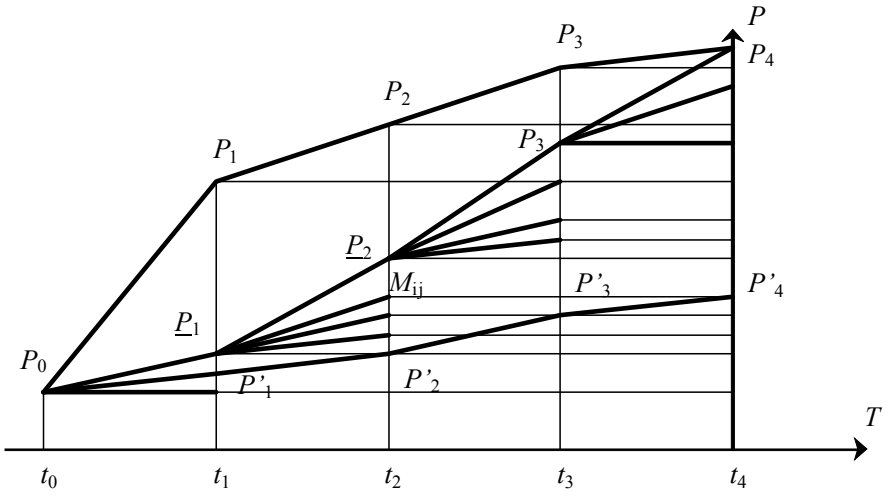
Products and services, for which the level of satisfaction of needs will be closer to the established, will no longer be included in the program. Therefore, compliance with the continuity of production and the provision of services of one kind is not ensured, in connection with which the task additionally introduces upper and lower limits of volume. In addition, it includes restrictions on fixed assets, labor, material and financial resources. In this case, material resources are conventionally divided into two groups: those coming from the environment of the transport complex, and those coming from other sectors or units.

Limits of the first group allow to coordinate the activities of this unit, and thus the transport complex with the "external environment" of the complex. This is supplemented by appropriate managerial decisions.

The peculiarities of using models in the construction of trajectories of the poorly developed transport complex are considered. The trajectory of the weakly limited development consists of balanced (co-ordinated) local trajectories of poorly defined development of individual production components in the aspect of increasing competitiveness (Figure 3).

Figure 3

Dynamics of achievement of the goal in conditions of extreme-intensive (P0P1R2P3R4), weakly limited (P0P1P2P3P4) and limited (P0P'1P'2P'3P'4) development



The obtained local trajectories are balanced only unilaterally, as in the conditions of the weakly limited development in the aspect of increasing competitiveness, the duration of

time until reaching the immediate ultimate goal in different sectors or units of the transport complex will be different. That is why it is necessary to balance the growth rate in terms of increasing competitiveness with regard to the sector or unit for which the duration of the goal is maximized.

To do this, a re-simulation of the weakly developed sectors or units in reverse order from the unit, which is a "bottleneck" relative to the potentially possible pace of development of other units, is carried out. Thus, the full balance of the trajectory of weakly limited development in the aspect of increasing competitiveness is achieved.

Such trajectory can be successfully used to build a trajectory of limited development in terms of increasing competitiveness. The scheme of application of a complex of simulation models fully coincides with the above.

But it should be borne in mind that now the resources are allocated not according to the identified needs, but in limited amounts, that is, "bottlenecks" can not be eliminated completely. To eliminate the deficit, opportunities for increasing the efficiency of the use of resources, changing the structure of products and services, etc., are considered.

Such information is only available to officials of the regional level management system in relation to transport complex, and therefore the construction of a trajectory of limited development in terms of increasing competitiveness without their personal involvement is impossible. It is these workers who must determine the set and timing of measures to eliminate bottlenecks. The simulation model does not. Answers to the ways in which you can try to eliminate "bottlenecks". But it allows you to check the exact consequences of each event. To this end, according to the data on possible measures for the elimination of bottlenecks, an executive body prepares the initial information on the basis of which the development and activity are simulated in the aspect of increasing competitiveness and determines the dynamics of the parameters characterizing the production potential of the SRS and the final results of its use.

The presence of characteristics of the trajectory of the limited development of the complex opens up possibilities for constructing a trajectory of accelerated development in the aspect of increasing competitiveness. In addition, the development of a strategy for accelerated development involves the maximum use of available reserves.

Thus, the analysis of the developed system of simulation models of the control process allows us to propose a method of making optimal managerial decisions on the strategy of its development by solving an optimization problem with different levels of constraints of development trajectories and determining the basic parameters of a rational trajectory of accelerated development of the complex in terms of increasing competitiveness.

Based on the obtained trajectories, the process of achieving the goal of functioning of the production complex of any administrative-territorial unit can be optimized, for example, satisfaction of the needs of transport services by the transport complex in the Zaporozhye region from the requirement "for every inhabitant of cities and villages of the area proper service" (Table 1). The table accepts the notation: N, A – respectively the number of inhabitants in the administrative-territorial units of the oblast and the required number of buses, which, by their maximum weight, are divided into two categories:

- category M2 – buses for the carriage of passengers and having more than 8 seats for passengers and a maximum weight of not more than 5 tons;
- Category M3 – buses for the carriage of passengers and have more than 8 seats for passengers and a maximum mass exceeding 5 tons; buses with a capacity of no more than 22 passengers are divided into two classes:
- Class A: buses intended for the carriage of seated passengers and seats for standing passengers;
- Class B: buses intended for the carriage of seated passengers.

Table 1

The optimal structure of the bus fleet of the Zaporizhzhya region

№ п/ п	Name of cities (districts)	N, people	A, unit.	Park structure (units)*						
				Categories						
				M2		M3		M3		
				Classes						
				A	B	A	B	I	II	III
	Total for Zaporozhye region	1834929	4960	621	1156			596	1862	725
1	Incl in the cities of Zaporozhye	784695	2110	125	320	-	-	530	820	315
2	M. Berdyansk	121278	335	39	79	-	-	17	138	62
3	M. Melitopol	158263	443	49	118	-	-	22	175	79
4	M. Tokmak	34552	ПО	19	38	-	-	13	27	13
5	M. Energodar	54454	145	20	48	-	-	14	49	14
	Rural areas									
1	Berdyansk	28053	70	13	22	-	-	-	30	5
2	Vasilevsky	68851	190	28	60	-	-	-	83	19
3	V.-Belozersky	8644	25	5	8	-	-	-	12	0
4	Veselovsky	22990	62	14	18	-	-	-	21	9
5	Vilnyansky	49066	135	29	39	-	-	-	46	21
6	Gulyaypilsky	30041	78	18	25	-	-	-	25	10
7	Zaporozhye	56503	155	31	46	-	-	-	55	23
8	K.-Dniprovsky	43073	110	23	32	-	-	-	40	15
9	Kuybyshevsky	25063	62	14	18	-	-	-	21	9
10	Melitopol	52587	140	28	42	-	-	-	50	20
11	Michael's	30740	85	20	28	-	-	-	26	11
12	New Nikolayev	17784	45	8	12	-	-	-	17	8
13	Oryhivsky	49702	140	28	42	-	-	-	50	20
14	Pologovsky	43980	110	23	32	-	-	-	40	15
15	Priazovsky	29997	85	20	28	-	-	-	26	11
16	Seaside	32701	85	20	28	-	-	-	26	11
17	Rose	10428	23	5	7	-	-	-	8	3
18	Tokmatsky	25882	62	14	18	-	-	-	21	9
19	Chernihiv	19608	60	10	20	-	-	-	21	9
20	Yakimivsky	35994	95	18	28	-	-	-	35	14

Buses with a capacity of more than 22 passengers are divided into three classes:

- class I: buses intended for the carriage of seated and standing passengers, the design of which allows passengers to move freely in the cabin;
- Class II: buses intended for the carriage of mostly sedentary passengers, as well as standing passengers in the aisle between rows and (or) on the platform for standing passengers, the size of which does not exceed 1.5 m2;
- Class III: buses intended for the carriage of seated passengers only.

The number of inhabitants of the city and rural areas can be estimated by the results of demographic forecasts. The optimal structure of the bus fleet of the region allows for the provide of the required number of buses to improve the level of passenger service and to facilitate their safe travel in the required directions.

According to the calculation of the optimal structure of the bus fleet, taking into account the existing number of rolling stock and taking into account the need for decommissioning buses older than 10 years, the calculation of the number of buses to be purchased (Table 2) is mate.

Table 2

Distribution by categories and classes of the required number of buses to be purchased for servicing the population in Zaporozhye region

№	Structure		Existing number buses (unit)	With the term exploitation more than 10 years	Required quantity buses, (unit)	Number buses that are necessary buy (unit)
	Category	Class				
1	2	3	4	5	6	7
2	M2	A	587	-	621	34
		B	1834	745	1156	67
3	M3	A	382	382	-	-
		B	-	-	-	-
4	M3	I	637	543	596	502
		II	1638	790	1862	1014
		III	712	324	725	337
5	Σ		5790	2784	4960	1954

Thus, for the organization of a stable bus service in the area of transport in the Zaporozhye region, the normalization of passenger traffic in cities and districts the purchase of buses requires, mainly categories M3 cl. II (middle class: LAZ, Etalon, Bogdan), and full refurbishment of buses of category M3 cl. 1 (great and especially great class: Lyase, Ikarus and others.

For a comprehensive solution to the issue of transport services, it is necessary to develop a regional rolling stock update program.

One of the possible mechanisms for updating an automobile park is defined:

- obtaining long-term loans at the National Bank of Ukraine as a guarantor of state support at low interest rates (5-9% per annum), at the same time, lifting taxes on the sale of new buses, as well as reducing the insurance premium;
- lending funds to local budgets for the purchase of buses for communal enterprises;
- improvement of the mechanism of renewal of vehicles by leasing.

3. Implementation of the Algorithm Solving the Problem

The course on transformation of Ukraine into a social state in conditions of deepening of market transformations in the economy requires intensification of the state policy in the field of social protection of the population and increase its efficiency. In connection with this, one of the key tasks of local self-government bodies is the approval of programs of socio-economic development of the respective regions, settlements, other targeted programs in order to improve the quality of life of the members of the respective territorial communities. An important part of this process is the preliminary assessment of the level of socio-economic development of the region or settlement in terms of strengthening the resource potential, identifying weaknesses and developing targeted management influences in order to mitigate their negative development of the region or locality. A model for assessing the socio-economic development of a region or locality, on the basis of which it is possible to improve the quality of the relevant management decisions that are used to increase the competitiveness of the region and develop its resource potential, is developed.

It seems legitimate for the regions of Ukraine to proceed from the necessity and expediency of equalizing levels of socio-economic development in different regions or settlements.

For the planned management of socio-economic development of the region or settlement, the positive significance would be the expansion of the circle and improvement of the quality of information on the basis of which appropriate management decisions are made. In our view, it would be useful, along with traditional partial indicators of socio-economic development, to use some consolidated general indicators that characterize the aspects of strengthening resource potential in the analysis and forecasting.

Before proceeding to the consideration of the integral indicator below, we note that the development of different types of integral characteristics for applications is an extremely difficult task [9]. Naturally, when moving from a number of partial to one generalizing indicator, as with any aggregation, certain information is lost. At the same time, quantitative criteria for assessing the loss of information are absent or non-indicative. Thus, small differences in the distribution of the most essential components of social infrastructure may be more weighty than the strong variation of less important components. In world science, attempts have been made repeatedly to construct generalized living standards of the population by applying statistical procedures that reduce the size of the space of features. Methods of factor and component analysis are the most commonly used [10]. Indeed, with the help of procedures of this type it is possible to obtain a small number of generalized characteristics that accumulate the variance of the source factors. You can also calculate the value of these characteristics for the units under study.

However, experience has shown that the generalized characteristics obtained by methods of compression of information are usually difficult to interpret. From the practical point of view, the main disadvantage of this kind of indicators is the impossibility of their use in the actual technology of making managerial decisions. The numerical values of such generalized characteristics and the conclusions emanating from them are directly dependent on the number of variations of the originally chosen factors. At the same time, "factor loadings" or other indicators linking output factors with generalized ones do not depend on the actual significance of a particular factor, but on some statistical characteristics of its distribution (primarily from dispersion).

In practice, for the purpose of generating aggregate indicators, the method of weight coefficients is most often used. In this case, the factors that form the integral characteristic are added with some weighting factors, which simultaneously lead factors to a single unit of measurement. The most vulnerable feature of this method is the choice of weight coefficients, which is compulsory based on subjective criteria, for example, on expert estimates.

However, it is unlikely to deny the usefulness of development and practical use in analyzing and forecasting various general characteristics, including the integral indicator of socio-economic development in terms of strengthening resource potential. In case of the correct selection of the output can be an indicator that is numerically equal to the sum of deviations of the current values of partial indicators from their target values. As a target, you can use the average or maximum values of partial indicators, or their normative values, if there are sufficient grounds for constructing the relevant norms.

In our view, in the construction of an integral indicator of socio-economic development in the aspect of strengthening the resource potential, it is more convenient and expedient to use the maximum values of partial indicators, as the normalized index will vary from zero to one (with the same - equal units - weighted coefficients), and the members of this territorial community form an opinion on the level of its socio-economic development by the way it is better or worse than others (especially in neighboring regions or cities).

The goals of forecasting socio-economic development are closely linked with the achievement of social homogeneity of the population of the region. Therefore, it is necessary to predict it based on the need for sustainable creation of general conditions for the life of all Ukrainian citizens - regardless of the region where they live and work. The Law of Ukraine "On State Social Standards and State Social Guarantees" [11,12] establishes certain norms of social development that can be used as the basis for calculating the level of socio-economic development of a region or city in terms of strengthening resource potential.

In order to ensure Ukraine's systematic integration into the European community, in accordance with the "European Social Charter" ratified by the Verkhovna Rada of Ukraine [93], it is also necessary to continue work on improving and bringing national social standards in line with international norms and standards, in particular, those related to issues wages, increase of pension provision, compulsory state social insurance, provision of social assistance to families with children and low income families.

Taking into account the foregoing we will take as an integral indicator in the following form.

$$J_i = \sum_{k=1}^{n} \frac{a_{ik}}{\max a_{ik}}, \qquad i = 1, \ldots, m, \tag{1}$$

where aik - a partial indicator (population provision of housing, communal services and other services) of socio-economic development k in the aspect of strengthening resource potential in the region i.

Generally speaking, an integral indicator of the development of social infrastructure in the aspect of strengthening the resource potential in this territory can be any of the norms of the vector, components of which are partial indicators of security.

$$J_i = \sqrt[p]{\sum_{k=1}^{n} \left(\frac{a_{ik}}{\max\limits_{i} a_{ik}} \right)^p}. \tag{2}$$

However, the form (1) for the integral indicator of the development of social infrastructure in terms of strengthening the resource potential (at p = 1) seems the most natural.

To compile the model of social development in the aspect of strengthening the resource potential, we introduce the following notation: b (s), s = l, ..., p - the limiting value of the resource s used to improve the indicators of social development; kij (s) - specific costs of the resource s in the region i in support and improvement of the indicator of social development; Δij - the magnitude of the increase in security by the indicator of social development; f (aij + Δij) - the function of priorities of social development in the region i for the indicator j.

Suppose also that the process of mechanical migration of the population of the region i can be described as follows.

$$\delta_i = c_i I_i + c_{0i}, \qquad i = 1, \ldots m, \tag{3}$$

where δi - the balance of mechanical migration of the population of the region i; Ii - an integral indicator of social development of the region in terms of strengthening resource potential.

$$I_i = \sum_{k=1}^{n} \frac{a_{ik}}{\max\limits_{i} a_{ik}}, \qquad i = 1, \ldots m, \tag{4}$$

c0i - the size of the balance of migration of the population of the region i, which does not depend on the degree of social development in one region or another (in particular, it is a natural increase or a decrease in the population); ci – a value indicating a change in the

balance of migration of the population of the region i with an increase in the value of the integral index per unit.

Using the introduced notation, the model of social development in terms of strengthening the resource potential can be written in the form.

$$L(\Delta)=\sum_{i=1}^{m}c_i\sum_{k=1}^{n}\frac{(a_{ik}+\Delta_{ik})f(a_{ik}+\Delta_{ik})}{\max\limits_{i}[(a_{ik}+\Delta_{ik})f(a_{ik}+\Delta_{ik})]}\to\max \tag{5}$$

for restrictions on the use of material, financial, labor and other resources for social development

$$\sum_{i=1}^{m}\sum_{k=1}^{n}y_{ik}^{(s)}(a_{ik}+\Delta_{ik})\le b^{(s)},\qquad s=1,\ldots,p, \tag{6}$$

$$\Delta_{ik}\ge 0,\qquad i=1,\ldots m,\qquad k=1,\ldots n. \tag{7}$$

For the convenience of describing the solution process, replace the variables.

$$x_{ik}=a_{ik}+\Delta_{ik},\qquad i=1,\ldots m,\qquad k=1,\ldots n. \tag{8}$$

Then the considered model in the aspect of strengthening the resource potential will take the form.

$$L(\Delta)=\sum_{i=1}^{m}c_i\sum_{k=1}^{n}\frac{x_{ik}f(x_{ik})}{\max\limits_{i}[x_{ik}f(x_{ik})]} \tag{9}$$

under conditions

$$\sum_{i=1}^{m}\sum_{k=1}^{n}y_{ik}^{(s)}x_{ik}\le b^{(s)},\qquad s=1,\ldots,p, \tag{10}$$

$$x_{ik}\ge a_{ik},\qquad i=1,\ldots m,\qquad k=1,\ldots n. \tag{11}$$

In order to ensure the uniformity of social development, the {xik} is supplemented by additional restrictions

$$x_{ik}\le m_k,\qquad i=1,\ldots m,\qquad k=1,\ldots n, \tag{12}$$

that is, regardless of the possibility of increasing the value of the target function due to the further development of social infrastructure in terms of strengthening the resource potential in already developed regions, funds should be directed to regions with a relatively underdeveloped infrastructure.

Since the model (1) – (12) described above is nonlinear, the iteration process is used to solve it, at which point the linear programming problem is solved. Let's describe this process in more detail.

As a starting point, we assume that the considered indicators of social development in the aspect of strengthening the resource potential are equally high priority, that is, $f^{(0)}(x_{ik})=1$ the possible value of each indicator does not exceed its maximum actual value in other regions.

$$\max\left[x_{ik} f^{(0)}(x_{ik})\right]=\max x_{ik}=\max a_{ik}=m_k^{(0)}. \tag{13}$$

In addition, we will introduce the designation

$$c_{ik}^{(0)}=\frac{c_i}{m_k^{(0)}}, \qquad i=1,\dots m, \qquad k=1,\dots n. \tag{14}$$

Then the problem (12) - (15) is reduced to the problem of linear programming)

$$L(\Delta)=\sum_{i=1}^{m}\sum_{k=1}^{n} c_{ik}^{(0)} x_{ik} \to \max \tag{15}$$

under conditions

$$\sum_{i=1}^{m}\sum_{k=1}^{n} y_{ik}^{(s)} x_{ik} \le b^{(s)}, \quad s=1,\dots,p, \tag{16}$$

$$x_{ik} \ge a_{ik}, \qquad i=1,\dots m, \qquad k=1,\dots n. \tag{17}$$

$$x_{ik} \le m_k^{(0)}, \qquad i=1,\dots m, \qquad k=1,\dots n. \tag{18}$$

Let z_s, z_{ik} (1), z_{ik} be two-dimensional estimates of constraints (19) - (21) respectively. They are correlated

$$\sum_{s=1}^{p} k_{ik}^{(s)} z_s + z_{ik}^{(1)} + z_{ik} \ge c_{ik}^{(0)}, \qquad i=1,\dots m, \qquad k=1,\dots n. \tag{19}$$

It is legitimate to assert that the conditions (20) are not restrictive. This is substantiated by the natural assumption of the adequacy of the allocated resources in $b^{(s)}$ to maintain the already existing level of social development in the aspect of strengthening the resource potential, the condition $m_j^{(0)} \ge a_{ij}$, which follows from the definition of the value $m_j^{(0)}$, and the direct proportional dependence of the value functional of x_{ij}. Consequently, z_{ij} (1) = 0.

If the resources $b^{(s)}$ are large enough for social development in the aspect of strengthening the resource potential and restricting only the conditions (21), then $z_s = 0$ and the above ratio for binary variables takes the form.

$$z_{ik} \geq \frac{c_i}{m_k^{(0)}}, \qquad i = 1,\dots m, \qquad k = 1,\dots n. \tag{20}$$

To remove the limited growth of social development indicators in the aspect of strengthening the resource potential (ie, the uniform relaxation of the constraints of type (21) is proposed to proceed in this case in this way (we refuse to index this step of the iterative process as the first, since the given ratios are valid for any step).

$$m_k^{(q+1)} = m_k^q + \gamma_k^{(q+1)} \frac{\max\limits_i \dfrac{c_i}{m_k^{(q)}}}{\sqrt{\sum\limits_{i=1}^{m}\sum\limits_{k=1}^{n}\left(\dfrac{c_i}{m_k^{(q)}}\right)^2}}, \qquad k = 1,\dots,n, \tag{21}$$

where $\gamma_k^{(q+1)}$ - is a step multiplier whose initial value is chosen empirically.

If the resources $b^{(s)}$ are not sufficient for social development in terms of strengthening the resource potential for each indicator in the size $m_j^{(0)}$, then some binary estimates $z^{(s)}$ of constraints (19) will be different from zero, and the formula for refinements m_k will look like.

$$m_k^{(q+1)} = m_k^q + \gamma_k^{(q+1)} \frac{\max\limits_i z_{ik}^q}{\sqrt{\sum\limits_{i=1}^{m}\sum\limits_{k=1}^{n}\left(z_{ik}^q\right)^2}}, \qquad k = 1,\dots,n, \tag{22}$$

Thus, if for some t

$$x_{it} < m_t^{(q)}, \qquad i = 1,\dots m, \tag{23}$$

$$z_{it} = 0, \qquad i = 1,\dots m, \qquad m_t^{(q+1)} = m_t^{(q)}. \tag{24}$$

Then the step multiplier can be selected in the following way

$$\gamma^{(q+1)} = \begin{cases} \gamma^{(q)}, L^{(q+1)}(x) > L^{(q)}(x), \\ \dfrac{\gamma^{(q)}}{q}, L^{(q+1)}(x) \le L^{(q)}(x). \end{cases} \tag{25}$$

As a result, indicators of social development in the aspect of strengthening resource potential within the allocated resources b $^{(s)}$ are evenly increasing.

At each step of integration, you also need to define the values of the priority function.

If the optimal plan is a task, consideration of any restrictions (з $x_{ik} \le m_k^{(q-1)}$) are executed as severe inequalities, then the corresponding variables of the dual problem are zero, that is, dual evaluations $z_{ik}^{(q-1)}$; $x_{ik} \le m_k^{(q-1)}$, $i = 1, \ldots, m$, $k = 1, \ldots, m$, get zero values if $x_{ik} < m_k^{(q-1)}$, and more than zero if $x_{ik} = m_k^{(q-1)}$.

This means that only the resources that are fully utilized in the optimal version of the socio-economic development program can have a positive two-way assessment; estimates of non-fully utilized resources are always zero. But in this case, it is not about resources, but about achievements in social development in terms of strengthening the resource potential of a certain level for each indicator.

In other words, if by any indicator one region or another is significantly behind the region with the best indicator, the two-digit score is zero. But it is the regions with significant lag behind the indicators of social development in terms of strengthening the resource potential should be given a higher priority. Therefore, the value of the priority function is proposed to be defined as.

$$f^{(q+1)}\left(x_{ik}^{q}\right) = \frac{G}{z_{ik}^{q} + c}, \tag{29}$$

where G and c - are constant nonzero.

As a result of (q + 1) -th step the target function is written

$$\sum_{i=1}^{m} c_i \sum_{k=1}^{n} \frac{x_{ik} \dfrac{G}{z_{it} + c}}{\max\left(x_{it} \dfrac{G}{z_{it} + c} \right)} = \sum_{i=1}^{m} \sum_{k=1}^{n} c_{it} x_{ik}. \tag{30}$$

Iterations end when the condition is fulfilled $\gamma^{(q+1)} = \dfrac{\gamma^{(q)}}{q} \le \varepsilon$

The growth of the indicator m_k $^{(q)}$ is based on the considerations of further increase in the balance of mechanical migration, for all components of the integral index is proportional to

the double estimates $z_{ik}^{(q)}$. In the presence of substantiated social standards and standards of security, individual elements of social development in the aspect of strengthening the resource potential built on their basis, the integral indicator will be.

$$I_i^{(H)} = \sum_{k=1}^{n} \frac{a_{ik}}{m_{ik}^{(H)}}, \qquad i = 1, \ldots m, \tag{31}$$

where $m_{ik}^{(H)}$ is the normative level of the provision of the region and the element of k social development in the aspect of strengthening the resource potential.

Then the model (8) - (10) will look like

$$L(\Delta) = \sum_{i=1}^{m} c_i \sum_{k=1}^{n} \frac{(a_{ik} + \Delta_{ik}) f(a_{ik} + \Delta_{ik})}{m_{ik}^{(H)}} \tag{32}$$

with the same conditions (9), (10).

Some "intermediate" option statement of the task is to maximize

$$L(\Delta) = \sum_{i=1}^{m} c_i \sum_{k=1}^{n} \frac{(a_{ik} + \Delta_{ik}) f(a_{ik} + \Delta_{ik})}{\min(m_k^{(H)} \max\limits_{i}(a_{ik} + \Delta_{ik}))} \tag{33}$$

under the constraints of the model (9), (10) and condition $\max\limits_{i}(a_{ik} + \Delta_{ik}) \le m_i^{(H)}$

4. Estimating Expected Results

In this case, the situation when the standard takes the level of security for the considered indicator of the region, which may be better than the standard adopted, is excluded.

In the aspect of practical application of the proposed integral indicator and conducting analytical calculations in order to substantiate the prospects of social development in the aspect of strengthening the resource potential in a particular region. It is expedient to carry out calculations according to the indicators of state social standards and state social guarantees.

Using the proposed integral indicator, analytical calculations were performed to substantiate the prospects for the development of social infrastructure in the Zaporizhzhya region of Ukraine. To ensure the necessary comparison, calculations were carried out separately for 5 cities, 20 rural areas (with settlements of city type and district centers) of the region (as of the beginning of 2017) for 17 indicators: population provision in places in preschool institutions, schools, cinemas, in houses of culture, in catering enterprises, in homes of everyday life, in bathhouses; books and magazines in libraries, hospital beds,

shopping areas in stores, laundry facilities, dry-cleaners, outpatient clinics; residential telephone, residential area, water supply and sewerage.

Calculations have shown that for rural areas, the integral indicator has a rather large range of changes. According to this indicator, the most secured were the villages of the Melitopol district, and the smallest - the Roziv district. As to the standard, these areas are provided: Melitopol area - by 63%, Rosevsky - only 6.9%. By the integral indicator "the best area" (Melitopol) is provided in 2.3 times better than "the worst".

The classification of rural areas of Zaporizhzhya Oblast by the integral indicator is as follows: Melitopol area - 15.7; Zaporozhye - 14,5; Vasiliev area - 13,2. Then there are 15 districts with the value of the integral index from 10.0 to 12.1. The following 18 districts: 8.0 - 9.9. The last three districts: Novomykolaiv district- 7.7; Veliko-Belozersk area- 7.6 and Roziv area- 6.9. It is concluded that the negative balance of migration of the population is explained not so much by the "attraction" of large cities, but by "repulsion" of the underdeveloped social infrastructure in the countryside.

Unevenly developed social infrastructure and in the context of regional centers of the region. The integral indicator is best provided with the center of the Berdyansk region, and worse - Veliko-Belozersk region (3.2 times).

Classification of district centers of the Zaporizhzhya region by the integral indicator is as follows: Berdyansk - 17,7; Melitopol - 13,0; Tokmatsk - 11,5, followed by 18 district centers with the value of the integral index 8,3 - 11,2; 15 with a value of 6.0 - 7.9, Chernihiv - 5.9; Rosiv - 5.5; Veliko-Belozersk - 5.5.

The provision of social infrastructure of rayon centers in the region varies from 23% (Veliko-Belozersk) to 71% (Berdyansk).

Some interest also represents the classification of cities in the Zaporizhzhya region by the value of the integral indicator. In this sense, the best was Berdyansk (18.2), followed by Melitopol (17.5), and only - the third was the regional center - Zaporozhye (15.3). This, apparently, is largely due to the fact that the growth rate of the population: the population in Zaporozhye were in recent years significantly higher than in Berdyansk and Melitopol.

According to our calculations, the total provision of social infrastructure per citizen of Zaporozhye region is 40 thousand UAH, rural - 50 thousand UAH. However, if in Zaporozhye, Berdyansk, and Melitopol, in fact, the security varies slightly: from 38 thousand rubles. in Energodar to 41 thousand UAH. in Tokmak, then in rural areas the amplitude of fluctuations is significant: the most secure is the Melitopol district - 66 thousand UAH, the least - Veliko-Belozersk district - 43 thousand UAH.

Significant differentiation in the level of actual provision of social infrastructure within the districts is due to a large proportion of the value of housing stock in the Berdyansk district, where per capita accounts for 23 square meters. m area, while in Rosevsky - only 12.3 sq.m. The same is my explanation of the gap in the levels of cities and districts. In the districts of the Zaporizhzhya region, an average of 16.6 square meters is needed per inhabitant. m of housing, in cities - 10 sq.m. In addition, when constructing larger social infrastructure objects typical of large cities, the cost per unit costs less.

Thus, social infrastructure of rural areas costs more than cities, more than 25% (per person).

In order to ensure the provision of social infrastructure with social standards for each indicator in the development of cities of the Zaporizhzhia region, investment is about 59 billion UAH, and districts - 700 billion UAH.

Experience has shown that the use of concrete results of such calculations contributes to enhancing the validity of relevant decisions on the aspect of strengthening the resource potential of programs of socio-economic and cultural development of regions on the territory of Ukraine.

5. Conclusions

Summarizing the theoretical aspects of increasing the competitiveness of regions and developing their potential on the basis of a structural approach to the organization of the activity of executive authorities and local governments in this area, modeling and research of the developed models allowed to draw the following conclusions.

During creating the organizational mechanism of public administration to improve the competitiveness of regions and the development of their potential, it should be borne in mind that the relationship between the growth of financing and the efficiency of the development of production and services is mainly of an exponential nature, which explains the periodicity of radical change in methods and sources of production. The principles of cost-effectiveness for increasing the competitiveness and development of resource potential of the region from state-management positions are determined and it is shown that when forming the organizational mechanisms of state policy it should be taken into account that the problem of increasing the competitiveness and development of resource potential is one of the number of multicriteria, weakly structured tasks, there is a need for purely economic approach; distribution of limited resources taking into account dynamic features of the resource support system. The scheme of implementation of organizational mechanisms with a multicriteria assessment of the features of the system of increasing competitiveness and development of the resource potential of the region is substantiated, and in the first place, its inertia, the output to its desired structure is associated with a certain period and a combination of short and long-term measures with different times of obtaining the effect.

The directions of the regulatory influence on the competitiveness of the industrial complexes of the region are determined, the main stages of the process of their implementation are determining, firstly, the long-term goal, and secondly, the trajectories of its development in the assumption of the absence of restrictions (such a trajectory will be referred to as a trajectory of the weakly limited development of the transport complex) and, thirdly, the trajectory in the presence of real constraints (it will be called the trajectory of limited development). The economic content and the procedure of constructing mutually coordinated and balanced trajectories of regulatory influence are considered, which means a set of parameters reflecting production capacities, the efficiency of their use, as well as the results of the complex at a given time interval.

To identify the trajectories of the development of the transport complex in the process of drafting regulatory acts, a set of simulation models has been used, which consists of a unit for determining the purpose of the activity, local simulation models for the development of production capacities of individual sectors and a block of consolidated calculations. The interconnections between local models are determined by the technological sequence of participation of sectors and production units in the process of manufacturing the final product. Therefore, the number and structure of the interconnections of local models depends on the peculiarities and scales of its production activity.

The prospects of development of social infrastructure of the region in the aspect of increasing its competitiveness and strengthening of resource potential by the integral indicator of socio-economic development are revealed. The proposed integral indicator is used in the model of social development for the aspect of solving the tasks of increasing competitiveness and strengthening the resource potential of the region and is defined as the sum of the ratios of the current and maximum values of the partial indicators of population security by type of services in the region.

It is believed that the use of specific results of calculations using the model will contribute to increasing the validity of relevant management decisions and Ukraine's compliance with European standards.

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ИКОНОМИЧЕСКИ ИЗСЛЕДВАНИЯ
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THE ANALYSIS OF INDEBTEDNESS OF RETAIL COMPANIES IN THE BALKAN COUNTRIES

The aim of this paper is to determine the factors which have an impact on the structure of capital of the companies in the trade industry in the Balkan countries, during the eight years period (2010-2017). In order to realize this goal, the panel data model with fixed effects was used. The sample included 2,057 companies that operated in the retail sector in all ten Balkan countries. The obtained results showed that almost all observed variables have a statistically significant impact on the financial leverage, long-term financing, and short-term financing. According to the obtained results of the research, we can conclude that the higher profitability, liquidity, the tangibility of assets and the company's size means a smaller indebtedness, measured by leverage. On the other hand, observed variables have different statistically significant influences depending on whether companies are financed from short-term or long-term sources. Achieving the optimal capital structure and improving the financial performance of the companies of the retail sector in the Balkan countries should be supported by investments and acquisitions based on the market standards of business applied by the developed countries of the European Union.
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1. Introduction

The decision on the capital structure is a decisive decision that affects various aspects of corporate governance. The structure of capital consists of the amount of debt and capital required to finance the company's operations. The companies opt for the capital structure bearing in mind the benefits and costs which are related to financing from own or other sources of funding. The optimal debt and capital ratio differ from company to company, from industry to industry and from country to country. The policy of financing of the company has an impact on the financial risk and the value of the company in the long run. The market value of any company should not be depended on its structure of capital. However, issuing debts that are categorized as risky has an impact on the present market value of any company.

Capital structure determines the sources of funds that a company uses to fund assets. There exist a lot of theories that explain what should be the structure of capital. The most important are the pecking order theory and the trade-off theory. According to the pecking order theory, the company should start with internal financing, then external financing and the last choice is to issue equity (Choudhry, Sundaram, 2013). Internal financing relies on retained earnings as a determinant of capital, then on some percentage of borrowing if there is a need for added funding sources and finally on issue capital in order to meet additional capital requirements. The internal funding represents liquid funds necessary to finance investments. It relies on the asymmetry of information and greater discretion in financing. An option of issuing equity is the next option after if there are not enough other sources of funding. In practice, small companies usually strive to borrow more, while larger companies usually rely on retained earnings in order to settle financial needs in the long run. The cost of external equity for the small company is often higher than for the large company. According to the pecking order theory, managers have a piece of more information and are not willing to issue shares that are underpriced. Sometimes, the managers avoid the high level of borrowing in order to protect their business.

The second one is the static trade-off theory that represents the optimal capital structure as the balance between the debt and equity or between the gains and costs of debt financing. A company sets the target level of debt and makes all efforts to achieve it (Huang, Song, 2006). Determining the capital structure is under the authority of the company's management bearing in mind the fact that the company's value should be maximized. The level of debt financing is an effective tool for determining the company's value. Large profitable companies that earn bigger profits and have a business with lower risk are more focused on borrowing than financing from the capital. According to this theory, financing from other sources is justified to a reasonable level.

There is a very important connection between the capital structure and the company’s value. When the capital market is perfect, the company’s value does not depend on its capital structure, it only depends on future cash flow. So, financial decisions that are focused on financing from own or borrowed sources do not essentially affect the growth of the company's market value. There is considered that at the perfect capital market does not exist taxes, transaction and bankruptcy costs, homogenous expectations, very limited assumptions and that the production capacity of the company is independent of its funding

methods (Bevan, Danbolt, 2002). In this market, it is complete all the same for companies to be financed from internal or external sources. The optimal capital structure maximizes the market value of the company or market value of the unpaid shares of the company, i.e. minimizes its overall cost of capital. There are considerations in which time the optimal structure of capital can lead to maximizing the value of the company. However, assuming that there is no perfect capital market, the choice between the debt and equity is conditioned by the specific characteristics of the company and becomes an important value-determining factor (Deesomsak, et al. 2004).

The optimal capital structure is also based on the concept of asymmetric information between the company and potential financiers which implies that the financial costs are conditioned by the different sources of funding. For example, when we talk about internal sources of finance where the company provides funding, the company will have more information than new holders of capital. So, it will be cheaper to use internal funds than to issue capital shares as a new holder of debt. Internal sources of funding are always cheaper than external sources of funding. Economic conditions in which companies operate have a very significant impact on the company's financing policy. The risk may be in a negative correlation with long-term debt ratio, but in a positive correlation with short-term debt ratio. The costs associated with leverage are different in the context of long-term or short-term debt. Also, when we talk about the measures of long-term and short-term funding, it is necessary to consider the factors which affect long-term and short-term financing.

There is a lot of literature about the company's capital structure. However, this topic has not been thoroughly researched in the Balkan region, especially having in mind the trade industry (retail sector). Additional reasons for choosing this sector are found in high indebtedness and low liquidity issues of retail companies, which lead to an increase in payment deadlines and transferring obligations to the supplier's liability. Retail chains attempt to solve liquidity problems by short-term funding from suppliers. The high rate of indebtedness is accompanied by high-interest rates and other unfavourable borrowing terms. Also, the financial risk associated with retail chains is relatively high. Further, we analyzed the effects of five independent factors (profitability, liquidity, tangibility of assets, sales growth and size of the company) on three indebtedness indicators (leverage, long-term and short-term financing of the company) in the retail sector in ten Balkan countries: Bulgaria, Albania, Bosnia and Herzegovina, Croatia, Greece, Montenegro, Macedonia, Romania, Slovenia and Serbia.

The paper is structured as follows. We start with Theoretical background wherein we set the hypotheses. After that, the Data and the methodology were considered, following the Results and their discussion. The last part presents the Conclusion with limitations and guidelines for future research.

2. Theoretical Background

The decision about the capital structure is conditioned by the basic characteristics of the company, the legal framework and institutional country's surroundings for the company's operation. When looking at a specific country, the company can have a higher level of

borrowing, because of a higher percentage of new companies that decide to borrow more. Differences in the structure of capital between companies in different industries usually arise due to the specific characteristics of certain companies, and not differences in the industry. Given that there are different levels of leverage at the company level, managers are trying to achieve the best possible solution in terms of optimal capital structure, bearing in mind that financing from debt increases the value of the company, but also increases financial risk. Likewise, debt policy of any company could point to the imperfect or incomplete equity market.

In this paper, we observed the five determinants of capital structure and their impact on leverage, long-term and short-term financing. All these determinants will be explained hereinafter, according to previous literature and research in this field.

2.1. Profitability

Analyzing the relationship between profitability and indebtedness, we proceed from the pecking order and trade-off theory. The first one implies that more profitable companies with high gainings, greater self-financing ability and preferably more retained earnings are usually less indebted than a company that does not make high gainings. So, the pecking order theory decides for a negative relationship between these two variables. The second one relies on the fact that more profitable companies have a greater amount of debt due to the use of tax benefits and lower risk of bankruptcy. So, the trade-off theory decides for a positive relationship between these two variables. There is also a widely accepted understanding that the company which has a common practice of debt issuance is usually the company with high profitability because debt issuance is a significant signal for the stock market (Gomes et al., 2014).

A lot of studies have tested the effect of profitability on the company's level of indebtedness. In most studies, researchers have agreed that there was a significantly negative relationship between profitability and debt level. Wald (1999); Graham (2000); Serrasqueiro & Rêgo (2009) also determined a significantly negative relationship between profitability and leverage and considered that more profitable companies were less indebted and less financed by debt than less profitable companies.

Al-Najjar & Taylor, in their study, analyzed the relationship between capital structure and ownership structure of 86 non-financial companies in Jordan in a time period of ten years. The overall number of observations was 743 and there was used the panel data model. The obtained results relied on strong arguments that there was a significantly negative relationship between profitability and indebtedness. It was concluded that the profitability of the company is in a small extent taking into account when deciding whether and to what extent to invest in a company. Therefore, high profitability did not have to be a criterion for selecting a company for investment by an institutional investor (Al-Najjar & Taylor, 2008). Similarly, Li investigated the determinants of capital structure using samples of Shanghai 180 index of China in order to analyze the factors that have an impact on the structure of capital. The results of the panel data of 102 listed companies in the time period 2004-2006

showed that profitability has significantly negative effects on leverage and that the companies are mainly dependent on short-term funding (Li, 2015).

Majumdar analyzed the financial policy and the determinants of capital structure of unlisted manufacturing companies in India in order to realize the volume of external sources of funding. The size of the sample was 864 companies in two periods, 2006-2007 and 2009-2010. The results obtained by using a panel data model showed that the company's profitability had a statistically significant inverse relationship with total borrowing and short-term financing. On the other hand, the results obtained showed that there is a weak and statistically insignificant relationship between profitability and long-term financing (Majumdar, 2014). Similarly, Cassar and Holmes analyzed the determinants of the capital structure of 1,555 Australian unlisted companies in the time period 1995-1998 using ordinary least squares (OLS) regression. The obtained results showed that leverage, long-term and short-term debt financing are in a significantly negative relationship with the company's profitability. The strongest relationship was noticed between the company's profitability and the financial leverage, while the weakest was noticed between the company's profitability and the long-term financing (Cassar & Holmes, 2003).

Bearing in mind all previous research in this filed, we set the following hypotheses:

H1: Profitability has a statistically significant negative impact on leverage.

H2: Profitability has a statistically significant negative impact on long-term financing.

H3: Profitability has a statistically significant negative impact on short-term financing.

2.2. Liquidity

Liquidity represents the skill of the company to finance its mature liabilities. Current liquidity ratio shows the ability of the company to finance short-term liabilities with current assets. There are divided opinions about the impact of liquidity on the company's indebtedness. At one side, there is a positive relationship between liquidity and profitability, because more liquid companies are borrowing on a larger scale due to a greater ability to pay off their short-term liabilities. On the other side, according to the pecking order theory, there is a negative relationship between liquidity and profitability, because more liquid companies use their assets for own investments. Terra P., R., S researched the determinants of corporate debt maturity of 1,963 companies in Latin America for the period 1987-2002 by dynamic panel data analysis. The obtained results showed that the liquidity as determinant has a positive impact on the debt maturity. The company takes care of the mature of its liabilities in order to avoid the problem of liquidity that leads to bankruptcy in the long term (Terra, 2011).

Al-Najjar and Taylor in their study (previously explained in the context of factor profitability) also concluded that there is a positive relationship between liquidity and company's debt and also between the company's debt and the structure of the owner in the sense that the potential investors will be interested in companies with a high value of liquidity ratio because they are able to pay off matured liabilities (Al-Najjar & Taylor, 2008). On the other hand, from the aspects of high agency costs of high liquidity, the

potential investors may restrict the number of external funding sources for the company. This situation rests on the point of view that more liquidity companies are less indebted.

Rodrigues et al. analyzed the factors of determining the capital structure of 1,091 companies in Latin America and the USA in the time period 2009-2013. Using a pooled regression model, the authors concluded that the liquidity of the companies in Latin America is in a positive relationship with each level of borrowing (overall, long-term and short-term). Greater liquidity is necessary in order to be able to borrow on a larger scale with a higher level of risk in the business. However, the current liquidity of the USA companies had an inverse impact on the total debt, long-term and short-term debt (Rodrigues et al., 2017). The obtained results were in accordance with the research conducted by Li, who concluded that there was a significant negative correlation between liquidity and capital structure. The author used the panel data of 180 Chinese listed companies in the time period 2004-2006 and obtained empirical results were explained on the assumption that liquid assets were primarily used for the company's investment needs, and larger liquid assets did not imply greater borrowing capacity (Li, 2015).

According to all previous research and research conducted by Majumdar who showed that liquidity had a positive relationship with long-term financing and negative relationship with short-term financing and leverage of the company (Majumdar, 2014), we set the following hypotheses:

H4: Liquidity has a statistically significant negative impact on leverage.

H5: Liquidity has a statistically significant positive impact on long-term financing.

H6: Liquidity has a statistically significant negative impact on short-term financing.

2.3. Tangibility of assets

The tangibility of assets represents the participation of net fixed assets in overall assets of the company. The company with a large investment in tangible assets has less financial distress costs than a company which has a large investment in intangible assets. According to the trade-off theory, theoretical assumptions and previous research in this field are based on the view that the high value of tangibility of assets ratio leads to more indebtedness. This positive relationship is the consequence of that the company strives to harmonize the maturity of assets with the maturity of the liabilities or to satisfy the maturity matching principle. The higher value of this ratio also has an impact on the reduction of the marginal agency cost of debt which arises in case of need to provide or substitute assets. Analyzing Non-Linearity in the Capital Structure Determinants of UK companies, Fattouh, Harris & Scaramozzino findings confirmed that the level of collateral showed in the form of tangible assets has a positive impact on the financial leverage for companies that have a low debt-equity ratio (Fattouh et al., 2008). It is considered that the companies that have a high share of fixed assets in total assets can borrow on a larger scale due to the fact that they could use higher fixed assets as collateral. This view is consistent with the agency theory of the structure of capital. However, the greater volume of fixed costs because of the larger

participation of net fixed assets could mean a higher risk of the company's business and that the lenders may not grant a loan.

Similar to previous research, Serrasqueiro & Rêgo Rogão also confirmed that there is a positive relationship between the tangibility of assets and indebtedness. Analyzing the structure of capital of 41 non-financial listed Portuguese companies in the time period 1991-2004, they confirmed that the tangibility of assets is the main factor that has an impact on the optimal policy of financing or adjusting the level of borrowing to the optimal level. They also concluded that a higher value of tangibility of assets ratio is a feature of large and profitable companies that reduce the transaction costs of the companies (Serrasqueiro, Rêgo Rogão, 2009).

The characteristics of the industry in which companies operate can be such that require large investments in fixed assets due to the fact that fixed assets are related to the collateral value of the company and non-debt tax-shield. The research conducted by Albanez who analyzed the impact of the cost of capital on the financing decisions of 235 Brazilian companies in the time period 2000-2011 showed that the tangibility assets ratio is in a negative relationship with the financial leverage (Albanez, 2015). This conclusion is in accordance with the pecking order theory which is based on the point of view that the companies with a lot of tangible assets had fewer problems with information asymmetry and rely more on the financing from equity. A negative relationship was also confirmed in the research conducted by Zhao & Zhu, 2006; Li et al., 2009 who rely on the assumption that the intense collateral ability to gain tangible assets implies a smaller amount of borrowing. Research conducted by Al-Najjar & Taylor showed that there was a significant negative relationship between the tangibility of assets and institutional investors. Potential investors will prefer the company that has a low level of tangibility asset ratio, given that the tangible assets are seen as an indicator of the company's debt capabilities (Al-Najjar, Taylor, 2008).

Bearing in mind all previous research and especially the research, conducted by Chittenden et al. (1996); Jordan et al. (1998); Michaelas et al. (1999); Hall et al. (2004); Sogorb-Mira (2005); Degryse et al. (2010); Abu Mouamer (2011); Majumdar (2014); Harc (2015); Rodrigues et al. (2017) we set the following hypotheses:

H7: Tangibility has a statistically significant positive impact on leverage.

H8: Tangibility has a statistically significant positive impact on long-term financing.

H9: Tangibility has a statistically significant negative impact on short-term financing.

2.4. Sales Growth

There are various factors for measuring the growth potential and from these factors depend on the relationship between the financial leverage and the growth opportunity. One of the indicators to measure the growth opportunity is sales growth. Sales growth is determined as sales growth rate on an annual basis. Companies, that have a high annual sales growth rate, usually have a large turnover of collecting customer receivables and paying out liabilities to suppliers which can affect the growth of total liabilities. The sales growth rate is an

attractive indicator for institutional ownership because the institutional investors decide to buy the stock of companies that have high sales growth rate (Tong, Ning, 2004).

Previous research stands at the point of view that there is a positive relationship between leverage and sales growth (Cassar & Holmes, 2003; Mahmud & Qayyum, 2004; Gomes et al., 2014; Li, 2015). A positive relationship is due to the fact that companies with greater opportunities for sales growth are usually successful companies that have a greater demand for funds and are easier to borrow. According to the pecking order theory, companies with a lot of growth opportunities should increase internal funds and also retain more earnings. In the case of a large volume of retained earnings, it is necessary to borrow more in order to achieve an acceptable level of leverage. Morri and Cristanziani agreed that borrowed funds tend to increase in case of invested funds are larger than retained earnings and to fall in case of invested funds are less than retained earnings (Morri, Cristanziani, 2009).

The companies with a larger growth opportunity usually use borrowed funds for investments and face lesser bankruptcy costs. It is expected that financing from short-term funds has a positive relationship with growth, reduce the agency problem and the cost of funding, especially if the company with a lot of growth opportunities is primarily financed from short-term rather than long-term funds (Michaelas et al., 1999). Achy emphasizes that higher sales growth rate means more cash and cash equivalents, receivables, inventories, so financing from short-term debt needs to fulfil all liquidity requirements (Achy, 2009). On the other hand, the companies with a lot of growth opportunities are more flexible in terms of investment, usually have severe agency problems and the future growth rate is expected to be in a negative relationship with long-term leverage (Al-Najjar, Taylor, 2008).

A negative relationship between the sales growth rate and leverage is predicted by the trade-off theory due to the fact that the companies with a greater annual sales growth rate usually have greater profitability that implies greater internal funds, the smaller volume of funding from borrowed sources and higher financial distress costs. According to this theory, growing companies less rely on the borrowed funds, because the possibilities of growth cannot cut off as collateral. The agency theory of financing also highlights a negative relationship between growth and leverage as a result of conflicts between owners and creditors. These findings confirmed the research conducted by Wald (1999) and Fattouh et al. (2008). According to Brito et al. (2005) the company with high growth rates has high bankruptcy costs due to the fact that a vital part of the company's value is associated with the expectations of gainings and funds in the future which can't be liquidated in the case of financial problems. Bearing in mind this fact and the fact that the growing company is often trying to increase and realized the greater risks projects, the debt financing would be restricted, so the companies with high growth rate rely less on funding from borrowed sources (Brito et al., 2005).

Bearing in mind all previous research and research conducted by Tang & Jang (2007); Abu Mouamer (2011); Zani et al. (2014); Majumdar (2014), we set the following hypotheses:

H10: Sales Growth has a statistically significant positive impact on leverage.

H11: Sales Growth has a statistically significant negative impact on long-term financing.

H12: Sales Growth has a statistically significant positive impact on short-term financing.

2.5. The company's size

Most theoretical considerations are based on the understanding that there is a positive relationship between the company's size and financial leverage, because larger companies have a better treatment in the capital markets, more favourable borrowing terms and the benefits of economies of scale, wide range of investments, larger diversification of business, lower direct costs in the case of issuing debt or capital and lower risk to face bankruptcy. Larger companies have more funds to cover the liabilities and fewer bankruptcy costs that enable them to be financed from borrowed sources on a larger scale. So, potential bankruptcy costs and the probability of going bankrupt are in reverse relation with the company's size. The positive relationship between the company's size and financial leverage is confirmed in research conducted by Wald (1999); Cassar & Holmes (2003); Deesomsak et al. (2004); Akhtar (2005); Morri & Cristanziani (2009); Serrasqueiro & Rêgo (2009); Albanez (2015); Li (2015); Wei & Kong (2016).

The trade-off theory supports the view that greater company's size directs companies to turn to a larger volume of debt financing. In the case of conflicts that can occur between the owner of shares and lenders, small companies usually rely on a low volume of long-term financing and a high volume of short-term financing (Michaelas et al., 1999). So, the size effect is positively correlated with financing from long-term debt (Cassar & Holmes, 2003; Gomes et al., 2014) and influences better debt adjustment to the optimal level. Greater size contributes to the reduction of transaction costs that the owner of shares or managers can have in relation to creditors. On the other hand, research conducted by Song showed that although the company's size is positively related to the leverage ratio and short-term debt ratio, there is a negative relationship between the company's size and long-term debt ratio (Song, 2005). A negative relationship between the company's size and long-term debt ratio is also confirmed in research conducted by Rodrigues et al. (2017).

The supply of capital to smaller companies can be on a much smaller scale or the capital is offered at substantially higher costs, which affects the smaller volume of using borrowed sources for small companies. Likewise, if there is an inverse relationship between the operating risk and the company's size, this will affect smaller companies to less rely on debts and external sources of funding. Similarly, if there is an inverse relationship between the bankruptcy costs and the company's size, the stakeholders can question the survival of the company or making further operational decisions.

Research conducted by Al-Najjar and Taylor confirmed the positive relationship between financial leverage and the company's size but also found that there is a positive relationship between institutional ownership and the company's size. Institutional investors opt for investing in bigger companies due to lower stock investment risk and financial distress risk (Al-Najjar & Taylor, 2008). Research conducted by Fattouh et al. showed that the company's size has a positive influence on the financial leverage for the companies with a low debt-equity ratio, but a negative influence on the companies with a high debt-equity ratio. So, the results of quantile regression showed that the impact of company's size on leverage is positive at lower quantiles, but it is negative for companies in the upper quantiles (Fattouh et al., 2008).

According to the pecking order theory, there is a negative relationship between financial leverage and the company's size due to the fact that asymmetry of information between the

individuals within the company and capital markets is less represented in large companies and the cost of capital of large companies are usually smaller. Large companies should rely more on their own capital and less on debt. Sometimes, long-term funding sources are not a desirable source of funding due to high-interest rates. In such circumstances, larger companies are turning to other sources of funding, for instance, to issue shares. Bearing in mind that the costs of issuing shares are lower for larger than smaller companies, smaller companies are focused on short-term funding. Smaller companies strive to borrow more than to open their capital to external investors.

In certain circumstances, larger companies can have a monopoly in price formation that affects the creation of higher profits and a greater degree of reliance on self-financing. A negative relationship between the financial leverage and the company's size is confirmed in research conducted by Achy (2009); Yartey (2011); Tang & Jang (2007). Karadeniz et al. did not find any significant relationship between the leverage ratio and the company's size for lodging companies (Karadeniz et al., 2009).

Bearing in mind all previous research and especially research conducted by Song (2005); Abu Mouamer (2011); Majumdar (2014); Rodrigues et al. (2017) we set the following hypotheses:

H13: The size has a statistically significant positive impact on leverage.

H14: The size has a statistically significant negative impact on long-term financing.

H15: The size has a statistically significant positive impact on short-term financing.

3. Data and the Methodology

Panel regression analysis was used to research indicators of the capital structure of companies in the retail industry with the goal to achieve the optimal structure of capital for all participants in the value chain, i.e. suppliers, logistics and the food industry. The observed countries were Bulgaria, Albania, Bosnia and Herzegovina, Croatia, Greece, Montenegro, Macedonia, Romania, Slovenia, and Serbia. The selection of determinants of the capital structure is based on the chosen theory of capital structure. The sample consisted of 2,057 companies and a series of 8 years. However, after eliminating missing values, the model included 14,211 observations. The source of data was based on the aggregate indicators of the balance sheet and the company's income statement. TP Catalyst database with all information on public and private companies was the source of the data (Bureau van Dijk, A Moody's Analytic's Company, 2018). We took all the companies in the trade industry into research, sector retail, except for the sale of motor vehicles and motorcycles. Statistical program Stata 13 was used for data processing.

In order to analyze the indebtedness of the companies in the Balkans, we consider indebtedness as the dependent variable and profitability, liquidity, the tangibility of assets, sales growth and the company's size as independent variables. Indebtedness was measured by leverage, short-term financing, and long-term financing. Leverage determines the ratio between total liabilities and total assets (Cassar, Holmes, 2003; Song, 2005; Abu Mouamer,

2011; Harc, 2015; Majumdar, 2014; Rodriques et al, 2017). It determines the total amount of funds financed by debt (Zani et al., 2014). It represents the most comprehensive determination of leverage or what remains to shareholders in the circumstances when liquidation occurs. However, it does not indicate whether the company faces the risk of default in the near period.

There are two forms of leverage in corporate finance theory: short-term and long-term. Short-term financing is such a form of financing in which the debtor is obliged to settle their obligations within a contracted term, usually shorter than one year. Consistent with previous research, we measured short-term debt financing as the ratio between short-term liabilities and total assets (Cassar, Holmes, 2003; Song, 2005; Harc, 2015; Majumdar, 2014; Rodriques et al., 2017). On the other hand, long-term funding represents liabilities that will be paid over a period of more than one year as a percentage of total assets (Cassar, Holmes, 2003; Song, 2005; Harc, 2015; Majumdar, 2014; Rodriques et al., 2017). It is a preferred source of financing for companies when they want to finance growth (Tang, Jang, 2007).

Profitability as an independent variable was measured by return on assets that represents the skill of the company to earn yield using its funds. It is measured by the ratio of operating income to total assets (Fattouh et al., 2008; Terra, 2011; Gomes et al., 2014). The requirement for profitability is derived from the company's goal because the goal of each company is to maximize results in a long run.

Liquidity represents the company's ability to finance its mature short-term liabilities with short-term assets. Consistent with previous research, current liquidity ratio was measured as the ratio of current assets to current liabilities (Al-Najjar, Taylor, 2008; Terra, 2011; Albanez, 2015; Li, 2015; Abu Mouamer, 2011).

The tangibility of assets was measured as net fixed assets to total assets ratio according to previous research conducted by Cassar & Holmes (2003); Mahmud & Qayyum (2004); Achy (2009); Karadeniz et al. (2009); Harc (2015). Net fixed assets represent non-current assets or overall land, building, equipment and other fixed assets reduced to the cost of depreciation of land, building, equipment and other fixed assets of any company (Fattouh et al., 2008).

Sales growth as an independent variable was measured as a growth of the company's total sales on an annual basis (Cassar, Holmes, 2003; Mahmud, Qayyum, 2004; Fattouh et al., 2008; Zani et al. 2014; Li, 2015). According to Brito et al., sales growth is calculated as company's annual sales growth rate, bearing in mind the value of sales of the current and previous period (Brito et al., 2005).

The company's size is measured as a natural logarithm of the total assets (Akhtar, 2005; Fattouh et al., 2008; Al-Najjar, Taylor, 2008; Morri, Cristanziani, 2009; Abu Mouamer, 2011; Li, Reinhard, 2010; Li, 2015). On the other hand, some authors calculated the company's size based on the book value of its total assets on an annual basis (Mahmud, Qayyum, 2004; Rodriques et al., 2017).

An overview of all used indicators and the method of their calculation is presented in Table 1.

Table 1

Indicators of indebtedness and factors that can have an impact on the indebtedness

Indicators	Method of calculation
Leverage	Total liabilities/Total assets
Long-term financing	Long-term liabilities/Total assets
Short-term financing	Short-term liabilities/Total assets
Profitability	ROA- Operating income/Total assets
Current liquidity	Current assets/Current liabilities
Tangibility of assets	Net fixed assets/Total assets
Sales Growth	(Sales of Current Period – Sales of Previous Period) / Sales of Previous Period
The company's size	Ln Total assets

Source: Author's calculation.

Following the previous studies, the methodology of the analysis of panel data series was used. Hereby, Pooled Ordinary Least Squares model, fixed-effects model, and the random-effects model could be used. The Pooled OLS model and fixed effects model have the same, the general model of the equation of panel data regression. The random-effects model starts from the general model and adds the variance of the random effect. The starting assumption of application fixed or random effects is that a fixed-effects model is applied when the sample consists of all units belonging to the observed sample and the random-effects model is applied when the units in the sample are randomly selected from the whole population (Brooks, 2008). Similarly, the fixed effects model observes the internal data dimensions or the influence within the unit. On the other hand, the random-effects model observes the internal and external data dimensions or the influence within the unit and the influence between the units.

During the research, we used three types of tests that should show us which model is the most representative for the application: F-test, Breusch-Pagan LM test and Hausman specification test. F-test points out whether we should use the fixed effects or pooled OLS regression model. Bearing in mind that its p values for all three models were lower than 0.05, the fixed effects approach was more appropriate for our analysis. For choosing between random effects or pooled OLS regression model, the Breusch-Pagan LM test was applied. Its results, with p values lower than 0.05 for all indebtedness models, indicated that for our research, the random-effects model was more representative. Finally, the results of the Hausman specification test (where p values in all three cases were lower than 0.05) pointed out that the use of fixed effects model was more appropriate than the random effects model.

According to Brooks (2008) and bearing in mind all previous explanations, we defined three fixed-effects models in the following way:

$$SF_{it} = \alpha_i + \beta_1 ROA_{it} + \beta_2 CR_{it} + \beta_3 TA_{it} + \beta_4 SG_{it} + \beta_5 CS_{it} + U_{it}$$

$$LF_{it} = \alpha_i + \beta_1 ROA_{it} + \beta_2 CR_{it} + \beta_3 TA_{it} + \beta_4 SG_{it} + \beta_5 CS_{it} + U_{it}$$

$$LEV_{it} = \alpha_i + \beta_1 ROA_{it} + \beta_2 CR_{it} + \beta_3 TA_{it} + \beta_4 SG_{it} + \beta_5 CS_{it} + U_{it}$$

SF_{it}, LF_{it}, LEV_{it} presents the dependent variable;

α presents the intercept coefficient of company i;

β presents a k×1 vector of a parameter that should be estimated on the explanatory variables;

ROA, CR, TA, SG, CS presents the independent (explanatory) variables;

ROA_{it}, CR_{it}, TA_{it}, SG_{it}, CS_{it} is a 1×k vector of observations on the explanatory variables;

U presents the residual error;

i signify each company (i=1,….., N) and t signify time (t=1,…., t).

4. Empirical Results and Discussions

Table 2 presented descriptive statistics of dependent and independent variables of the proposed models.

Table 2

Descriptive statistics

Variables	Mean	SD	Min	Max
Size of the Company	15.96254	1.691892	1.219676	22.79627
Tangibility of Assets	0.4076419	0.2638776	0	1
Return on Total Assets	4.424815	13.84293	-98.227	99.438
Current Ratio	2.011493	4.663511	0	99.879
Sales Growth	-0.1442071	8.520768	-751.0767	1
Short-term Financing	0.5330965	2.379247	-0.0254588	260.8
Long-term Financing	0.0948157	0.175349	0	2.956189
Leverage	0.6279123	2.382617	0	260.8

Source: Author's calculation.

According to the presented results in Table 2, it can be concluded, for example, that the average profitability rate of the companies in the retail industry was 4.42% that was below the reference value of 10%. According to the average value, it is concluded that the companies in the retail industry were not profitable during the observed period. This indicator showed a high level of dispersion, with the lowest value of -98.23 and the highest value of 99.44%. The average value of the current liquidity ratio was 2.01, which was in accordance with the reference value that is equal and bigger than 2. The highest value of the current ratio was 99.88, which means that in the retail industry exist companies that had an extremely high ability to cover short-term liabilities from current assets. It was noticeable that companies in the retail industry had an unsatisfactory value of sales growth indicator, which ranges from -751.08 to 1. The negative average value of sales growth (-0.14) showed that companies in the retail industry had a problem with achieving sales growth in the observed period. The reasons should be sought in the fact that the economies of these

countries are adapting to a new growth model that is more focused on investment and exports, and less on domestic consumption.

The share of long-term debts in total assets (0.095) was about six times lower compared to the share of short-term liabilities in total assets (0.533). The value of short-term financing also had a high level of dispersion, from -0.02 to 260.8. The retail companies used short-term loans in order to solve the illiquidity problem in the Balkans economy. Likewise, the most common form of loans approved by banks due to higher systematic risk were short-term loans. Finally, the part of the funding was transferred to suppliers bearing in mind the fact that prolonging the settlement of liabilities to suppliers leads to an increase in their participation in the financial structure. Finally, leverage also showed significant value variations with the average value of 0.63, which showed, for example, that on 1 Serbian Dinar (RSD) of the capital comes to 63 pounds of debt. The average value of leverage (0.63) is higher than the reference value (0.5) with high dispersion from 0 to 260.8.

Table 3

Correlation matrix

Variables	*Size*	*Tan.*	*ROA*	*CR*	*SG*	*SF*	*LF*	*Lev.*
Size of the Company	1.0000							
Tangibility of Assets	0.2197 (0.0000)	1.0000						
Return on Total Assets	-0.0708 (0.0000)	-0.1987 (0.0000)	1.0000					
Current Ratio	-0.0568 (0.0000)	-0.0600 (0.0000)	0.0898 (0.0000)	1.0000				
Sales Growth	0.0077 (0.3555)	0.0012 (0.8818)	0.0222 (0.0078)	-0.0254 (0.0024)	1.0000			
Short-term Financing	-0.1159 (0.0000)	-0.0674 (0.0000)	-0.1694 (0.0000)	-0.0535 (0.0000)	0.0106 (0.2056)	1.0000		
Long-term Financing	0.1951 (0.0000)	0.2270 (0.0000)	-0.1644 (0.0000)	-0.0263 (0.0014)	-0.0508 (0.0000)	-0.0176 (0.0320)	1.0000	
Leverage	-0.1014 (0.0000)	-0.0506 (0.0000)	-0.2022 (0.0000)	-0.0554 (0.0000)	-0.0146 (0.0813)	0.9973 (0.0000)	0.0560 (0.0000)	1.0000

Source: Author's calculation.

Correlation coefficients for all dependent and independent variables were presented in Table 3. There were no high coefficients of correlation (higher than 0.5) between independent variables. For detecting multicollinearity, variance impact factors (VIF) have been calculated for all independent variables. As all VIF values were less than 5 (their values were shown in Table 4), it can be concluded that there was no problem with multicollinearity.

Table 4

Variance impact factors of variables (VIF)

Variables	VIF	1/VIF
Size of the Company	1.05	0.949291
Tangibility of Assets	1.09	0.917929
Return on Total Assets	1.06	0.944792
Current Ratio	1.01	0.987883
Sales Growth	1.00	0.998634

Source: Author's calculation.

The further results have presented through Table 5, Table 6, and Table 7 (for each independent variable one by one). In addition to the coefficients, the tables contained their mean values and p values. Also, each table presented the results of F test, Breusch-Pagan test and Hausman test based on which the fixed effects approach was applied.

Table 5

Leverage

	Leverage			
Independent variables	*Coefficients*	*SD*	*t-ratio*	*p-value*
Size of the Company	-0.057703	0.0046217	-12.49	0.000
Tangibility of Assets	-0.1904479	0.0226343	-8.41	0.000
Return on Total Assets	-0.0053474	0.0002258	-23.68	0.000
Current Ratio	-0.0089744	0.0006248	-14.36	0.000
Sales Growth	-7.34e-06	0.0002624	-0.03	0.978
R^2	0.1241			
Hausman Test	H = 515.49 (0.0000)			
Breusch-Pagan Test	LM = 10596.17 (0.0000)			
F test Results	F(2042, 12163) = 12.93 (0.0000)			

Source: Author's calculation.

According to the presented results in Table 5, we concluded that the variable size of the company (-0.057703) had a statistically significant negative influence ($p<0.05$) which means that the hypothesis H13 was rejected. Similarly, the variable tangibility of assets (-0.1904479) had a statistically significant negative influence ($p<0.05$) which means that the hypothesis H7 was also rejected. So, in the retail industry, the larger companies and the companies with the higher value of tangibility of assets to a lesser extent financed from other sources. This results did not support the requirements of Trade off Theory and the Pecking Order Theory. Although, the greater size assumes greater diversification of activities and less possibility of bankruptcy, the greater companies in the retail industry will not borrow on a larger scale. These results are in accordance with the results of Zani et al. (2014) and Rodrigues et al. (2017). Likewise, the higher level of tangible assets of retail companies did not presume that they will use it as collateral security in order to borrow more and reduce the agency costs of capital. This finding was also confirmed by Karadeniz et al. (2009) and Wei & Kong (2016).

On the other hand, the variables return on total assets (-0.0053474) and current ratio (-0.0089744) had a statistically significant negative impact on leverage ($p<0.05$) which means that the hypotheses H1 and H4 were confirmed. So, more profitable and liquid retail companies had smaller leverage as an indicator of possible borrowing that measures the risk of investing in the company. The higher profitability reduces the level of debts which is in accordance with the Pecking Order Theory, so it can be concluded that these companies use a high level of retained earnings instead of financing from debts. The reasons could be found in insufficiently developed capital markets in the Balkan countries that causes higher costs of increasing capital. Higher financial costs and higher risk premiums were the results of expensive borrowing conditions in the Balkan countries. The negative relation between profitability and leverage was also confirmed by Li & Reinhard (2010) and Zani et al. (2014).

More liquid companies in the retail industry usually use liquid assets in order to finance their investments rather than borrowed from external sources which is in accordance with the research conducted by Deesomsak et al. (2004). In a situation when retail companies encounter a problem of illiquidity, they borrow more on a short-term basis which leads to the growth of the total leverage and confirms the statistically significant negative relationship between the liquidity and financial leverage. The possible level of indebtedness of retail companies will be achieved up to the equality of the rate of return on assets and the capital costs.

The last coefficient was the sales growth which influence was negative and not statistically significant ($p>0.05$) which means that the hypothesis H10 was rejected. The negative relationship between the growth opportunities as measured by the sales growth and leverage is contrary to the requirements of the pecking order theory. The reasons should be sought in insufficiently high-quality sources of funding in the Balkans countries that significantly impact on fewer opportunities for growth. This relation is statistically significant only in the case of long-term debt financing.

Table 6

Long-term financing

Independent variables	Long-term financing			
	Coefficients	*SD*	*t-ratio*	*p-value*
Size of the Company	-0.0009302	0.002154	-0.43	0.666
Tangibility of Assets	0.1366392	0.0105489	12.95	0.000
Return on Total Assets	-0.0003399	0.0001052	-3.23	0.001
Current Ratio	0.0017442	0.0002912	5.99	0.000
Sales Growth	-0.0002672	0.0001223	-2.19	0.029
R^2	0.0506			
Hausman Test	H = 90.71 (0.0000)			
Breusch-Pagan Test	LM = 14686.27 (0.0000)			
F test Results	F(2042, 12163) = 11.62 (0.0000)			

Source: Author's calculation.

According to the presented results in Table 6, it can be concluded that the tangibility of assets, return on total assets, current ratio and sales growth had a statistically significant

influence ($p<0.05$). The exception is the size of the company which influence was not statistically significant ($p>0.05$). The variable tangibility of assets (0.1366392) and current ratio (0.0017442) had a positive statistically significant influence which means that the hypotheses H8 and H5 were confirmed. The positive relation between assets tangibility and long-term indebtedness means that the retail companies in the Balkans have used capital assets as collateral in order to get higher long-term loans which are in accordance with the agency theory of the structure of capital. High tangible assets of retail companies lead to the higher liquidation value of these companies and consequently, to the high level of the collateral for long-term debts. The high value of the collateral is especially important for new retail companies on the market that did not have such a close relationship with creditors. Likewise, the retail companies managed to satisfy the maturity matching principle or to adjust the maturity of the assets with the maturity of the liabilities in the long run on what indicated the positive relation between the current ratio and long-term indebtedness. It also means that retail companies had easier access to long-term debts.

On the other hand, the variables return on total assets (-0.0003399) and sales growth (-0.0002672) had a negative statistically significant influence which means that the hypotheses H2 and H11 were confirmed. So, more profitable retail companies and companies that achieve higher sales growth are less likely to borrow from long-term sources of borrowing in order to finance their investments and add value to products or services that are sold. Higher growth opportunities of retail companies are financed with less borrowed funding which is in accordance with the trade-off theory. A negative relationship between growth rate and long-term debt was also confirmed in research conducted by Fattouh et al. (2008).

The last one variable was the size of the company (-0.0009302) which influence was negative, but not statistically significant ($p>0.05$) which means that the hypothesis H14 was rejected. Although, the larger retail companies have diversified operations and longer existence on the market and as a result lower cost of capital, reducing the size of these companies did not have a statistically significant impact on the decrease in the volume of long-term borrowing. Bearing in mind that the most usual form of long-term borrowing in Balkans countries is very expensive loans from the bank, larger retail companies are often relying on own sources of funding when they finance growth.

Table 7

Short-term financing

	Short-term financing			
Independent variables	*Coefficients*	*SD*	*t-ratio*	*p-value*
Size of the Company	-0.0567727	0.0045577	-12.46	0.000
Tangibility of Assets	-0.3270871	0.0223211	-14.65	0.000
Return on Total Assets	-0.0050075	0.0002227	-22.49	0.000
Current Ratio	-0.0107185	0.0006161	-17.40	0.000
Sales Growth	0.0002598	0.0002587	1.00	0.315
R^2	0.1956			
Hausman Test	H = 423.58 (0.0000)			
Breusch-Pagan Test	LM = 8925.46 (0.0000)			
F test Results	F(2042, 12163) = 10.66 (0.0000)			

Source: Author's calculation.

According to the presented results in Table 7, we concluded that the first four observed variables (size of the company, tangibility of assets, return on total assets and current ratio) had a statistically significant negative influence ($p<0.05$). Presented results showed that the variable size of the company (-0.0567727) had a negative impact on short-term financing which means that the hypothesis H15 cannot be accepted. So, with the growth in the size of the retail companies, the volume of financing from short-term sources did not increase.

The variables tangibility of assets (-0.3270871), return on total assets (-0.0050075) and current ratio (-0.0107185) had a negative impact on short-term financing which means that the hypotheses H9, H3, and H6 were confirmed. So, the higher the profitability, liquidity and, tangibility of assets means a smaller volume of borrowing from short-term sources. More liquid retail companies were borrowed in the short-term to a lesser extent, which could mean that they use their liquid assets to settle short-term operating liabilities which primarily include suppliers. In that way, they try to ensure synchronization of deadlines of the collection of receivables from customers and deadlines for settlement of obligations to suppliers. On the other hand, unsatisfactory level of profitability and unavailable cash flow for financing capital investments, credit and operating liabilities could lead to an increase in other sources of funding, especially short-term. Lack of money for maintaining a satisfactory level of liquidity, reducing purchasing customer's power, a smaller volume of investments and difficulties in collecting receivables can be the result of crisis business conditions (Pjanic, Vukovic & Mijic, 2018). In those circumstances, retail companies may use short-term debts to solve the problems, especially the problem of liquidity which supports the fact that there is a statistically negative correlation between short-term leverage and liquidity.

The negative relation between the tangibility of assets and short-term financing means that the retail companies only used capital assets as some kind of guarantee to get funds from the lenders in the financial market in the long run. These companies did not need collateral to borrow in short runs and most of their fixed assets were financed from long-term sources.

The last one variable, sales growth (0.0002598) had a positive impact on short-term financing, but not statistically significant ($p>0.05$), which means that the hypothesis H12 was rejected. It means that a higher sales growth of retail companies in the Balkans market, which will lead to higher revenues in the future, requires a larger volume of short-term borrowing. The positive and highly significant relationship between the growth opportunity and short-term financing is confirmed by Cassar & Holmes (2003).

To sum up, the obtained results, i.e. the effects of all independent variables (profitability, liquidity, the tangibility of assets, sales growth and the company's size) on three indebtedness indicators (leverage, long-term financing, and short-term financing) are presented in Table 8.

Table 8

Hypotheses and respective relations

Hypotheses	Leverage		Long-term financing		Short-term financing	
	Expected	Found	Expected	Found	Expected	Found
Profitability	Negative	Negative	Negative	Negative	Negative	Negative
Liquidity	Negative	Negative	Positive	Positive	Negative	Negative
Tangibility of assets	Positive	Negative	Positive	Positive	Negative	Negative
Sales Growth	Positive	nss -	Negative	Negative	Positive	nss +
The company's size	Positive	Negative	Negative	nss -	Positive	Negative

Notes: This table provides the list of hypotheses and respective expected and found relations.
nss - – not statistically significant, negative
nss + – not statistically significant, positive

Source: Author's calculation

5. Conclusion

The major aim of this paper has been the identification of key factors influencing the capital structure of the companies in the trade industry. In our study, we investigated the five determinants of the capital structure (profitability, size, the tangibility of assets, liquidity and sales growth) and their impact on the indebtedness measured by leverage, long-term and short-term financing. A sample of 2,057 companies that operated in the retail sector in the Balkan countries was chosen. The methodology of the analysis of panel data series was applied in order to investigate the factors that influence capital structure of those companies.

Our findings suggest that indebtedness (measured by leverage) is negatively influenced by profitability, liquidity, the tangibility of assets and the company's size. This suggests that the more profitable and liquid retail companies had smaller leverage as an indicator of possible borrowing that measures the risk of investing in the company. Also, the larger retail companies and the companies with the higher value of tangibility of assets to a lesser extent were financed from other sources.

The study also has shown that the indebtedness (measured by long-term financing) is negatively influenced by profitability and sales growth, and positively by liquidity and tangibility of assets. This means that more profitable retail companies and companies that achieve higher sales growth are less likely to borrow from long-term sources of funding in order to finance their investments and add value to products or services that are sold. Also, the retail companies have used capital assets as collateral in order to get higher long-term loans. High tangible assets of retail companies lead to the higher liquidation value of these companies and consequently, to the high level of the collateral for long-term debts.

Finally, the obtained results have shown that the determinants of capital structure which negatively affect indebtedness (measured by short-term financing) of Balkan retail companies are profitability, liquidity, the tangibility of assets and company's size. In other words, the higher the profitability, liquidity, and tangibility of assets means a smaller volume of borrowing from short-term sources. More liquid retail companies use their liquid

assets to settle short-term operating liabilities which primarily include suppliers. Also, with the growth in the size of the retail companies, the volume of financing from short-term sources did not increase.

The study provides a basis for future research analyzing the relationship of capital structure determinants on indebtedness. Our study suffers from several limitations that are at the same time guidelines for future research:

- An obvious restriction of this study is the quality and reliability of the data, that is similar to most financial studies relying on reported financial statements.
- Explaining the indebtedness, it is necessary to use determinants taking into account market values in models.
- It would have been advisable to include organizational and managerial factors, besides financial variables, so that the behaviour of the dependent variable could be better described.

Further research might also consider other factors that have not been included in our model (it could be made with the addition of further variables, or the removal of existing variables). It might be also conducted a comparative study that includes retail companies in a different group of countries in order to figure out whether the determinants of indebtedness are the same in different business environments in other regions. Clearly, more research is needed on the indebtedness of retail companies in the Balkan countries in order to supplement the initial findings in this study.

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ИКОНОМИЧЕСКИ ИЗСЛЕДВАНИЯ
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THE SAVING BEHAVIOUR OF POMAKS IN BULGARIA: A PATH ANALYSIS APPROACH

In the region of Smolyan in Bulgaria and specifically in the cities of Zlatograd, Madan, Rudozem and Velingrad, the saving behaviour appears to be gaining more importance for Pomak households. Based on the Theory of Planned Behaviour, path analysis was applied to explore the factors that determine the intention of Pomak households to enhance their saving behaviour. The strongest influence was exerted by attitudes followed by subjective norms. Saving motives of households showed that those had the most significant influence on the intention towards saving. As regards the perceived behavioural control factor, the results indicated a direct positive effect on final saving behaviour, but a non-significant one on the intention to save. Furthermore, religiosity emerged as an important factor that affects the intention towards saving.
JEL: D10; D14

1. Introduction

The Republic of Bulgaria is situated on the eastern Balkan Peninsula of Southern-Eastern Europe, along the Black Sea. According to the Constitution of the Republic of Bulgaria, religions and religious practices in the country are free. The ethnic composition is: Bulgarian – 84.8%, Turkish – 8.8%, Roma – 4.9% and others (Based on the Population Census 2011 data) (NSI, 2017). Pomaks represent one of three major Muslim groups. According to the results of the 2001 census, there were 996,978 Muslims in Bulgaria, making up 12.2% of the Bulgarian population. Muslims were concentrated in the south-

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eastern and north-eastern regions of the country. Pomaks identified as a religious minority, primarily concentrated in the mountainous regions of the Rhodope mountains, with the Bulgarian language as their mother tongue, but whose religion and customs are Muslim (Poulton, 1991; Georgieva, 2001). This research aims at the development of the Pomak population and comprises any creative work undertaken on a systematic basis in order to increase the volume of financial knowledge, including the understanding of this minority group of its saving behaviour in order to devise new innovative financial policies. The emergence of the role of financial and social needs and the safeguarding of universal social rights for collective prosperity of the minority is crucial. Factors, such as social security, health, social care, employment and the labour market, education, immigration, financial policies and housing policy economy is a sector that contributes significantly to creating jobs, sustainable development and a fairer distribution of income and wealth to this population group in the area of Bulgarian Thrace. Specifically, it exists limited knowledge about how this minority group can compare the saving behaviour and tendency for it.

The socioeconomic situation in the region of Bulgarian Thrace is characterized, on the one hand, by the presence of favourable conditions for economic growth (natural resources, qualified and experienced workforce), and on the other, by serious problems (Lozanova et al., 2005), which resulted from the socialist regime's handling of the sectors of infrastructure and environmental protection. Other issues emerged as a result of a slow and painful transition towards a market economy, such as sluggish and non-effective privatization, closure of enterprises without the necessary social measures for providing alternative employment to laid-off workers. Low purchasing prices of agricultural products (including tobacco), dumping import of agricultural products from the neighbouring countries and low consumption power of the population and of underdeveloped regional markets (Lozanova et al., 2005) aggravated the already dismal situation. The combination of the traditional underdevelopment in the region (especially in the mountainous and border villages) with the rising unemployment (during the first years of the transition, in some villages over 90% of residents were left without work) resulted in the sharp impoverishment of the population (Lozanova et al., 2005). An imbalance between the demand of workforce and their lack of specialization was highly observed. A large part of the population (mostly the men) was forced to seek employment outside the region. The majority of those managed to find employment as seasonal workers in the large cities of Bulgaria, or even Spain, Portugal, Germany, Belgium and Holland (Lozanova et al., 2005). Minorities may also find it more difficult to access loans from banks and other financial institutions than non-minorities because loan officers as typical humans prefer to consider applications based on familiar references (Bewaji et al., 2015). Also, minority entrepreneurs may fear being rejected by financial institutions and thus are less likely to apply for loans. Since a loan manager in a bank sees fewer minority members applying for loans, he or she has less experience to successfully judge the potential viability of the individual. Due to the lack of interaction and the avoidance of uncertainty, a loan manager will be very likely to make a decision against giving loans to minority entrepreneurs. Sometimes minorities simply face prejudice based on their ethnic background in terms of the public's expectation of their ventures (Bewaji et al., 2015). Pomaks deliberately isolated themselves from the majority; they limited participate in the migration flows from the village–to–city in the industrialization period, which contributed to the preservation of traditional (pre-industrial)

and specific characteristics of their culture (Brunnbauer, 1999; Georgieva, 2001). At the same time, an opposite trend existed as well, because especially the young generation influenced by the secular education, wanted to detach from the religious conservatism and to establish closer contacts with the majority. Despite the existence of such trends, the beginning of the transition period found the Pomaks almost totally isolated, and politically, socially and economically divided (Eminov, 2007; Todorova, 1998). Pomaks were divided in two 'ethclasses': the Muslim industrial workers in the villages and the atheistic or secular intellectuals of the towns, that Pomaks were deeply religious but had not built up knowledge of their religion, or that they did not even profess the Sunni Orthodoxy, but traditional or popular Islam (Karagiannis, 1997). These impressions mainly resulted from the lack of serious research into the Muslim communities in Bulgaria (Gradeva, 1998), which opened a possibility of applying over-simplified definitions both to the community and its religiousness that their culture is Islamic. There were no signs in the 1990s of an economic uplift or sustainable revival of the local economy in the Rhodopes. The structural reform made things worse because most of the mining and processing enterprises in the south were closed down, thus increasing the already high levels of unemployment among Turks and Pomaks. The process of privatization of state enterprises has been very slow and the development of private businesses negligible. A slight improvement was observed only in those municipalities where the revival of enterprises and interest towards private businesses occurred. More often, however, there was a lack of initiative, information and a clear strategy for starting a private business. Local people viewed the private initiative as a survival strategy, not as means for increasing revenues. They obviously preferred small businesses with minimum investment risk – mostly trade ((Lozanova et al., 2005).

According to the Law on Regional Development (State Gazette, 2004) Bulgaria was divided into six planning regions, of which the fifth (South Central Region – SCR) included districts of Plovdiv, Kardzhali, Haskovo, Pazardzhik, Smolyan and Stara Zagora. In the project, only the two border districts will be examined – Smolian district (SD) and Pazardzhik district (PD). The present study explores the factors that influence the intention towards saving and the final saving behaviour of Pomak households. The Theory of Planned Behaviour (Ajzen, 1991) supplied the theoretical framework for the study. Consistent with the TPB, the research focused on attitudes, subjective norms, and perceived behavioural control in relation to the behavioural intention on the saving behaviour. The method of path analysis was utilized with R statistical language (R Core Team, 2013) and was applied to 400 participants, an adequate sample size.

2. Analytical Framework

The Theory of planned behaviour (TPB) is an extension of Fishbein and Ajzen's theory of reasoned action that includes measures of control belief and perceived behavioural control to deal with behaviours over which people has incomplete volitional control (Ajzen, 1991, 2002; Armitage & Conner, 2001; Conner & Armitage, 1998). The TPB further proposes that attitude, subjective norm, and PBC are determinants of behavioural intention, which subsequently influences behaviour. These three determinants are influenced by three different antecedents, namely behavioural beliefs, normative beliefs, and control beliefs

respectively, which together reflect the underlying cognitive structure (Ajzen, 1991, 2002; Armitage & Conner, 2001). The relative importance of these three determinants is expected to vary across behaviours and situations (Ajzen, 1991). The Theory of Planned Behaviour (TPB) predicts an individual's intention to engage in a behaviour at a specific time and place (Ajzen, 2002). The theory was intended to explain all behaviours with which people have the ability to exert self-control. The TPB has constantly been applied in the social psychology literature and has been applied to investigations in the field of credit counselling, personal finance, private money management, tourism sector both domestically and internationally (Ajzen, 2002; Bobek et al., 2007; Kidwell & Turrisi, 2004; Quintal et al., 2010; Ramayah et al., 2009; Rutherford & DeVaney, 2009; Xiao & Wu, 2008; Zhang et al., 2018). The use of TPB based models on financial and saving behaviour displayed positive results, for instance, with a 51% financial budget leading to 72% retirement saving of the variance in intention (Croy et al., 2012; Kidwell & Turrisi, 2004). According to Ajzen (2002), attitudes refer to the degree to which a person has a favourable or an unfavourable evaluation of the behaviour of interest and also entails a consideration of the outcomes of behaviour performance. Subjective norms refer to the belief about whether most people approve or disapprove the behaviour (Ajzen, 2002). It relates to a person's belief about whether peers, and people of importance to the person, think he or she should engage in the behaviour. Perceived behavioural control refers to a person's perception of the ease or difficulty of performing the behaviour of interest, and varies across situations and actions, which results in a person having varying perceptions of behavioural control depending on the situation (Ajzen, 2002). Behavioural intention refers to the motivational factors that influence a given behaviour where the stronger the intention to perform the behaviour, the more likely the behaviour will be performed (Ajzen, 2002).

TPB provides a framework to explore the underlying beliefs that affect one's financial behaviours. Thus, the TPB is helpful in investigating and designing strategies to help people to adopt positive financial behaviours. Several studies used the TPB to investigate a range of financial behaviours. Rutherford and DeVaney (2009) studied the role of the antecedents of a key concept of the TPB, behavioural intention (BI), to understand the "convenience use" of credit cards. Findings suggested that convenience users of credit cards were likely to possess an unfavorable ATT with regard to the use of credit cards and were influenced less by SN with regard to the use of credit cards (Rutherford & DeVaney, 2009). These authors also found that perceived behavioural control (PBC) positively impacted the convenience use of credit cards. Interestingly, however, Rutherford and DeVaney (2009) did not address behavioural intention (BI) in terms of its influence on the convenience use of credit cards. Rather, the foci in this study were the antecedents thereof: ATT, SN, and PBC. Ramayah, Yusoff, Jamaludin and Ibrahim (2009) used the TPB to predict internet tax filing intentions (e-filing). The study showed that PCB was the strongest predictor of intentions to file taxes via the internet, followed by the next strongest predictor, ATT. The results indicated that SN demonstrated a minor influence on tax filing via the internet. However, the study participants' PBC over the situation and ATT toward e-filings were found to be essential for a strong BI to file taxes via the internet. Xiao and Wu (2008) utilized the TPB identified psychological factors that supported the completion of debt management plans (DMPs). Participants in this study indicated higher levels of BI toward completing a DMP when ATT and PBC reflected higher levels. The study also showed that

BI had a direct effect on the completion of DMPs. PBC (an antecedent of BI), also had a direct effect on the completion of DMPs. A study using the TPB reported by Bobek, Hatfielf & Wentzel (2007) explored why taxpayers prefer refunds. This research showed that ATT and SN influenced taxpayer withholding decisions. However, the results did not support the notion that PBC was associated with making changes in one's withholding. In the results of this study it appeared that the perceived emotional benefit of receiving a tax refund was a more powerful motive than gaining investment income.

The TPB's PBC is the individual's perception of the extent to which the performance of the behaviour is easy or difficult, and reflects both past experiences as well as anticipated impediments and obstacles (Ajzen, 1991). It refers to the amount of volitional control individuals perceive over the behaviour (Armitage, Conner, 2001) and can be seen as interchangeable with self-efficacy (see Ajzen, 1991; Conner, Armitage, 1998), although perceived controllability might constitute PBC together with perceived self-efficacy (see Ajzen, 2002; Conner, Armitage, 1998). The importance of PBC is well evidenced in prior studies (Posthuma, Dworkin, 2000; Lim, Dubinsky, 2005; Kang et al., 2006). Because PBC is related to the individual condition, such as ability, time, money, and resources, it is expected to vary little by culture and country (Abrahamse, Steg, 2009).

The Theory of Planned Behaviour (TPB) (see Ajzen, 1991) is frequently used to explain such patterns and better understand how individuals make behavioural decisions (Xiao, 2008). From the theoretical perspectives, this study highlights the importance of TPB in determining individual's saving behaviour. The proposed framework model of this study provides emphasis upon how the saving behaviour is affected by the elements of TPB model. In order to Pomak households' saving behaviour, it is important to figure out on what their attitudes and beliefs towards saving and also consider how social pressure may affect their saving decision. The theory of planned behaviour can help predict and explain saving intentions and behaviour and can accommodate decisions involving savings (Ajzen, 2015).

Household saving represents a decision to increase asset accumulation or consume less current income in order to meet financial goals (Chang, 1994). The analysis of household savings provides a better understanding of their saving behaviour, differences among household saving rates, factors influencing the level of household saving, trends in the household saving rate, and a variety of other issues related to saving (Fisher, Montalto, 2010). The concept of saving has received a considerable amount of theoretical and empirical consideration in the economic literature (Canova et al., 2005). According to previous studies on saving behaviour, those households in which spending was less than income were defined as savers, excluding spending on investments or durables such as a home or automobile (Fisher, Montalto, 2010; Hogarth et al., 2005; Rha et al., 2006; Yuh, Hann, 2010). Particularly, minority households are more likely to make mistakes because they earn less and are less educated than the majority of households (Campbell, 2006). The availability of such resources for minority households may considerably improve their financial status or economic well-being (Forry, 2009).

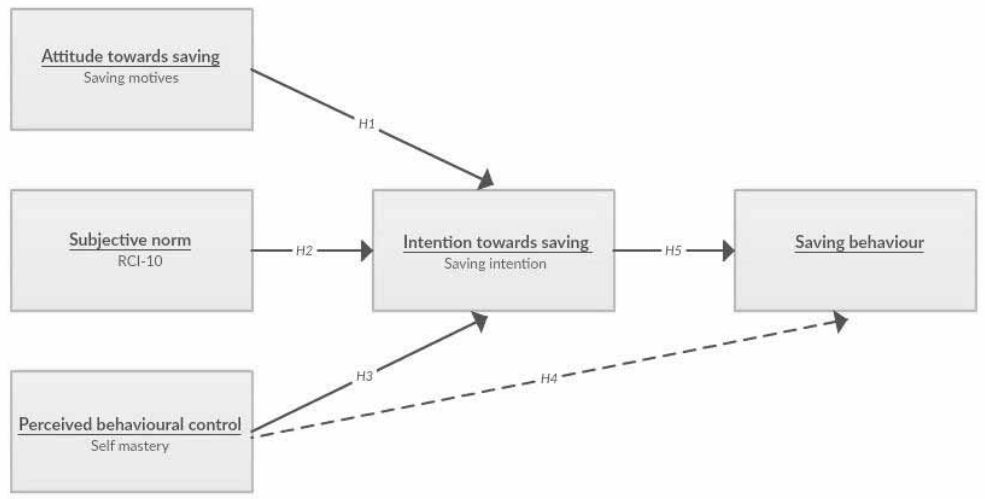
Attitude refers to the degree to which a person has a favourable or unfavourable evaluation of the behaviour of interest. It entails a consideration of the outcomes of performing the behaviour. Many studies have found the significant effect of attitudes on intention (Ing-

Long & Jian-Liang, 2005; Ramayah et al., 2003; 2009; Rhodes & Courneya, 2003; Taylor & Todd, 1995) and that a behavioural intention reflects a person's decision to perform the behaviour (Ajzen, 1991). Subjective norms refer to the belief about whether most people approve or disapprove of the behaviour. It relates to a person's beliefs about whether peers and people of importance to the person think he or she should engage in the behaviour. Several, studies have shown no significant relationship between SN and intention (Chau & Hu, 2001; Lewis et al., 2003) whereas other studies depict the opposing outcome (Chan & Lu, 2004; Jen-Ruei et al., 2006; Ramayah et al., 2004; Taylor & Todd, 1995). Perceived behavioural control refers to a person's perception of the ease or difficulty of performing the behaviour of interest. Perceived behavioural control varies across situations and actions, which results in a person having varying perceptions of behavioural control depending on the situation. Perceived behavioural control has an important contribution in predicting behavioural intention and have a greater influence than attitude (Hsu & Huang, 2012). As the PBC of an individual gets more positive, the behavioural intention to participate also transforms as a more positive (Kuo & Young, 2008). Intention refers to the motivational factors that influence a given behaviour where the stronger the intention to perform the behaviour, the more likely the behaviour will be performed. It is supposed to directly affect a given behaviour because it is an indication of how willing individuals are to perform the action (Ajzen, 1991; Armitage & Conner, 2001). According to the TPB, the amount of volitional control specifies, to what degree intentions are transformed into behaviour (Ajzen, 1991; Armitage & Conner, 2001).

In the context of the present study, the conceptual TPB model (Ajzen, 1991; Satsios, Hadjidakis, 2018) is presented in Figure 1.

Figure 1

Conceptual model



Source: Satsios & Hadjidakis, 2018.

Savings goals encouraged participants to think about frame savings for a particular purpose, such as education in the future or a security deposit on an apartment (Tversky, Kahneman, 1981; Zelizer, 1989). DeVaney et al. (2007) identified the characteristics of households that lead to a shift from lower to higher saving motives and found that the hierarchical structure consisted of physiological (basic), safety, security, love/societal, esteem/luxuries, and self-actualization motives. A number of theoretical and simulation studies have analysed saving for selected motives, such as retirement (Modigliani, Brumberg, 1954), precautionary reasons (Leland, 1968), and saving for the purchase of a house (Artle, Varaiya, 1978; Hayashi et al., 1988). However, empirical studies of saving for specific motives have been few (Horioka, Watanabe, 1997). Moreover, psychological factors may have influenced households more during normal times, that is, if households are uncertain about their future income, they tend to save more to accumulate assets to their target level. Individuals are expected to have several reasons for saving and place their money in various accounts, rather than simply wanting to save and placing all savings in a single account. At the individual level, savings help households' smooth consumption and finance productive investments in human and business capital. At the macroeconomic level, saving rates are strongly predictive of future economic growth. Saving incentives make saving attractive and help increase accumulations.

In addition, religion plays a significant role in financial service. Noland (2005) maintains that beliefs and religion can be very harmful to the economy, at both microeconomic and macroeconomic levels. The degree of religiosity seems to be a key determinant of the Muslim consumer on saving attitude and behaviour. In the financial literature (Souiden & Rani, 2015), among all the common variables that come into play when choosing a bank, religious beliefs or religiosity have been the most studied factors in the context of Islamic banking. Religiosity offered by Johnson et al. (2001) suggests that it is strongly related to attitude, in line with Fishbein & Ajzen (1975, p. 11), who write that attitude is "*the amount of affect for or against some object*". They maintain that beliefs represent the information an individual has about an object. A person's beliefs are likely to be strongly related to his/her religion, either by direct effect (via sacred texts) or by indirect effect (because of the culture of the individual, which is influenced by religion). Thus, religion and attitudes are strongly correlated.

3. Method

3.1. Sample & Procedure

The survey was given to 400 respondents in Bulgaria in the region and the city of Smolyan and specifically in the cities of Zlatograd, Madan, Rudozem and Velingrand. The self-completion questionnaire was administered face to face in several physical locations in this region and the aim of the research was analysed to the respondents. The sample included 221 females and 179 males, with a mean age of 38.4 years (SD = 13.9). The households in the survey were selected through the snowball sampling technique. In each case, the questionnaire was completed by one representative from the household. This person was involved in the decision-making process of the household and served as a proxy for the

whole household. Analyses were carried out using IBM SPSS 24 and R statistical language (R Core Team 2013) equipped with lavaan package (Rosseel, 2012).

3.2. Measures

All items intended to measure the variables in this research were adopted from previously validated instruments (Table 1). The respondents were asked questions from academic scales (Table 1) about their saving behaviour, in order to determine the factors that are crucial to and influence their financial life.

Table 1

List of items and their sources

Constructs	Items	Abbrev.
Attitude towards Saving (adapted from DeVaney et al., 2007; Saving Motives hierarchy)	Paying debts	ATT1
	Retirement	ATT2
	Education / love / family	ATT3
	Future uncertainties / emergency / safety	ATT4
Subjective Norm (adapted from Worthington et al. 2003; 2012; RCI-10 scale)	I make financial contributions to my religious organization.	SN1
	I spend time trying to grow in understanding of my faith.	SN2
	Religion is especially important to me because it answers many questions about the meaning of life.	SN3
	My religious beliefs lie behind my whole approach to life.	SN4
Perceived Behavioural Control (adapted from Pearlin & Schooler's, 1978; Self Mastery scale)	There is really no way I can solve some of the problems I have.	PBC1
	Sometimes I feel that I'm being pushed around in life.	PBC2
	I have little control over the things that happen to me.	PBC3
	I often feel helpless in dealing with the problems of life.	PBC4
	There is little I can do to change many of the important things in my life.	PBC5
Intention towards Saving (adapted from Warneryd, 1996a; 1996b; Saving Intention scale)	I always try to pick saving schemes that yield high profits.	INT1
	It is important always to save as much money as possible.	INT2
	It is important to have some money left at the end of the month.	INT3
	Saving should be encouraged in today's society.	INT4

3.3. Reliability

Cronbach's alpha was calculated for all the scales of the questionnaire (Table 2). For all academic scales that were used, the internal reliability was good or very good.

Table 2

Cronbach's alpha coefficients of survey

Scale	Pilot survey Cronbach's a (N=600)	N (Items)
ATT	.792	4
SN	.887	4
PBC	.835	5
INT	.815	4

Principal component analysis in the 17 items of the questionnaire suggested a four components solution explaining 65.8% of the total variance (Table 3). Thus, the desired structure was confirmed and the questionnaire was proved to be adequate for the purpose of the study.

Table 3

Rotated component matrix

	Component			
	SN	PBC	INT	ATT
I make financial contributions to my religious organization.	.699			
I spend time trying to grow in understanding of my faith.	.884			
Religion is especially important to me because it answers many questions about the meaning of life.	.887			
My religious beliefs lie behind my whole approach to life.	.895			
There is really no way I can solve some of the problems I have.		.778		
Sometimes I feel that I'm being pushed around in life.		.844		
I have little control over the things that happen to me.		.798		
I often feel helpless in dealing with the problems of life.		.773		
There is little I can do to change many of the important things in my life.		.684		
I always try to pick saving schemes that yield high profits.			.596	
It is important always to save as much money as possible.			.823	
It is important to have some money left at the end of the month.			.853	
Saving should be encouraged in today's society.			.793	
Paying debts				.741
Retirement				.787
Education/love/family				.776
Future uncertainties/emergency/safety				.691
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.				
a. Rotation converged in 4 iterations.				

3.4. Path Analysis

The hypothetical model was assumed to be the model suggested by the TPB theory (Figure 1). All 400 observations were used in order to estimate the coefficients. The model was converged after 49 iterations (Table 4). The model was statistically significant ($c^2(10)=252.9$, $p<0.001$). The model was well fitted to the data (CFI=0.974, TLI=0.871, RMSEA=0.089, 90% C.I. 0.033-0.155, SRMR=0.032, NFI=0.967, NNFI=0.871,

GFI=0.992, AGFI=0.939). The standardized regression coefficients for the Bulgarian sample are presented in Figure 2.

Table 4

First path model's parameters

	Estimate	95% C.I.		Std. Err	z-value	p	**Std. lv***	**Std. all****	**R^2**
		Lower	Upper						
INT									0.273
ATT	0.358	0.287	0.429	0.036	9.884	0.000	0.358	0.445	
SN	0.105	0.048	0.162	0.029	3.620	0.000	0.105	0.164	
PBC	-0.025	-0.106	0.056	0.041	-0.601	0.548	-0.025	-0.026	
SB									0.158
INT	0.419	0.318	0.520	0.052	8.124	0.000	0.419	0.373	
PBC	0.167	0.069	0.264	0.050	3.361	0.001	0.167	0.154	

Note: $c^2(10) = 252.9$, $p < 0.001$; RMSEA = 0.089, NFI = 0.967, CFI = 0.974, TLI = 0.871.
(*) Dependent Variables are standardized.
(**) Completely standardized solution (estimates of parameters if the variances of the observed and latent variables are unity).

The direct and indirect effects of the constructs on saving behaviour are presented in Table 5. Attitudes towards saving (ATT) had a significant positive direct effect on intention towards saving (INT) (b_{std} = 0.445, b = 0.358, 95% C.I. = 0.287 to 0.429, $p < 0.001$) and a significant positive indirect effect on saving behaviour (SB) (b_{std} = 0.186, b = 0.168, $p < 0.001$). Subjective norms (SN) had a significant positive direct effect on intention towards saving (INT) (b_{std} = 0.164, b = 0.105, 95% C.I. = 0.048 to 0.162, $p < 0.001$) and a non-significant indirect effect on saving behaviour (SB) (p = 0.622). On the other hand, intention (INT) had a significant positive direct effect on saving behaviour (SB) (b_{std} = 0.373, b = 0.419, 95% C.I. = 0.318 to 0.520, $p < 0.001$). Finally, perceived behavioural control (PBC) had a significant positive direct effect on saving behaviour (SB) (b_{std} = 0.154, b = 0.167, 95% C.I. = 0.069 to 0.264, p = 0.001), and a non-significant effect on intention towards saving (INT) (p = 0.548) and a non-significant indirect effect on saving behaviour (SB) (p = 0.310).

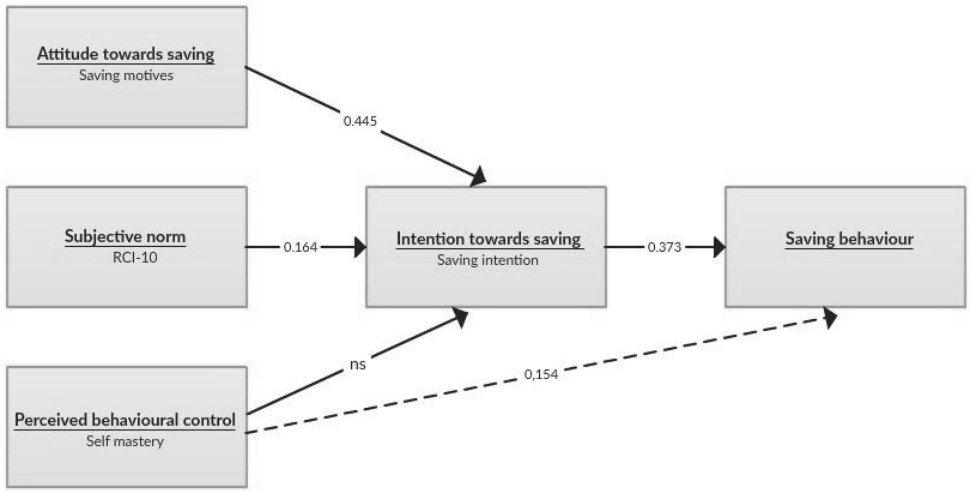
Table 5

Summary of the path model

Path/Effect	Direct effect	Indirect effect	Total effect	Greek sample Total Effect
ATT → INT	0.445		0.445	0.289
ATT → SB		0.186	0.186	0.036
SN → INT	0.164		0.164	0.346
SN → SB		ns	ns	0.044
PBC → INT	ns		ns	0.133
PBC → SB	0.154	ns	0.154	-0.068
INT → SB	0.373		0.373	0.126

ns=non-significant

Figure 2
Path analysis results on the effect of attitudes, subjective norms and perceived behavioural control on intention towards saving and saving behaviour (*standardized estimates, N = 400*)



4. Discussion

The study showed that attitudes have a significant and positive effect on the saving behaviour of the Bulgarian Pomak households, an effect that also emerged in Greek Pomak households (Satsios, Hadjidakis, 2018). In particular, individuals with higher positive attitudes were found to have a greater intention to save. This finding agrees with previous studies (Choo et al., 2004; Cwik et al., 2017; Fisher, Montalto, 2010; Lea et al., 1995; Warneryd, 1999; Webley, Nyhus, 2001), which support the TPB theory of attitudes as a predictor of intention towards saving. Thus, the attitudes towards saving through the saving motives are becoming increasingly important.

Subjective norms also emerged as a positive effect on intention towards saving for Bulgarian Pomaks, as the research of Satsios and Hadjidakis (2018) on Greek Pomak households has shown. Nevertheless, it had more than half the effect of intention compared to the attitudes towards saving, which had the largest effect in the Bulgarian sample. That finding is in contrast to the analogous findings of the Greek sample, where religiosity was found to have the strongest effect on intention towards saving (Satsios & Hadjidakis, 2018). Also, the subjective norms were found to be a significant predictor of intention in other academic researches, as well (Ajzen, Driver, 1992; Bock, Kim, 2002; Chan, Lu, 2004; Jen-Ruei et al., 2006; Kuo, Young, 2008; Taylor, Todd, 1995; Tsai, 2010). Religiosity prevails as an important factor, having a buffer effect on both the individual and the cultural level, influencing at the same time the relationship between financial life and psychological adjustment (Gebauer et al., 2013; Plouffe, Tremblay, 2017).

Concerning perceived behavioural control, the results indicate a non-significant effect on intention towards saving and a direct positive effect on saving behaviour, a finding that is in agreement with published articles concerning TPB (Albarracin et al., 2001; Ryu et al., 2003). In contrast, it differentiates from the former application of the TPB model on the Greek Pomak sample, where perceived behavioural control was found to have a negative effect on saving behaviour (Satsios & Hadjidakis, 2018). According to Xiao et al. (2006), some evidence shows that self-perceived financial behaviour performance is associated with self-reported positive financial behaviour.

In the current path model, the intention has a significant positive direct effect on saving behaviour (Ajzen, 1991; Armitage & Conner, 2001; Davis & Hustvedt, 2012; Hershey et al., 2008; Lusardi, 2008), an effect that was found to be larger than the corresponding effect in the Greek Pomak sample (Satsios & Hadjidakis, 2018). Thus, it is verified than in both Pomak communities, Bulgarian and Greek, the intention to save depicts an important process to final saving behaviour. Consequently, behavioural intention is verified to be a proxy measure of likely behaviour (e.g., Phillips & Jang, 2012; Sparks & Pan, 2009; Wang & Ritchie, 2013). In summary, most of the paths in the Bulgarian sample application of path analysis are of similar nature to the corresponding parts of the analogous model tested in a Greek Pomak sample (Satsios & Hadjidakis, 2018), a fact that proves the similarity of saving behaviour between the two Pomak communities and characterizes the TPB model as a reliable academic tool for modelling analogous financial behaviour.

4.1. Implications & Future suggestion

Both Pomak communities in Bulgaria and Greece have equal opportunities to succeed, irrespectively of their socioeconomic origins and backgrounds. Inclusive and equal quality education with lifelong learning possibilities requires investments in people and places so that equal opportunities for all and sustainable growth can be ensured. The course of financial policy action spans across aspects of well-being, such as health and education, aiming to improve the (environmental) quality of life and infrastructure, thus, creating sustainable cities. Setting up foundations for new jobs requires investments in both human and produced capital, for example, through vocational training and life-long-learning (encouraging girls' and women's participation) and effective investment policy frameworks (enabling the financial system to support the investments). Specifically, for practitioners in financial counselling and planning, the results can be used to better understand clients' goals and design more effective saving strategies for them. These results may also be useful in designing public policies to encourage an increase in household saving rates by emphasizing saving for more personal desires rather than just for precautionary or retirement saving purposes (Lee, Hanna, 2015). To meet goals for financial inclusion, practitioners and policymakers must address the distinct constraints affecting low-income households as they attempt to save, namely transaction costs, mistrust of financial institutions, regulatory barriers, information gaps, social constraints, and behavioural biases. The research focused on potential implications for savings programs and policies targeted toward low-income families and minorities in low-resource settings, also included to observe the effects of a higher saving incentive.

Using self-report information to examine savings and consumptions is common in other studies (Elliott et al., 2011; Karimli, 2014). A higher savings incentive only led to a higher frequency of deposits relative to receiving a lower savings incentive. In summary, when children and families in both intervention arms were offered opportunities to open incentivized savings accounts at formal financial institutions and provided supportive workshops and mentorship as complementary programmatic components, participants were subsequently more likely to report having money saved somewhere. Previous studies on saving behaviour, defined as savers, those households in which spending was less than income, excluding spending on investments or durables such as a home or automobile (Fisher, Montalto, 2010). Thus, researchers should investigate these factors more to explain this relationship for government programs for savings for the households. At the individual level, savings help households' smooth consumption and finance productive investments in human and business capital. At the macroeconomic level, savings rates are strongly predictive of future economic growth. It is recommended that more in-depth studies on household savings be conducted in order to address other problems, enlighten the general public, and push national and local governments to set policies and programs related to it. Future research can include other religious or ethnic groups, as well, in order to investigate and compare their saving behaviour.

4.2. Limitations

The majority of participants were Muslims. Many religious affiliations (particularly within Christianity) profess varied beliefs and teachings and therefore, religious affiliation is likely to be an influential factor in one's ability and desire in faith (Kidwell & Turrisi, 2004). Moreover, it was not able to further distinguish between the various ethnic groups within this subsample. Future research must confirm the cultural differences reported in this study for specific ethnic groups. Future research should be extended to include different levels of value and the culture of respondents, as in those of respondents from other countries (Teng et al., 2015).

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ИКОНОМИЧЕСКИ ИЗСЛЕДВАНИЯ
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SHADOW ECONOMY AND POPULISM – RISK AND UNCERTAINTY FACTORS FOR ESTABLISHING LOW-CARBON ECONOMY OF BALKAN COUNTRIES (CASE STUDY FOR BULGARIA)

The main purpose of the current publication is to formulate a scenario model for the analysis of the opportunities for low-carbon economy establishment in the countries with transition economies. The model studies risk factors such as shadow economy level and populism based on the implementation and development of Balkan countries' economic policy and at the same time shows future climate changes tendencies and uncertainties of climate models. A transdisciplinary approach is implemented in the study. Climate change perception and understanding about the low-carbon economy are examined through the public opinion and analysis of mass-media publications. The results of the research are important in order to clarify the multicultural divergences as a factor for risk and uncertainty in the implementation process of the policy for climate change. In this way, geographical aspects of risk and uncertainty, which are not only related to the economic development of the relevant countries, could be brought out.
JEL: Q54; O17

1. Introduction

Climate change is one of the most significant challenges in the contemporary world, which has an impact on various sectors of the economy. That is why the interest to this topic has been increased in many research works. The scientific publications show increasing of air temperature during the last decades. Hartmann et al. (2013) show that the first decade of 21st century is the warmest period during the instrumental observations. According to WMO (2020), the past five years and the past decade were the warmest on the record. The global mean temperature in 2019 was about 1.1°C above pre-industrial levels (1850-1900). For the last 50 years, fossil CO_2 emissions represent 82% of the total emissions in the global carbon budget (WMO, 2020).

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The main purpose of the current study is to contribute to the risk and uncertainty forecasting models in the context of the climate change policy. In this regard, the transdisciplinary approach is applied. This allows the creation of a conceptual model of the research problem in order to integrate in a general perspective the climatic and economic analyses. In this way, the specific restrictions of the separate disciplines are eliminated. In the present paper, the vision of a low-carbon economy goes beyond traditional macroeconomic models as the economic system is analyzed as part of the global biosphere. On the other hand, the climatic analysis overcomes the restrictions of the ecological approach as the climate processes are analyzed in conjunction with the economic activity dynamics.

The present paper makes a connection among the risk and uncertainty of the climate change policy, polluting infrastructure of the Bulgarian energy system and the multicultural differences. These issues are examined through the level of the shadow economy and populism.

In order to achieve the aim of the study, a transdisciplinary approach has been implemented, which includes qualitative and quantitative methods. The qualitative analysis explores through questionnaires how Bulgarian society perceives the climate change. An internet-based inquiry of the Bulgarian mass media about the presence of populism in the coverage of news related to climate change has also been carried out. The online surveys were used to examine the extent to which the society understands the problems related to climate change and the perception of measures to limit greenhouse gas emissions into the atmosphere. The quantitative analysis is based on the climate and economic data. The paper gives the information about the expected changes in air temperature in the study area as well as shows the degree of influence of the shadow economy and populism on the achievement of a low carbon economy in Bulgaria. The data from International Monetary Fund databases and Eurostat is used for the economic analysis.

The results of the present study could complement the concept of Bridge et al. (2013) for the Geography of Energy Transition: Space, place and the low-carbon economy in terms of how Bulgaria and the other Balkan countries would fit into such model. Is it possible to identify the risk and uncertainty in reaching a low-carbon economy in a geographical perspective?

Next, analysing the specificities of the countries with economies in transition, the study could contribute to the analysis of multicultural differences identified by IPCC as a factor of risk and uncertainty in climate change policy (Kunreuther et al., 2014).

The current study also describes the climate change tendencies in South-East Europe, which are characterized by the risk of drought on the one hand and the extreme precipitation and floods on the other. The analysis of precipitation variability during the 20th and in the beginning of the 21st century, as well as the results from climate models show the general decreasing trend in southern Europe, including Bulgaria (IPCC 2007, EEA, 2012, PRUDENCE, 2005). Chenkova and Nikolova (2015) point out the increasing of air temperature and decreasing of precipitation in Bulgaria in the future (2051-2080), which could increase the risk of drought events. Despite the general tendencies to drought the increasing of the frequency of extreme precipitation was observed in the recent years. This

causes significant floods and creates a risk for the population. Bocheva et al. (2010) found that during the period 1991-2007 the average number of days with daily rainfall values over 100 mm increased by about 30% compared to the baseline period 1961-1990.

The paper has the following structure: 1. Introduction, 2. Theoretical background, 3. Study area data and methods, 4. Theory/calculation, 5. Results and discussion and 6. Conclusion. The second section of the paper analyses main definitions related to risk and uncertainty in the climate change policy as well as makes the review of existing research on the investigated topic. The data, qualitative and quantitative methods used in the present study are presented in the third section. On the background of climate change risk assessment, the fourth part of the paper reveals the uncertainty of climate models and the necessity of observation data for climate analyses. The results and discussions are related to the investigation about public perception about climate change and related issues as well as present in-depth statistical and economical analysis of the relationship shadow economy – populism – climate change policy.

2. Theoretical background

2.1. Risk and uncertainty definition in the context of climate change analysis

After the studies of Wunne (1992) and Stirling (2007) were published, the definition of risk and uncertainty in the context of environmental policies has a new meaning. Four different categories were distinguished: risk, uncertainty, ignorance and indeterminacy. Kunreuther et al. (2014) specify that one of the gaps in the skills and knowledge are related to the multicultural differences in regards to human perception and behaviour to the climate change. The current study analyzes the multicultural differences of the Balkan countries with the economies in transition.

The research question is if the multicultural differences of Balkan countries with transition economies could be accepted as an independent factor which impacts over the risk and uncertainty of the climate change policy. The research hypothesis is that the shadow economy and the populism are multicultural differences, which are typical for the Balkan countries and they impact on the risk and uncertainty of the climate change policy.

The analysis of the share of the shadow economy as a percentage of the GDP for 31 European countries, according to a study of the International Monetary Fund (Medina and Schneider, 2018), indicates that the first four countries in the ranking are transition economy countries from the Balkans (Bulgaria, Turkey, Croatia and Romania). The share of the shadow economy as a percentage of GDP in these countries is 25-30% for 2017 while in Switzerland and Germany this percentage is 6-10%. The main purpose of the shadow economy is to reach a profit at any cost, while climate change and compliance with environmental standards are not a priority. These conclusions are also confirmed in publications, written by Bulgarian authors (Stoykov, Dimitrova, 1999; Vassileva, 2007).

There are also favourable conditions for the development of populism. That is why, the uncertainty in the behaviour of some economic agents in transition economy countries (which are also EU member-states) could cause risk to the global efforts for climate change.

The multicultural differences of these countries, compared to the other EU member-states are based on the fact that these countries are former socialist countries. The informal public and social networks in these countries are still aware of the concept for totalitarianism, that the resources are cheap and unlimited, that the smoking factory's chimneys are symbol of progress because they ensure employment for the population (Lavigne, 1999; Kronenberg, 2004). These social networks impact the government policy as they are the main electorate. For example, Bulgaria has been an EU member-state for ten years, but many electric power stations which operate on lignite and pollute the environment have not been closed so far.

The effects over risk and uncertainty could be broader. Three of the Balkan countries are EU member-states (Bulgaria, Romania and Croatia). The non-execution of their national priorities for low carbon emissions could impact the EU policy for climate change.

In the literature review are identified the papers of Balintet et al. (2017), Brunner et al. (2012), Farmer et al. (2015), Peterson, (2006). They examined these issues in the absence of political will and political instability. From this point of view, the present study is the first of its kind puts the accent on the multicultural differences, shadow economy and populism.

2.2. The relationship shadow economy and populism – risk and uncertainty in the climate change policy

In 2016, the World Health Organization (WHO, 2016) ranked Bulgaria on a second place in the world ranking because of the polluted air and the number of respiratory diseases caused. In 2017 the EU Court of Justice judged Bulgaria for the same reason (Case C-488/15). Consequently, a climate imaginary in the type "fossil fuels forever" is established in Bulgaria. The Bulgarian energy sector is low efficient, dependent on the lignite and highly polluting the air and the environment.

According to Dimitrova (2011), the Bulgarian energy sector is a black box. In the energy system, public information about the cash and material flows is missing. The same statement is also approved by the Center for the Study of Democracy (2015). They consider that the Bulgarian energy sector is not governed transparently. The main energy resource is the highly-emission lignite which produces 37% of the gross domestic energy consumption in Bulgaria. Another problem is the high transformation, transportation and consumption losses of energy in Bulgaria, which are almost 50%. In general, the transformation and transportation losses of energy are equal to the volume of energy produced by renewable energy resources. European Commission (COMP/39.767-2015) states that the energy market liberalization in Bulgaria is too slow and formal.

The empirical testing of Borlea et al., (2017) shows the relationship between corruption, shadow economy and economic growth for the EU member-states. According to this study for the period 2003-2014, the Balkan countries Bulgaria and Romania have the greatest share of the shadow economy and corruption, compared to the other EU countries and the lowest living standard level (measured by GDP per capita). The authors make the conclusion that there is a relationship between the aforementioned indicators and the Bulgaria and Romania affiliation to the former communist bloc. It is also indicated that the

transition economy countries, which are former communist countries, have multicultural differences with the other EU member-states. A similar relationship between shadow economy and post-socialist type of countries has been established by the investigation of Bayar and Ozturk (2016) which examine the financial development and shadow economy in the European Union transition economies. The results of the study show that Bulgaria, Romania and Croatia have the greatest share of the shadow economy for the period 2003-2014.

According to Stavrev (2017), in the last decade, the Bulgarian government has restricted the control over the monopolies and cartels, including the observation of the environment protection standards. The society has no access to the information, concerning the main priorities of the government policy. This results in missing values of the society, which is a good basis for the development of populism. This hypothesis is confirmed by other Bulgarian authors. Badjakov (2013) examines the suspicions about Non-public Politics (Backstage Politics) in the Bulgarian society. This means that people do not worry about the issues, related to the ecological problems and climate change. The everyday problems of the society are related to the conspiratorial theories about the underhand governance of the state. This also creates a favorable environment for the development of the populism.

The classical economic definition of the term populism is presented in the publication of Dornbusch and Edwards (1990) concerning the macroeconomics of populism. The term means political mobilization with repeating rhetoric and symbols whose main purpose is a huge number of people to be inspired for a reform of the economic policy. In the context of the climate change policy, there is no clear definition of the term climate populism. There are many viewpoints and concepts. For example, Levy and Spicer (2013) use the term "climate imaginaries" according to which they define the shared socio-semiotic systems which generate group understanding of the climate change. Four types of the climate imaginaries are pointed out in the cited publication: "fossil fuels forever", "climate apocalypse", "techno-market", and "sustainable lifestyle". Swyngedouw (2010) uses the term „apocalyptic imaginaries" in the similar sense in order to introduce the climate populism to the policymakers. Another term which is used in relation to the climate populism is the discourse. It is introduced for the first time by McDonald (2015) and describes the public marginalization of the discourse for climate and ecologic security against the discourse for energy and economic security. Dunlap (2013) presents the term „Climate Change Scepticism" which covers the cases when the existence of the problem is rejected. In this way, the term „Climate Change Scepticism" is close in definition to the climate populism and it is a part of it.

Based on the literature review and for the needs of the research, we have elaborated the following definition of the term „Climate Change Populism": It is a repeated marginal rhetoric addressed to a wide range of public groups which main purpose is to legitimate a definite climate imaginary, in favour of separate business groups, which fact will destroy the public interest in balanced sustainable development. This can either force the government to take excessive measures in order to approach low carbon economy or to completely reject such measures.

There are open channels for marginal climate rhetoric in Bulgaria. According to Stavrev (2017), the following is observed about the Bulgarian society in 2017: NGOs which defend

exotic thesis and media, whose ownership and resources of funding is unknown and they work at a loss. The same statement is approved by the Center for the Study of Democracy (2016). According to the centre, for the period 2005-2014 most of Bulgarian print media work at a loss and their purpose is to exert media impact. The ownership of part of these media is unclear and 70% of this ownership is divided between two owners who develop the economic activities in other sectors. Consequently, there are open media channels and suspicious NGOs, which propagate marginal climate rhetoric.

3. Study area, data and methods

The scope of the research are Balkan countries with the economies in transition and Bulgaria in particular. The transition economy countries have socio-cultural and economic similarities, which distinguish them from the other two categories of countries (Lavigne, 1999; Kronenberg, 2004). Most of these countries have been Former Soviet Union members and they are industrial countries. Moreover, these countries accept the EU climate change policy, and some of them are EU member-states, EU Candidate Countries or EU border area. In this way, the transition economy countries are much alike the developed countries. On the other hand, in these countries, the GDP per capita is too low, the share of the shadow economy is too high as well as the level of corruption. According to the aforementioned, the transition economy countries are much similar to the developing countries. From a socio-cultural perspective, the risk and uncertainty, typical for the developed and developing countries, could not be the same as the risk and uncertainty in transition economy countries. That is why these countries are chosen as a subject of the current research. The accent of the analysis is the situation in Bulgaria.

According to the International Monetary Fund (Murgasova et al., 2015) Bulgaria, together with Romania and Croatia are included in the Emerging Europe group where they are defined as transition economy countries. These countries are distinguished from the Advanced European Union countries (EU-17).

The following type of data and information are used for the purpose of present analysis:

1. Information from mass media. In order to examine the populism in climate change topic an inquiry of the mass media publications in Bulgaria for the period 2012-2017 is done. Five of the most popular private electronic media in Bulgaria are chosen for the purpose of the analysis (https://www.capital.bg; https://www.investor.bg; https://www.24chasa.bg;https://trud.bg;https://www.mediapool.bg/).500 publications on the topic for climate change are studied. The expert assessment method is applied in order to be analyzed each of the publications.
2. Answers of the questionnaire, distributed among the people representing various sectors in Bulgaria. The main topic of this questionnaire is climate change and low carbon economy.
3. Climate data: model data about air temperature from MPI-EMS-MR, Max-Plank Institute, Germany are used for the RCPs (Representative Concentration Pathways) 4.5

and 8.5. The data are available on the web site of Nederland Meteorological Institute (https://climexp.knmi.nl/start.cgi?id=someone@somewhere, accessed by April 2020).

4. Data for the economic analysis: Greenhouse gas emissions intensity of energy consumption (Dataset, Eurostat, 2020) as an indicator for national climate change policy; data for shadow economy (International Monetary Fund databases, Medina and Schneider, 2018). Data for Shadow economy from the IMF database are selected as the most-up-to-date and reliable ones. There are also publications of Bulgarian authors, which are published in the world's largest and indexed databases and consist of reliable data for shadow economy. Unfortunately, the presented information about shadow economy in these publications is reliable one, but it is not up-to-date (Stoykov and Dimitrova, 1999; Vassileva, 2007).

Quantitative methods

The results of the present study are obtained by quantitative and qualitative analyses. The main purpose of the quantitative analysis is to integrate in a general perspective the climatological and economic analyses. The climate change impact on the shadow economy level and populism over the low carbon economy in Bulgaria are examined. As a quantitative method, the regression analysis is applied on two aspects: 1) to determine the tendencies in seasonal air temperature changes in the investigated area for the 2021-2050 and 2051-2080 periods, and 2) to analyze the shadow economy level and the climate populism impact on the national climate change policy in Bulgaria.

The tendencies in the multi-year course of air temperature is analysed by application of linear regression model ($y=b_0+b_1*x$) of the time-series. The linear regression is a widely used method in the specialized scientific literature on climatology to study trends in the multiyear course of climatic parameters (Easterling et al., 1997; Smith, 2008; Wang, 2009; IPCC, 2007, 2013; Peng-Fei et al., 2015; Chattopadhyay and Edwards, 2016). The calculation of the trend and evaluation of its statistical significance by T-statistics at level 0.05 were done in AnClim software (Stepanek, 2008).

The regression method was used in order to evaluate the combined impact of the factors on national climate change policy. For the economic assessment, the regression analysis is based on the dependent variable "Greenhouse gas emissions intensity of energy consumption" and the independent variables shadow economy and climate populism. The data for Greenhouse gas emissions intensity of energy consumption characterize the national climate change policy.

The model of Hammonds et al., (1994) is used in order to measure the risk and uncertainty in the accomplishment of the main purposes of the Bulgarian policy on climate change till 2030. The information is taken from the official website of the Bulgarian Ministry of Environment and Water (MOEW, 2012).

Qualitative methods

The qualitative analysis is conducted in order to analyze the public opinion about climate change, climate change policy and low carbon economy. The present study aims to give the answer of the question "How the society in Bulgaria perceive the issue of "climate change" and what is their understanding of setting targets and implementing measures to limit greenhouse gas emissions in the atmosphere?" For the purpose of the present paper, the questionnaire of 12 questions was cerated and was distributed by e-mail to the people representing different sectors and categories in Bulgaria such as industry, services, agriculture, administration (including state administration), science, non-governmental organizations, and students. The questionnaire was made through a free survey form at https://www.surveyrock.com and was also made available to the wide public by an announcement on social media, which gave the possibility for participation for the people not listed above. The number of questions is limited to 12 in order to use the possibilities for a free survey, but in our opinion, the information from the answers of these questions is sufficient to present the general picture in Bulgaria about climate change perception and the transition to the low-carbon economy issue. The qualitative information from the surveys was evaluated by the relative share of the answers to the individual questions (in %) and the results are presented graphically.

Apart from the introductory question on the affiliation of respondents to the different sectors, the other questions of the survey give information that can be referred to the following two groups: 1. How does the population understand/accept the problem of "climate change" and 2. What does Bulgaria do about reducing the greenhouse gas emissions into the atmosphere, which stimulates the transition to a low-carbon economy in the country and which are the obstacles for this?

The second aspect of the application of the qualitative analysis is for the examination of the existence of populism on the topic of climate change in Bulgaria mass media for a period 2012-2017. For the purposes of the analysis, five of the most popular private electronic media were examined and 500 publications on the topic of climate change were analyzed through the expert assessment method.

In order to reveal whether the presence of populist media publications on climate change influences public opinion, a comparison between the analyses of public opinion and mass media publications was made.

4. Theory/calculation

The theoretical knowledge, observations, and climate models data demonstrate that there is a link between climate change and the growing risk of the following climatic extremes: extreme heat, heavy rainfalls (including snowfalls), drought and forest fires (Huber and Gulledge, 2011). The holistic approach for climate change risk assessment includes the following steps: 1) analysis of future pathway of global greenhouse gas emissions; 2) revealing the physical climate, and their direct risks to human activity; 3) assessment of the

risks arising from interactions between changes in the physical climate and human systems, and 4) valuing the changes that might take place (King et al., 2015).

One of the main tasks for the scientific community dealing with modelling climate change is the assessment of the uncertainty of the climate models (Bader et al., 2008). The accuracy and details of the experiment depend most on the horizontal resolution of the models. The reduction of the step is accompanied by the need to significantly increase the computing resources. Model results should not be considered as a forecast of the weather in a future period. Simulations of climate change should be considered as a comparison of the average values of the model variables (temperature, precipitation, etc.) in the past and the future. Typically, 30-year periods are compared.

The IPCC (2013) develops the RCPs (Representative Concentration Pathways) scenarios which show the radiative forcing due to the increased concentration of greenhouse gases. Depending on the population, gross domestic product, technology development, food and electricity production, electricity consumption and land-use change, the scenarios give different concentration trajectories. According to the RCPs scenarios, the implementation of measures in the area of climate change could lead to a stabilizing effect and even to a reduction in the radiative forcing, which will also affect the strength and direction of climate change.

In order to show the utilization of the climate model for the investigation of future climate on a local scale, the MPI-EMS-MR model air temperature data from Max-Plank Institute, Germany were used. The RCP 4.5 and RCP 8.5 scenarios were examined. The RCP 4.5 scenario presents average results and stabilization of the concentrations through the implementation of measures to limit greenhouse gas emissions. According to this scenario, greenhouse gas emissions will increase until 2040, after which the radiative forcing is expected to be 4.5 W/m^2 by 2100, which corresponds approximately to concentrations of about 650 ppm CO_2 eq. The RCP 8.5 scenario is the most pessimistic and implies a rapid increase in population, low technological development, without measures to reduce greenhouse gas emissions, increase poverty and, on the other hand, high energy consumption and increased emissions (van Vuuren et al., 2011). The radiative forcing will increase to 8.5 W/m^2 to the year 2100, which corresponds to concentrations of 1370 ppm in CO_2 eq.

The model data were downscaled to the region with coordinates: lon 21.56 – 23.44, lat 41.04 – 42.90, which includes parts of western Bulgaria and the eastern parts of Macedonia and Serbia. The area was chosen according to the availability of the observation data which are needed for the bias correction of model data. The research was done by simulations for two periods 2021-2050 and 2051-2080. The observation data for the period 1986-2015 was used as a reference period for bias correction of the model data. The temperature data are corrected for each month and year with the difference between observation data average for the period 1986-2015 and model data. The complete coincidence in the annual cycle of air temperature based on observation and model data is established after bias correction. The model data show negative deviations from the observation data only for the period of May – June, while for the other months, there are positive deviations (Table 1).

This example indicates the uncertainty of climate model data, the importance of observation data and the usefulness of bias corrections.

Table 1

Monthly air temperature (°C) from the observation and MPI-EMS-MR model before and after bias correction for the period 1986-2015

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
Before correction	2.7	4.0	6.6	10.6	14.1	17.8	20.4	21.7	18.6	13.3	7.1	3.9
After correction	-0.5	1.6	5.5	10.7	15.4	19.1	21.6	21.4	16.7	11.2	5.5	0.5
Observation	-0.5	1.6	5.5	10.7	15.4	19.1	21.6	21.4	16.7	11.2	5.5	0.5

In order to examine the impact of the shadow economy on the national climate change policy, linear regression is applied. This method is chosen due to the following reasons: it is an efficient method in primary studies and it is simple and easy to use. The present paper is a first in its kind which studies the impact of the shadow economy and populism over the climate change policy. The results of the investigation could lead to the increasing of the scientific interest in this topic and also will put the attention to the shadow economy and populism as factors for risk and uncertainty of the climate change policy.

The linear regression analysis amongst the aforementioned factors, was performed using both the statistical software STATA (13.1) and the Microsoft office application - Excel. This could help to be calculated more accurately the correlations amongst factors and to be received the most reliable conclusions and results.

5. Results and discussion

5.1. Climate sensitivity analysis

According to the RCP 4.5 scenario, the changes in seasonal air temperature in the studied area are close to 0 and are statistically non-significant. The results from the investigation of tendencies in seasonal air temperature for two future 30-years periods (2021-2050 and 2051-2080) show well determined positive trend by RCP 8.5. (Table 2). The highest values are obtained for summer and autumn for the period 2051-2080.

Table 2

The coefficients of linear trend (°C/ 10 years) of seasonal air temperature according to RCP 4.5 and RCP 8.5MPI-EMS-MR model data for the territory lon = 21.563 – 23.438, lat = 41.036 – 42.901

Scenarios	Period	Winter	Spring	Summer	Autumn
RCP 4.5	2021-2050	0.4	0.0	0.1	0.3
	2051-2080	0.4	-0.3	-0.1	-0.3
RCP 8.5	2021-2050	**0.6**	0.1	**0.5**	0.3
	2051-2080	0.1	**0.5**	**1.4**	**0.7**

** The values in Bold are statistically significant at p=0.05*

The increasing of the air temperature is synchronous with the course of greenhouse gases. In 2006 the concentration of CO_2 reached a value of 403.3 ppm. According to the most unfavourable scenario RCP 8.5 (IPCC, 2013, AR5), the average annual temperatures for the Balkan Peninsula (including Bulgaria) are expected to increase by 0.5 to 0.75°C for every 100 ppm CO_2 (eq) greenhouse gas concentrations. By the end of the century, the rise in temperatures would be from 5 to 7°C, while the optimistic scenario RCP 2.6 showed a rise in temperature of no more than 2°C (MOEW, 2014).

RCP scenarios show various trends of precipitation changes in Bulgaria. The average annual precipitation total in the country is expected to change by ±10% for the period 2016-2035, while at the end of the century the reduction will be between 10 and 20%. The most significant decrease is expected, according to the RCP 8.5 scenario, at the end of the century – by 20-30%, and in Southeastern Bulgaria - by 30-40%(MOEW, 2014).

5.2. Shadow economy, populism and the national climate change policy

The regression analysis between greenhouse gas emissions intensity of energy consumption (dependent variable) and shadow economy (independent variable) confirms the main hypothesis of the present research that the share of the shadow economy has an impact on the Greenhouse gas emissions intensity of energy consumption.

For the purposes of the research, the following variables are analyzed: 1) Independent variable: "Shadow economy" (ShadEcon) and 2) Dependent variable: "Greenhouse gas emissions intensity of energy consumption" (CIEC). The data for "Shadow economy" is taken from the research of Medina and Schneider (2018). Data for "Greenhouse gas emissions intensity of energy consumption" is taken from the EUROSTAT database (2020).

In order to examine if the correlation between the aforementioned variables could be performed through a linear function, the preliminary calculation tests with the statistical software STATA (13.1) were made. The detailed calculations could be found in Appendix 1 (Table 6, 7, 8, 9, 10).

First of all, the relationship between two variables is necessary to be tested for heteroscedasticity or what is the variance of the observed cases. In this regard, the Breush-Pagan test will be applied, as it is one of the most popular and reliable ones to test homogeneity of variance in a linear regression. For that purpose, we need to formulate H_0 and H_1. H_0 will say that there is no homogeneity of variance of the variables (this means heteroscedasticity) and H_1 will say the opposite – there is a homogeneity of variance (this means homoscedasticity). After performing the Breush-Pagan test, it is clear that Prob is 0.4836, which value is greater than α (0.05). Consequently, we will confirm the alternative hypothesis (H_1) as the correct one, which says that there is a homogeneity of variance between the variables and the relationship among them could be presented by a linear function, Appendix 1 (Table 6).

Secondly, the Ramsey Regression Equation Specification Error Test (RESET) is applied. The test shows that there are no omitted cases in the process of calculations. Consequently, it could be expected that no errors amongst the regressors will occur, Appendix I (Table 7).

Thirdly, the variance inflation factor (VIF) test is applied in order to be determined the severity of multicollinearity. The test shows that VIF=1, which means that there is no correlation among the j^{th} predictor and the remaining predictor variables, and hence the variance of (ShadEcon) is not inflated at all, Appendix I (Table 8).

In addition, Akaike's information criterion and Bayesian information criterion test and Effect sizes for linear models are also made, Appendix I (Table 9, 10).

Having in mind the above-presented information, it is clear that the relationship between both variables (Shadow economy and Greenhouse gas emissions intensity of energy consumption) could be explained via linear regression. For that purpose, the authors will apply first the Microsoft Office application "Excel" and then the statistical software STATA (13.1) so as the results obtained and final conclusions to be confirmed two times and to be more reliable.

The independent variable is "Shadow economy" (ShadEcon) and the dependent variable is: "Greenhouse gas emissions intensity of energy consumption)", (CIEC):

Table 3

Linear Regression analysis with STATA

.	regress CIEC:	ShadEcon			
Source	SS	df	MS	Number of obs	= 16
Model	350.461737	1	350.461737	F(1, 14)	= 16.40
Residual	299.148416	14	21.367744	Prob > F	= 0.0012
				R-squared	= 0.5395
Total	649.610153	15	43.3073435	Adj R-squared	= 0.5066
				Root MSE	= 4.6225
CIEC	Coef.	Std. Err. t	P>t	[95% Conf.	Interval]
ShadEcon	-.9293687	.2294812 -4.05	0.001	-1.421557	-.4371805
_cons	134.2636	6.216855 21.60	0.000	120.9298	147.5975

The interpretation of the results obtained via STATA and Excel will be made at the same time. Detailed information about the Excel calculations could be found in Appendix II (Table 11).

As showed in Table 11 (Appendix 2), it is clear that there is a linear relationship amongst the studied variables as the Sign. F is 0.005175, which value is much lower than α (0.05). Consequently the results obtained could be interpreted (Excel).

Multiple R is 0,68, which means that there is a strong proportional relationship between the dependent and independent variables (Appendix 2, Table 11).

R Square is 0,539 STATA (Table 3) which means that 50% of the variations in the Greenhouse gas emissions intensity of energy consumption due to changes in the government policy, related to the control of Shadow economy.

Having in mind the results obtained by the linear regression model, the relationship between two variables – "Greenhouse gas emissions intensity of energy consumption" and "Shadow economy" could be presented via a linear function:

$Y = f(x_1 \ldots\ldots x_n) + \varepsilon$ or

$$Y = a + bx + \varepsilon$$

$$Y_{(CO2\ intensity\ of\ EC)} = a + b * x_{(shadow\ economy)} + \varepsilon,$$

where

a – constant (no interpretation is needed)

b – regression coefficient in front of the regressor

ε – residual

CO_2 intensity of EC = 134,26 – 0,929 * shadow economy + ε

The equation above shows that if the shadow economy is decreased by 1%, then the "Greenhouse gas emissions intensity of energy consumption" will also decrease with 93 units. In this regard, the linear regression model allows the shadow economy to be examined as a risk and uncertainty factor in the process of implementing the government policy for a low carbon economy.

The model of Hammonds et al.,(1994) allows to measure the risk and uncertainty of the implementation of the main goals of the Bulgarian policy for climate change till 2030 for reducing the emissions of CO_2 in two scenarios (MOEW, 2012). In the first scenario, the Gg CO_2 eq have to be reduced to 60 943 and in the second scenario, when additional measures are introduced the Gg CO_2 eq have to be reduced to 52 642 until the 2030. If no measures for reducing the CO_2 emissions are introduced, their volume will be 66 360 Gg CO_2 eq. After the necessary calculations are done, it is established that the risk of reaching the goals of the Bulgarian policy for climate change is 92%. The problem here is that factors such as force majeure, new global economic crises and change of the EU energy policy are not taken into account in these scenarios.

There is no reliable statistical information about the indicator "populism", which information is needed for measuring the "climate populism" via a statistical model. The present study will try to establish a conceptual model for collecting statistical information for populism through the model of expert monitoring of the mass-media.

5.3. Study of climate change perception and understanding

The climate change perception and understanding are examined on the basis of the public opinion and in relation to the analysis of the existence of populism on the topic of climate change in Bulgaria mass media. This allows to determine the mass media effect on the topic of climate change and on the human perception. In order to study the public opinion, the online survey was conducted. The survey was disseminated by e-mail and social networks and we have received the answers from 81 respondents. Although that the survey was sent by e-mail to the representatives of various sectors the most active were those working in the administration (including the state administration) and in the field of science and education (22% of completed surveys are from respectively of these two sectors, Table 4). A relatively large number of completed surveys were received from the students and employees in sector "Services". Despite the significant number of respondents (81), the number of respondents from sectors such as industry, agriculture, NGOs is unsatisfactory.

Table 4

Percentage of respondents who have taken a part in online survey

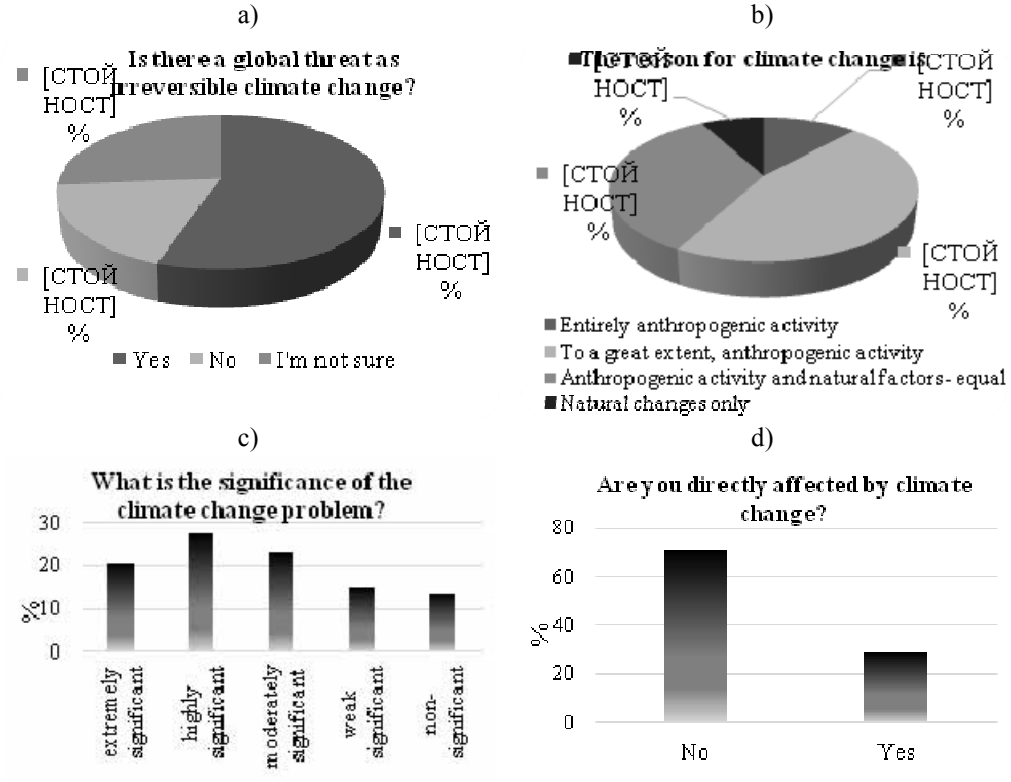
	Sectors	% of respondents
1	Industry	4
2	Services	16
3	Agriculture	4
4	Science and education	22
5	Administration	22
6	NGOs	7
7	Students	17
8	Other	7

The first part of the survey aims to give an information about climate change perception. The results show that 55% of respondents believe there is a global threat as irreversible climate change. According to 27% the problem of climate change is highly significant and 21% consider it as extremely significant (Figure 1a, c).

Most of the participants in the survey understand that anthropogenic activity has an important role for climate change (Figure 1b), but 34% think that climate change is due to the equal impact of anthropogenic activity and natural factors. Only 1/3 part of respondents said they were directly affected by climate change (Figure 1d).

The participants in the study indicate that climate change affects them by increasing of frequency of extreme meteorological and climate phenomena. The hailstorms, intense rainfall, floods, prolonged droughts destroy agricultural crops and also lead to the increasing of the cost of the property insurance. Some of the participants are affected by reducing water resources, shortening the ski season or exacerbating illnesses such as asthma and poly-allergy.

Figure 1
Climate change understanding and perception – answers from the survey (in percentage of the total number of respondents)



The public opinion about the Climate change issue completely responds to the inquiry of the Bulgarian mass media publications presented on Figure 2, where 72% of the publications confirmed that the climate change is a fact. This is identical with the government position on the topic as well as with the positions of the international organizations.

The answers of the questionnaires and most of the publications in the mass media confirm the existence of inevitable effects of the climate change. However, 44% of the publications inspire the conception that the society could not overcome the problem concerning climate change, or it is too expensive for the society to overcome it (Figure 3). This inspiration makes the Bulgarian society not to change the status quo. For example, the energy-sector in the country, which is the main polluter of the environment, not to be reformed and etc. This is a populist statement.

Figure 2

Global Warming: Is it Real? – analysis of 500 publications in the most popular Bulgarian media (2012-2017)

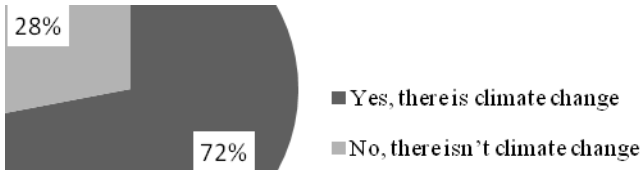
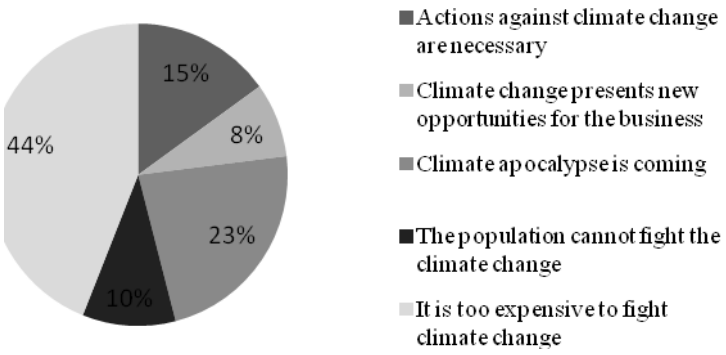


Figure 3

Climate Change Populism and the Media – Existence of extreme opinions in the mass media, concerning climate change – analysis of 500 publications in the most popular Bulgarian media (2012-2017)



23% of the publications defend the thesis that if the economy is not stopped a climate apocalypse is coming. This is also a populist statement.

The last 23% of the publications, which are divided in two categories, do not defend populist statements. According to the first category (15%), active policy measures against climate change should be taken. The second category (8%) point out that climate change presents new opportunities for the business, such as carbon finance, green energy and etc. This is completely identical with the government position on the topic as well as with the positions of the international organizations.

On the basis of the above analysis, it can be concluded that 77% of the analyzed publications on climate change in the Bulgarian mass media for the period 2012-2017 are populist. This creates a risk of a wrong impact over the social opinion on the topic about climate change. This also creates a risk for the government actions on the problem.

The second part of the online survey is dedicated to the problems related to the greenhouse emissions and the transition to the low-carbon economy. It is extremely necessary to set targets and implement measures to reduce carbon emissions and mitigate climate change for 52% of the participants in the survey and 26% consider it as very necessary. Only for 1% it is not necessary at all and for 3% this is not very important.

This statement does not respond to the inquiry of the Bulgarian mass media publications, presented on Figure 3. Obviously, the populist publications which are 77% of the total number of examined publications, do not impact over the public opinion, as 52% of the population think that active measures against climate change should be taken.

According to the respondents, the whole society should be involved in the process of tackling climate change. The responsible for solving climate change problems are also the government, all industrial enterprises and academic community (Table 5), only 4% of participants in the survey think that there is not a problem "climate change".

Table 5

Who should be involved in solving the climate change problem?

If there is a problem like the climate change, which should be involved in solving it?	Percentage of respondents who chose the answer*
Government	63
Large industrial enterprises	29
All industrial enterprises, regardless of size and production	50
Agricultural companies	18
Academic community / science	45
Non-governmental organizations	22
Individuals	16
Society as a whole	76
There is no "climate change" problem	4

* more than one answer could be chosen

Despite of the high number of respondents who think that the government should be involved in solving climate change problem only 32% of all participants at the survey think that Bulgaria conducts a policy aimed at limiting greenhouse gas emissions in the atmosphere.

89% of respondents agree to pay a higher price for the energy from alternative sources if this would reduce the concentration of greenhouse gases and pollutants in the atmosphere and to limit climate change. The respondents were asked to choose how much their monthly expenses to be increased – up to 2 Bulgarian leva (BGN) [3], up to 5, 10 or up to 20

[3] 1 BGN = 1.95583 Euro

Bulgarian leva. The distribution of answers in the different categories is almost equal – 25, 18, 25 and 22% respectively. Similar results are provided by Kotceva and Mochurova (2012), who have established by questionnaires the willingness of Bulgarian population to pay more for energy from renewable energy sources.

According to the survey, the main driving factors for the activities related to the decreasing of carbon emissions are air quality and healthy environment, requirements of the legislative documents and climate change (Figure 4). Among the main obstacles to the work for carbon emission reduction are Lack of human resources, knowledge and experience, Lack of financial resources and Citizens' reluctance to change (Figure 5).

Figure 4

What are the driving factors for limiting carbon emissions activities?

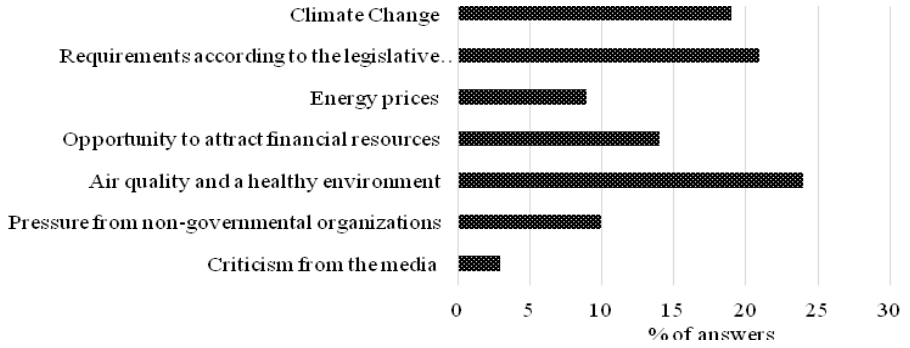


Figure 5

What are the main obstacles to the work for carbon emissions reduction?

The above-shown results have much in common with the information presented on Figure 3, according to which in 44% of the publications it is stated that it is too expensive for the society to fight climate change. From the other side, 25% of the respondents think that there is a lack of financial resources and over 20% is the citizens' reluctance to change. In 10%

of the publications (Figure 3) it is claimed that society cannot fight climate change. The results of the analysis allow making the conclusion, that mass media populism impacts over the public opinion.

6. Conclusions

The present analysis was made in the context of uncertainty and risk related to climate change and climate change policy. It is shown that the multicultural differences could be introduced as factors of risk and uncertainty in the realization of the climate change policy. The transition economy countries in the Balkans have their specifics. For all of them, the percentage of the shadow economy, corruption and populism is high. At the same time, some of them are EU member-states or EU Candidate Countries. The main problems, concerning the national policies for climate change of these countries could bring risk and uncertainty in the EU climate change policy. Bulgaria, Romania and Croatia have legal representatives in all of the EU institutions. The existence of populism could also be an obstacle the governments of these countries not to actively participate in the EU policymaking process and to put the EU policy for climate change at risk.

The regression analysis, as well as the qualitative and quantitative analyzes, are executed by using statistical data only for Bulgaria, but it is supposed that the results obtained are also valid for the other countries from the Balkan Peninsula. As it is stated in part 2.1 of the present study, there are many similar features that unite Balkan countries. Such features/indicators are: share of the shadow economy, populism, high energy and carbon intensity and etc. Consequently, if some of these indicators are studied about one of the Balkan countries, the same assumptions could be made for the others. That is why we could confirm that conclusions made about the aforementioned indicators for Bulgaria could be valid also for the other Balkan countries.

The regression analysis indicates well-determined correlation between the shadow economy and the Bulgarian climate change policy. A significant correlation between the indicators used for measuring the populism and the national climate change policy was not established. However, the link between them cannot be rejected and it could be proved by other indicators such as publications in the mass media, regarding extreme standpoints about climate change and their impact on public opinion. In depth, quantitative and qualitative analyses have to be done in relation to these issue in the future.

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Appendix 1
Preliminary tests for linear regression (STATA:13.1)

Table 6

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity

. estat hettest
Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
Ho: Constant variance
Variables: fitted values of CIEC
chi2(1) = 0.49
Prob > chi2 = 0.4836

Table 7

Ramsey Regression Equation Specification Error Test (RESET)

. estat ovtest				
Ramsey RESET test	using powers of the fitted	values	of	CIEC
Ho: model	has no omitted variables			
F(3, 11) = 2.28				
Prob > F = 0.1363				

Table 8

Variance inflation factor (VIF) test

.	estat vif		
	Variable	VIF	1/VIF
ShadEcon	1.00	1.000000	
Mean VIF	1.00		

Table 9

Akaike's information criterion and Bayesian information criterion

. estat ic
Akaike's information criterion and Bayesian information criterion
Model Obs ll(null) ll(model) df AIC BIC
. 16 -52.33329 -46.12983 2 96.25965 97.80483
Note: N=Obs used in calculating BIC; see [R] BIC note

Table 10

Effect sizes for linear models

. estat esize				
Effect sizes for linear	models			
Source	Eta-Squared	df	[95% Conf.	Interval]
Model	.5394955	1	.1297887	.7230792
ShadEcon	.5394955	1	.1297887	.7230792

Appendix 2
Regression analysis

Table 11

Regression analysis (Excel)

SUMMARY OUTPUT
CIEC:ShadEcon

Regression Statistics	
Multiple R	0,681169169
R Square	0,463991436
Adjusted R Square	0,422760008
Standard Error	4,774329034
Observations	15

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	256,5111696	256,511	11,25334	0,0051747
Residual	13	296,3248304	22,7942		
Total	14	552,836			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*
Intercept	133,2810331	7,001707652	19,0355	7,08E-11	118,15476
35,3	-0,8879045	0,264682642	-3,3546	0,005175	-1,4597166

Upper 95%	*Lower 95,0%*	*Upper 95,0%*
148,4073	118,1548	148,4073
-0,31609	-1,45972	-0,31609

ИКОНОМИЧЕСКИ ИЗСЛЕДВАНИЯ
ECONOMIC STUDIES

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Lyubomir Lyubenov[1]

SEGMENTATION OF THE MARKETS FOR BULGARIAN BEE PRODUCTS

The main product markets of the beekeeping sector – honey, pollen, beeswax, propolis, bee bread, royal jelly, bee venom, queen bees, sucker grubs, bees, pollination and api-tourism are identified through macro-segmentation. Subsequently, their customer segments have been identified through micro-segmentation of national and international markets. The national markets for bee products are differentiated into organizational and consumer markets. The organizational markets of honey and other bee products are segmented by applying various criteria. Perspective target markets are the online and offline auctions for bee honey and the segments for pollen, royal jelly and queen bees. The consumer markets are also segmented in a way that the segments for direct sales and farmer markets are determined as customer target markets for conventional honey, and for organic honey – the online markets. The consumer target markets are similar for bee pollen and royal jelly. The segmentation of the international markets for Bulgarian bee products is based on economic, geographical, demographic, cultural and price factors. The target markets are subdivided into markets in European countries – Group 1: Germany and the UK, Group 2: France, Italy, the Netherlands, Belgium and Switzerland, and Group 3: Greece and Austria, as well as target markets in the so-called "third countries" – Group 4: Saudi Arabia, the United States of America, and Japan. Conclusions on target markets and market niches are synthesized.
JEL: M31; Q13

Segmentation is a process of segregating the market into separate parts (segments) where users have similar product needs. If beekeeping farms do not segment the markets for bee products, they will not be able to fulfil the main task of marketing – the complete satisfaction of a particular group of consumers. The evolution of segmentation has led to a deeper penetration in the market segment – the market niches. The market segment is, as a rule, a significant group of consumers, while the market niche is a narrower group. Customers in the niche have specific combinations of needs for which they are willing to pay a higher price to these beekeeping farms that satisfy their needs best.

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Market niches can provide good profits as a result of a good knowledge of the specific needs of customers and their optimal satisfaction. Based on this, the beekeeping farms have good opportunities to limit the competition within market niches. Undoubtedly, there are also significant risks – a change in consumer demand, and large investments aiming closer adaptation to the specifics of consumers. The market niches are a typical phenomenon in the practice of small and medium-sized enterprises, and such are the beekeeping farms. The latter can achieve remarkable results as a result of closer relationships with the customers from the niches, and by modifying bee products in line with changes in demand.

The target markets are market segments that are promising, sustainable and providing the main part of farms' income. They meet several requirements – In line with the objectives of beekeeping farms and do not require large investments, easily accessible, low-risk and growing, profitable and have high consumption for bee products, the competition is not strong and can be overcome. Bulgarian beekeepers have to define their target markets, whether they operate on national and international markets, consumer and organizational markets, because they will assure most of their profits. Practically, segmentation expands the markets for bee products and is a prerequisite for developing the potential of Bulgarian beekeeping.

The theory and practice lag significantly in relation to the segmentation of national and international markets for Bulgarian bee products. On the one hand, there is a very limited amount of specialized literature in Bulgarian in the field of agricultural markets and their segments, as well as about the markets for bee products. On the other hand, Bulgarian agribusiness, including the beekeeping industry, does not segment its markets. This significantly limits the opportunities for better sales of Bulgarian bee products on national and international markets. Therefore, this study enriches theory and practice, as well as in the area of Bulgarian beekeeping, and allows the development of the strategic planning in respect to the most promising market segments - its target markets.

Bulgarian bee products encounter serious difficulties in the realization on the national and international markets. Wholesalers – exporters monopolize the national organizational markets and demand on consumer markets is relatively low. International markets are characterized by intense price competition and the availability of many substitutes. This requires segmenting and defining their target markets in order to achieve the best realization. There is a big discrepancy between the needs for segmenting the Bulgarian markets for bee products and the lack of such studies by Bulgarian and foreign authors. Furthermore, the market segmentation paves the way for future research regarding the positioning of Bulgarian bee products on such markets.

The macro-segmentation is the first step in the segmentation of Bulgarian beekeeping markets because its aim is to identify "product markets" (Lamben, 1996; Karakasheva, 2007; Boeva, Vasileva, 2010). Then, through micro-segmentation, one can also identify the national markets of the defined macro-segments. As more than 80% of Bulgarian honey is exported, its international markets will also be segmented. The criteria used for segmentation are tailored to the specificities of the various markets – organizational, consumer, national, international. The purpose of this research is to segment the national and international markets of Bulgarian bee products and to define their target markets.

The basic bee products are formed as a result of beekeeping. They are: bee honey, bee pollen, beeswax, propolis, bee bread, royal jelly, bee venom, queen bees, sucker grubs, and bees. Every bee product has unique characteristics that differentiate it considerably from other bee products. Nowadays, bee honey dominates significantly in the product structure, having more than 90% of the volume and value compared to other bee products. Honey and beeswax have many substitutes, whereas the other bee products are unique and have no substitutes, and their markets are also significantly smaller than those of bee honey. The aforementioned products of the beekeeping sector form product markets (Figure 1), i.e. the macro-level.

Figure 1

Product markets of the beekeeping sector

<table>
<tr><td rowspan="9">Honey</td><td>Beeswax</td></tr>
<tr><td>Propolis</td></tr>
<tr><td>Bee pollen</td></tr>
<tr><td>Bee bread</td></tr>
<tr><td>Royal jelly</td></tr>
<tr><td>Bee venom</td></tr>
<tr><td>Queen bees</td></tr>
<tr><td>Sucker grubs</td></tr>
<tr><td>Bees</td></tr>
<tr><td colspan="2">Pollination</td></tr>
<tr><td colspan="2">Api-tourism</td></tr>
</table>

In collaboration with other sectors, beekeeping forms services and many other more complex products than the already mentioned purely material bee products. The beekeeping sector is in symbiosis with some sub-sectors of the plant growing – technical crops, fruit growing, growing of vegetables, orcharding, etc., to which it provides the eco-system service called pollination which results in a significant increase in yields. Beekeeping, in collaboration with tourism, forms api-tourism, which is still in its infancy, but has positive prospects for development. The beekeeping sector serves as a basis for its emergence, as is viticulture for wine tourism. Beekeeping provides very good opportunities for developing rural, wellness and other types of tourism, and respectively for api-tourism.

All bee products can be conventional and organic according to the production environment and the technologies used which determine their quality and quantity. They can be offered in different packages, shapes and types, according to user preferences. By using the extraction and sorting technologies, different types of honey can be formed – acacia, linden, sunflower, bouquet, etc. Appropriate mixes can be created between different bee products, and between bee products and other products and services. Users' demand actually defines the quality, the quantity, the shape and the combination of bee products. Thus, it becomes logical to use the aforementioned product characteristics at a market level, i.e. at a micro-level.

1. Segmentation of national markets for bee products

According to the criterion 'purpose of the product', the Bulgarian markets for bee products can be divided into two main segments – organizational and consumer. Various organizations trade on the organizational markets- producers, traders, processors, state, municipal and public organizations, that buy bee products for resale, direct use in production, or use in day-to-day operations. Consumer markets for bee products consist of buyers whose primary purpose is not to make profits but mainly to satisfy their particular needs and desires (Lyubenov L. 2016). In general, the behaviour of the individual consumer is more irrational than that of organizations which use bee products.

1.1. Segmentation of organizational markets for bee products

In the 1980s in Bulgaria, there were about 770,000 beehives, producing about 15,000 tons of honey per year, 300-400 tons of beeswax, 8 tons of bee pollen, 4 tons of royal jelly, 3 tons of propolis, 10 kilograms of bee venom, 120 000 queen bees (Panchev, et al., 2014). Then, honey had more than 97% share of bee products in kind and Bulgarian beekeeping was the sixth largest producer of honey in the world. Today it produces about 10-15 thousand tons of honey per year, but no other official data is available for the other bee products. Bulgarian apiculture reaches the 12th place in the world in the export of honey in 2013 (MAI, 2017a). Table 1 determines the national organizational products, i.e. macro segments of Bulgarian bee products.

The criteria for segmenting the organizational markets are the type of organization, the consumer size, the use of the product (Pride, Ferrell, 1995), etc. Their natural continuation and addition are the capital share, organization of transactions, use of technologies (conventional, biological), market environment (offline and online), the regulatory framework (Lyubenov, 2016). As a result of their features, they form different market segments with different size, access, environment, product quality, trading rules, etc. Different bee products treated as food fall under specific regulations – for example, access to the organizational online markets requires individual company registration for any honey processing facility under Ordinance No. 9 for control and traceability guidelines.

Table 1

Bulgarian organizational markets for bee products

Bee products	Quantities, kg, (piece)*	Prices, BGN/kg. (BGN/pc.)*	Markets, mln. BGN/yr.
Honey	1 000 000*	5	75
Beeswax	500 000	10	5
Bee pollen	100 000	25	2.5
Propolis	3 000	50	0.15
Royal jelly	3 000	1000	3
Queen bees	100 000*	20*	2

1.1.1. Segmentation of the organizational markets for bee honey

Bulgarian beekeeping produces about 10,000 tons of bee honey, of which about 1/4 is realized as organic and 3/4 as conventional honey. The Bulgarian honey is about 1% honeydew honey and 99% nectar, the latter being mostly acacia, linden, sunflower, rapeseed and poly-floral. The market prices of these types of honey and the total market size (Lyubenov, 2017a) allow the formation of segments of a specific size. Rapeseed and poly-floral honey in kind occupy about 30%, but because of their low price, they account for about 20% in value. Acacia honey has the highest price, and linden and sunflower are in greater quantities, so each of them has about 25% in value. Although the quantity of the honeydew honey is the smallest, because of its high price it occupies about 5% in value (Figure 2).

Figure 2

Segments of bee honey by technology and raw materials

Conventional Honey	Organic honey	Acacia honey
		Linden honey
		Sunflower honey
		Poly-floral honey
		Rapeseed honey
		Honeydew honey

Bee honey can be framed and bulk (centrifuged), the latter accounting for more than 99% in different packages – 25 kg, 50 kg, etc. The Bulgarian organizational markets for honey are mostly offline and 100% non-organized. The latter are mainly formed by wholesalers who buy out more than 85% of the honey produced and export it to international markets. Wholesalers also re-export foreign honey from Bulgaria because its average import price is about twice lower than the average export price of Bulgarian honey. The remaining honey (about 15%) is bought by enterprises operating in the Bulgarian industry. The Bulgarian organizational markets are mainly markets for bulk honey, offline, non-organized and dominated by wholesale exporters (Figure 3).

Figure 3

Segments of bee honey by types of organizations and packages

Wholesalers-Exporters	Industrial users	Bulk honey
		Honey in frames

The current market segments of the organizational markets (Figure 2 and 3) are dominated by an offline, non-organic market for bulk bee honey, of which wholesale exporters account for more than 85%. This organizational market has two main segments – organic honey (about 25%) and conventional honey with about 75%. Although they are current target markets for Bulgarian beekeepers, they do not provide them with good prices and risk reduction. The prices of organic honey are very close to the prices for conventional honey. This requires beekeeping farms to form new target markets from the group of organized

markets. They can create offline and online auctions and producers' market segments for organic and conventional honey to improve their liquidity and profitability (Figure 4).

Figure 4

Prospective organizational target markets for bee honey

Offline auction	Online auction	Producers' Market	Online wholesale platform	Own
				Foreign

The defined target markets can be segmented according to the criterion "size of the consumer organization" because small and large buyers of bee honey have different needs. Under the criterion of "equity participation of beekeeping farms" in them, they can be own and foreign ones, i.e. without equity from the beekeeping farms. According to the rules and procedures for making purchases, there are organized markets with strictly defined and standardized trading rules (exchanges, auctions, markets, producers' markets, tenders) and non-organized online wholesale platforms[2] and others. In Bulgaria, such markets for bee honey have not yet been formed, which requires that beekeeping farms are created as their own.

The auctions and the markets of the producers can be mainly listed in their quality as own organized markets. The latter are a market for available agricultural commodities, which is why they cannot have an online segment, according to the Commodity Exchange and Marketplace Act. Auctions are not subjected to this law, which allows the formation also of an online segment. Beekeeping farms can also establish a non-organized offline and online market. The auction, as an organized target market (online and offline), allows the sale of large quantities of honey at equilibrium market prices with a high degree of control, but requires investment and new competencies and can therefore be created mainly by branch organizations and cooperatives of beekeeping farms.

1.1.2. Segmenting organizational markets beyond honey

In the near future, in kind bee honey will maintain its relative share of more than 80% in the structure of Bulgarian bee products. The absorption of the market potential of the other bee products may reduce its share to about 20% in value, but not considering the potential of the environmental service of pollination. Under the same conditions, bee pollen can take about 20%, royal jelly about 25%, and bee venom about 35% of the structure of bee products, but only if they have appropriate marketing strategies to develop their potential. It should also be considered that, in the long run, the potential of the pollination market may go beyond national organizational markets for honey and bee pollen, i.e. also their relative shares (Lyubenov, 2017b).

Today there is a lack of sufficiently reliable and accurate official data on the production of bee pollen, beeswax, propolis, bee bread, royal jelly, bee venom, queen bees, sucker grubs, bees, and the eco-system pollination service. This hampers the segmentation of these

[2] The access to organizational online markets requires the registration of a physical object for the processing of honey according to Ordinance No 9, legally enforced for control and traceability.

markets (Figure 5), but their size can be determined based on market prices, potential and expert assessment of the quantities produced at a national level (Table 1). Organizational markets still have only off-line segments of bee products beyond the group of honey, but at the same time have a great potential for growth, which is not absorbed. Such are also the environmental pollination service and the queen bees, considering the global decline in the bee population.

Figure 5

Target markets beyond the bee honey category

<table>
<tr><td rowspan="9">Organic</td><td rowspan="9">Conventional</td><td>Beeswax</td><td rowspan="9">Offline</td><td rowspan="9">Online</td></tr>
<tr><td>Royal jelly</td></tr>
<tr><td>Bee pollen</td></tr>
<tr><td>Queen bees</td></tr>
<tr><td>Propolis</td></tr>
<tr><td>Bee bread</td></tr>
<tr><td>Bee venom</td></tr>
<tr><td>Sucker grubs</td></tr>
<tr><td>Apis totale</td></tr>
<tr><td colspan="5">Pollination – environmental service</td></tr>
</table>

Still, the production, respectively the organizational markets for pollination, bee venom, bee bread, sucker grubs and bees are relatively small and irregular. The pollination market is sporadic, and still in the early stages of its growth. Bee venom requires specific conditions for harvesting, processing and market realization. Its production is very small and there is no national market for it. Bee bread is produced in small quantities and is extracted relatively hard, the most common method being involving the destruction of the honeycombs. Sucker grubs and bees, which are used for other purposes rather than as offspring to queen bees, have very small amounts and relative share, also markets. The organizational markets for these bee products are still very small and for specific market niches.

Beeswax is produced by almost all beekeepers who use it mainly to obtain beeswax bases, which is why it is not their target market. Bee pollen has good prospects with growing volumes and stable prices, which is why it is a real target market. Royal jelly is under strong price competition from China, which is the largest producer who determines prices, but it is a target market on a national scale. Propolis has a smaller and more specific market because it is mainly traded on national beekeeping exhibitions, which makes it more of a niche segment. Queen bees are also a real target market, given the declining population of bees globally. Access to these target markets requires investment in new competencies and processing technologies.

1.2. Segmentation of consumer markets for bee products

Consumer markets for bee products are characterized by a significantly larger assortment and a relatively narrower price range, with a relatively high share of bee products at relatively low prices. The technological development has little impact, but trends towards a

healthier lifestyle and consumption of healthy bee products have a strong impact. Demand is subject to fashionable trends in nutrition and diets, which makes it less sustainable and more elastic than organizational markets, with some exceptions for well-established brands. Personal preferences and emotions are often leading in decision-making. Consumer markets are more fragmented than organizational ones, making it difficult to segment them.

1.2.1. Segmentation of consumer markets for bee honey

Traditional markets dominate tangibly in the purchase of honey and account for 93% of all segments. Direct sales by producers account for 54%, the segment of purchases from relatives is 24%, and from agricultural markets 15%. Only 7% of Bulgarian consumers rely on modern trade (hypermarkets, supermarkets, discounters) for the purchase of honey (Ministry of Agriculture, Forestry and Food, 2017a). The HoReCa segment (hotels, restaurants, catering, confectionery, cafes, and fast-food restaurants) is very poorly developed, but is promising. Bulgarian consumers prefer conventional liquid honey, which they buy off-line from producers in one-kilogram glass containers. By its value, the share of honeydew honey is more than 5%, the acacia honey is about 45%, the poly-floral honey is about 25% and the rest is for linden, sunflower and rapeseed honey (Figure 6).

Figure 6

Segments of honey by markets and raw materials

<table>
<tr><td rowspan="6">Direct sales by producers</td><td rowspan="6">Relatives and acquaintances</td><td rowspan="6">Agricultural markets</td><td rowspan="6">Modern trade</td><td>Acacia honey</td></tr>
<tr><td>Poly-floral honey</td></tr>
<tr><td>Linden honey</td></tr>
<tr><td>Sunflower honey</td></tr>
<tr><td>Rapeseed honey</td></tr>
<tr><td>Honeydew honey</td></tr>
</table>

The current segments of consumer markets (Figure 6) are predominantly offline. Today, the national online markets for bee honey are negligible, but they have great potential and development prospects. The HoReCa segment also has significant potential that is not absorbed yet. Other promising segments with positive development trends are the municipal and farmer markets, direct sales and apparatus (Figure 7). These segments are promising due to the mass penetration of the Internet in all spheres of life and the growth of different types of tourism – rural, api-tourism, etc., the increase in consumption of organic and local products. The engine for the development of these segments is the ongoing processes of globalization, regionalization and localization.

Figure 7

National customer target markets for bee honey

<table>
<tr><td rowspan="4">Online markets for organic honey</td><td rowspan="4">Online markets for conventional honey</td><td>Direct sales</td></tr>
<tr><td>Municipal and farmer markets</td></tr>
<tr><td>HoReCa</td></tr>
<tr><td>Apparatus</td></tr>
</table>

The online segment of organic honey[3] deserves special attention because both the online and the organic markets are growing, and they blend very well in terms of consumer trends for a dynamic and healthy lifestyle. The size of the organic market in Bulgaria is estimated at 16 million BGN/yr., but this assessment is very conservative and inaccurate due to the lack of representative data. Considering its growth of about 20% per year, it will exceed 32 million BGN/ yr. by the end of 2019. The Bulgarian online market for food, beverages and commodities for daily use is about 60 million BGN/yr. and grows by about 15% per year. The online segment for organic honey has an even greater growth potential because bio-certification builds confidence that supports its growth.

As potential customers of the online segment for organic honey, all internet users are oriented towards healthy nutrition, with limited mobility and time. These are healthy-oriented and dynamically working residents of large cities who have little free time. Pregnant women and mothers with young children who find it difficult to shop offline. Older people ordering online by themselves or through their children living abroad. People with reduced mobility and the disabled, to whom online channels provide the opportunity for individual shopping. This segment covers more than 5% of 1.1 million e-buyers in Bulgaria in 2016, which accounts for more than 55,000 potential customers with significant and stable prospects for growth.

Direct sales and farmer markets are leaders as consumer target markets for beekeeping farms which today account for about 70% of offline bee honey markets, and 93% of them are mediated by close relatives. The HoReCa segment, which has considerable potential, is underdeveloped, because agricultural raw materials make up about 1/4 and food and beverages about one-third of it (Lyubenov, 2017c). The segment of apparatuses for supplying small packages of bee honey is in its beginning stage, but with great potential because of the growth of dynamic and health-oriented customers. The growth of rural and other types of tourism further increase their potential. Access to them requires beekeeping farms to register under Ordinance 26 and to invest in processing and commercial areas.

Bee honey is a well-known product for thousands of years and is consumed by a very wide range of consumers. Therefore, many variables such as age, gender, education, profession, etc. are not applicable as segmentation criteria. Appropriate for further segmentation of defined target markets are consumer incomes and their standard of living. Consumers with high-income and standard of living are sensitive to quality, but not to the price of bee honey. Therefore, they will dominate the online segment of organic honey, the direct sale segment, farmer markets and the HoReCa segment, while lower-income consumers will dominate the online segment of conventional honey, apparatus and modern trade.

1.2.2. Segmenting consumer markets beyond the bee honey category

There are no official statistics on the retail trade of bee pollen, propolis, bee bread, royal jelly, sucker grubs and bees (apis totale) (Figure 8). They are not subject to modern trade

[3] Access to consumer online markets requires registration of a physical object for bee honey according to Ordinance No 26 imposed by the control and traceability regulatory framework.

because their markets are relatively small. They are realized directly from beekeeping farms to end customers, as well as through farmer markets and online platforms. The largest segment is the segment of bee pollen, which is conventional, but it also has a smaller organic segment. The rest of the products are available in small packages, and are mostly niche products. Their demand is sporadic and seasonal because they are not traditional foods and beverages. Consumers look for them mainly because of their application in apitherapy, for treating various diseases and prophylactics.

Figure 8

Segments of bee products beyond the bee honey category

Conventional	Organic	Bee pollen
		Propolis
		Bee bread
		Royal jelly
		Sucker grubs
		Apis totale

Organic bee pollen and royal jelly have very good prospects for online realization and are therefore promising target markets. The segments of direct sales and farmer markets are now real target markets, given the consumer's confidence in their producers. In the future, bee pollen and royal jelly have the potential to penetrate the public catering (HoReCa) and non-market (automated) segments, given their refrigeration chain capacities, as required by royal jelly, when it is less processed (Figure 9). Their segments will continue to grow both absolutely and relatively at the expense of bee honey because consumers want to live healthier and to reduce the consumption of sugars.

Figure 9

Consumer target markets beyond the bee honey category

Royal jelly	Bee pollen	Direct sales	Offline	Online
		Municipal and farmer markets		
		HoReCa		
		Apparatus		

1.2.3. Segments of mixes of bee products and other products

Based on the compatibility between different bee products, some combinations have been established between them, including bee honey, as it combines successfully with most bee products and increases their shelf life. Successful examples are the combinations of honey with pollen (50% - 80% honey with pollen), honey with royal jelly (99% honey with royal jelly), honey with bee bread (more than 80% honey with bee bread), honey with pollen and royal jelly (honey 79%, pollen 20% and royal jelly 1%), honey with extract of sucker grubs, i.e. apilarinyl (more than 60% honey with apilarinyl). Mixtures of honey products without honey such as apilarinyl with pollen, apilarinyl with propolis and others are also possible. (Figure 10). They form new market segments as they offer combined bee products with new taste, nutritional and health properties.

Bee products can also be combined with many other products beyond their group. Established and proven as good combinations are honey with tahini, honey with cinnamon, honey with turmeric and cloves, pollen with yoghurt, propolis with alcohol, etc. (Figure 10) These mixes form new products with a different taste, nutritional and health properties, i.e. also new segments. It should be noted that bee venom is used as a medicine in apitherapy, and different mixes are also used in spa procedures, cosmetics, medicine, technology, etc., as well as in culinary. Beekeeping also forms a solid base for the emergence of a special branch of tourism – api-turism. In perspective, innovations in different mixes will increase, forming new segments.

Figure 10

Segments of bee products with other bee and various different products

Honey – Pollen	Honey – Tahini	Honey – Walnuts	Honey – Cinnamon	Honey – Turmeric	Honey – Cloves	Honey – Ginger	Pollen – Yoghurt	Propolis – Alcochol
Honey – Royal Jelly								
Honey – Bee bread								
Honey – Pollen – Royal Jelly								
Honey – Apilarinyl								
Apilarinyl – Pollen								
Apilarinyl – Propolis								

Although today most of consumers prepare such mixes themselves, the mixes have a good potential to penetrate the HoReCa segment, where they can be combined and offer a variety of variants. The segment of direct sales by customer demand is also promising because it allows to meet a specific mix of needs. Different mixes of bee products with other bee products or bee products with non-bee products can form nutritional supplements, medicines, cosmetics, etc. to be offered on the market by pharmacies and apparatuses. Today, the segments of different mixes of bee and non-bee products are very small and have a predominantly niche character. However, their online segments have good prospects for growth (Figure 11).

Figure 11

Prospective target markets for mixes of bee products

Mix bee products- bee products	Mix bee products – non-bee products	Direct sales	Offline	Online
		Farmer markets		
		Pharmacies		
		HoReCa		
		Apparatus		

2. Segmentation of international markets for Bulgarian bee products

Honey production in the world for the period 2013-2016 fluctuates from 1.6 to 1.8 million tons per year. China plays a decisive role on the world market as a major producer and exporter. China is a world leader with a production of over 450-500 thousand tons, and in 2016 its share in the world production of honey is 28.1%. Turkey is second in the world with an average annual amount of 102 000 tons. Turkey's in world bee honey production is 6%. Iran ranks third with an annual production of 78 000 tons. In 2016 the country's share in honey production was 4.5%. The United States are placed fourth with a production share of 4.1% and an average annual production of 73 000 tons. Russia has about 4% of world production (Bulletin 9, 2018) – 70 000 tons of honey per year.

Following the top five countries in honey production in the world, the Ukraine's average for the period 2013-2016 is 66 000 tons, then India with 61 000 tons, Argentina with 59 000 tons, Mexico with 58 700 tons (Bulletin 9, 2018) and Ethiopia with about 45,000 tons. The EU is the second-largest producer with about 240 to 270 thousand tons of honey after China. The largest producers of honey in the EU in 2015 are Romania – 35 000 tons, Spain – 32 000 tons, Hungary – 30 000 tons, Germany – 24 000 tons, Italy – 23 000 tons, Greece with 22 000 tons, France with 18 000 tons, Poland with 14 000 tons, Portugal and Croatia- both with 10 000 tons, and Bulgaria with 9 000 tons (Brussels, 7.12.2016, COM (2016) 776 final). Although the EU is the second-largest producer, it is also the world's largest bee honey consumer with about 350,000 tons/yr.

The total imports of honey in the EU in 2015 are 197,545 tons worth 498,027 euros. The main supplier is China, which accounts for 50% of imports, followed by Mexico and Ukraine. Exports from the EU are negligible compared to imports – about 8% of total production, mainly for the high-quality bee honey markets such as Switzerland, Saudi Arabia, Japan, the USA and Canada (Brussels, 7 December 2016, COM (2016) 776 final). The largest importers of Bulgarian honey in the EU for 2016 are Germany, which imports more than half of Bulgaria's exports, followed by Greece, Poland, Belgium, France, Spain, Italy, Austria, Denmark, Great Britain, Romania and Cyprus (MAE, 2017a). Bulgaria's export to "third countries" is mainly to the USA, Japan, China, and the Republic of Korea, and is only 400 tons, about 5% of the total.

According to Eurostat data, by 2011, the production of organic honey in the EU Member States was 5,341 tons and in 2012 it increased by over 48% to about 8,000 tons. The assessment of the market share of organic honey in Europe is about 10,000 tons per year, equivalent to about 2.5-3% of the market for honey, but today the European organic market exceeds 15,000 tons and is one of the most developed on a global scale. Given the average growth rate of sales of organic products, the annual consumption in Europe alone is expected to exceed 20,000 tons by 2020 (Lyubenov, 2019). The demand for conventional and organic honey and bee products in Europe is significantly greater than its own production, which will continue as a trend in the next decade.

Since 2014 Bulgaria is one of the world's leaders in the number of certified organic bee colonies. In 2015 Bulgaria ranked first in the world with 179,106 organic bee colonies (Lyubenov, 2018), and in 2017 it was second in the world with about 230,000 certified bee

colonies (https://www.dnes.bg/business/2017/03/01/). In 2016, in Bulgaria, 21% of bee colonies are certified, and nowadays, they are 33% (MAFF, 2018). This places Bulgaria at the forefront as a producer of organic bee honey, but Bulgaria's organic beekeeping faces serious problems related to: certification, the realization of honey as a low-priced raw material, and the declining amounts of subsidies that slow down the development of this sector.

The segmentation of national markets for bee products has revealed that despite of the relatively low consumption of honey and bee products, consumers have a variety of preferences which in turn forms different segments. Unlike the national markets for bee products, the international markets cover an extremely large and heterogeneous group of consumers located on a vast area. This necessitates identifying the main segments and identifying those that are of interest. The segmentation of the international markets for bee products can be done by using several indicators as segmentation criteria, some of the most appropriate in this respect being the economic, geographical, demographic and cultural factors.

Among the economic indicators, the gross domestic product (GDP) is the most commonly used measure of economic development of the countries. Since it may lead to some misconceptions and categorization in a group of countries with a very different level of overall development, it is good to combine the GDP with other indicators such as purchasing power parity (PPP) per capita. Often, countries with the highest PPP per capita have a relatively lower GDP. This discrepancy is essential for the segmentation of the international markets for bee products because they do not classify in the basic foodstuff group; therefore their demand is highly dependent on the consumers' available income.

In countries where the incomes are low, the demand for honey and bee products will be more limited in volume and will be located only in the low-price segment. In countries where the incomes are higher, albeit with a smaller population, the total demand may be several times higher, while both quality expectations and prices will increase. It can be seen from the economic indicators of the most developed countries that only a few of them have both a high GDP and high PPP per capita (https://www.imf.org, 2017) – Switzerland, the USA, Saudi Arabia, the Netherlands and Germany, followed by Canada, Great Britain, Japan and France. These segments of the international markets are promising target markets for Bulgarian bee products.

Among the geographical indicators, the most frequently used one is to divide the world market by regions and countries. Frequently, data about global trade is divided into two main groups – "EU countries" and "Third countries". The first group includes Belgium, Germany, France, Italy, Luxembourg, the Netherlands, Denmark, Austria, Hungary, Poland, Spain, Sweden, Great Britain,[4] Ireland, Portugal, the Czech Republic, Slovenia, Slovakia, Romania, Lithuania, Latvia, Bulgaria, Estonia and Croatia. The second group – the so-called "third countries" encompasses the remaining countries around the world. This regional division emphasizes the geographical proximity to these countries, combined with the relative commercial freedom that EU members have in trading with each other.

[4] According to this criterion, it is integrated into the EU, although it does not wish to be a member of the EU.

The demographic indicators are important for defining the number of users as they determine the potential of a given market. The size of the countries does not fully reflect their market potential, so it is good to also consider employment and population density. In 2018, the country with the largest population in the EU is Germany – 82.9 million, followed by France – 67.3 million, Great Britain – 66.3 million, Italy – 60.5 million, Spain – 46.7 million, Poland – 38 million, Romania – 19.5 million, Netherlands – 17.2 million, Belgium – 11.4 million, Greece – 10.7 million, Czech Republic – 10.6 million, Portugal – 10.3 million, Sweden – 10.1 million, Hungary – 9.8 million, Austria – 8.8 million, Bulgaria – 7 million (https://bg.wikipedia.org/wiki, April 2019). The employment rate and population density in the EU are the highest in the Netherlands, Belgium, the UK, Germany and Italy.

In 2019, the largest countries in the world by population are: China – 1.4 billion, India – 1.3 billion, EU – 0.53 billion, USA – 0.33 billion, Indonesia – 0.27 billion, Pakistan – 0.21 billion, Brazil – 0.2 billion, Nigeria – 0.19 billion, Bangladesh – 0.16 billion, Russia – 0.15 billion, Japan – 0.13 billion, etc. Switzerland has the largest share of employed. The highest population density is in the Republic of Korea, followed by Japan and Switzerland (https://bg.wikipedia.org/wiki, April 2019). The analyzed indicators outline the perspective segments for Bulgarian honey and bee products. For Europe, these are the Netherlands, Belgium, the United Kingdom, Germany and Italy, and in the so-called "third countries" – Switzerland, the Republic of Korea and Japan. Out of these potential target markets, Bulgarian bee honey is not yet realized in the Netherlands and in Switzerland.

Cultural factors are related to the traditions of the consumption of honey and bee products in different countries. For example, European countries have deep historical roots and traditions in the production and consumption of honey and bee products. The largest consumers of bee honey in the EU are Germany, Great Britain, Belgium, Spain, Poland, Italy, and the Netherlands. European consumers have a positive attitude towards purchasing honey and bee products, produced in a country different than theirs. Although European markets have a solvent and stable demand for bee honey, they are characterized by intensified competition and are dominated by several large companies. European consumers are very demanding in respect to the quality of bee products and especially for organic products.

There are an established culture and customs in the consumption of honey and bee products in the USA, Canada, Russia, Japan, Saudi Arabia, etc. The global consumption of honey is steadily increasing because honey is considered not only as a natural sweetener, but also because of its prophylactic and healthy qualities. The largest importers of honey from the EU are Germany, the United Kingdom and the Netherlands, and from the so-called "third countries" – the USA and Japan. The consumption of honey per capita on average worldwide is about 150 grams per year and steadily increases, but it varies widely between countries. Western European countries which are also members of the EU have an average consumption (per person) of honey of 2.5-2.7 kg, Hungary – 0.7 kg (EU, 2017/2115 (INI)), Bulgaria – 0.5 kg, Greece – about 2 kg, Ukraine – 1 kg, USA – 1.2 kg.

The economic, geographic, demographic and cultural factors used as criteria for segmentation of the international market for bee honey, determine two main groups of target markets for Bulgarian honey – European and EU countries, and other countries. The

EU target markets clearly that stand out clearly are Germany, France, Italy, the Netherlands and Belgium, and the non-EU countries – Switzerland and the UK. Other target markets are Saudi Arabia, the USA, Japan, Canada, and the Republic of Korea. Of the abovementioned target markets, there is no data on the realization of Bulgarian honey in the Netherlands and Switzerland, but it is likely that they get some quantities as re-exports. On these target markets, there is a very strong competition by the countries that are the largest producers of honey.

Greece has good prospects as a target market because it is a neighbouring country with a large consumption of bee honey per capita, and Austria is similar in this regard. Because of the great international competition in the domain of bee honey, Bulgarian beekeeping should specialize in the production of other bee products, for which there are potential competitive advantages such as: bee pollen, royal jelly, bee venom and bee colonies, given the declining population of bees in the USA and in other countries. A prospective target market is the organic honey segment and other organic bee products. Nowadays, the export of Bulgarian bee products beyond the honey category is very small, which is why there is no official data on them and they are mostly niche markets.

The regional principle, e.g. by counties, plays the leading role in the segmenting of international markets. However, applying segmentation based solely on geographical or quantitative factors will lead to unilateral development. This imposes the use of a combination of indicators, as well as their complex reporting. Therefore, inter-segmentation is also applied, i.e. division of the formed segments based on other indicators. Though, here comes the problem, that the formation of too many segments is inappropriate and costly, and should be avoided. The choice of an international market (Karakasheva, 2007; Boeva, Vasileva, 2010) is based on grouping the countries into homogeneous groups, elaborating the characteristics of each group and determining their advantages and disadvantages.

The determined international target markets for Bulgarian bee products can be divided into two main groups:

A) Target markets in European countries:

- Group 1 – Germany and the UK;
- Group 2 – France, Italy, the Netherlands, Belgium and Switzerland;
- Group 3 – Greece and Austria.

B) Target markets in the so-called "third countries":

- Group 4 – Saudi Arabia, the USA and Japan;
- Group 5 – Canada and the Republic of Korea.

The formed groups of target markets have internal similarity and clear differences between them.

Group 1 covers European countries with a large population and excellent economic performance indicators. These are countries with traditions in honey consumption. They have established taste preferences and attitude towards honey and bee products. In

Germany and in the UK, despite some fluctuations in demand for honey, it remains at a relatively constant level, which is why they are world market leaders in terms of imports. About 1/2 of Bulgarian exports are for Germany, and only about 1% is for the UK- one of the smallest among the EU member states. Direct competitors of Bulgaria in this group are: China, Ukraine, Turkey, India, Argentina, Mexico, Ethiopia, Romania, Spain, Hungary, etc. Bulgarian honey is exported as a raw material, which results in strong price competition.

Group 2 covers five countries that need to be divided into two micro-segments:

- Segment 2.1. includes the Netherlands, Belgium and Switzerland, which are smaller in size but with excellent economies, high standards of living and high available income per capita. The smaller population of these countries impacts the volume of imports but, in terms of value, it surpasses the imports of some of the larger countries. This fact is indicative of the types of honey that are realized there – from the high price class and the upper half of the average price class, which is also linked to the demand for a honey of higher quality. These three countries, just like the countries in Group 1, have established taste preferences and attitudes. They are not large producers and imports are a major way to meet the demand for their domestic markets. Direct competitors to Bulgaria in this segment are Germany, as a re-exporter, and the abovementioned EU leaders in production.
- Segment 2.2. includes France and Italy, which are significantly larger in terms of size and number of employed in the economy but with relatively lower available income than the previous micro-segment. Both countries have solid traditions in the consumption of honey and bee products. Although they are among the largest producers of honey in the EU – Italy is 5th, and France is 7th, they cannot satisfy their domestic consumption. The lower share of employed and available income versus segment 2.1 is the main reason for the consumption, being oriented in the group of honey, produced by them. The relative share of France in the export of Bulgarian bee honey is 5.4%, and Italy's share is about 3% (MAFF, 2017a). Direct competitors to Bulgaria in this segment are Germany and its neighbours.

Group 3 covers two European countries – Greece and Austria. Although they are among the global leaders with the highest consumption of honey per capita, they can be divided into two distinct micro-segments due to some significant differences between them:

- Segment 3.1. Austria produces about 5,000 tons of honey per year, which does not satisfy its large domestic consumption and is, therefore, a traditional importer. It accounts for about 2.5% of Bulgarian exports (MAFF, 2017a), which is very little, given the relatively high solvency of this target market. Consumption in Austria is oriented towards higher quality honey, including organic honey, which is in the higher price class. Competition in this segment is strong and dominated by large and well-established merchants exporting honey, such as the German merchants, who are further helped by linguistic and cultural similarities. This requires that Bulgarian bee honey be oriented towards organic markets with higher quality segments and prices.
- Segment 3.2. Greece ranks 6th in the EU for production of honey equaling 22,000 tons. Its population is about 2 million more than Austria, and also has a large per capita

consumption. Another difference from segment 3.1 are the lower consumer incomes, which, coupled with larger national honey production, are driving consumption to the lower price segment. Greece consumes about 11% of Bulgarian exports, which is second only to Germany on Bulgaria's export list (MAFF, 2017a). The main competitors to the Bulgarian honey in this segment are the largest producing countries of cheaper honey – China, Turkey, Ukraine, and the Eastern European leaders in honey production.

Group 4 covers three countries – the United States of America, Japan and Saudi Arabia, which form two micro-segments:

- Segment 4.1 covers the USA and Japan. These are two of the largest countries in the world when it comes to very good economic results. In both countries, the bee honey market is being developed by leading countries in the area of its export. Japan imports about 38,000 tons of honey per year, as its own production satisfies only 6.6% of consumption. Consumption is stable, despite high prices. China provides about 1/2 of imports followed by New Zealand, Canada, Argentina, Hungary, etc. When it comes to the EU, in 2015, Hungary provided about 1/2 of the exports, followed by Romania and Spain, with less exports being France, Italy and Bulgaria. In this segment, Bulgarian honey is in a good price niche (MAFF, 2017b) – 6.88 dollars/kg, with an average export price of 3.51 dollars/kg.

The USA is one of the largest bee honey markets in the world; the USA imports 165,000 tons worth nearly 400 million USD. Leading suppliers of honey for the USA are Canada, India, Brazil, Argentina and Vietnam. Anti-dumping duties have been introduced against Chinese bee honey because of its dumping prices and unfair competition in respect to domestic producers. The average wholesale price of the best-paid American honey is 2.5 dollars/kg (Embassy of Bulgaria in the USA, 2014), which is why the Bulgarian honey on this market is profitable mainly as a quality product to be sold by the organic retailer markets. In this segment, price is not critical, and no huge quantities are required; of utmost importance are the quality, origin, type, colour and packaging of the honey.

- Segment 4.2. Saudi Arabia produces less than half of the honey demand in the country, which is why it needs large quantities of imported honey of about 15,000 tons. The average import price is 3.73 dollars/kg. The largest market share in the country occupies Mexico with almost 1/4 of imported quantities and an average import price of 3.73 dollars/kg and quantities of 3.4 thousand tons. The applicable duty is 5% of the invoice value of the imports; only the rates for Egypt and Yemen are zero. As of 2015, the symbolic 25 tons are exported from Bulgaria, which are in the average price niche – 4.76 dollars/kg (MAFF, 2017в). Despite the presence of strong competition, this segment is attractive, and Bulgarian honey has the potential to increase its market share.

Group 5 covers Canada and the Republic of Korea, which can be considered as potential target markets, as a very small part of Bulgarian exports is made to the Republic of Korea – 0.7% (MAI, 2017a), and Canada is still not an export destination for Bulgarian honey. Canada has a steady increase in demand for organic and high-quality bee products as a result of consumer desires to reduce sugar consumption. Therefore, in recent years, there has been a growing interest from Canadian companies to import natural Bulgarian honey.

There is similar interest from the Republic of Korea, which is becoming a growing consumer of honey. Exports to both countries would be related to significant administrative and logistic costs, given the great distance from Bulgaria.

Overall, the target markets of Group 5 and Group 4 (Saudi Arabia, the USA and Japan) are less attractive than EU countries and other European countries. The main reasons for this are the greater logistic, administrative and other costs, tariff and non-tariff barriers and strong price competition from the largest honey-producing countries. In order to access these segments, Bulgarian exporters of bee products shall establish contacts with their local intermediaries and meet the requirements for trading with honey, bee products in each country in respect to safety, traceability, etc. Bulgarian beekeeping products shall be directed to specific segments – organic bee honey for Japan, offspring for the USA, creamy honey for Canada, etc.

The formation of too many segments is inappropriate and is linked to significant marketing and other costs. Thus, the author suggests using the criterion "price of honey", which allows the unification of some of the segments. According to this criterion- the highest price in USD/ ton – the first position is for Japan – 5355, followed by Denmark – 5093, Saudi Arabia – 4760 and Belgium – 4026. Next are Germany – 3829, France – 3506, USA – 3434 and Italy – 3315 (MAFF, 2017a). The Netherlands and Switzerland, as well as Sweden (19th PPP per capita) and Finland (23rd place) can also be added to this group because they allow for realization in a high and middle price range. At an average price of 4165 USD/ton Bulgarian honey falls in the average price class. These segments are also suitable for the realization of organic bee honey.

Statistical information (MAFF, 2017) shows that the countries of Group 3 (Austria, Greece) and the UK are export destinations for Bulgarian honey in the middle and lower price range. Poland can join them because it is the third largest consumer of Bulgarian honey at a price of 3015.75 USD/ton. Although the UK is one of the largest consumers of honey in the EU, in this segment, Bulgarian honey has the lowest average price – 2405.3 USD/ton. It is higher for Austria (3088.86 USD/ton) and Greece (2794.69 USD/ton), which are also countries with high consumption per capita. The average price for these segments is 2826.15 USD/ton, and the price in Bulgaria is 3581 USD/ton. The disadvantage of these segments is their lower profitability compared to the other segments.

Conclusion

As a result of the segmentation of the markets for Bulgarian bee products, conclusions can be drawn in two main directions:

Firstly regarding the segmentation of national markets for bee products:

- The current organizational target markets of Bulgarian beekeeping farms are offline, non-organized markets for bulk bee honey dominated by wholesalers who buy out about 85% of it. These target markets do not provide beekeeping farms with equilibrium prices and risk reduction. The organic honey is bought at prices very close to the conventional prices. Therefore, beekeeping farms have to establish their own target

markets – offline and online auctions, and producer markets for organic and conventional honey that will improve their liquidity and profitability.

- The organizational target markets of Bulgarian beekeeping farms beyond the honey bee category are pollen, royal jelly and queen bees. The segment of dried and bulk pollen is an offline non-organized market of wholesale merchants. The queen bee segment is mainly an offline, non-organized market negotiated between licensed producers and consumer beekeeping farms. The organizational markets of pollination, bee venom, bee bread, sucker grubs and the bees are very small and have a niche character.
- Current consumer markets for bee honey are dominated by traditional markets, covering 93% of all segments – direct sales by producers occupy 54%, the segment of purchases by relatives 24%, and agricultural markets – 15%. A prospective target market is the online segment of organic honey, which will grow steadily. Today, the public catering (HoReCa) and apparatus trade segments have niche character, but their prospects for development are positive.
- Consumer target markets beyond the bee honey category are bee pollen and royal jelly, which are mainly conventional, with potential for organic segments. They are realized in the segments of direct sales and farmer markets. The prospective target markets are the public catering (HoReCa) segments and the non-shop automated trade. The other bee products are mostly niche. The segments of all bee products will continue to grow at the expense of honey, because consumers want to live healthier, with less sugars.
- Today the segments of mixes of bee products with other bee products and other different products have the character of very small niches. The bee honey is the main ingredient in these mixes because it combines successfully with most bee honey and non-honey products, increasing their shelf life – honey with pollen, honey with royal jelly, honey with bee bread, honey with tahini, honey with walnuts, honey with cinnamon, etc. The mixes have good potential to penetrate the HoReCa segment, where they can be combined and offer a variety of variants. Segments of direct and online sales by orders are also promising.

Secondly on the segmentation of international markets for Bulgarian bee products:

- EU Member States – Denmark, Belgium, Germany, France and Italy are real target markets for Bulgarian bee honey, where it is mainly realized in the lower interval of the average price range of about 5-3.5 thousand USD/ton. Prospective target markets in Europe and the EU that have not yet been penetrated are the Netherlands, Sweden, Finland and Switzerland. For the so-called "third countries" such as Japan and Saudi Arabia, Bulgaria sells at about 5000 USD/ton. The lower prices in the USA – 3434 USD/ton, make Canada a good alternative.
- From the list of potential target markets are eliminated the most accessible neighbouring countries and those from the EU, which are major producers of bee products such as: Turkey, Romania, Spain and Hungary. The UK, which is in the process of leaving the EU, is also a segment in which Bulgarian bee honey is realized at the lowest average price – 2405.3 USD/ton. With respect to Austria, Greece and Poland, where prices are

some of the lowest and fluctuate about and below 3000 USD/ton, repositioning to higher prices is required, which also applies to the UK.

- Due to the high quality, nutritional, prophylactic and medicinal value of Bulgarian bee honey, it is necessary to re-orientate to new target markets – organic honey for Denmark, Belgium, Germany, Japan and Saudi Arabia, creamy honey for Canada and Northern Europe. The development of the potential of Bulgarian beekeeping requires the definition of target markets of the other bee products – queen bees and bee colonies for the USA, organic royal jelly for Japan, bee venom for Germany, etc.
- Today Bulgarian bee products, such as beeswax, propolis and queen bees, are mainly realized on the national markets. Potential opportunities for realization on the international markets include bee pollen, bee venom and royal jelly. Bee pollen has good opportunities due to larger production and developed national organizational market. Bee venom and royal jelly do not have developed national organizational markets and are under strong price competition from world leaders – China, Turkey and others, and therefore have a niche character. The other bee products are less represented and have a more pronounced niche character.

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ИКОНОМИЧЕСКИ ИЗСЛЕДВАНИЯ
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POSSIBILITIES FOR IMPROVEMENT OF THE SERVICE, PROVIDED BY ENERGO-PRO VARNA JSC TO END DOMESTIC CUSTOMERS IN THE CITY OF VARNA

The article has the aim to outline the specifics of the electric power market and on the basis of a survey of the consumer attitude to the satisfaction from the service and the quality of the delivered to domestic customers of Energo-Pro Varna JSC in the city of Varna services, to outline possibilities for improvement of the service, provided by the company. The basic method, applied in the course of the survey is the questionnaire, in view of the accumulation of information regarding the end consumers' assessment about different aspects of the process of electric power supply. Three main proposals for the improvement of the customer service have been systematized on this basis, connected with the outsourcing of the telephone services, the introduction of chatbots for the online services and the increase of service quality with the assistance of the so-called "seven quality instruments": Control list, Stratification method (differentiation), Histogram, Dispersion diagram, Ishikawa diagram, Pareto diagram and the Control chart.
JEL: O13; O14; Q43

Introduction

The search of opportunities for improvement of the customer service is at the basis of every corporate policy, aimed at an adequate competitive positioning. Satisfied and loyal customers are a long-term investment, which leads to return of the investments made, based on the high levels of turnover, financial revenues and security in a long-term prospective.

The aim of the present elaboration is to outline the specifics of the electric power market and based on a survey of the consumer attitudes to the satisfaction from the service and the quality of rendered to domestic customers of Energo-Pro Varna JSC services, to outline possibilities for improvement of the service, provided by the company.

The achievement of this goal supposes the solving of fundamental tasks, connected with:

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1. Theoretic summary of the nature and specifics of the electric power market.
2. Study of the consumer attitudes towards the satisfaction with the service and the quality of the provided services to domestic customers of Energo-Pro Varna JSLC in the city of Varna.
3. Revealing of opportunities for improvement of the customer service by Energo-Pro Varna JSC.

In the course of the study, methods of synthesis, a graphical method, as well as a survey for the accumulation of information regarding the assessment of end consumers of different aspects in the process of electric power provision by Energo-Pro Varna JSC are applied, divided into two blocks. The first block has the aim of determining the degree of overall satisfaction/ dissatisfaction with the customer attendance and the quality of the offered by Energo-Pro Varna JSC services, the degree of acquaintance with the services, offered by Energo-Pro Varna JSC, the problems which electric power consumers, subscribers of Energo-Pro Varna JSC at the territory of the city of Varna encounter. The obtained results, on grounds of the extracted information, will make possible the defining of conclusions and the formulation of proposals and adequate recommendations for quality management in the process of customer service. The second block is a demographic one. It has the aim to collect general information about the respondents and to trace how much the examined parameters are bound with the demographic groups.

A research object in the elaboration are end domestic customers, attended by Energo-Pro Varna JSC, at the territory of the city of Varna, who are profiled on the basis of questions, set in the demographic block, included in the survey list.

The subject, which is of interest to the researchers, could be reduced to the customer service in Varna region by Energo-Pro Varna JSC.

The electric power specifics create a basis for research of a theoretical and applicable significance, aimed at searching and determining of possibilities for improvement of the customer service in the energy sector.

1. Essence and specifics of the electric power market

The electric power market is an aggregation of legal, technical and economic norms, regulating the relations between the participating entities, as well as the means, assisting their activities during the purchase and sale of electric power and its derivatives. On the other hand, the electric power market includes the stage of development of the fundamental means – projecting, construction, building and exploitation of energetic sites, as well as commerce with electricity companies' assets.

Two kinds of markets are usually reviewed in the scientific literature: a perfect market and a monopolistic market to a certain degree (a pure monopoly, oligopoly, etc.) (Yakimova, et al., 2012, p. 239) and (Iliev, et al., 2001, pp. 92, 105). Some authors consider, that energy markets are essentially monopolies and are characterized by a high margin (Jumasseitova, 2016, p. 131), i.e. these are market structures, in which one producer of a product, which

has no close substitutes exist, and substantial barriers exist before the entry into the sector (Kovachev, et al., 1993, pp. 164-165). A counterpoint of this opinion is the European policy regarding energy markets development, which encourages loyal competition and the easy access of separate providers, as well as the support of capacities for new energy production, in order to allow consumers to use to a full extent the possibilities of the liberalized internal market of electric power (European Parliament and the Council). At these markets, energy is often bought and sold on a wholesale basis, before it reaches the end consumer and in view of guaranteeing the smooth operation of these markets and in order to avoid the manipulation of prices, the EU has introduced regulations, prohibiting the usage of internal information or the dissemination of incorrect information related to the supply, the demand and the prices (De Nicolò, Favara, Ratnovski, 2012, pp. 7-10).

Consequently, energy markets can be constructed as a monopolistic or competitive structure, which is defined depending on the barriers at sector entry and the real choice, which the customer faces, as simultaneously a broad range of tools is applied, with the purpose of definite informational dimensions from their functioning to be publicly accessible, on the condition "that no information is divulged, constituting a trade secret, or information, protected by virtue of law" (Energetics Act, 2019).

The electric power market is a complex economic structure with its specifics and participants not typical of other markets, nevertheless subject to the general principle of resources redistribution. The specifics of the market is to a great extent, determined by the specifics of electric power and a lack of a uniform opinion on its definition as a product or a service.

A number of characteristics have been systematized in theory, which accompany the provision of services and they can be reduced to the following more significant ones (Mirotin, 2002, pp. 81-90):

- The service has a creative character.
- In the service sector, the relative share of individuality during the realization of the labour process is high, and the quality level depends on the individual employee's qualities.
- The variety of customer requirements makes the unification and standardization of customer service difficult.
- The processes of providing and consumption of services coincide in time and place.
- The end assessment of the service level is obtained at the stage of immediate contact between the consumer and the provider of the service.
- The realization of transporting and storing of the service is impossible.

The creative character is rather not present in the offering of electric power, as well as no individuality is observed, and to a bigger extent standardization in the process of service provision, in view of the strict requirements regarding the quality characteristics of the electric power, set within the Bulgarian state standard, which has as an object: determining and description of the feeding voltage, relating to the frequency, size, form of the wave and

the symmetry of three-phase voltages. In this relation we must note, that electricity is perceived as a not-differentiated product, which differs from the remaining merchandises with the following characteristics: seasonality of demand, high prices changeability, inelasticity of demand, limited transportation possibility (Chatnani, 2010, p. 260). This means, that independently from the fact whether it is produced by a heat power station (HPS), nuclear power station (NPS) or another type of a production station, energy remains with the same qualities and characteristics, i.e. it is impossible that a NPS delivers to the market electric power with different characteristics such as higher voltage or a bigger electricity power (Georgiev, 2014, p. 45). In this respect, the energy market establishes itself as a market with relatively resistant characteristics regarding the product offered, which can deviate within the framework of established and allowable norms for the indicators of the electric power quality only.

Simultaneously, the processes of supply and consumption of electric power coincide in regard to time and place, as an impossibility for its storing is present. Consequently, we support the conclusions of J. Bielecki and M. G. Desta, who define electricity as a „special product in view of its physical characteristics, since, unlike other products, it usually cannot be stored and is supplied along special chains, which connect all participants in the value-added chain“ (Bielecki, J., M. G. Desta, 2004, p. 6). In this context, the defining of electric power in the sense of Bulgarian legislation is of interest, where it is perceived as a product also according to art. 13, item 2, from the Law on Excises and Tax Warehouses, which is taxed with an excise, according to art. 2, item 3, from the same normative act (Law on Excises and Tax Warehouses, 2019).

In view of the lack of categorical arguments, which to define electric power as a product or service we can join the opinion of P. Pineau, who considers, that “energy and electric products have the peculiar characteristic, which classifies them as products and as services as well” (Pineau, 2004, Vol. 12: Iss. 2, Article 9), since production and consumption of electric power, on the one hand, coincide in time and this gives it the characteristic of a service, and on the other hand, electric power is a product of electricity production, which qualifies it as a merchandise. The fact should be taken into consideration here, that electricity supply on its side is defined as a public service from a general economic interest, such as the post, the railways etc. (Andreeva, 2012, p. 93), or these are services, which could be provided by the private sector, as well as jointly between the private sector and the state authorities of the separate states.

Consequently, we accept the concept for a specific differentiation of the merchandise “electric power” from the service “electric power”, based on its delivery at the desired by the customer time, place, quantity etc. characteristics, which is set in the conceptual realization for the distinction of the end product in components during the pricing.

On the grounds of the conducted theoretical survey, the following summaries can be deducted:

1. The electric power market can be constructed and functioning as a monopolistic or a competitive structure, characterized with many peculiarities and participants, not characteristic of other markets, at which not-differentiated products are offered, possessing specifics, inherent to merchandises as well as services.

2. Electric power is defined on one side as a service, since the production and consumption coincide in time, which imparts the characteristics of a service to it, and on the other side electric power is a result from electricity production and this defines it as a product.

After the clarification of theoretical formulations, connected with the essence and peculiarity of the electric power market and of the electric power as a product and service, the elaboration focuses on the assessment and analysis of the domestic customer satisfaction at the electric power market in Varna region.

2. Survey of consumer attitudes towards the satisfaction from the attendance and the quality of the provided by Energo-Pro Varna JSC services to domestic customers in the city of Varna.

In the contemporary dynamic and competitive environment, market surveys play an important role for the development of each market. They provide opportunities for research of the state of the electric power market, and the attitudes of electric power consumers. Market researches are one of the instruments, which could be used for obtaining of information, giving answers to questions, connected with the electric power market, with whose assistance satisfaction of all participants in this process to be reached, but mostly an increase of the living standard of the population, which is unthinkable without the availability of energy sources and a reliable access to them.

The questionnaire method will be used in the present work, for the electric power market survey in the city of Varna. The aim of the performed survey is, that the respondents' attitudes are examined and their opinions are analyzed, their attitude to the offered by Energo-Pro Varna JSC services and their probable preferences. The limitation for the city of Varna originates from the big range of the license territory of Electrodistribution North AD and Energo-Pro Sales AD, which has a size of approximately 30,000 sq. km and covers nine administrative regions in North-Eastern Bulgaria – Varna, Veliko Tarnovo, Gabrovo, Dobrich, Razgrad, Ruse, Silistra, Targovishte and Shumen.

The necessary empirical information is secured by means of a special organized survey of consumers at the territory of the city of Varna. An inquiry was performed among the adult population of the city of Varna during the period October 1st, 2019 – October 31st, 2019.

The questionnaire is divided into two main blocks. The first block has the aim to determine the degree of the overall satisfaction/dissatisfaction with the attendance and the quality of the offered by Energo-Pro Varna JSC services, the degree of acquaintance with the services, offered by Energo-Pro Varna JSC, the problems which electric power consumers – subscribers to Energo-Pro Varna JSC encounter at the territory of the city of Varna. The obtained results, grounded on the extracted information, will make possible the defining of conclusions and formulation of proposals and adequate recommendations for the quality management of operations in the process of customer service.

The second block is a demographic one. It has the aim of collecting general information about the respondents and tracing to what extent the studied indicators are bound with the demographic groups.

The survey was performed among 430 respondents from the city of Varna (see Table 1).

Table 1

Distribution of the respondents according to their age and gender

Age	Men	Women
18-29	39	39
30-39	39	39
40-49	47	47
50-59	38	38
60-69	30	30
70+	21	23

Two hundred and sixteen from them are women, and men – 214. They are proportionally distributed and are from five Varna sections: Odesos, Primorski, Mladost, Vladislav Varnenchik, Asparuhovo (see Table 2).

Table 2

Distribution of the respondents according to their age, gender, section

Section	Odesos		Primorski		Mladost		Asparuhovo		Vl. Varnenchik	
Gender/Age	Men	Women	Men	Women	Men	Women	Men	Women	Men	Women
18-29	8	8	9	9	9	9	6	6	6	7
30-39	8	8	9	9	9	9	7	8	7	7
40-49	9	9	10	10	11	11	7	8	8	8
50-59	9	9	8	8	9	9	6	6	5	6
60-69	8	8	7	7	6	7	4	5	4	5
70+	5	6	4	5	5	5	3	3	4	5
Total:	47	48	47	48	49	49	34	34	37	37

Their age is from 19 to 88 years. Different social groups were included: unemployed, housewives, students and retired people, as the number of employed persons dominates – 280, followed by retired persons – 86, unemployed – 23, housewives – 22 and students – 19 (see Table 3).

Table 3

Distribution of respondents according to social status

Unemployed	Housewife, Maternity	Retired person	Employed	Pupil/Student
7	5	-	47	18
4	6	1	70	-
3	7	3	77	1
5	3	4	63	-
2	1	36	22	-
2	-	42	1	-

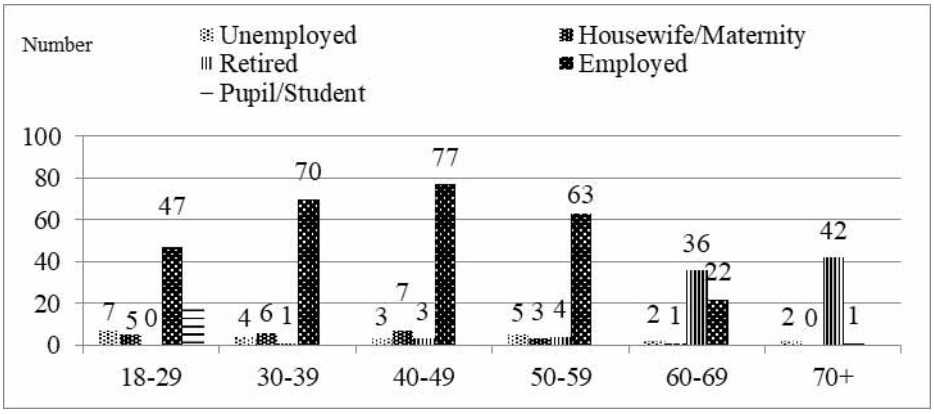
The participants in the survey were asked 50 questions, which they answered after being informed about the aims of the performed survey and gave their permission for usage of their personal data.

Like for any enterprise, the leading aim for Energo-Pro Varna JSC, besides the end financial results, is the increase of consumer trust and satisfaction by the merchandise and services offered, the minimizing of problems and defining of ways for their resolving with the assistance of an even broader in scope informing of consumers in relation to prices, terms, necessary documents, etc.

In the course of the survey, the social appurtenance of the different age groups is traced (see Figure 1). The biggest number is of the employed persons at the age of 40-49, and the smallest number is of the inquired persons aged over 70 years. The biggest number of unemployed is found in the group of 18 to 29 years old, and the least number of unemployed is between 60 and 69 years. The inquired students are between 18 and 29 years old, and housewives are from all age categories.

Figure 1

Distribution of the groups according to age groups and social appurtenance



The territorial location of the interviewed persons according to sections and their gender appurtenance are visualized in Figure 2. The biggest share amounting to 23% belongs to section Mladost, where the respondents are as follows: 49% men and 51% women. Ninety-five respondents were included in the survey for each of the sections Odesos and Primorski, including 51% women and 49% men. The participants in the survey in section Vladislav Varnenchik are 72, or 17% from the total number, from which 47% are men, and 53% women.

The least number of respondents were inquired in section Asparuhovo – 69 people, i.e. 16%, including 48% men and 52% women.

Figure 2

Distribution of the respondents according to geographic and gender indicators

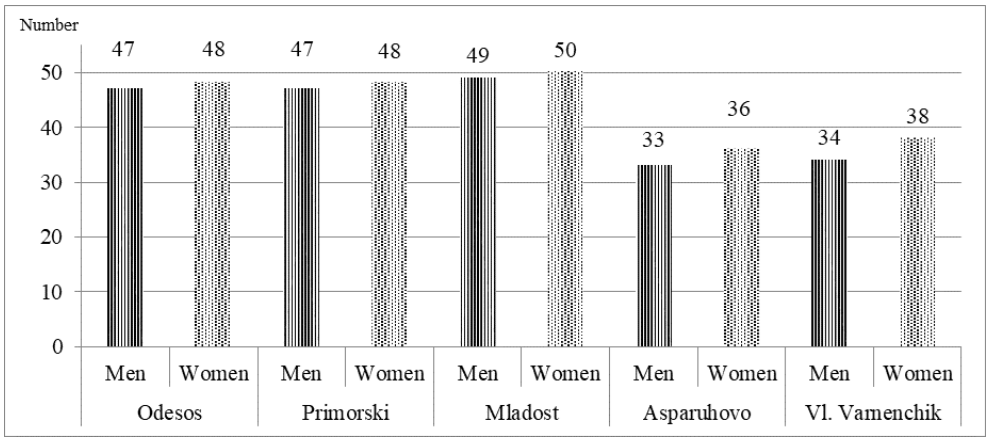
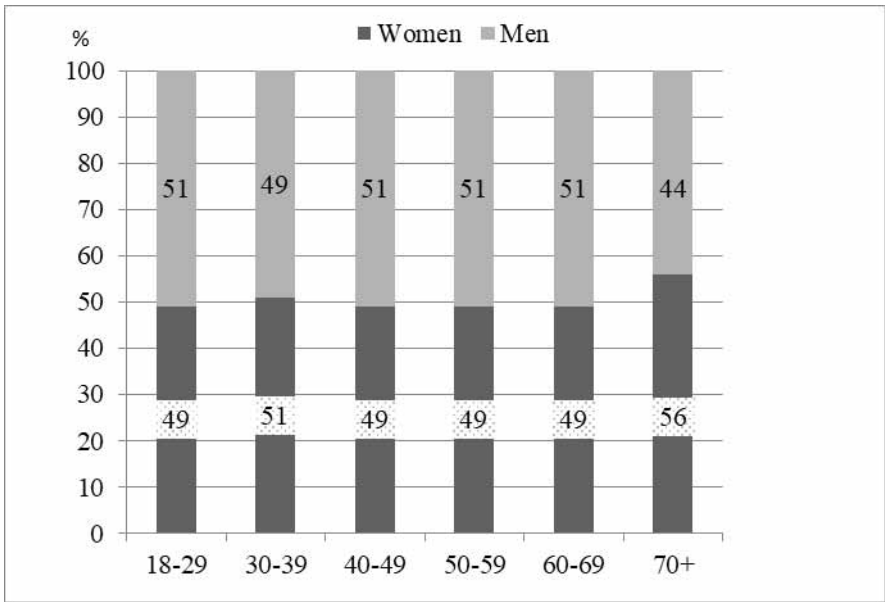


Figure 3

Structure of the respondents according to age and gender appurtenance



Fifty-one percent from the inquiry participants between 18 and 29 years old are men, and 49 – women. The situation within the borders of the ranges: 40-49, 50-59 and 60-69 years of age is analogous. From the interviewed aged 70+ 44% men and 56% women have participated in the survey. The ratio of the inquired persons aged 30-39 is different, where 49% are men, and 51% are women. The share of men in the total number of participants in

the survey is 49.8% and that of women – 50.2%, i.e. the distribution of men and women according to sections corresponds to the general trend in the survey.

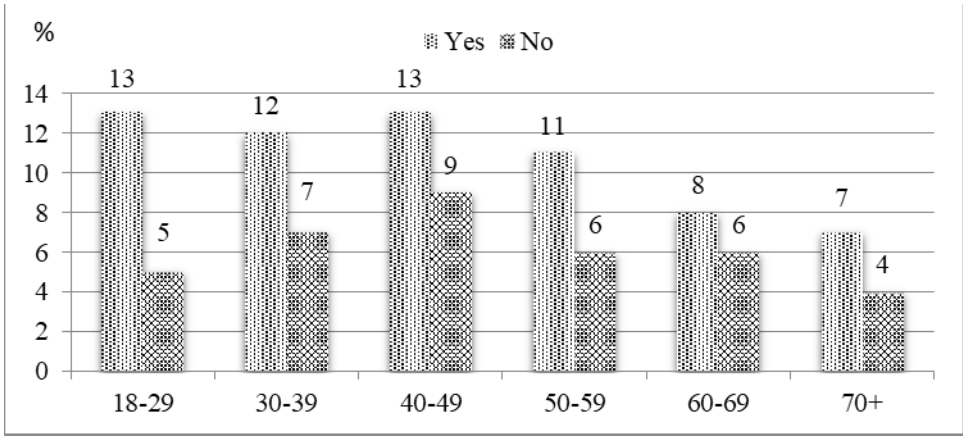
One of the most valuable achievements of each company is connected with the increase of confidence, which its customers have, regarding the provided products and services and their quality, as well as regarding the way, in which these products and services are offered, that is, the way of servicing, responsiveness, competence, etc. Confidence is "trust in somebody's good intentions, in his/her benevolence, in his/her prudence, conscientiousness, professionalism". In this sense, the higher degree of users' confidence in the company's products and services is a reflection and result from the high professional qualification of the company's employees, as well as from the company's policies, grounded as clearly defined principles.

In the concreteness of energy products and services, one of the most important indicators of domestic consumers' confidence is the security of the exact measurement of the consumed by them electric power, that is how much they believe, that the means for commercial measurement indicates exactly the amount, consumed by them (see Figure 4 and 5).

Figure 4 reveals the positive attitude and the degree of confidence of the different age groups.

Figure 4

Structure of the confidence/mistrust of different age groups in commercial measuring instruments



From 430 participants in the survey, 64% have declared, that they have confidence in the exactness of the measuring device, and the share of the ones, who have no confidence is 36%.

The respondents between 18 and 49 years are approximately 60% from the ones, having confidence in the reported consumption. A trend is observed, that with the increase of the age limit, the consumer confidence decreases. This could be explained with the declared by them incomes (see Table 4), since 64% from 60-69 years old persons and the ones aged

70+ have shared, that their incomes are up to 1000 BGN and less, whereas with 30-39 years old ones such incomes are 20%, with 40-49 years old persons – 22% and 50-59 years old ones – 31%.

Figure 5

Structure of the confidence/mistrust of the different age groups in the means for commercial measurement

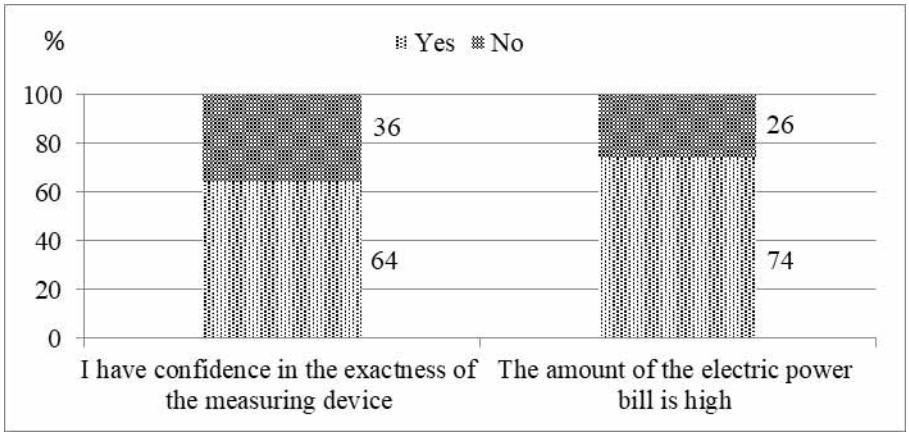


Table 4

Declared monthly income of the respondents

Monthly income	Number					
	18-29	30-39	40-49	50-59	60-69	70+
0 lv.	12	-	-	1	1	1
1001-1500 lv.	9	21	27	17	9	2
501-1000 lv.	12	9	8	11	25	21
0-500 lv.	-	-	2	2	3	7
1500 lv.+	22	27	27	19	6	3
No information	22	24	27	25	17	11

These conclusions are confirmed by the data, which Figure 6 reveals, namely the most unemployed housewives and retired persons do not declare confidence in the measuring device, and working persons' confidence is at higher levels.

Confidence is a long term investment, since the increase of customer loyalty is a key factor for strategic development in the conditions of a competitive environment. Practically such relations are built upon the fundamentals of a high degree of customer satisfaction, a result of the quality of products as well as services, included in the company's portfolio.

The confidence of domestic customers of Energo-Pro Varna JSC can be traced in Figure 7, by several indicators such as satisfaction with: the responsiveness of the employees of Energo-Pro Varna JSC towards the inquiries, the employees' competence towards the inquiries, the ways of communication with Energo-Pro Varna JSC, the quality of the services, connected with customer service.

Figure 6

Structure of the confidence/mistrust in the exactness of the means for commercial measurement of the different social groups

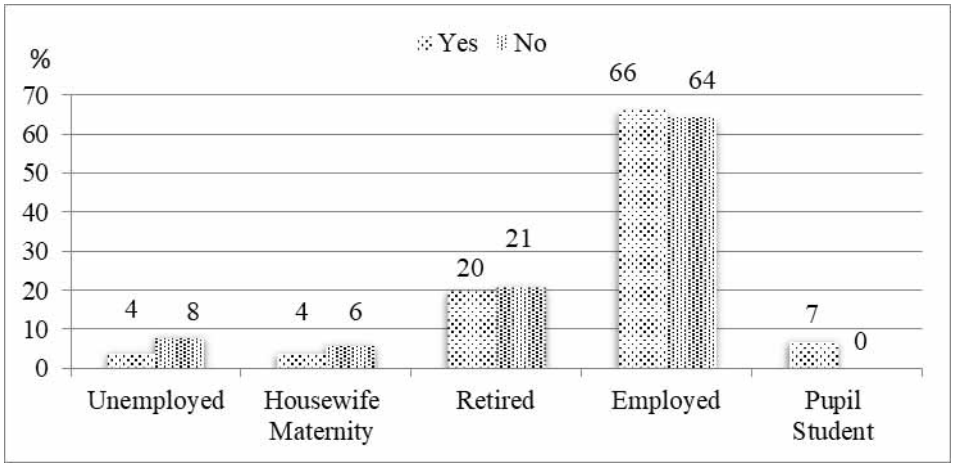
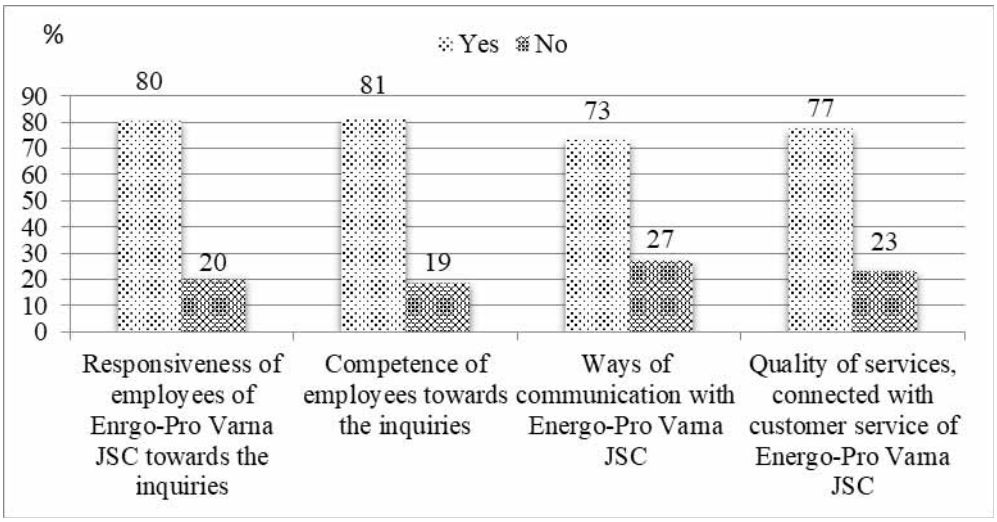


Figure 7

Structure of the satisfaction of domestic consumers – customers of Energo-Pro Varna JSC



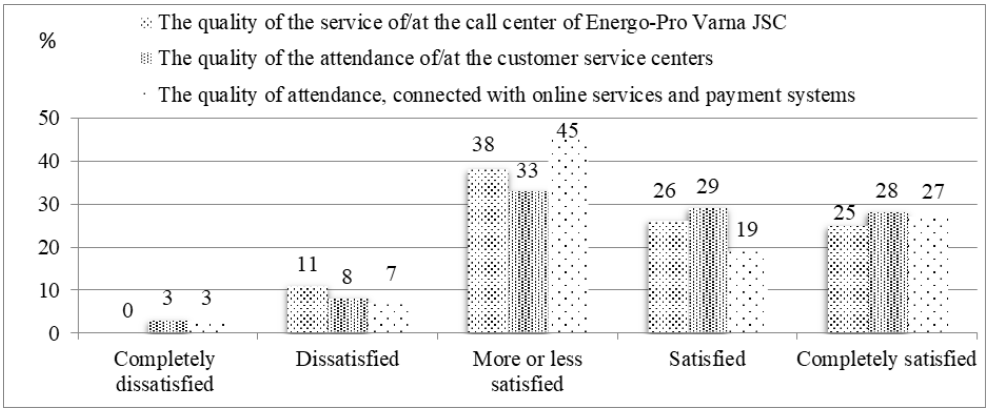
The percentage of consumers, who are satisfied with the employees' responsiveness is 80, the ones satisfied with employees' competence are 81%, and with the quality of services, connected with customer attendance are 77%.

In their greater part, domestic consumers are pleased with the way of offering of services and the communication channels to employees of the company.

The degrees of satisfaction have been studied of Energo-Pro Varna JSC customers, from the quality of the service (see Figure 8), which the call centre, the customer service centres and the online services, provided by the company offer.

Figure 8

Structure of the satisfaction degree of domestic consumers – customers of Energo-Pro Varna JSC

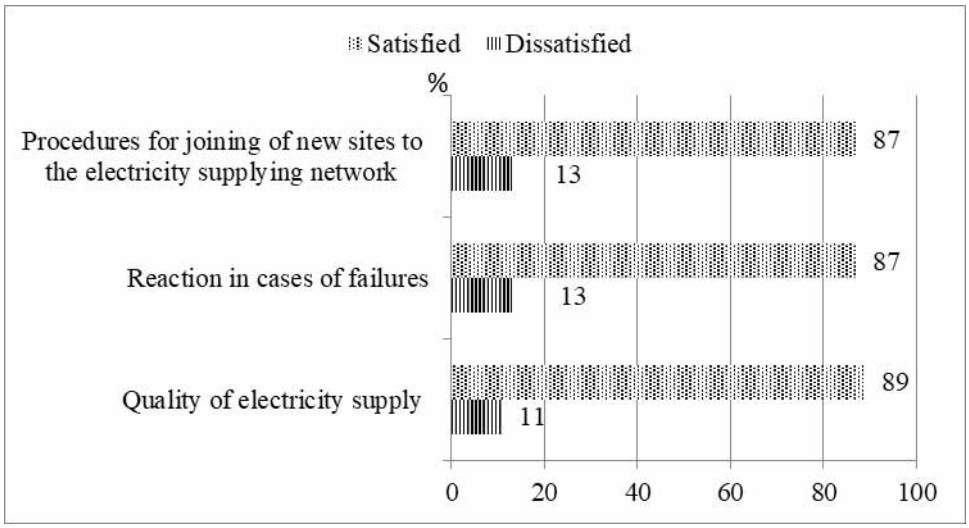


It is important that the fact is taken into consideration, that the share of the completely dissatisfied persons from these services is not more than 3%. This is a sign, that the company has fulfilled a big part of the expectations of its customers regarding the activities, connected with telephone contacts, "face to face" contacts and the online service. In this connection, it has to be noted, that the biggest satisfaction is the declared one in relation to the work, performed at the customer service centres – 28% are completely satisfied, 25% are completely satisfied with the service quality, offered by the call centre and 27% with the services, connected with online services and payment systems. Still, the biggest share of domestic consumers falls into the group of the more or less satisfied from 33 to 43%, which is an indicator, that the company has still got opportunities for improvement of its service, so that the number of the completely satisfied customers to be increased.

Satisfaction should be sought in connection with the quality of domestic consumers' electric power supply, the speed of reaction and the results in cases of failures, as well as during procedures of new subscribers' joining the electroconductive network (see Figure 9).

The satisfied with the quality of the electric power supply persons are 89% from the participants in the survey, and the dissatisfied ones are 11%. The relative share of customers, who are dissatisfied is considerable, which imposes that the company's priorities are reoriented to the undertaking of measures, aimed at the increase of the levels of satisfaction, as a consequence of the improvement of the quality parameters of the offered service.

Figure 9
Structure of domestic consumers' satisfaction degree – customers of Energo-Pro Varna JSC



The respondents express an analogous opinion in relation to the company's reactions in cases of emerged failure situations. Eighty-seven per cent are satisfied, and 13% are dissatisfied. Consequently, the obtained results are an indication of problems of Energo-Pro Varna JSC, having in mind the comparatively high level of dissatisfaction, which its customer mass declares.

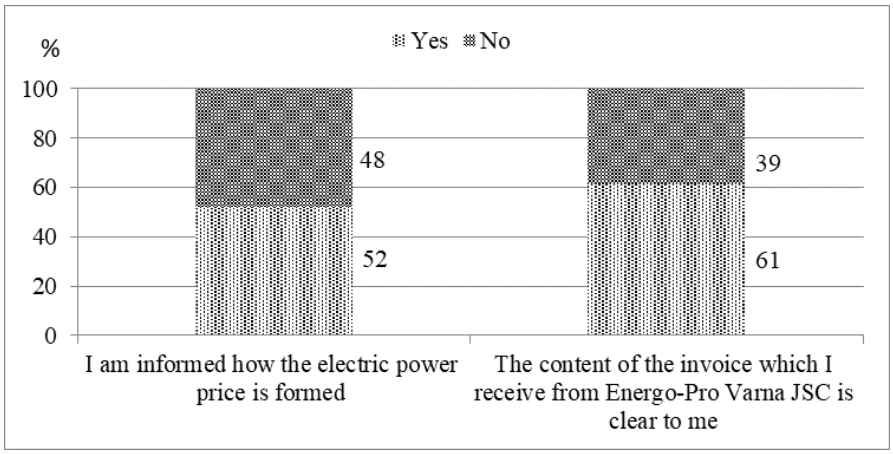
The performed survey provides the opportunity to trace the degree of satisfaction of Energo-Pro Varna JSC consumers with the realization of the procedures for the joining of new sites to the electroconducting network. An impression is made, that the most surveyed persons are satisfied, as the percentage ratio is again 87% satisfied and 13% dissatisfied. These results demonstrate, that the company has at its disposal a potential for the increase of the satisfaction, based upon the decrease of the documents turnover, the shortening of deadlines for investigation, documents processing, the preparation of statements, etc.

A bigger degree of customer confidence and satisfaction could be achieved not only by an improvement of the service quality of the rendered services, but by an increase of the consumer level of information – information regarding prices, services, normative basis, documents, etc. It is natural that each customer of Energo-Pro Varna JSC is interested mostly in the prices of electric power, at which he/she has to pay his/her consumption, but at the same time information is important what the monthly invoice includes for everyone of them. The company, as a conscientious supplier, has attached to its site a file with an explanation of a cash bill and an invoice for domestic customers, from where every consumer could get informed about everything, connected with the end amount of the invoice.

Questions have been asked in our inquiry, through which the degree of familiarity of the company's domestic customers to be determined, regarding the formation of electric power price and regarding the content of the received by them monthly invoices for the consumed by them electric power (see Figure 10).

Figure 10

Structure of the degree of domestic consumers' familiarity – customers of Energo-Pro Varna JSC

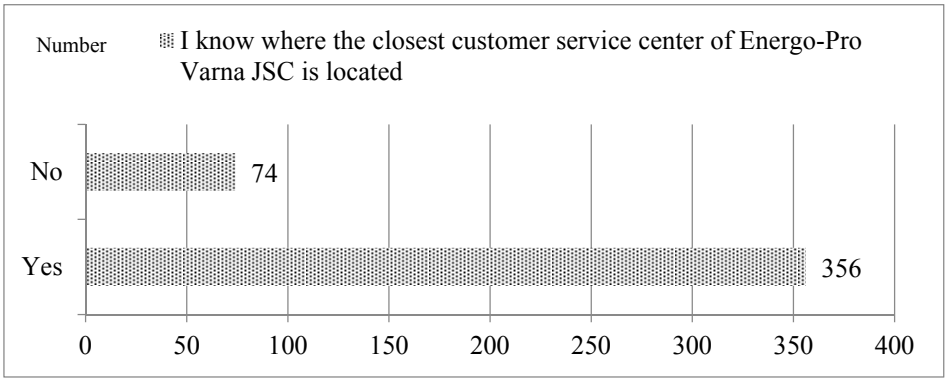


In their bigger part – 61% from the respondents have confirmed, that the content of the invoice which they receive from Energo-Pro Varna JSC is clear to them. The share of the persons, who are familiar with the methods for pricing of the electric power is bigger – 52%, and 48% need additional information, regarding the formation of the end prices.

The familiarity of consumers was studied in connection with their knowledge where the location of the closest customer service centre is (see Figure 11).

Figure 11

Familiarity with the location of the closest customer service centre

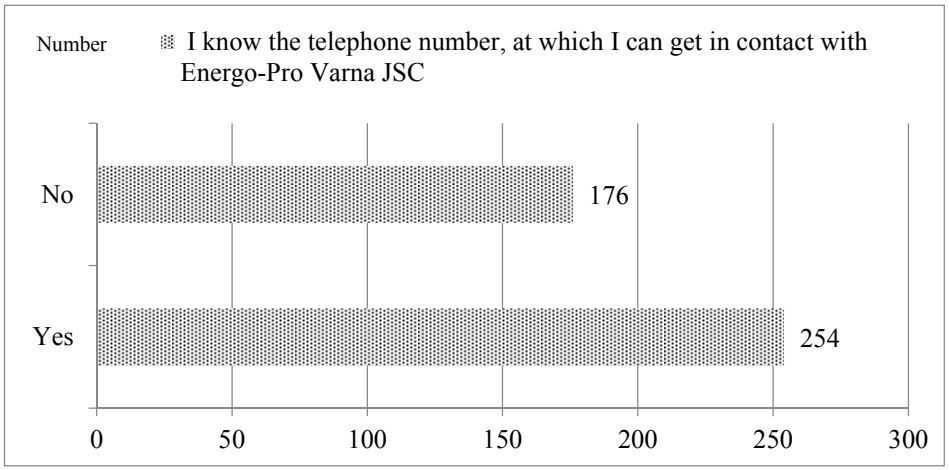


The results show, that 83% know the address at which they could be attended to by the employees of Energo-Pro Varna JSC and 17% only are not informed on this matter.

The answers to a question, connected with consumer knowledge regarding the telephone number, through which they could, at any moment, enter into contact with the company's call centre arises interest (see Figure 12).

Figure 12

Familiarity with the telephone number of Energo-Pro Varna JSC

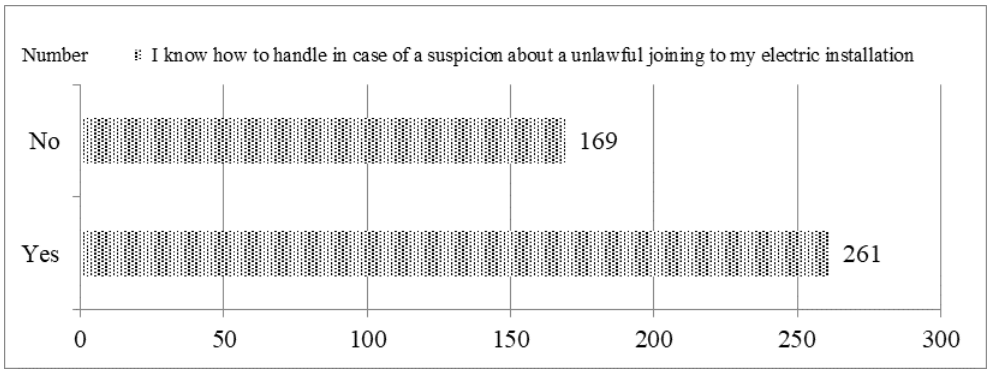


Just 59% dispose of this information, and the remaining 41% have no idea.

At the same time, the fact is intriguing, that 61% from the inquired persons know what steps they should take in case of suspicion of unlawful joining to their electric installation (see Figure 13).

Figure 13

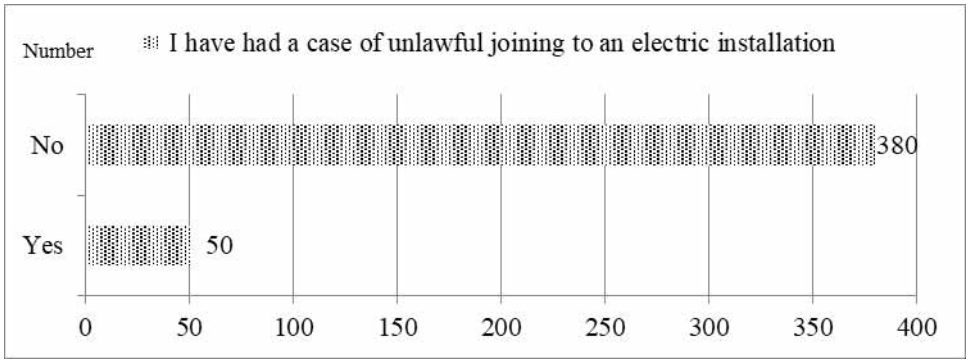
Familiarity at a suspicion of unlawful joining



At the same time, maybe as a result of the reliable familiarity, 12% only from the participants in the survey have encountered in reality an unlawful joining to their electric installation (see Figure 14).

Figure 14

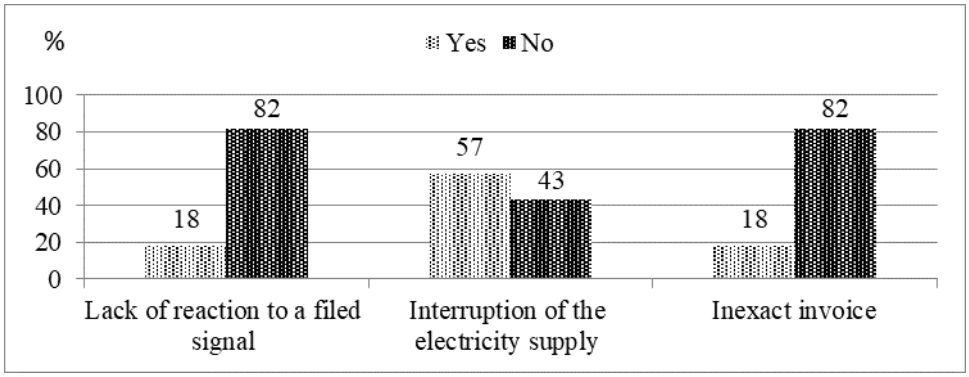
Problems with an unlawful joining to an electric installation



In the survey, the respondents had the opportunity to share, if they had encountered general problems such as energy supply interruption, an inexact invoice or a lack of reaction to a filed by them signal (see Figure 15).

Figure 15

Structure of the satisfaction degree of the domestic consumers – customers of Energo-Pro Varna JSC during the resolving of problems

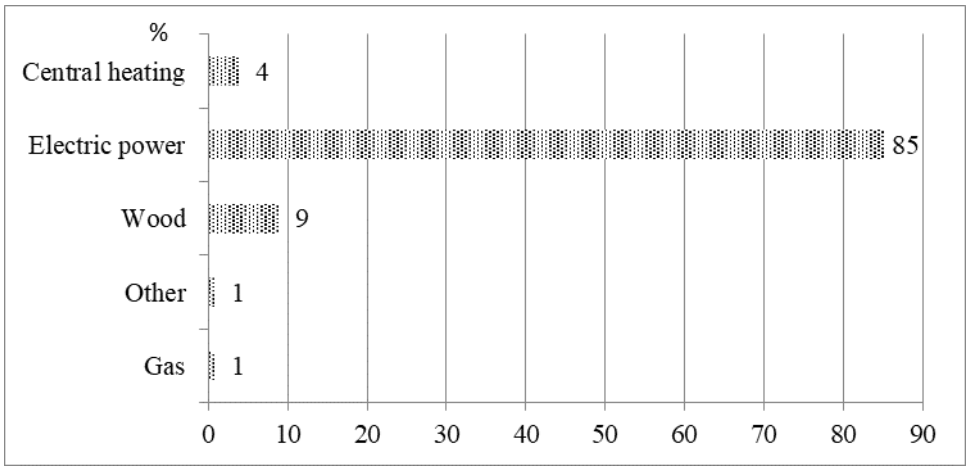


The results from the answers of the question, connected with the accuracy of the received by the domestic consumers' invoices are analogous.

We have established, during the performed survey the percentage ratios as well, of the used electric power sources for heating among the inquired persons for the needs of their households (see Figure 16).

Figure 16

Used source of heating energy



Electric power is a main source for heating, used by 85% of the respondents, 9% use wood, 4% central heating, and gas or some other source – 1%.

In this context, our survey divulges, that the homes of 51% from the participants are heat-isolated (see Figure 17), and 83% from them have a positive attitude to the purchase of energy-saving appliances for their households (see Figure 18).

Figure 17

Availability of heat isolation of the home

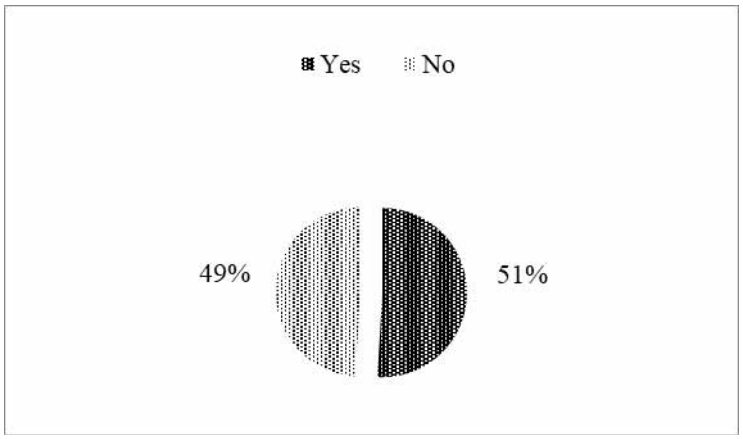
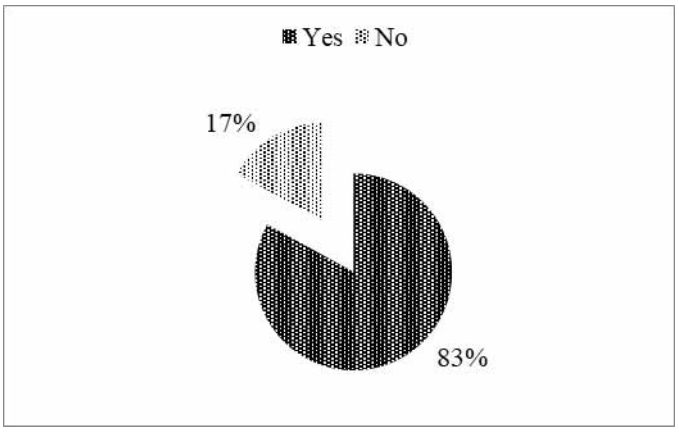


Figure 18

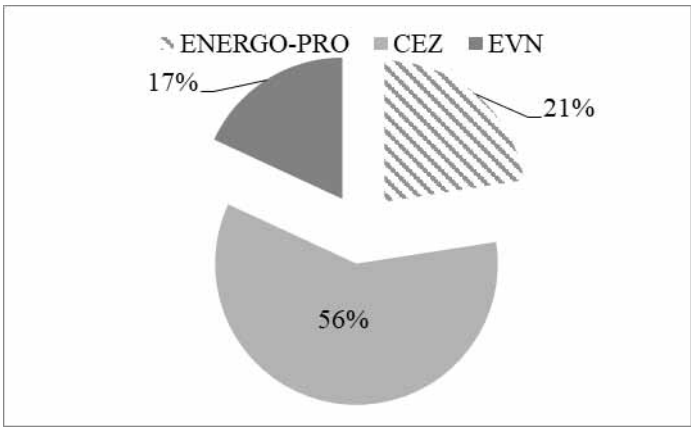
Attitude towards the purchase of energy saving appliances



The need to take such measures is judged by the Energy and Water Regulatory Commission (EWRC) report to the European Commission in 2019, which reflects the main causes of complaints (see Figure 19) (EWRC, 2019, pp. 54-55).

Figure 19

Share of complaints against main electricity companies in 2018



The largest number of received complaints was in connection to the quality of the low voltage electricity supplied in the connection point, frequent power cuts and damage to electrical appliances. The inspections done in this regard showed that complaints were justified in a high percentage of the cases, which resulted in giving mandatory guidelines to the companies to envisage and realize measures to enhance the quality within short terms.

Second is electric energy readings and billing. This includes allegations of inaccurate readings or lack of real readings, improper operation of clock switches, billing errors in the reported quantities and network services charging.

Other causes of complaints and signals were as follows:

- adjustments to consumed electricity amounts, but inaccurately metered and measured, stipulated in the electricity metering rules, but found by customers as illegal;
- commercial metering devices – doubts about the accuracy of the devices, the remote place of installation, non-communication of planned or periodic replacements, absence of witnesses in the statement of facts document upon replacement;
- suspension of the power supply without reason and without notice;
- connection agreements of new users' and generators' sites – delays, unfair terms, unlawfully terminated contracts;
- electricity supply contracts – delays and problems with supplier switching;
- condition of electrical equipment – bad condition, dangerous installations, violated servitudes of energy sites;
- misapplication of EWRC pricing decisions;
- free electricity market – delay or non-issuance of documents for switching supplier;
- purchase and acquisition of equipment under para.4 of EA;
- connection of power plants using renewable energy to the electricity distribution networks;
- purchase of the electricity generated by RES power plants or cogeneration.

The data only confirms the strategic importance of the electric power sector and its exclusive role in contemporary people's life, as well as the necessity of creating prerequisites and conditions for the optimal usage of the available resources, for minimizing the losses and directing the efforts to an even broader usage of alternative electricity sources with the aim of environment protection and decreasing the changes in climate.

On the basis of the performed survey, five main conclusions can be systematized:

1. The company's customers declare comparatively high confidence levels regrading one of the most significant aspects of the relations with the company, connected with the preciseness of the means for commercial measurement and the attitude towards the amount of electricity bills.
2. The customers of Energo-Pro Varna JSC give high ratings to indicators as satisfaction from: responsiveness of Energo-Pro Varna JSC employees towards inquiries, employees' competence towards inquiries, ways of communication with Energo-Pro Varna JSC, quality of the services, connected with attendance of customers.

3. The degrees of satisfaction of customers of Energo-Pro Varna JSC with the quality of the services which the call center, the customer service centers and the online services of the company offer.
4. The customers of Energo-Pro Varna JSC are satisfied regarding the quality of electricity supply, the speed of reaction and results in cases of failures, as well as in regard to the procedures for joining of new subscribers to the power supply network.
5. The degree of domestic customers' familiarity of the company is high, regarding the formation of the electric power price and regarding the content of the received by them monthly invoices for consumed electric power.

The quality parameters of the process of service correspond to the greatest degree with the level of satisfaction of the customers multitude and are a prerequisite for the formation of loyalty, based on mutual trust. In their context, an objective necessity is outlined from measurement of the levels of satisfaction with the provided attendance before all market agents, with scientifically grounded approaches, which to localize the problematic areas and to outline directions, on the one hand, for achieving a balance between quality of the offered service and the price, and on the other hand for increasing the economic efficiency of the company.

3. Possibilities for improvement of customer service of Energo-Pro Varna JSC

The possibilities for improvement of customer service by Energo-Pro Varna JSC at this stage can be localized in several main directions, connected with:

- Changes in the long-term strategy of the company regarding the attendance to customers on the phone, which can be redirected to external companies, specialized in this activity.
- Considering of an option for the introduction of chatbots in the online service to customers.
- During the quality management of the service to customers by Energo-Pro Varna JSC the so-called "seven instruments of quality" can be adapted and used.

The first opportunity, which Energo-Pro Varna JSC could consider, with the aim of improvement of the parameters of the offered service to end domestic customers is connected with the outsourcing of the performance of services which the call centre offers.

In the course of the analysis, the company should investigate the advantages of the self-dependent execution and of outsourcing in the field of services (see Table 5).

Contemporary centres for telephone services, called the call centre, offer a high-quality customer service in compliance with the standards of the best practices with the purpose of customers being better informed at maximum speed and competence, which on its part is a prerequisite for the creation of a reputation before the customers and recognition of the company as a partner, which creates additional benefits.

Table 5

Advantages of self-dependent execution and the outsourcing

Advantages of self-dependent execution (insourcing)	Advantages of outsourcing
• maintenance of key competences; • diminishing of operative costs; • limiting the indefiniteness (the high risk) during the provision of services; • usage of the superfluous available staff; • maintenance of the desired quality level of the service; • the prevention of an accord between service providers; • protection of the personnel against discharge (creation of workplaces); • protection of the property rights of unique projects (technologies); • increasing or maintenance of the company's size.	• concentration of the management staff on the main activity of the company; (key competences); • decrease of the costs for basic funds; • keeping of the obligations of service providers; • possibilities for the application of new technological or managerial solutions; • absence of adequate capacities for operations fulfillment; • securing of alternative service sources; • ignoring inadequate technological and management resources; • cooperation with suppliers.

Source: Adapted from Dyibskaya, et al, 2008, p. 515.

A fundamental factor, which imposes that Energo-Pro Varna JSC directs the focus of its attention to new technologies and more concretely to chatbots is the fact, that "the world has changed and more specifically the way, in which people communicate has changed" (Dale, 2016, pp. 811-817). In this regard, we should note, that changes in communication processes concern a number of spheres and precisely chatbots are one of the instruments which finds a broad application. They could serve a number of purposes, one of which we connect with customer service (Brandtzaeg, Følstad, 2017).

The characteristics of chatbots can be systematized and connected more concretely with the unlimited possibilities of this technology, which Energo-Pro Varna JSC could apply in view of the improvement of the online service, regarding the permeable capacity, a 24/7 working schedule, redirection of inquiries, absence of discrimination in the attitude towards the customer, etc. (see Table 6).

The key characteristics of chatbots practically underline their main advantages, which could contribute for the achievement of the necessary level of service at reasonable costs.

In the management of the service quality of the customers by Energo-Pro Varna JSC, some methods could be adapted and used, called "seven quality instruments" (Mirotin, L. B. et al., 2002, p.39): Control list, Stratification method, Histogram, Dispersing diagram, Ishikawa diagram, Pareto diagram and the Control chart.

The characteristics of these methods for quality control, as well as their advantages and disadvantages, can be systematized (see Table 7).

Table 6

Key characteristics of the Chatbots (CB)

Description
The CB relatively guarantees, that each potential customer, who has accomplished a contact with the information system, will be serviced, independently of his/her personal characteristics and the formulation of the inquiry.
The CB has an unlimited admission capacity and can simultaneously service a big number of customers and their simultaneous inquiries, which could have a different purpose. The CB can secure multilanguage maintenance and translation in real-time.
The chatbot can formulate brief and/or exhaustive answers, with options of additional information by customer demand.
The CB can work in a non-stop mode or 24 hours per day, 7 days per week and 365 days per year, which depends completely on the operation of the computer system, where the CB software is installed and its accessibility, including through computer networks.
The CB can redirect inquiries to a real company officer, at the emerging of an information vacuum, at the necessity of an assisting service by an employee, or at an express customer's demand.
The CB minimizes the risks, caused by incorrect interpretation or actuality of the information, as it has a continuous access to the constantly updated databases of the company.
The CB functions, as it stimulates the human communication, which is most frequently realized through applications for text messages, but it can be simultaneously equipped and even replaced by algorithms and technologies for the synthesizing of natural human speech, which is subject to an additional setting up by the user.

Source: Stojanov, 2019, pp. 10-16.

Table 7

Characteristics of popular control methods

Control methods	Advantages of the method	Disadvantages of the method
1. The control list is an instrument for the collection of data and automatic processing with the aim of facilitation of the further usage of information collection.	Easy usage, systematizing of data for work with other control instruments, application of a uniform form of registration.	Preliminary determined categories of data which raises the possibility that events are discovered, which have not entered in the control list.
2. The stratification is a method of grouping of data, which have to be observed. During the stratification, the data are grouped according to the conditions of their obtaining and processing of each group separately is applied.	Possibility of processing separately the respective data groups. This method identifies interrelations, which cannot be found during mutual work and simplifies the analysis.	Necessity from preliminary examination of the stratification factors. This is necessary due to the fact that the inaccurately selected factors make the obtaining of the desired result and arises the necessity of repeated collection of data about new factors.
3. The histogram is a tool for statistical presentation, which allows a visual assessment of the law of statistical distribution of controlled status data.	There is an upper and lower allowable limit, which changes the value of the observed parameter in regard to the tolerance field.	Often a deviation from the normal distribution is observed, which is an indication of irregularities in the process and the necessity of applying of management

Control methods	Advantages of the method	Disadvantages of the method
		influence.
4 The diagram of dispersing is an instrument which allows you to define the type and the close connection between the parameters of the corresponding variables.	The clarity and easiness of the assessment of the connection between both variables.	The necessity of inclusion in the diagram an assessment of those factors, for which the necessary information about the studied object is available, which will prevent the wrong usage of this instrument.
5. The Ishikawa diagram is a diagram for visualization of cause and effect, which is used for a graphical presentation of the connection between the problem which has to be resolved and the causes which influence its origin.	Graphical visualization of the connection between the problem which is examined and the reasons, concerning this problem; the ability to perform a meaningful analysis of the chain of interconnected causes, concerning the problem; Convenience and ease of usage and understanding, which do not demand highly qualified staff.	Difficulty with the correct identification of the connection between the studied problem and the reasons which raise it in cases of a complex problem.
6. The Pareto diagram is a graphical instrument, which allows that the efforts for problem resolving of the management are distributed, that the main reasons for deviations from the set parameters are identified; it demands the setting of priorities for actions, necessary for overcoming the problem and separation of the important factors from the insignificant ones.	Opportunity for focusing of the efforts and resources for the solving of considerable problems and easiness of application and understanding of its operating mechanism by the personnel.	The possibility of wrong determining of the problems significance. Due to inadequate taking into consideration of the price of the possible negative consequences.
7. The control diagram is a ribbon graphic, which shows the dynamics of the changes in metrics, as it thus controls the process and creates the opportunity for it to be influenced and to prevent the deviation from certain requirements.	An ability for a visual determination of the moment, in which the process changes, they create a basis for perfection of the processes, casual and systematic interruptions of the process are identified.	High demands for training and the necessity of work in real time.

Source: Adapted from Vinichenko, 2016, pp. 27-28.

1. *The control list*, having as an aim to assess the quality of the offered customer service of Energo-Pro Varna JSC, has to envisage several main items, to which attention should be paid, namely (Institute for Public Administration, 2014):

1) The answer will provide information to the ones, who will use the assessment results.

2) The answer will generate new information and insights.

3) The answer will provide important information for decision making about the policy.

4) The issue is entered consecutively and understandable in the assessment range and complies with the selected assessment criteria.

5) The answer will have influence over the policy.

6) Is it feasible from an operative point of view (budget, staff, time, experience) for the question to be answered?

7) Is it possible to answer the question in the present policy context? (maturity of the policy, the availability of data accessibility, sensitivity, etc.)?

Consequently, the control list is developed, taking into account the company's experience and its policy regarding the quality and the possibility additional information to be accumulated, useful in the course of expected changes.

2. *Stratification (differentiation) method for analysis of the tasks in field of quality.* With this method, the general data about the problem can be arranged (grouped) into subgroups, as all of the data are combined in separate subgroups, based on the available common characteristics (see Table 8).

Table 8

Stratification of the knowledge in subject areas

Strata	Knowledge type	Character of the analyzed information
1	knowledge about what	Strategic analysis: aims, designation and functions of the system. Conceptual analysis: main concepts, conceptual structure.
2	knowledge about who	Organizational analysis: human resources.
3	knowledge how	Functional analysis: hypotheses and models of decisions taken.
4	knowledge where	Space analysis: surrounding environment, equipment, communications.
5	knowledge when	Temporal analysis: time parameters and limitations.
6	knowledge why	Cause and effect analysis: formation of subsystems of explanations.
7	knowledge how much	Economic analysis: resources, expenses, profits, payments.

Source: Gavrilova, 2008, p. 19.

For the purposes of Energo-Pro Varna JSC the criteria for stratification of the data can be connected with the service processes, with the place of the service, with the employees who took part in the service rendering, with the type of the provided services, with the customers, etc.

3. *Histogram for quality assessment*. The histogram is the most basic graphics for the visualization of a random variable. It demonstrates the distribution of values, which the variable could take (Balabanov, T. et al., 2019, p. 56). Within the range of the services,

offered by Energo-Pro Varna JSC, on the abscissa, the number of services, which the company offers or elements of service with which customers are satisfied or dissatisfied can be ranked, and on the ordinate, the number or the relative share of the satisfied/dissatisfied customers can be systematized.

4. *Diagram of the dispersal for manifestation of the dependencies between quality parameters and key factors of the external environment.* In the practice, it is very often from significance, how two random variables influence each other. In such a situation the diagram of dispersal is one extremely useful instrument. Each point from the diagram reflects one observation of the two variables. One variable is given along the X-axis, and the other variable is given along the Y-axis (Balabanov et al., 2019, p. 58). In the sphere of provision of services a big number of examples for the availability of interrelation between two changeable variables exist, such as: a number of customers attended to and filed customer complaints, number of failure situations and the expenses for the rendering of the service, etc.

5. *The Ishikawa diagram* is a cause and effect diagram for systematizing of the factors and conditions influencing the quality level. The Ishikawa diagram is one of the classic examples of the most broadly distributed tool for the solving of managerial tasks, connected with management. The cause and effect diagram helps not only to eliminate a given problem, but to undertake actions for its removal. The cause-and-effect Ishikawa diagram - type "fishbone" is called so, because of its structure, which resembles a fishbone (Tsvetkov et al., 2017). For the purposes of Energo-Pro Varna JSC an Ishikawa diagram, which could be used could divide the reasons, which characterize the problem into 3 categories: effectiveness, efficiency and quality.

6. *Pareto diagram for analysis of the reasons for the established disadvantages.* By means of the Pareto analysis events such as defects, failures, or other indicators are categorized and demonstrated by accumulation, so that different classes and types of problems can be identified. Furthermore, the obtained results are graphically revealed, so that the most significant problems emerge from the general background (Rahnev, Dimitrov).

The problems, which could be an object of study by Energo-Pro Varna JSC by means of the Pareto diagram, should be connected with the quality of the personnel, with the quality of electricity supply to domestic customers, with the processes of joining of new subscribers to the electricity distributing network, with the procedures for satisfying the complaints and in order for them to be assessed with a definite value expression, which will form the foundation for the grouping of problems in a 80:20 ratio on the basis of the cumulative total percentage or will specify the problems with the biggest relative weight.

7. *Shewhart control chart (GOST).* In production and business processes management, the Shewhart control chart is viewed as an instrument for visualization of the changes of chosen parameters with the purpose of securing of the statistical quality control.

Energo-Pro Varna JSC can apply this model for quality control, as they form a certainty corridor, which they will define on the basis of risk of a mistake, as a result of a deviation from the established in the company standards in relation to the attendance to customers, and will trace in time how the number of customers attended to or the value of paid services

change. On the grounds of the measurement means for dispersion, the average standardized value will be determined by them, with which all units of the observed aggregation deviate from the average value and respectively, the smaller the deviation as an absolute value is, the more stable the observed aggregation of customers is (Zhelyazkova, Tokusheva, 2016, pp. 292-342).

The application of one complex approach during the contemplation of possibilities for improvement of the customer service is within the reach of the company's potential of Energo-Pro Varna JSC and it should be optimally used in view of the achievement of a balance between price and quality, in order for the share of satisfied customers to be increased.

Conclusion

The attention to the customer can contribute to an adequate company positioning at balanced expenses and accumulate a number of advantages, having a financial as well as social expression, as long as harmony is established in the relations between the partners. Energo-Pro Varna JSC takes strategic positions in the market segment, in which it functions, and having in mind the specifics of electric power as a product and service, as well as its significance for the economic stability and vitality of the society, the company generates a substantial potential, with which to influence constructively the development of the geographic areas, in which it develops its activity. Based on these circumstances we consider, that the changes which can really happen in the relations with the end domestic customers on the basis of contemporary approaches for quality management of the offered service and the application of modern information technologies, will increase customer satisfaction and will strengthen the market positions of the company.

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SUMMARIES

Victor Yotzov
Daniela Bobeva
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Nedialko Nestorov

MACROECONOMIC IMPLICATIONS OF THE FIGHT AGAINST COVID-19: FIRST ESTIMATES, FORECASTS, AND CONCLUSIONS

The COVID-19 pandemic has triggered a massive spike in uncertainty all over the world. Bulgaria is no exception. Major uncertainties surround almost every aspect of human life: the infectiousness, prevalence, and lethality of the virus; the capacity of healthcare systems to meet the challenge; how long it will take to develop 'herd immunity'; how long and how strong should social distancing be; how long it will take to develop and deploy safe, effective vaccines etc. On top of all this comes the economic uncertainty. There is no doubt the pandemic is having immediately visible effects on economic activity. The rapid contraction in economic activity, the collapse of trade, and the dramatic increase in the unemployment rate are without precedent. Our goal here is to assess near-term macroeconomic effects of these COVID-induced uncertainties. To this end we look at the measures taken worldwide and in the EU in particular, focusing on Bulgaria's main trading partners. We develop three different scenarios for the economic development by the end of 2020 based on different assumptions with regard to the severity of the external shock as well as the duration of the social distancing.
JEL: E27; E60; I15; I18

Teodora Peneva

CHINA'S SILK ROAD TO EUROPE – STRATEGIES AND INVESTMENT

This article argues that Chinese overseas direct investment is not so much market-driven, but a result of long-term strategies and policies. These are an important basis in any analysis of the status and trends of Chinese investment in Europe. Therefore, the article aims to describe the most important strategies and policies that determine Chinese foreign investment in general, different market entry models, and to analyze the situation in Europe.
JEL: F42; F64; F68

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AREAS AND MEANS OF FORMATION OF TRANSPORT REGIONAL COMPLEXES AND MECHANISMS FOR MANAGING THEIR COMPETITIVENESS IN UKRAINE

The entry of Ukraine into the European Union significantly expands the boundaries of cooperation with different countries of the world. Compliance with the European requirements in the marketing sector will greatly increase the efficiency of its operation in the regions of Ukraine. The method of estimating the development of social infrastructure in the resource support of the management

mechanism aimed at increasing the competitiveness of the transport system of the region by the integral indicator, which characterizes the level of social development of the region, is developed in the work. The integral indicator is defined as the sum of the ratios of the current and maximum partial indicators of population security by type of services in the region. The components of the process of social development assessment have been introduced: a limitation on the magnitude of each type of resource used to improve social development indicators; specific expenses of each type of resource in the region in support and improvement of the indicator of social development; the magnitude of the growth of the provision of the region for each indicator of social development; the function of the priorities of social development in the region for each indicator. It is believed that using the results of calculations using the proposed method will increase the validity of relevant management decisions.
JEL: L91; R42; O52

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THE ANALYSIS OF INDEBTEDNESS OF RETAIL COMPANIES IN THE BALKAN COUNTRIES

The aim of this paper is to determine the factors which have an impact on the structure of capital of the companies in the trade industry in the Balkan countries, during the eight years period (2010-2017). In order to realize this goal, the panel data model with fixed effects was used. The sample included 2,057 companies that operated in the retail sector in all ten Balkan countries. The obtained results showed that almost all observed variables have a statistically significant impact on the financial leverage, long-term financing, and short-term financing. According to the obtained results of the research, we can conclude that the higher profitability, liquidity, the tangibility of assets and the company's size means a smaller indebtedness, measured by leverage. On the other hand, observed variables have different statistically significant influences depending on whether companies are financed from short-term or long-term sources. Achieving the optimal capital structure and improving the financial performance of the companies of the retail sector in the Balkan countries should be supported by investments and acquisitions based on the market standards of business applied by the developed countries of the European Union.
JEL: G32; M40

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Aikaterini Galanou
Ioannis Sotiropoulos

THE SAVING BEHAVIOUR OF POMAKS IN BULGARIA: A PATH ANALYSIS APPROACH

In the region of Smolyan in Bulgaria and specifically in the cities of Zlatograd, Madan, Rudozem and Velingrad, the saving behaviour appears to be gaining more importance for Pomak households. Based on the Theory of Planned Behaviour, path analysis was applied to explore the factors that determine the intention of Pomak households to enhance their saving behaviour. The strongest influence was exerted by attitudes followed by subjective norms. Saving motives of households showed that those had the most significant influence on the intention towards saving. As regards the perceived behavioural control factor, the results indicated a direct positive effect on final saving behaviour, but

a non-significant one on the intention to save. Furthermore, religiosity emerged as an important factor that affects the intention towards saving.
JEL: D10; D14

Nina Nikolova
Shteryo Nozharov

SHADOW ECONOMY AND POPULISM – RISK AND UNCERTAINTY FACTORS FOR ESTABLISHING LOW-CARBON ECONOMY OF BALKAN COUNTRIES (CASE STUDY FOR BULGARIA)

The main purpose of the current publication is to formulate a scenario model for the analysis of the opportunities for low-carbon economy establishment in the countries with transition economies. The model studies risk factors such as shadow economy level and populism based on the implementation and development of Balkan countries' economic policy and at the same time shows future climate changes tendencies and uncertainties of climate models. A transdisciplinary approach is implemented in the study. Climate change perception and understanding about the low-carbon economy are examined through the public opinion and analysis of mass-media publications. The results of the research are important in order to clarify the multicultural divergences as a factor for risk and uncertainty in the implementation process of the policy for climate change. In this way, geographical aspects of risk and uncertainty, which are not only related to the economic development of the relevant countries, could be brought out.
JEL: Q54; O17

Lyubomir Lyubenov

SEGMENTATION OF THE MARKETS FOR BULGARIAN BEE PRODUCTS

The main product markets of the beekeeping sector – honey, pollen, beeswax, propolis, bee bread, royal jelly, bee venom, queen bees, sucker grubs, bees, pollination and api-tourism are identified through macro-segmentation. Subsequently, their customer segments have been identified through micro-segmentation of national and international markets. The national markets for bee products are differentiated into organizational and consumer markets. The organizational markets of honey and other bee products are segmented by applying various criteria. Perspective target markets are the online and offline auctions for bee honey and the segments for pollen, royal jelly and queen bees. The consumer markets are also segmented in a way that the segments for direct sales and farmer markets are determined as customer target markets for conventional honey, and for organic honey – the online markets. The consumer target markets are similar for bee pollen and royal jelly. The segmentation of the international markets for Bulgarian bee products is based on economic, geographical, demographic, cultural and price factors. The target markets are subdivided into markets in European countries – Group 1: Germany and the UK, Group 2: France, Italy, the Netherlands, Belgium and Switzerland, and Group 3: Greece and Austria, as well as target markets in the so-called "third countries" – Group 4: Saudi Arabia, the United States of America, and Japan. Conclusions on target markets and market niches are synthesized.
JEL: M31; Q13

Donka Zhelyazkova
Nevena Petrova

POSSIBILITIES FOR IMPROVEMENT OF THE SERVICE, PROVIDED BY ENERGO-PRO VARNA JSC TO END DOMESTIC CUSTOMERS IN THE CITY OF VARNA

The article has the aim to outline the specifics of the electric power market and on the basis of a survey of the consumer attitude to the satisfaction from the service and the quality of the delivered to domestic customers of Energo-Pro Varna JSC in the city of Varna services, to outline possibilities for improvement of the service, provided by the company. The basic method, applied in the course of the survey is the questionnaire, in view of the accumulation of information regarding the end consumers' assessment about different aspects of the process of electric power supply. Three main proposals for the improvement of the customer service have been systematized on this basis, connected with the outsourcing of the telephone services, the introduction of chatbots for the online services and the increase of service quality with the assistance of the so-called "seven quality instruments": Control list, Stratification method (differentiation), Histogram, Dispersion diagram, Ishikawa diagram, Pareto diagram and the Control chart.
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