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ANALYSIS OF WINE TOURISM OFFER IN NORTH MACEDONIA

Dejan Metodijeski[1*], Oliver Filiposki[2]
[1] *„Krste Misirkov" No.10-A P.O. Box 201, Stip 2000, North Macedonia*
[2] *„Krste Misirkov" No.10-A P.O. Box 201, Stip 2000, NorthMacedonia*
**Corresponding author: dejan.metodijeski@ugd.edu.mk*

Abstract

Wine tourism covers wide range of tourist activities as visiting wineries, vineyards, wine tasting, wine routes, wine museums, wine events etc. Wine tourism is a specific type of tourism which is constantly growing and represents a significant part of the tourist offer of many countries worldwide, most of them countries with a tradition of wine production. The rich tradition of vine growing and wine production in North Macedonia started back in ancient times, and today, there are over 70 wineries located in the three wine regions. The subject of this paper is the analysis of wine tourism offer in North Macedonia. The paper presents review of relevant literature concerning wine tourism and wine tourism offer in the country. For the purpose of the paper, a research methodology and secondary data sources have been used by consulting literature, studies, statistical data and official web pages of the wineries in North Macedonia. In the paper, 28 wineries are analysed and beside wine tasting criteria, other aspects of wine tourism are covered in the research as restaurant services, accommodation and conference facilities. Data presentation in tables and analysis has shown that, in addition to the Central wine region, containing 24 wineries, the capacity of the wineries for wine tourism development in the remaining two regions (Eastern and Western) is insufficiently used.

Key words: *wine regions, wine tasting, wineries, tourism services.*

JEL Classification: L83

INTRODUCTION

Tourism as activity of people traveling to and staying in places outside their usual environment for leisure, business or other purposes is successful story of present time and has shown constant economic grown in past decades (Metodijeski & Micev, 2018). Tourism is characterized by its own specifics and various forms, such as rural tourism, adventure tourism, urban tourism, wine tourism etc. In addition to the large number of authors dealing with the topic of wine tourism, the literature does not recognize a universal and single definition of wine tourism (Carlsen & Charters, 2006). This term has been explored by various authors and organizations, defining it from different perspectives. The first stage of the researches related to wine tourism date back to the 1990s (Getz & Brown, 2006). Wine tourism is also called enotourism by some authors (Ortiz et al., 2016). Other authors provide the synonyms oenotourisme or vinitourism for wine tourism (Jafari & Xiao, 2016). Enotourism, also known as wine tourism, refers to tourist trips specifically to wine-related destinations, allowing the visitors to understand viticulture methods, along with the processes behind wine production (Kwietniewska & Charzyński, 2020). However, each terminology and definition helps to understand the specificity of wine tourism which is the sum of various interactive processes, phenomena and relationships arising from the interest of the visitors for the production and/or the consumption of wine as a style, way of life, culture and tradition of a certain wine region (Pivac et al., 2009). The majority of the definitions for wine tourism refer to the experiences and the motives of the tourists. According to them, wine tourism means visiting wine regions, vineyards, tastings, wineries, wine festivals and exhibitions organized for purposes of leisure. Generally, there are three main holders of wine tourism: the wine producer, the tourist –

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consumer and the tourist agency promoting the destination. Other researches, in turn, point to the fact that the cultivation of vines and the winemaking technology are directly connected to the cultural heritage, with wine tourism having similar characteristics to cultural tourism, because the tourists participating in wine tourism and gastronomy are essentially participants in cultural tourism, as well.

The development of wine tourism leads to the development of the destination itself, and, in particular, the rural destinations, by increasing the wine sales, building a positive image of the destination and increasing the number of tourists. The development of wine tourism also depends on the tourism policy, the strategies and the development programs of the state, the destination marketing, the tourist organizations and the private sector. The following stakeholders of the tourism market benefit from the development of wine tourism (Geić, 2011):

The Wine Industry through:

- increase in the wine sales,
- education of the visitors of the winery and the wine region,
- attracting new market segments,
- increased revenue,
- creation of new business cooperations,
- opportunities for creating new products.

The Destination through:

- increase in the number of tourists, their demand and consumption,
- development of a positive image of the destination,
- attracting new and retaining existing tourists.

The Local Community through:

- attracting new investments,
- development of new service and entertainment content,
- creation of a positive image of the region,
- organization of manifestations,
- employment of local population,
- general development of the region.

The demand in wine tourism consists of a number of different motives, experiences, perceptions and expectations that change depending on the needs of the potential consumers. The determination of the motives for participation in wine tourism and the profiling of wine tourists is a complex process (Bruwer & Alant, 2009). The motives vary from buying a good wine to education on the way of production, enjoying walks in nature, getting to know the local food etc. Researches show that the average wine tourist is a college graduate at the age of 45-60 and is economically independent. His/her goal is not only to taste wine, but also to meet other people, their culture and history. The literature defines four types of wine tourists (Geić, 2011):

- Professional, a person who knows oenology, discusses details and precisely determines the qualities of the wine.
- Impressed beginner, a person who loves wine, enjoys food, travels with friends.
- Bohemian, a person with a high purchasing power who realizes his/her social status through the wine, has basic knowledge, loves the famous brands.
- Alcoholic, a person who regularly visits wineries, drinks wine in great quantities, but does not enjoy it.

The wine tourism offer consists of a combination of wineries, wine routes, the destination as an attraction, its image, the cultural heritage, wine manifestations etc. (Charters & Knight, 2002). However, wine, as the only products, is not enough to complete the offer, so developing other forms, such as rural tourism, religious tourism, cultural tourism etc. is also

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required. The wine tourism product in itself should contain elements from different holders and as such it can be placed on the market as a successful tourism story. The Table 1 below shows the typology of the wine tourism products (Manila, 2012).

Table 1. Typology of the wine tourism products

Typology of the Products	Description of the products
Wine Routes	Marking the wine regions for the purposes of visiting vineyards and wineries
Walk in the Vineyards	The marked itineraries allow the exploration of the vineyards through sightseeing and walks
Studying Oneology	Familiarization courses for marketing in wine tourism, culture, tradition and production technology
Wine Cellar Visits	Introduction to wine cellars and winemaking
Wine Museums	Monuments of culture representing world achievements in winemaking
Festivals and Events	Events for the preservation of the local tradition, wine promotion, improvement of the distribution and the production
Expert Presentations, Fairs, Tastings and Sales Activities	Presentation of wines for commercial purposes

Successful examples of the development of wine tourism can be found all over the world. In addition to the countries which are traditional wine producers, such as France, Spain, Italy, countries like Argentina, Australia, Chile, New Zealand and South Africa invest a lot of resources for the development of wine tourism. In South Africa, tourists visiting Cape Town are supposed to do the following two basic activities: visit the Table Mountain National Park with a funicular and visit some of the regional wine routes (Hall et al., 2000). Napa Valley, the popular wine region in California, USA, is a region where only plums were produced in the past, however, today it has grown to be one of the most significant and most visited wine regions in the world. The majority of the tourists enjoy the picturesque wine routes of Napa, the numerous wineries and restaurants. In addition to tasting wine and visiting wineries, Napa offers other wine-related tourist experiences: walks through the vineyards, traditional lunch on the mountains, rest and relaxation in the spa centers, playing golf for a wine prize, cycling around the vineyards, hot air balloon rides, visiting cultural manifestations, eco-tourism, voluntary wine auctions etc. Some wineries, as an additional activity to enrich the stay of the tourists, have created bird parks, places for picnic and barbecue, local historical heritage tours etc. (Hall & Sharples, 2008).

The research data from the United Nations World Tourism Organization (UNWTO, 2016) point to an increased interest in wine tourism worldwide, which, in the developed wine countries, represents a great part of the income generated by the wineries.

Table 2. Number of tourists and wine tourism in selected countries

No.	Country	Number of tourists who are directly motivated to participate in wine tourism in millions
1	USA	15
2	France	10
3	Italy	5
4	Spain	2.1
5	Argentina	1.5

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As shown in the Table 2, most of the wine tourists are visiting the USA and France, and then follow Italy, Spain and Argentina. Wine routes or paths have been created in these countries that are visited by the tourists and whose goal is to introduce the visitors to the wine, but also to the characteristics of the region as natural and cultural heritage.

MATERIAL AND METHODS

History of wine making in North Macedonia

Winemaking is a process of production of wine, starting with the selection of the grapes, its fermentation into alcohol, and the bottling of finished liquid. The rich tradition of vine growing and wine production in North Macedonia started back in ancient times, testified by the numerous artefacts found on the territory of the country. Golden amphorae and craters (vessels for wine transportation and consumption) were found at the necropolis site in Trebeniste near Ohrid. The bronze statue Menada, found in Tetovo, dates from the 6th century BCE. The menades were companions of the wine god Dionysus and during the celebrations in his honour, they would serve the guests. The tradition of antiquity continued in the Roman period, when Macedonia was one of the most important wine regions, and that tradition continued until the Slavs arrived, and continued until the fourteenth century. During the Ottoman Empire (1350-1918), wine production in Macedonia declined and was maintained in numerous Orthodox monasteries. Phylloxera (a small insect that attacks the root and leaf of the grapes) strongly affected Macedonia between 1890 and 1920, when many vineyards were excavated, and in some areas wine production and grape growing were fully terminated. The oldest agricultural schools in the country were established in Bitola in 1908, in Tetovo in 1928, but only after World War II did departments for studying wine production and viticulture emerge. The Institute of Agriculture in Skopje was established in 1927, and the departments of viticulture and wine production were established in 1944. Macedonian viticulture peaked in the 1980s, when Macedonia produced two-thirds of the total wine production in the former Yugoslavia, but with gaining independence in 1991, wine exports declined dramatically.

Today, viticulture is one of the main branches of the total agricultural production, that is to say, the most important strategic industry in North Macedonia, taking into account that together with wine production it contributes about 17%-20% of the agricultural GDP (gross domestic product). Wine ranks first in the export of beverages, and is the second most important product, after tobacco, in terms of export value of agricultural products. The vineyards today cover about 24,000 hectares (Metodijeski et al., 2019). However, despite favourable climate conditions, large fluctuations have been observed in the last 30 years on the grape growing areas. This situation is a consequence of the delay in the restoration of the vineyards, that is, the deteriorated age structure of the vineyards, where the share of the plants over 20 years old is very high. At the same time, the size of the plots is small, due to the long fragmentation of agricultural land, due to inherited traditions, lack of land market and long periods of underinvestment in this sector. In 2018, the total wine production in the country was 781,292 hectolitres of wine and this is a slight decrease in production compared to other years. The average annual wine production is about 800,000 hectolitres, most of it as bulk wine (about 80%) and the rest as bottled wine. In North Macedonia today, there are over 70 wine cellars located in the main wine-growing regions. Most of these wineries are mainly small and medium-sized, with capacity of up to 100,000 hectolitres, and only a small number have a capacity that is greater than 100,000 hectolitres. These wineries strive to concentrate on bottled wine production and high-quality wines through strict control of variety selection, vineyard management and harvesting, transportation and delivery practices. In addition, they invest in sophisticated finishing and refining equipment, bottling, and marketing technologies

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and are competitive in both, domestic and foreign markets. Some of these wineries are focused on wine tourism development and have built a material and technical base for tourist acceptance and service, wine tasting, vineyard viewing, familiarising with the wine production process, wine sales, and additional services, such as conference facilities, sightseeing and organised tours and activities in the region etc. Wine tourism, as a specific form of tourism with a potential for development, is represented in strategy for tourism development of North Macedonia. In the country there are laws governing winemaking. The country also promotes wine tourism on nationla level through wine tourism guides and wine events, and associations of wine producers promote wine tourism with wine stores, wine museums, wine routes, wine fairs etc. Travel agencies provide and promote wine tasting tours with wine-expert guides.

Wine regions in North Macedonia

There are three wine regions in the North Macedonia (Vlam & Simjanoska, 2011; Beleski, 2014; Robinson, 2015): Central Wine Region (Povardarie), Western Wine Region (Pelagonija-Polog) and Eastern Wine Region (Pcinja-Osogovo). These regions are divided into 16 winelands.

Figure 1. Wine regions in North Macedonia

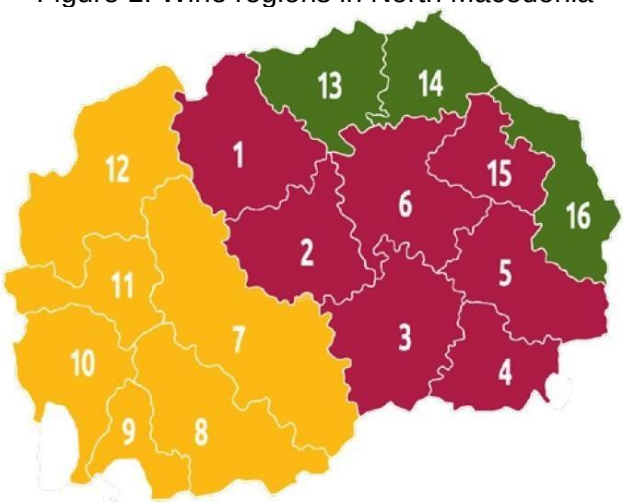

Figure 2. Winelands in North Macedonia: Skopje winelands (1), Veles winelands (2), Tikvesh winelands (3), Gevgelija-Valandovo winelands (4), Strumica-Radovish winelands (5), Ovche Pole winelands (6), Kochani-Vinica winelands (15), Prilep winelands (7), Bitola winelands

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(8), Prespa winelands (9), Ohrid winelands (10), Kichevo winelands (11), Tetovo winelands (12), Kumanovo winelands (13), Kratovo winelands (14) and Pijanec winelands (16).

The Eastern wine region (Pcinja-Osogovo) accounts for approximately 4% of total production and includes 3 winelands: Kumanovo, Kratovo, Kochani and Pijanec. The vineyards are located at 440-850 metres above sea level and are planted on hilly and wavy fields, with moderately mild slopes with varying exposure. The climate is moderate continental with strong gusts of north winds. Over 110 days a year they have a temperature above 25 degrees. Precipitation averages 50 l/m2, with dry periods rarely occurring during vegetation. Vineyards are grown on different types of soil, the most common being diluvial, cinnamon and brown soils on limestone. This region extends to the north-western part of North Macedonia and extends from Pcinja River to the west, to the Osogovo Mountains to the east.

The Central wine region (Povardarie) is the largest and most famous wine region in North Macedonia, producing approximately 83% of the North Macedonian wine. The vineyards are at 50-500/600 metres above sea level and extend along the Vardar Valley and between the high mountain ranges that rise to the east and west. The climate is Mediterranean to continental, with mild winters and hot summers. The temperature is above 25 degrees for more than 124 days during the year. Precipitation averages 46 l/m2 and is evenly distributed throughout the year. Vineyards are grown on different types of soil, the most common being diluvial soil (plain fields).

In Western wine region (Pelagonija-Polog), the vineyards are located at 600-680 metres above sea level and are planted on the banks and in wavy fields, with moderately mild slopes with southern exposure. The high mountain climate dominates, which is characterised by humid and cold winters and dry and hot summers. Over 87 days a year the temperature is above 25 degrees C. Precipitation averages 57 l/m2. Vineyards are grown on different types of soils, the most common being brown soil. This region produces about 13% of the total wine production.

Methodology

The subject of this paper is the analysis of wine tourism offer in North Macedonia. The paper presents review of relevant literature concerning wine tourism and wine tourism offer in the country. For the purpose of the paper, a research methodology and secondary data sources have been used by consulting literature, studies, statistical data and official web pages of the wineries in North Macedonia. An analysis and review of wine tourism in North Macedonia has been made, based on a systematic evaluation of the current content of wine tourism offer using methodology of content analysis (Ritchie et al., 2005). In North Macedonia today, there are over 70 wine cellars located in the main wine-growing regions. For the purpose of the paper, only wineries with wine tasting offer are included in the research. 28 wineries from three wine regions in North Macedonia are analysed in the paper and beside wine tasting criteria, other aspects of wine tourism are covered in the research as restaurant services, accommodation and conference facilities. The main source of secondary information and data used in this research is Study on wine tourism in Republic of North Macedonia (Metodijeski et al., 2019).

An important aspect of wine tourism is wine tasting, which is an integral part of the package of tourist services and is essential part of the tourist offer. Wine tasting differs from professional and expert wine tasting, since the purposes of the two wine tastings are different. The expert tastings are intended to give a professional evaluation of a specific wine, to classify them by quality of wine, to indicate the degree of quality and suitability with the category and name of a particular wine, wine tasting has a different purpose - it is a tourist service, where the main purpose is to present the wines to the tourists and to become acquainted with the

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organoleptic properties in a certain atmosphere and with the necessary information related to the tasting set. The facilities of the wineries developed for tourist visit are mainly divided into two main parts: facilities in front of the winery (where tasting takes place and additional activities are conducted such as sightseeing and relaxation) and production facilities (where the production process with machinery and equipment takes place). Wine tasting as an essential element in the wine tourism offer has its own characteristics related to the following: wine tasting, organisation of tasting room, tasting performance and additional activities.

RESULTS AND DISCUSSION

Wineries offering wine tasting in North Macedonia by wine regions

In North Macedonia there are 28 wineries offering wine tasting for visitors and tourists (Metodijeski et al., 2019). These wineries, to the greatest extent, are located in the Central wine region (24), three are located in the Western wine region and one is in the Eastern wine region.

Table 3. Wineries offering wine tasting in North Macedonia by wine regions

Region	Winelands	Wineries
Eastern Wine Region	Kumanovo area	1
Central Wine Region	Skopje area	5
	Valandovo area	1
	Tikvesh area	14
	Veles area	2
	Ovche Pole area	2
Western Wine Region	Prilep area	1
	Ohrid area	1
	Bitola area	1
Total		28

As shown in Table 3, Tikvesh winelands, in terms of wineries in the country that offer wine tourism through wine tasting is well ahead of other winelands with 14 wineries available to tourists. Following the Tikvesh winelands, Skopje winelands is ranked second, with 5 wineries offering wine tasting as a basic form of wine tourism. Veles and Ovce Pole winelands have two wineries each, and Kumanovo, Valandovo, Prilep, Bitola and Ohrid winelands have one winery each that may accept tourists. The country's wineries, in addition to tasting, accommodation, restaurants and conference opportunities, offer vineyard walks, acquaintance with the production process and technologies of wine production and storage, various tours and organised excursions to visit sites or activities in the region.

In the Easter wine region, the following wineries are operational: Kokino, Trickovik, Premium, Vekovnik, Nipro, Zemsil Rik Sileks, and others. In the forthcoming period, these wineries are planning to create conditions for wine tourism development, by organising tasting, walks around the wineries, acquainting with the wine production process, etc., which would make them attractive for the tourists. At the moment, only Kokino winery, located in Kumanovo, is offering wine tasting. This winery also disposes of accommodation facilities, restaurant, and conference room.

Table 4. Wineries offering wine tasting in the Eastern wine region

	Winery	Winelands	Tasting	Restaurant	Accommodation	Conferences
1	Kokino	Kumanovo	Yes	Yes	Yes	Yes

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It may be expected that more wineries from the Eastern wine region to equip their capacities and prepare those for acceptance of tourists, primarily for tasting, and later for accommodation, food, and supplementary services for the visitors. In addition to wineries, also important for the wine tourism development are the natural and cultural resources of the region.

The Central wine region is the most developed wine region in the country, and as such, it contains most of the wineries offering tasting to tourists. The Table below provides basic data on the 24 wineries offering tasting in the Central wine region.

Table 5. Wineries offering wine tasting in the Central wine region

	Winery	Winelands	Tasting	Restaurant	Accommodation	Conferences
1	Brzanov	Skopje	Yes	No	Yes	No
2	Kartal	Skopje	Yes	Yes	No	No
3	Kuvin	Skopje	Yes	Yes	No	Yes
4	Skovin	Skopje	Yes	Yes	No	No
5	Chateau Kamnik	Skopje	Yes	Yes	Yes	Yes
6	Valandovo	Valandovo	Yes	Yes	No	No
7	Bovin	Tikvesh	Yes	Yes	No	No
8	Venec	Tikvesh	Yes	Yes	No	Yes
9	Domen Barovo	Tikvesh	Yes	Yes	Yes	Yes
10	Domen Lepovo	Tikvesh	Yes	Yes	Yes	Yes
11	Kralica Marija	Tikvesh	Yes	Yes	Yes	Yes
12	Lazar	Tikvesh	Yes	Yes	Yes	Yes
13	Movino	Tikvesh	Yes	No	No	Yes
14	Pivka	Tikvesh	Yes	No	No	Yes
15	Popov	Tikvesh	Yes	Yes	No	No
16	Popova Kula	Tikvesh	Yes	Yes	Yes	Yes
17	Puklavec	Tikvesh	Yes	Yes	No	Yes
18	Stobi	Tikvesh	Yes	Yes	No	Yes
19	Tikvesh	Tikvesh	Yes	Yes	No	Yes
20	Trajkovski	Tikvesh	Yes	Yes	No	Yes
21	Tristo	Veles	Yes	Yes	No	Yes
22	Chateau Sopot	Veles	Yes	Yes	No	Yes
23	Imako	Ovce Pole	Yes	Yes	No	No
24	Ezimit	Ovce Pole	Yes	Yes	No	No

It may be seen from the Table 5, that most wineries (21) have restaurant facilities (with the exception of 3 wineries), accommodation is offered by only 7 wineries, and 16 wineries have conference facilities. In the future, it is expected that Central wine region wineries to increase their accommodation facilities in line with the growing demand for wine tourism, as

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well as introduce additional services such as conference rooms where various events would be organised.

Table 6. Wineries offering wine tasting in the Western wine region

	Winery	Winelands	Tasting	Restaurant	Accommodation	Conferences
1	Mal Sveti Kliment	Ohrid	Yes	Yes	No	Yes
2	Chiflik	Bitola	Yes	Yes	Yes	Yes
3	Pirgan	Prilep	Yes	Yes	No	No

In the Western wine region there are several wineries, and only three wineries – Mal Sveti Kliment (Ohrid), Pirgan (Prilep) and Chiflik (Bitola) are offering wine tasting and are open to tourist visit (Table 6). A complete tourist service is offered by Chiflik winery, which, in addition to tasting, is offering accommodation, restaurant and conference facilities. Mal Sveti Kliment winery has no accommodation, and Pirgan winery does not dispose of accommodation and conference capacities.

CONCLUDING REMARKS

Wine tourism covers wide range of tourist activities as visiting wineries, vineyards, wine tasting, wine routes, wine museums, wine events etc. Wine tourism is a specific type of tourism which is constantly growing and represents a significant part of the tourist offer of many countries worldwide, most of them countries with a tradition of wine production. The rich tradition of vine growing and wine production in North Macedonia started back in ancient times, and today, there are over 70 wineries located in the three wine regions. The demand in wine tourism consists of a number of different motives, experiences, perceptions and expectations that change depending on the needs of the potential consumers. The determination of the motives for participation in wine tourism and the profiling of wine tourists is a complex process. The motives vary from buying a good wine to education on the way of production, enjoying walks in nature, getting to know the local food etc. Successful examples of the development of wine tourism can be found all over the world. In addition to the countries which are traditional wine producers, such as France, Spain, Italy, countries like Argentina, Australia, Chile, New Zealand and South Africa invest a lot of resources for the development of wine tourism.

The subject of this paper is the analysis of wine tourism offer in North Macedonia. For the purpose of the paper, a research methodology and secondary data sources have been used by consulting literature, studies, statistical data and official web pages of the wineries in North Macedonia. There are three wine regions in the North Macedonia Central Wine Region (Povardarie), Western Wine Region (Pelagonija-Polog) and Eastern Wine Region (Pcinja-Osogovo). These regions are divided into 16 winelands. 28 wineries are analysed in the paper and beside wine tasting criteria, other aspects of wine tourism are covered in the research as restaurant services, accommodation and conference facilities.

In the Easter wine region, the following wineries are operational: Kokino, Trickovik, Premium, Vekovnik, Nipro, Zemsil Rik Sileks, and others. In the forthcoming period, these wineries are planning to create conditions for wine tourism development, by organising tasting, walks around the wineries, acquainting with the wine production process, etc., which would make them attractive for the tourists. At the moment, only Kokino winery, located in Kumanovo, is offering wine tasting. This winery also disposes of accommodation facilities, restaurant, and conference room. It may be expected that more wineries from the Eastern wine region to equip their capacities and prepare those for acceptance of tourists, primarily for tasting, and later for accommodation, food, and supplementary services for the visitors. In

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addition to wineries, also important for the wine tourism development are the natural and cultural resources of the region.

The Central wine region is the most developed wine region in the country, and as such, it contains most of the wineries offering tasting to tourists. Most wineries in Central wine region (21) have restaurant facilities (with the exception of 3 wineries), accommodation is offered by only 7 wineries, and 16 wineries have conference facilities. In the future, it is expected that Central wine region wineries to increase their accommodation facilities in line with the growing demand for wine tourism, as well as introduce additional services such as conference rooms where various events would be organised.

In the Western wine region there are several wineries, and only three wineries – Mal Sveti Kliment (Ohrid), Pirgan (Prilep) and Chiflik (Bitola) are offering wine tasting and are open to tourist visit. A complete tourist service is offered by Chiflik winery, which, in addition to tasting, is offering accommodation, restaurant and conference facilities. Mal Sveti Kliment winery has no accommodation, and Pirgan winery does not dispose of accommodation and conference capacities.

Data presentation in tables and analysis has shown that, in addition to the Central wine region, containing 24 wineries, the capacity of the wineries for wine tourism development in the remaining two regions (Eastern and Western) is insufficiently used.

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IDENTIFICATION DEFINITION, DETERMINATION AND PROMOTION OF LARGE MOUNTAIN TOURIST REGIONS IN THE WORLD

Nikola V. Dimitrov[1]

Abstract

Mountains are a natural attractive motif spread on all continents. The mountains have many opportunities for recreation, sports, education, entertainment and other activities for tourism. Tourism that is practiced in mountainous environment is identified as mountain tourism, which consists of special alternative forms - hiking, mountaineering, walking, skiing and more.

Mountain tourism is one of the most selective types of tourism. Mountaineering, walking and organized skiing date back to the mid-19th century. Today, mountain tourism is widespread on all continents and it is more or less practiced in about 80 countries around the world.

To complete this paper we use literature and extensive internet research of relevant data.

The purpose of this paper is to identify and define the criteria through which we determine and make the first promotion of large mountain tourist regions in the world. Through this text, on geographical regionalization we identify 17 large mountain tourist regions and over 3100 mountain resorts and ski centers, which practice various forms of mountain tourism.

In addition to the text, several tables, graphs and thematic maps have been moved. In the end, in the conclusion are presented several directions and recommendations for future more thorough research of each mountain tourist region separately, but also studio research on the mountains where one or more alternative forms of mountain tourism are practiced.

Key words: hiking, mountaineering, skiing, hiking and mountain trails, ski resorts, tourists.

JEL Classification: Z32 Tourism and Development; Z39 Tourism: Other

INTRODUCTION

The mountains have always fascinated people because of the clean air, clean water, rich biodiversity, natural landscapes, various geomorphological shapes and specific features that provide opportunities for recreational and sports activities on the mountain.

The first forms of mountain tourism - hiking, walking, mountaineering and skiing as organized activities for recreation and mountain sports date back to the middle of the XIX century. (Gerrard, A. J. 1990) The first forms of organized mountaineering are found in Europe, in 1857 when the first mountaineering organization was established in London (Great Britain) called "Alpine Club", and then followed the establishment of such mountaineering clubs and organizations in several countries (Austria, Australia, Switzerland, Italy, Germany, France, etc.). (Kazazavić, E. & Caplar, A., 2010)

Geographically, there are mountains on all continents of the Earth in large and still unknown numbers. There are many interconnected mountains on Earth that form mountain systems or chains, from 100, 200, up to several thousand kilometers. The total number of major mountain ranges, systems and independent mountains with a length of over 100 km is 1233, of which 396 in North America, 267 in Asia, 218 in Europe, 132 in

[1] *PhD regular professor, Faculty of Tourism and Business Logistics, University "Goce Delchev" – Stip, nikola.dimitrov@ugd.edu.mk*

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South America, 124 in Africa, 46 in Antarctica, 31 in Central America and 19 in Australia with Oceania. https://en.wikipedia.org/wiki/List_of_ mountain_ranges (Dimitrov, 2021)

There are 70 mountain systems in the world longer than 500 km. Most of them are in Asia (35), followed by North America (12), Europe (8), South America (7), Africa (4), Australia with Oceania (3) and Antarctica (1). Of all these, only about 20 large mountain systems practice various forms of mountain tourism. The most famous of them are: Alps (mountain system 1200 km long), Apennines (1200 km), Carpathians (1700 km), Scandinavian Mountains (1700 km), Pyrenees (700 km), Urals (2500 km), Greater Caucasus (1200 km)), Appalachian Mountains (2414 km), Rocky Mountains (4830 km), Coastal Mountains (1600 km), Andes (7000 km), Himalayas (2500 km), Australian Mountains (3500 km), Atlas (2500 km), Dinaric Mountains (645 km), Tavr (600 km), Balkan Mountain (557 km), Karakorum (500 km) and others.(Dimitrov, 2021)

From its emergence onwards, mountain tourism is enriched with new primary and secondary activities, such as walking,, mountaineering, skiing, then mountain biking, mountain running, paragliding, rock climbing, hunting, fishing, cultural-historical tourism, rural, landscape tourism and the like. However, the dominant activities are: recreational hiking, walking, skiing, rock climbing, mountain running, mountain biking and paragliding. (Malcev, & Sotirov, 2015)

Important segments of mountain tourism is the mountain infrastructure, which are: mountain resorts, mountain hotels, ski resorts, mountain lodges, villas, marked hiking and hiking trails, ski and other trails, jumps, traffic access, various cable cars, ski lifts and more tourist and catering infrastructure. The developed mountain tourist regies attract millions of tourists, especially in the summer and winter period of the year.

The tourism researc the problem of mountain tourism in the world is overshadowed by the coastal tourism that dominates. Namely, in 2018, world tourism realized 1,401,000,000 tourists (UNWTO, july 2019), of which most, over 800 million tourists (57.1%) spent their vacation by the sea and lake, or belong to coastal and lake tourism, then over 300 million tourists belong to cultural and religious tourism (21.4%), over 200 million tourists belong to mountain tourism (14.3%) and over 100 million tourists belong to other types of tourism (7.2%).

With this paper, we make a modest contribution to the study of the regionalization of mountain tourism, we provide data on the number of large mountain tourist regions, data on the number of mountain resorts, ski centers, the longest mountain trails and more.

MATERIAL AND METHODS

The materials and methods we use in the research are part of the method of description and we group them into two groups, namely: primary and secondary group. In the primary group there are descriptions of used literature, and in the secondary group there are data from the websites of mountain ski resorts, resorts, mountain and alpine federations, etc., as well as personal mountaineering observations and experiences.

Based on the textual materials and data obtained from literature and websites, we identify, define and determine the geographical location, ie location of large mountain tourist regions, mountain resorts, ski resorts, marked mountain and other trails globally.

We define and determine the large mountain tourist regions based on three criteria: **scope** or size of mountain natural conditions (mountains, mountain massifs, dominant peaks, richness of geomorphological forms, etc.); **mountain tourist infrastructure** in function of mountain tourism (terrains for sports - recreational tourism, hiking, walking, mountaineering, skiing, mountain biking, mountain running, rock climbing, paragliding and other activities, then accommodation, food, entertainment, culture and etc., as well as

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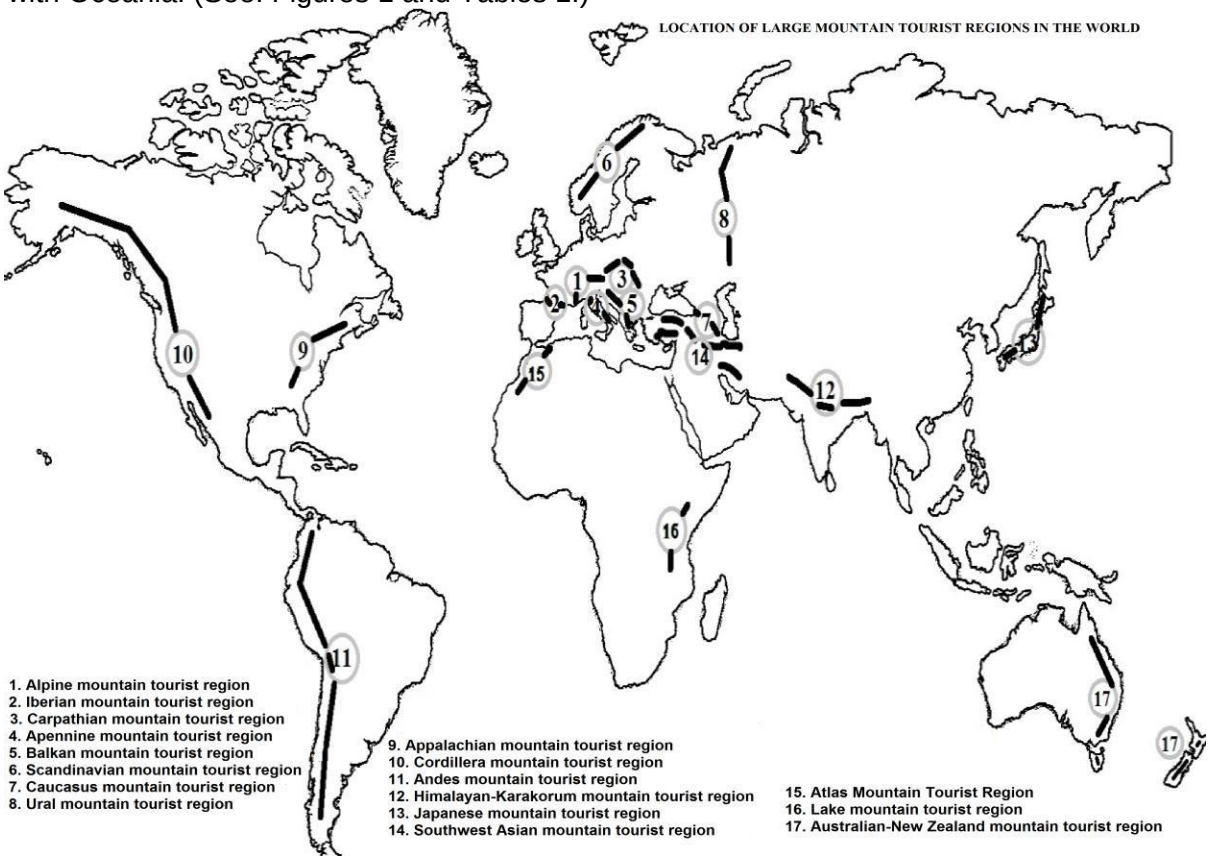
spaces and facilities for communication - roads, cable cars, sports trails, etc.) and **international importance** - tourist visits to the mountainous region.

RESULTS AND DISCUSSION

Large mountain tourist regions

From the extensive research, we group the mountains and massifs that practice mountain tourism in the world into 17 large mountain tourist regions. These regions cover several thousand mountains spread across 71 countries and on all continents. By continents, the largest mountain tourist regions are 8 in Europe, 3 in Asia, 2 in North America, 2 in Africa, 1 in South America and 1 large mountain tourist region in Australia with Oceania. (See: Figures 1 and Tables 1.)



Figures 1: Location of major mountain tourist regions in the world

Tables 1: Large mountain tourist regions in the world

SN	Mountain tourist region	Name of the mountain	Countries where the mountainous region extends
		EUROPE	
1.	**Alpine**	Alps (western and eastern Alps)	Switzerland, Austria, Italy, France, Germany, Liechtenstein, Slovenia, Monaco (8)
2.	**Pyrenees**	Pyrenees, Sierra Nevada	Spain, France, Andorra (3)
3.	**Carpathian**	Carpathians, Tatras, Sudetans and others.	Czech Republic, Slovakia, Poland, Ukraine, Romania, Serbia (6)
4.	**Apennines**	Apennines, Vesuvius,	Etna Italy, San Marino (2)

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5.	**Balkan**	Dinara, Jahorina, Igman, Durmitor, Tara, Zlatibor, Kopaonik, Prokletie, Shar Planina, Bistra, Baba, Pind, Olympus, Rila, Pirin and others.	Slovenia, Croatia, Bosnia and Herzegovina, Montenegro, Serbia, Kosovo, Albania, Bulgaria, Macedonia, and Greece (10)
6.	**Scandinavian**	Scandinavian Mountains	Norway, Sweden and Finland (3)
7.	**Caucasus**	Caucasus (Greater Caucasus, Lesser Caucasus)	Russia, Azerbaijan, Georgia and Armenia (4)
8.	**Ural**	Urals	Russia (1)
NORTH AMERICA			
9.	**Appalachians**	Appalachians	Canada and USA (2)
10.	**Cordillera**	Cordillers and others.	Canada and USA and Mexico (3)
SOUTH AMERICA			
11.	**Andes**	Andes	Venezuela, Colombia, Ecuador, Peru, Bolivia, Chile, Argentina (7)
ASIA			
12.	**Himalayas Karakorum**	Himalayas, Karakorum, Kunlun Shan, Hindu Kush, Pamir, Tian Shan et al.	China, India, Nepal, Bhutan, Pakistan, Afghanistan, Kyrgyzstan Tajikistan (8)
13.	**Japanese**	Fuji-Fujiyama	Japan (1)
14.	**Southwest**	Southwest Tabor, Pontic Mountains, Ararat, Elborz, Zagros and others.	Turkey, Iran, Lebanon, Syria, Israel (5)
AFRICA)			
15.	**Atlas**	Atlas	Morocco, Tunisia, Algeria (3)
16.	**Lake**	Lake Kilimanjaro, Ruvenzori, Kenya	Tanzania, Kenya, Uganda (3)
AUSTRALIA WITH OCEANIA			
17.	**Australian-New Zealand**	Australian Alps, Southern Alps	Australia, New Zealand (2)

Of all the 17 major mountain tourist regions, 4 are the largest and most developed mountain tourist regions in the world, namely: ***Alpine, Appalachian, Cordillera and Japanese***.

These large mountain tourist regions are located in the territories of highly developed states, as well as near densely populated areas with millions of cities and other major cities. Fourthen major mountain tourist regions are visited of they over 150 million mountain tourists or 75% share of the total number of 200 million mountain tourists. (Dimitrov, 2021)

In the first place is the Alpine mountain tourist region (Austria, Switzerland, France, Italy, Germany and Slovenia), which is annually visited and stayed by over 100 million mountain tourists (with a share of 50% in the total number of mountain tourists), with visit by over 30 millions of mountain tourists are the Appalachian and Cordillera Mountain Tourist Region (in the USA and Canada) and with over 10 million mountain tourists is the Japan Mountain Tourist Region.

The primacy of the Alpine Mountain Tourist Region is illustrated by the example of the Alps, which has 1,500 tourist centers with 3.5 million beds, 13,000 cable cars and more than 7,000 km2 of ski slopes. (Stevanovic, 2008), as well as 1200 large and small ski resorts and mountain resorts. (Dimitrov, 2021)

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The most visited countries are France, USA, Austria, Italy, Switzerland, Germany, Spain, Japan and Canada. (See: Tables 2)

Tables 2: Countries in the world with over 10 million mountain tourists

Country	Number of tourists		Percentage %
	Total tourists	From that mountain *	
France	89.400.000	30.000.000*	33,5%
USA	79.618.000	30.000.000*	37,6%
Austria	30.816.000	25.000.000*	81,1%
Italy	62.146.000	25.000.000*	40,2%
Switzerland	11.715.000	10.000.000*	85,3%
Germany	38.881.000	10.000.000*	25,7%
Spain	82.773.000	10.000.000*	12,0%
Japan	31.192.000	10.000.000*	32,0%
Canada	21.134.000	10.000.000*	47,3%
Total:	**447.675.000**	**160.000.000***	**35,7%**

Source: World Tourism Organization (UNWTO), July, 2019; *Evaluation by the author

The other 13 major mountain tourist regions are visited by a total of about 50 million mountain tourists. Of these, 8 major mountain tourist regions, Pyrenees, Apennine, Carpathian, Scandinavian, Balkan, Ural, Caucasian and Australian-New Zealand, have a total visit of over 40 million mountain tourists.

The five largest mountain tourist regions have the lowest attendance and stay of mountain tourists of about 6 million: Himalayas - Karakorum, Southwest Asia, Andes, Atlas and Lakes. The low attendance is primarily due to the distance from large cities and poor traffic and other infrastructure.

The remaining 4 million tourists belong to mountains and countries that are not included in the seventeen major mountain tourist regions. These are mountains in twenty countries: Great Britain, Portugal, Iceland, Belgium, Mexico, South Korea, South Africa, Kenya, Tanzania, Uganda, Ethiopia, Brazil and others. Some of the mentioned countries do not have ski centers or mountain resorts, but they still have attractive mountain landscapes, conditions for recreational hiking, mountaineering, walking, cycling, forest houses, houses and the like. (Dimitrov, 2021)

Mountain resorts and ski resorts

Mountain skiing is an important recreation and sport that has existed without interruption for about 150 years. Various ski activities: downhill, slalom, giant slalom, cross country, Nordic skiing, biathlon, sledding, ice hockey, ski jumping, snowboarding, etc. Special skiing equipment: skis, appropriate footwear, appropriate clothing, etc. Accompanying instruments and facilities are: various types of ski lifts, cable cars, devices for making artificial snow, snow removal machines - snowmobiles, snowmobiles, helicopters, ski patrols, then hotels, restaurants, mountain houses, etc.

As of 1994, there are an estimated 55 million people involved in alpine skiing worldwide. (Ćećibović, & Maćić, & Komlenović, & Manić, 2006: Maćić, 2008). Today, the conditions for alpine skiing in the world are better and the numbers have significantly increased to about 200 million people.

In 2012, there were 2791 large and small ski resorts and mountain resorts in the world, of which 1689 in Europe, 644 in North America, 379 in Asia, 38 in Australia with

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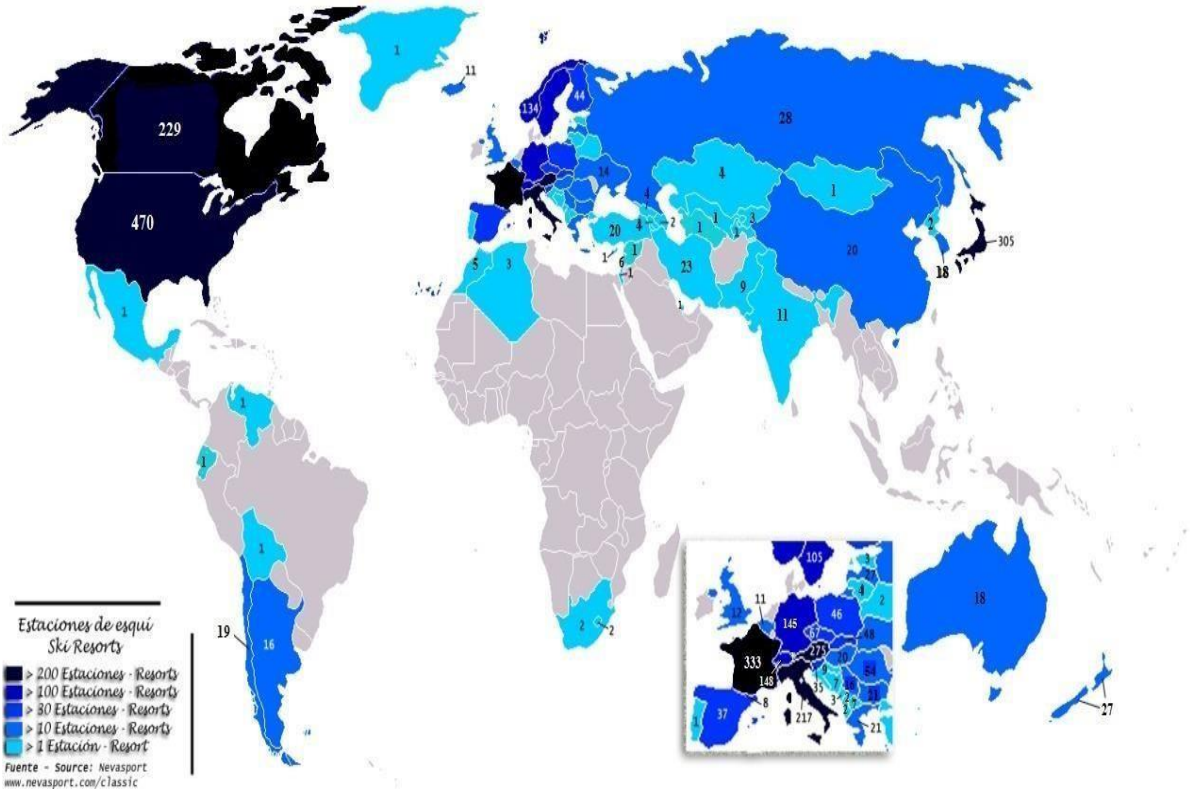
Oceania, 35 in South America and 8 in Africa 8 ski resorts and mountain resorts. (Dimitrov, 2021)

In 2020, there are 3153 ski resorts and mountain resorts in the world, or in eight years, ski resorts and resorts have increased by 362 new or about 13%. The highest number of ski resorts and resorts is in the USA 470, in France 333, in Japan 305, in Austria 275, in Canada 229, in Italy 217, in Switzerland 148, in Norway 134, in Germany 116, in Sweden 105, int. There are 73 countries in the world that have ski resorts, of which 10 countries have over 100 ski resorts, 7 countries have over 30 ski resorts, 9 countries have 20 or more ski resorts, and 10 countries have over 10 ski resorts, and 37 countries have under 10 ski resorts. (See: Tables 3 and 4; Figures 2, 3, 4 and 5)

https://en.wikipedia.org/wiki/List_of_ski_areas_and_resorts in the world



Figures 2: **Location of ski resorts and mountain resorts in the world, in 2020.**

By continents. Most ski resorts are in Europe 1930, North America 700, Asia 428, Australia with Oceania 45, South America 38 and Africa 12 ski resorts.

Tables 3: Geographical location of large mountain tourist regions by continents, by number of ski resorts, resorts and number of countries

SN	**Large mountain tourist region**	Number of ski resorts and resorts	Number of countries	Continent (number of large and small ski resorts and resorts)
1.	**Alpine**	1200	8	Europe *(1930)**
2.	**Pyrenees**	70	3	
3.	**Carpathian**	120	6	

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4.	**Apennine**	40	1	
5.	**Balkan**	90	10	
6.	**Scandinavian**	290	3	
7.	**Caucasian**	Caucasus	4	
8.	**Ural**	Ural	1	
9.	**Appalachians**	Appalachians	2	North America *(700)**
10.	**Cordilleras**	Cordillery	3	
11.	**Andes**	Andes	7	South America *(38)*
12.	**Himalayas-Karakorum**	Himalayas-Karakorum	8	Asia *(428)**
13.	**Japanese**	Japanese	1	
14.	**Southwest Asia**	Southwest Asia	5	
15.	**Atlas**	Atlaski	3	Africa *(12)**
16.	**Lake**	Lake	3	
17.	**Australian-New Zealand**	Australian-New Zealand	2	Australia-New Zealand *(45)*
Total:		Total:	Total:	**3153**

* Together large and small ski resorts and mountain resorts in other mountains and countries.
** Together with states that repeat in two regions.

Tables 4: Geographical location of large and small ski resorts and mountain resorts in the world, in 2020

Continents with a number of ski resorts	**Држави со број на големи и мали ски центри и планински одморалишта**
Europe: 1930	In 41 countries: France 333, Austria 275, Italy 217, Switzerland 148, Germany 145, Norway 134, Sweden 105, Czech Republic 67, Romania 54, Slovakia 48, Poland 46, Finland 44, Spain 37, Slovenia 35, Russia 28, Latvia 27, Bulgaria 21, Greece 21, Hungary 20, Serbia 16, Ukraine 14, Great Britain 12, Belgium 11, Iceland 11, Croatia 9, Andorra 8, Macedonia 7, Bosnia and Herzegovina 7, Armenia 4, Lithuania 4, Georgia 4, Montenegro 3, Albania 2, Azerbaijan 2, Estonia 3, Kosovo 2, Belarus 2, Liechtenstein 1, Portugal 1, Cyprus 1, Denmark 1 (Greenland).
Asia: 428	In 18 countries: Japan 305, Iran 23, Turkey 20, China 20, South Korea 18, India 11, Pakistan 9, Lebanon 6, Kazakhstan 4, Kyrgyzstan 3, North Korea 2, Israel 1, Mongolia 1, United Arab Emirates 1 **, Russia (Asian Territory) 1, Syria 1, Tajikistan 1, Turkmenistan 1 and Uzbekistan 1. ** Ski Dubai - closed large ski resort with an area of 22,500 m^2, temperature from -1 to 2°C, height of 85 meters, with a ski trail, sledding, cable car, etc.
North America: 700	In 3 countries: USA 470, Canada 229, Mexico 1.
Australia with Oceania: 45	In 2 countries: New Zealand 27 and Australia 18.
South America: 38	In 5 countries: Chile 19, Argentina 16, Bolivia 1, Venezuela 1, Ecuador 1
Africa: 12	In 4 countries: Morocco 5, Algeria 3, Lesotho 2 and South Africa 2.
Total: 3153	**In 73 countries**

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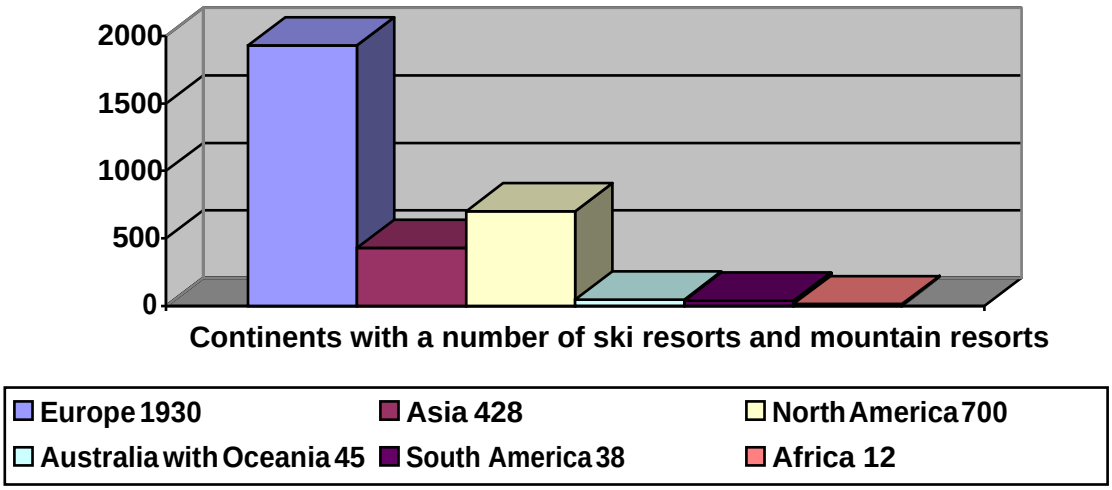
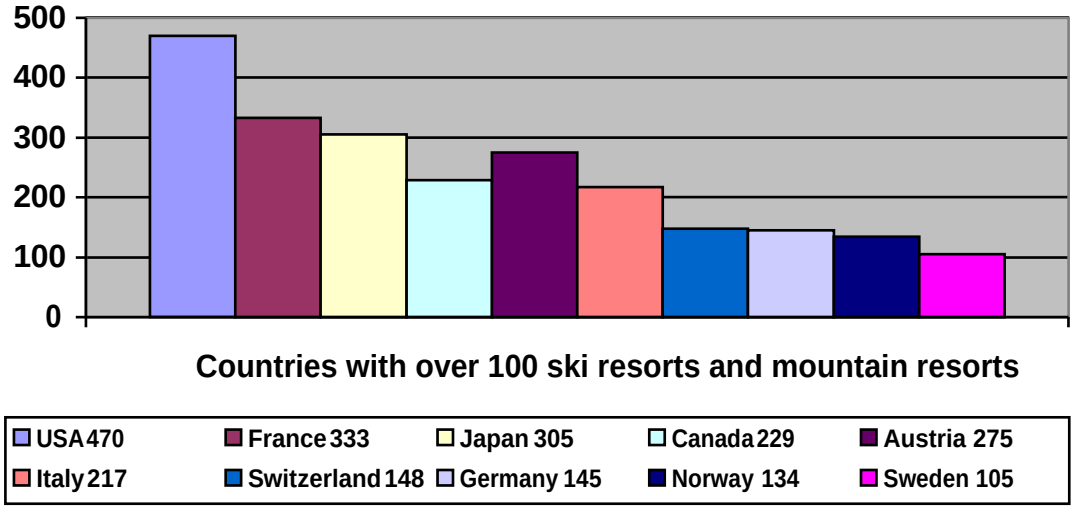


Figures 3: Continents with number of ski resorts and mountain resorts



Figures 4: Countries with over 100 ski resorts and mountain resorts

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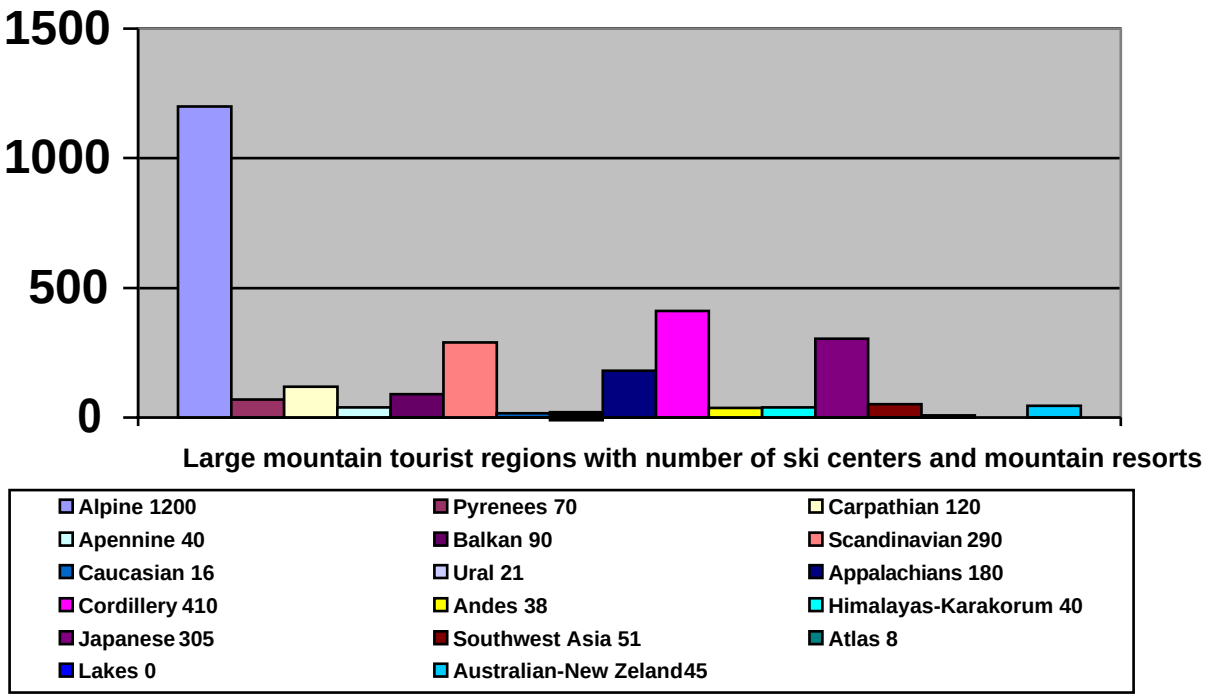

Figures 5: Large mountain tourist regions with number of ski centers and mountain resorts

From all the previous tables, maps and graphs, generally we can conclude that mountain tourism in greater or lesser form is practiced in the world by about 80 countries, of which 65 countries belong to the 17 major mountain tourist regions. In 65 countries (33% of the total number of 196 countries) they practice ski and mountain tourism in the mentioned 17 large mountain tourist regions. Large mountain tourist regions have 2924 large and small ski resorts and resorts (92.7% of the total number of 3153 large and small ski resorts and mountain resorts in the world). The remaining 229 large and small ski resorts (7.3%) are located on other mountains in over twenty other states (along with the United States outside the two major mountain resorts - Appalachian and Cordillera).

Mountain trails, mountain running and mountain biking

The function of safe mountaineering is to trace and mark various trails for recreational hiking, recreational and professional mountaineering, various weight trails or mountaineering directions, mountain running trails, cycling trails, etc.

Based on extensive analysis and calculations, we come to the conclusion that the total length of the network of hiking and mountaineering trails in the world is over 343,000 km. Of these, the longest network of hiking and mountain trails is in Europe, over 130,000 km (37.9%), in North America about 110,000 km (32.1%), in Asia about 60,000 km (17.5%), in Australia with Oceania about 20,000 km (5.8%), in South America about 18,000 km (5.2%), in Africa about 3000 km (0.9%) and in Central America about 2000 km (0.6%). (Dimitrov, 2021)

Viewed by country, there are long hiking and mountaineering trails in the USA, France, Italy, Switzerland, Austria, Germany, Great Britain, Sweden, Norway, Spain, Great Britain, Poland, Czech Republic, Slovakia, Slovenia, Bulgaria, Serbia, Russia, Japan, India ,

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Nepal, China, Israel, Tanzania, Kenya, Morocco, Chile, Argentina, Australia, New Zealand and others.

The longest recreational hiking and mountaineering trails are the following: 12 European or E-trails, with a length of more than 70,000 km that pass through several countries in Europe. Other non-EU European countries also have a large network of 60,000 km of hiking and mountain trails.

The most important and most attractive mountain trail in Europe is Via Alpina with a length of 5000 km, with a level of 0 to over 3000 meters above sea level. This trail has 342 stages through the alpine regions of eight countries: Italy (121), Austria (70), Switzerland (55), France (40), Germany (30), Slovenia (22), Liechtenstein (3) and Monaco (1 stage).

Other longer trails in Europe are: Great Italian Trail with 6166 km, English Coastal Trail 4350 km, Scanneleden Trail 1250 km, Hungarian National Blue Trail 1128 km, Sormlandseleden Trail 1000 km, Nordkalotruta or Arctic Trail 800 km, High Randone Pirinene (HRP) with 800 km., trail peaks in the Balkans and High Skardus with 700 km. etc.

In North America, the longest hiking and mountaineering trails are in the United States (80,000 km long), the most important of which are the Appalachian National Walking Trail with 3500 km, then the Continental 5000 km, the Pacific Ridge 4300 km, etc. The longest multiple recreational trail in the world is the Trans Canada, or Grand Trail, which stretches from the Atlantic to the Pacific and the Arctic Ocean for 24,000 km.
https://en.wikipedia.org/wiki/Long-distance_trail#Mountain_trails

In Asia, the most important mountain trails are the Himalayas and the Japanese mountains. The Himalayan trails are about 8000 km long, of which the longest is the Great Route of the high mountain Himalayan trail, 4500 km long. Meanwhile, the trails in Japan have a total length of 27,000 km.

In South America, the longest trail is the Great Patagonian Trail 3,000 km, and the entire network of hiking and hiking trails in the Andes is over 16,000 km. There are over a dozen long trails in Australia, the most famous of which is the National Trail with a length of 5330 km, etc.

CONCLUDING REMARKS

Due to the global approach to mountain tourism, this research does not claim to be comprehensive and has some ambiguities. However, this is the first attempt through a short text supported by several tables, graphs and thematic maps, it we promote 17 major mountain tourist regions, 3153 ski resorts and mountain resorts, countries that practice mountain tourism and a network of hiking and mountain trails in the world.

In the interest of the development of mountain tourism, we recommend a more thorough research of each mountain tourist region separately, but also a study of the mountains where one or more alternative forms of mountain tourism are practiced.

The direction of research should be interdisciplinary through the preparation of expert studies and strategies for mountain tourism, especially for each mountain tourist region, for the larger mountains and for each country separately.

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SIMULATING THE DIAMOND-PISSARIDES-MORTENSEN MODEL: SEARCH MODEL THAT GIVES REALISTIC ACCOUNT OF UNEMPLOYMENT

Dushko Josheski [1*], Tatjana Boshkov [2]

[1] *Dushko Josheski, Assistant professor Goce Delcev University of Stip, Faculty of tourism and business logistics, R.North Macedonia, dusko.josevski@ugd.edu.mk*

[2] *Tatjana Boshkov, Associate professor, Goce Delcev University of Stip, Faculty of tourism and business logistics, R.North Macedonia, tatjana.dzaleva@ugd.edu.mk*

* *Corresponding author: dusko.josevski@ugd.edu.mk*

Abstract

This paper is about the conventional search models of unemployment. An as considerable number of authors point out that negatively - sloped Beverage curve is the result of an aggregate demand shock. The shock that creates a positive movement between vacancies and unemployment "loops" around the Beveridge curve is due to matching efficiency and job destruction. This positive co-movement of vacancies and unemployment occurs after recessions. It is why we include RBC model to see the co-movement of IRF function of 6 macro variables including: Labor and wages. New- Keynesian DSGE model was included out of fancy. Unemployment dynamics due to: output, matching efficiency, vacancy advertising cost, unemployment benefits, and exogenous separation rate is studied at the end.

Key words: *DPM model, labor market search, unemployment*

JEL Classification: J01

INTRODUCTION

John Maynard Keynes in his *The General Theory of Employment, Interest and Money* (1936), argued that capitalist economy could poses equilibria that are characterized by the persistent involuntary unemployment, see also, Akerlof,Yellen (1987).Keynes defines involuntary unemployment : …."*Men are involuntarily unemployed If, in the event of a small rise in the price of wage-goods relatively to the money-wage, both the aggregate supply of labour willing to work for the current money-wage and the aggregate demand for it at that wage would be greater than the existing volume of employment*".There is a distinction between voluntary and involuntary unemployment[1], or "for instance in the latter case it is not true that real wages must be lower if employment is to be higher[2]…moreover involuntary unemployment arises from avoidable co-ordination failures and externalities ", Hahn,(1987).As the Beveridge curve movements (relationship between market tightness (vacancies over unemployment) $\theta = \frac{v}{u}$ and unemployment rate u) is to be interpreted as a decrease in the efficiency of matching process between workers and jobs, see Diamond (2011).So if λ exogenous separation rate increases , real wage will decline and involuntary unemployment will rise (vacancy setting curve will move to the left). Keynes analyzed that the key departure from the self-interested maximizing behavior is the assumed stickiness of money wages. Workers typically resists money wage reduction but.."..not to resist real money wage reductions". Keynesian theory of involuntary unemployment is compatible with search theory, since the worker in question may have reservation wage below those of his type who are being hired.In that view Dasgupta,Raj(1986) regard involuntary unemployment as a manifestation of

[1] Unemployment to an average person is an involuntary idleness (Andolfatto,2006 in The New Palgrave Dictionary of Economics, 2nd edition, 2008). This is inconsistent in the way in which unemployment is in fact defined and measured. Because according to International Labor Organization (ILO) conventions, which are followed by most of the nation's labor force surveys, unemployment relates to those individuals that are unemployed but are actively searching job. Those unemployed who are not actively included in search are classified as non-participants.

[2] For Keynes worker is involuntary unemployed if the market wage for his labor exceeds his shadow wage, which is a wage at which a worker would be indifferent between not accepting and accepting job offer, see Hahn (1987).

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horizontal inequity. This paper will treat unemployment not as demand problem but as matching or structural problem and not so as an inadequate aggregate demand problem. For instance, this was described in simple words in Kocherlakota (2010) statement: “Firms have jobs but can’t find appropriate workers. The workers want to work but can’t find appropriate jobs”. This inference was simply taken to imply that one should not be concerned with stimulating the aggregate demand through monetary and fiscal policy. Like this the unemployment in 1950’s-1960’s in US was also been described as structural rather than a result of inadequate aggregate demand, see Solow (1964).On the other hand Samuelson, Solow (1960) paper has been widely known to be the first paper to have drawn US Philips curve. Both authors though report that Philips curve had disappeared during the Great Depression and suggested that persistent high unemployment by 1933 could well reduce mobility and increase structural unemployment[3].Samuelson, Solow (1960) continue to argue about the relation between wags and unemployment ..” They argued that imperfect competition was the right setting for studying cost push inflation. They emphasized that many factors were at work in the labor market including labor reallocation, labor mobility, collective bargaining; thus no simple or single explanation was likely to account for the relation between wages and unemployment”... see Blanchard, Diamond (1991). Solow later papers were also explorations of those themes, in his 1969 Manchester lectures Solow emphasized that with multiple equilibria (incomplete models)[4]..”the economy might be jolted out of an underemployment equilibrium". Wage setting curve (WS) and Vacancy setting curve (VS) equilibrium defines market tightness and real wage. After a change in the: efficiency of matching process, exogenous separation rate, bargaining power, unemployment benefits, advertising costs of vacancy, real wage and market tightness θ changes, also Beveridge curve (association between market tightness θ and unemployment rate u) moves left or right, see Bhattacharya et al. (2017). In general equilibrium setting of the neoclassical model and labor market as a centralized marketplace with perfect information devoting time to search for a job is non worthy, and individuals either become employed or unemployed and the solution is Pareto efficient. In the search model of unemployment labour market is decentralized place where the search model postulates wage distribution and distribution of offers per unit time. Latter is Poisson distribution with λ arrival rate, and some separation rate s, and job finding rate f from where unemployment rate u could be determined by notion of the reservation wage w_r with CDF $F(w_r)$ and $F(w)$ wage offer cumulative distribution function, with benefits b see Mortensen (2011)[5].Summers(1986) finds a strong negative relation between changes in unemployment and the growth of high-wage jobs ,see Burda (1988).This is in line with notion that voluntary unemployment exists near full employment, otherwise there exists involuntary unemployment which is dependent on the reservation wage (minimum wage) and efficiency wage. Papers on efficiency wage theories and explanations of involuntary unemployment such as: Yellen (1984), and Shapiro, Stiglitz (1984) are worth mentions. Though this paper is about search theory of unemployment with a special emphasis on the Diamond-Mortensen-Pissarides as a central model around the research. First literature review will be followed by

[3] “…one could argue that by 1933 much of the unemployment had become structural, insulated from the functioning labor market, so that in effect the vertical axis ought to be moved over to the right. This-would leave something more like the normal pattern.”, Samuelson, Solow (1960) od the US Philips curve for US

[4] Other than that his later work included themes on collective bargaining and unemployment, like kin his Wicksell lecture, Solow developed a view of labor market :..” as a market with constant reallocation of labor and addressed the question of how much of unemployment was due to low demand and how much to structural factors.”,see, Blanchard, Diamond (1991).

[5] Worth the mentioning…$\frac{u}{1-u}=\frac{s}{f}$; $f=\lambda\left(1-F(w_r)\right)$; and $u=\frac{s}{s+\lambda\left(1-F(w_r)\right)}$; $w_r=b+\lambda\int_{w_r}^{\infty}(J(w)-V)dF(w)$; $J(w)$ denotes the future earning associated with a job that offers wage w , and V is the value of vacancy when unemployed

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numerical examples and certain conclusions about the search and matching theory of unemployment.

2. Literature review on search theory of unemployment

The idea that a theory of unemployment can be built on the assumption that trade in the labor market is an economic activity was first explored by a number of authors in the late 1960's, in what is now known as search theory, see for example Stigler (1962) or economics of information and job search see McCall, J. (1970). The most influential papers in this tradition were Alchian (1969), Phelps (1968), and Mortensen (1970); they were collected with other contributions in the Phelps volume (Phelps et al. 1970). The driving thought to this research came from Phelps's (1967) and Friedman's (1968) reappraisal of the Phillips curve and the natural rate approach to which this led. Early search theory assumed the existence of a distribution of wage offers for identical jobs; unemployment arose in equilibrium because workers rejected low-wage jobs. This aspect of the theory was criticized both on logical grounds (these models take into account the supply side of the market) (Rothschild 1973) and on empirical grounds (Tobin 1972[6]; Barron 1975). An equilibrium model that met Rothschild's criticisms, but with a trivial role for workers looking for alternative jobs, was first presented in Lucas; Prescott (1974). Early applications of the concept of the matching function that downplay the role of reservation wages include Hall (1979), Pissarides (1979), and Bowden (1980). Diamond and Maskin (1979) used the similar concept of "search technology" in a related context. The application of zero-profit conditions for new jobs, leading to a closed model with endogenous demand for labor, was first discussed in Pissarides (1979, 1984b). The Nash solution was first applied in this context with fixed numbers of traders by Diamond (1982b), though earlier papers by Mortensen (1978) and by Diamond and Maskin (1979) discussed similar sharing rules for the division of the surplus from a job match. Despite its importance there are very few attempts to derive the matching function from primitive assumptions about trade. Hall (1979), Pissarides (1979), and Blanchard and Diamond (1994) have borrowed Butters's (1976) urn-ball game to derive an exponential function. The out-of-steady-state analysis of unemployment and vacancies was first discussed in Pissarides (1985a, 1987). In Pissarides (1985a), imputed unemployment income is assumed fixed, but the model contains more other features than the models in this review. In Pissarides (1987) unemployment income was allowed to depend on wealth. Large literature testifies on the importance on matching frictions and job rationing[7] as a source of unemployment, Michaillat (2012)[8].Labor markets see constant job creation, job destruction, and a very large flows of workers see for example Blanchard and Diamond (1989). Next, the fact that when there is search on the job the optimal policy can be described by two reservation wages was first noted in a partial context by Burdett (1978). The early literature is surveyed by Mortensen (1986). Jovanovic's (1979) model of turnover uses the latter mechanism and is built into an equilibrium search model in Jovanovic (1984)[9]. Vacancy chains caused by quitting are studied by Contini and Revelli (1997) and

[6] Tobin (1972) explained that the job seeking theory of Phelps et.al. (1970), is useful in explaining the voluntary frictional unemployment. But in the Beveridge curve reality –"vacancies should not be less than unemployment. But because of limited capital stocks and interdependence among skills, jobs cannot be indefinitely multiplied without lowering their marginal productivity". .."Our wise and benevolent planner would not place people in jobs yielding less than the marginal value of leisure. Given this constraint on the number of jobs, he would always have to keep some workers waiting, and some jobs vacant"..wrote Tobin (1972) acknowledging that there must be involuntary unemployed workers.

[7] Models of job ration include efficiency wage models, Solow 1979, Akerlof gift-exchange model (1982), insider-outsider models such as Lindbeck ; Snower 1988,and social norm models Akerlof (1980).

[8] This survey in modeling the matching frictions used the literature and it imposed a vacancy posting costs, see: Pissarides 1985; Mortensen and Pissarides 1994; Pissarides 2000; Shimer 2005; Hall 2005a.About the wage schedule in such an environment: The marginal product of labor always exceeds the flow value of unemployment, normalized to zero, so there are always mutual gains from matching. But there is no compelling theory of wage determination there. In other models such as those as: Hall 2005b; Shimer 2012, the labor market rapidly converges to an equilibrium in which inflows to and outflows from employment are large.

[9] In these models Jovanovic assumes that workers productivity is unknown to the firm at the beginning. Over time firm and the worker gain information about the value of the job.

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Akerlof, Rose, and Yellen (1988). Some papers have focused on costly search and the cost of advertising vacant jobs, see Howitt,McAfee (1987).

Materials and methods

3.Diamond-Mortensen-Pissarides (DMP) model

Economists had been using search models for more than 50 years to describe labor market more closely. And the seminal work of Diamond(1982b); Pissarides (1985); and Mortensen and Pissarides (1994), had become a framework for macroeconomists to study unemployment, Bhattacharya et al. (2017).Some important standard textbook in macroeconomics that use DMP framework include: Carlin and Soskice (2006); Williamson (2013); Chugh (2015).DMP model has been accepted throughout macroeconomics in the economics of business cycles, Merz (1995) ;Andolfatto (1996), in the New Keynesian model, see Gertler, Trigari (2009),in the area of monetary policy, see Blanchard and Gali (2010);and in the field of endogenous disasters, Petrosky-Nadeau, Zhang, and Kuehn (2015) ,see Petrosky-Nadeau, Zhang(2017).As per Hall (2012), DMP model is a central component of modern macroeconomics.

4.DMP framework

Matching function is given as:$mL = m(uL, vL)$,it is concave and homogenous of degree 1. Homogeneity or constant returns to scale. Where u is unemployment rate, v -vacancy rate, uL unemployed worker L-total labor force, and vL job vacancies. Vacancy to filled jobs equals $\frac{v}{u}$ is denoted to θ [10] and equals to: $\theta = m\left(\frac{u}{v}, 1\right)$.Also, δt is a small time interval during some vacant job is matched to an unemployed person,with a probability $q(\theta)\delta t$. Toa related Poisson proces $\lambda = \frac{m(uL,vL)}{uL}$ where $\lambda = \theta q(\theta)$ and has elasticity $1 - \eta(\theta) \geq 0$ .The mean duration of unemployment is $1/\theta q(\theta)$.Worker goes from employment to unemployment with probability $\lambda\delta t$, the mean number of workers who enter unemployment during a small time interval is $\lambda(1-u)L\delta t$, and the mean number who leave unemployment is $mL\delta t$,pr we can rewrite the latter as: is $u\theta q(\theta)L\delta t$,where $\theta q(\theta)\delta t$ is the transitional probability of unemployed. The evolution of mean unemployment is given as:

equation 1

$$\dot{u} = \lambda(1-u) - \theta q(\theta)u$$

In the steady-state the mean rate of unemployment is given as: $\lambda(1-u) = \theta q(\theta)u$. he equation that determines unemployment in terms of two transition states is :$u = \frac{\lambda}{\lambda+\theta q(\theta)}$. Job creation rate is defined as the ratio of the number of jobs created to employment $\frac{m(v,u)}{1-u}$,and job destruction rate is similarly defined as the ratio of the total number of jobs destroyed to employment $\frac{\lambda(1-u)}{1-u}$. Let J be the present-discounted value of expected profit from an occupied job and V the present-discounted value of expected profit from a vacant job. With a perfect capital market, an infinite horizon and when no dynamic changes in parameters are expected, V satisfies the Bellman equation:

equation 2

$$rV = -pc + q(\theta)(J - V).$$

[10] $\theta = \frac{v}{u}$ is a market tightness, and for the firms probability of filling a vacancy is given as:$\frac{m(u,v)}{v} = m\left(\frac{1}{\theta}, 1\right) \equiv q(\theta)$, and $q'(\theta) < 0$; and for the workers probability of finding a job is: $\frac{m(u,v)}{v} = m(1,\theta) \equiv \theta q(\theta)$.There flowing applies : $\lim_{\theta\to 0}[\theta q(\theta)] = \lim_{\theta\to\infty} q(\theta) = 0$ and $\lim_{\theta\to\infty}[\theta q(\theta)] = \lim_{\theta\to\infty} q(\theta) = +\infty$

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A job is an asset owned by the firm. In a perfect capital market the valuation of the asset is such that the capital cost, rV, is exactly equal to the rate of return on the asset: The vacant job costs pc per unit time and changes state according to a Poisson process with rate $q(\theta)$. The equilibrium condition for the supply of vacant jobs is $V = 0$, implying that :$J = \frac{pc}{q(\theta)}$. This is the second key equation of the equilibrium model. For an individual firm, $1/q(\theta)$ is the expected duration of a vacancy. The flow capital cost of the job is rJ. In the labor market, the job yields net return $p — w$, where p is real output and w is the cost of labor. The job also runs a risk λ of an adverse shock, which leads to the loss of J. Hence J satisfies the condition, $rJ = p - w — \lambda J$. The firm takes the interest rate and product value as given, but the wage rate is determined by a bargain between the meeting firm and worker as $p - w - \frac{(r+\lambda)pc}{q(\theta)} = 0$. Let U and W denote the present-discounted value of the expected income stream of, respectively, an unemployed and an employed worker, including the imputed return from nonmarket activities. The unemployed worker enjoys (expected) real return z while unemployed, and in unit time he expects to move into employment with probability $\theta q(\theta)$.Hence U satisfies:$rU = z + \theta q(\theta)(W - U)$.Employed workers earn a wage w; they lose their jobs and become unemployed at the exogenous rate it. Hence the valuation placed on them by the market, W, satisfies: $rW = w + \lambda(U — W)$. The permanent incomes of unemployed and employed workers, in terms of the returns z and w and the discount and transition rates:
equation 3

$$rU = \frac{(r+\lambda)z+\theta q(\theta)w}{r+\lambda+\theta q(\theta)} ; rW = \frac{\lambda z+[r+\theta q(\theta)]w}{r+\lambda+\theta q(\theta)}$$

The job is worth t the worker : $rW_i = w_i - \lambda(W_i - U)$the job rate for this job satsfies :
equation 4

$$w_i = argmax(W_i - U)^{\beta}(J_i - V)^{1-\beta}$$

β is labor's share of the total surplus that an occupied job creates,$0 \leq \beta \leq 1$, $\beta = \frac{1}{2}$ is the most plausible value.Now, rU -reservation wage, $\beta(p - r)$ fraction of net surplus they create by accepting the job, product value net of what they give up[11], $rU \Rightarrow rU = z + \frac{\beta}{1-\beta} pc\theta$. Aggregate wage equation that holds in equilibrium, is given as: $w = (1 - \beta)z + \beta p(1 + c\theta)$.

4.1 Steady-state equilibrium

Now, recall that the number of jobs is equal to employment, $(1 — u)L$, plus job vacancies,θuL; therefore, if we know $\theta$and u, we also know the number of jobs.Henceforth, θ is the labour market tightness or $\theta = \frac{v}{u}$ and $u = \frac{\lambda}{\lambda+\theta q(\theta)}$ unemployment rate and $p - w - \frac{(r+\lambda)pc}{q(\theta)} = 0$ wage rate is determined by a bargain between the meeting firm and worker. Also,$w = (1 - \beta)z + \beta p(1 + c\theta)$ aggregate wage equation that holds in equilibrium and $(1 - \beta)(p - z) - \frac{r+\lambda+\beta\theta q(\theta)}{q(\theta)}\text{pc} = 0$ equilibrium condition for θ. If we let $z = \rho w$, where p is the replacement rate (a policy parameter), then the wage equation becomes :$w = \frac{\beta(1+c\theta)}{1-(1-\beta)\rho} p$. The job creation condition now becomes $1 - \frac{\beta(1+c\theta)}{1-(1-\beta)\rho} - \frac{(r+\lambda)c}{q(\theta)} = 0$.

4.2 Capital

Now we define $k = \frac{K}{pN}$ capital stock per efficiency unit labor. $f(k) = F\left(\frac{K}{pN}.1\right)$ output per efficiency unit of labor, $f'(k) > 0; f''(k) < 0$ J is determined by the asset-valuation condition

[11] It is intuitive for a market equilibrium if we note that $pc\theta$ is the average hiring cost for each unemployed worker (since $pc\theta = pcv/u$ and pcv is total hiring cost in the economy).

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equation 5

$$r(J+pk) = pf(k) - \delta pk - w - \lambda J$$

equilibrium condition for the firm's capital stock, is given as:$f'(k) = r + \delta$. We restate here the equilibrium conditions with this generalization: $f'(k) = r + \delta$ equilibrium condition for the firm's capital stock,and now we have: $p[f(k) - (r+\delta)k] - w - \frac{(r+\lambda)pc}{q(\theta)} = 0$;wage rate is determined by a bargain between the meeting firm and worker: $w = (1-\beta)z + \beta p(f(k) - (r+\delta)k + c\theta)$ aggregate wage equation that holds in equilibrium $u = \frac{\lambda}{\lambda + \theta q(\theta)}$ unemployment rate.

4.3 Out of steady-state dynamics

Let again V denote the asset value of a vacant job. With a perfect capital market and perfect foresight it satisfies the arbitrage equation :$rV = -pc + \dot{V} + q(\theta)(J - V)$. Expected capital gains from changes in the valuation of the asset $\dot{V}$, yield $-pc$ and expected capital gains from the chance of finding a worker to take the vacancy $q(\theta)(J-V)$.The value of a filled job, J, satisfies a similar arbitrage condition. In the absence of capital we get: $rJ = p - w + \dot{J} - \lambda J\dot{J} -$ is the expected capital gain from changes in job value during adjustment. Our assumption that firms exploit all profit opportunities from new jobs, regardless of whether they are in the steady state or out of it, implies that $V = \dot{V} = 0 \Rightarrow J = \frac{pc}{q(\theta)} \Rightarrow \dot{J} = (r+\lambda)J - (p - w)$.

4.4 Endogenous job destruction in DMP search model

Reservation productivity R, defined by $J(R) = 0$. By the reservation property, firms destroy all jobs with idiosyncratic productivity $x < R$ and continue producing in all jobs with productivity $x \geq R$. Therefore the flow into unemployment (job destruction) is given by $\lambda(R)(1 — u)$. As before, the flow out of unemployment is equal to job creation, $m(v,u) = \theta q(\theta)u$.The evolution of unemployment is therefore given by

equation 6

$$\dot{u} = \lambda G(R)(1 — u) — \theta q(\theta)u$$

And its steady-state value is given by : $u = \frac{\lambda G(R)}{\lambda G(R) + \theta q(\theta)}$. The asset value of a job with productivity in the range $1 \geq x \geq R$ satisfies :$rJ(x) = px - w(x) + \lambda \int_R^1 J(s)dG(s) - \lambda J(x)$.For the worker the returns from working at a job with idiosyncratic productivity x satisfy : $rW(x) = w(x) + \lambda \int_R^1 W(s)dG(s) + \lambda G(R)U - \lambda W(x)$ .As before, we assume that the wage rate divides the job surplus in fixed proportions at all x, so the sharing rule that generalizes is:

equation 7

$(x) — U = B[J(x) + W(x) — V — U]; \forall: 1 \leq x \leq R$

Noting that all jobs are created at maximum idiosyncratic productivity, $x = 1$, the expected profit from a new job vacancy satisfies :$rV = — pc + q(\theta)[J(1) — V]$. Here $q(\theta)$ is the rate at which workers arrive to job vacancies. :$J(1) = \frac{pc}{q(\theta)}$. The unemployed worker's expected returns as:$rU = z + \theta q(\theta)[W(1) - U] = z + \frac{\beta}{1-\beta} pc\theta$.

4.4.1 Wage equation in the endogenous job destruction in DMP search model

This is the wage equation here:

equation 8

$$w(x) = (1 — \beta)z + \beta p(x + c\theta); (r + \lambda)J(x) = (1 - \beta)(px - z) — \beta pc\theta + \lambda \int_R^1 J(s)dG(s).$$

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$$(r + \lambda)J(x) = (1 - \beta)p(x - R);\ (r + \lambda)J(x) = (1 - \beta)(px - z) - \beta pc\theta + \frac{\lambda(1-\beta)p}{r+\lambda}\int_r^1 (s - R)dG(s).$$

the expected gain from a new job to the firm must be equal to the expected hiring cost that the firm has to pay : $(1-\beta)\frac{1-R}{r+\lambda} = \frac{c}{q(\theta)}$. The job destruction condition is derived by evaluating it at $x = R$ and substituting the result into the zero-profit condition for the reservation job:$R - \frac{z}{P} - \frac{\beta c}{1-\beta}\theta + \frac{\lambda}{R+\lambda}\int_R^1 (s - R)dG(s) = 0$. Suppose that z is a fixed proportion of the mean wage rate observed in the market, write z as a proportion of the mean wage, the effect of p on the reservation productivity disappears i.e. $z = \rho E[w(x)|x \geq R]$.Here $0 \leq \rho \leq 1$ is the replacement rate . Expected value of wage is given as:$E[w(x)|x \geq R] = (1-\beta)z + \beta p[E(x|x \geq R) + c\theta]$ and the fixed proportion of mean wage rate is $z = \frac{\rho\beta}{1-\rho(1-\beta)}p[E(x|x \geq R) + c\theta]$. The new job destruction condition here is:

equation 9

$$R - \frac{\rho\beta}{1-\rho(1-\beta)}\big(E(x|x \geq R)\big) - \frac{\beta}{1-\beta}\frac{c\theta}{1-\rho(1-\beta)} + \frac{\lambda}{r+\lambda}\int_R^1 (s - R)dG(s) = 0$$

For the analysis of additive shifts, we suppose that all idiosyncratic productivities x depend on an additive shift parameter h, such that $x(h) = x + h$. Thus, in examining the effects of a change in the variability of the productivity distribution, we write $x(h) = x + h(x - \bar{x})$ and $(1-\beta)(1+h)\frac{1-R}{r+\lambda} = \frac{c}{q(\theta)}$ from which follows that $(1+h)R - h\ \bar{x} + \frac{(1+h)\lambda}{r+\lambda}\int_R^1 (s - r)dG(s) = \frac{z}{p} + \frac{\beta}{1-\beta}c\theta$. By differentiation it can be shown that at $h = 0$ both market tightness and the reservation productivity rise. Differentiation of previous equation gives:

equation 10

$$\left[1 - \frac{\lambda}{r+\lambda}[1 - G(R)]\right]\frac{\partial R}{\partial h} = \bar{x} - R - \frac{\lambda}{r+\lambda}\int_R^1 (s - R)dG(s) + \frac{\beta}{1-\beta}c\ (\partial\theta\ /\partial h\ )$$

Differentiation with respect to h gives: $\frac{c\eta(\theta)}{\theta q(\theta)}\frac{\partial\theta}{\partial h} = \frac{1-\beta}{r+\lambda}\left[1 - R - \frac{\partial R}{\partial h}\right]$ and the elasticity notation is given as: $\eta(\theta) = -\frac{\partial q(\theta)}{\partial\theta}\frac{\theta}{q(\theta)}$ [12].

4.5 Wage bargain implications

We consider finally the implications of a higher labor share in the wage bargain, β.

equation 11

$$\left[1 - \frac{\lambda}{r+\lambda}[1 - G(R)]\right]\frac{\partial R}{\partial\beta} = \frac{1}{1-\beta}\left[\frac{c\theta}{1-\beta} + \beta c\ \frac{\partial\theta}{\partial\beta}\right];\ \frac{c\eta(\theta)}{\theta q(\theta)}\frac{\partial\theta}{\partial h} = -\frac{1-R}{r+\lambda} - \frac{1-\beta}{r+\lambda}\frac{\partial R}{\partial\beta}$$

the reservation productivity is independent of labor's share, and the net effect of labor's share on market tightness becomes: $\frac{\partial\theta}{\partial\beta} = -\frac{\theta}{(1-\beta)\eta}$.

4.6 Capital in the endogenous job destruction model

[12] Furthermore for the average productivity $\bar{x}$: $\left[1 - \frac{\lambda}{r+\lambda}[1 - G(R)]\right](1 - R) - \bar{x} + R + \frac{\lambda}{r+\lambda}\int_R^1 (s - R)dG(s)\ ;\ 1 - \bar{x} - \frac{\lambda}{r+\lambda}\int_R^1 (1 - s)dG(s);\ 1 - \bar{x} = \int_0^1 (1 - s)dG(s),\ \bar{x} - R - \frac{\lambda}{r+\lambda}\int_R^1 (s - R)dG(s) + \frac{\beta\theta q(\theta)}{\eta(\theta)}\frac{1-R}{r+\lambda};\ \bar{x} - R - \frac{\lambda}{r+\lambda}\int_R^1 (s - R)dG(s) + \frac{\beta}{(1-\beta)\eta(\theta)}c\theta$

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Aggregate capital in this economy is :$K = L(1-u)pk\int_R^1 xdG(x)$ and aggregate output $F(L(1 — u), K)$, or in per unit terms :$Y = L(1-u)pf(k)\int_R^1 xdG(x)$. The job creation condition, which as before satisfies it is:$(1-\beta)\frac{1-R}{r+\lambda}[f(k)-(r+\delta)k] = \frac{c}{q(\theta)}$.The job destruction condition is derived from :$[f(k)-(r+\delta)k]\left[R+\frac{\lambda}{r+\lambda}\int_R^1(s-R)dG(s)\right] = \frac{z}{p}+\frac{\beta}{1-\beta}c\theta$. Some empirical studies of job flows to support this theory include:Leonard (1987) and Dunne, Roberts, and Samuelson (1989) for the United States; Konings (1995) and Blanchflower and Burgess (1993) for the United Kingdom; Boeri and Cramer (1992) for Germany; Broersma and den Butter (1994) and Gautier (1997) for the Netherlands; Lagarde, Maurin, and Torelli (1994) for France; Albaek and Sorensen (1995) for Denmark; and Contini et al. (1995) for countries of the European Union. This model is based on Mortensen, Pissarides (1994)

4.6 Search intensity and job advertising

Now,the job matching technology as: $m = m(su.av)$also the efficiency units of job vacancies as av, thus, let s be a variable measuring the intensity of search by workers,and let a be a variable measuring job advertising. Key equations here are:$q_i^w = \frac{s_i}{s_u}m(su,av)$; $\theta = \frac{v}{u}$; $q_i^w = q^w(s_i, s\,a\theta)$.Index i denotes worker,s_i are efficiency search units.The process that transfers a job from a vacant state to a filled one for each efficiency unit of advertising supplied is Poisson with rate $m(su,av)/av$. Transition probability in unit time is : $q_j = \frac{a_j}{a_v}m(su,av)$. The equilibrium condition for unemployment, the Beveridge curve, is given, as before, by : $u = \lambda/(\lambda + q\theta(s,a,\theta)$ .In general, we assume that the cost of s_i units of search is σ_i, where: $\sigma_i = \sigma(s_i,z)$, $\sigma_s(s_i,z) > 0$, $\sigma_{ss}(s_i,z) > 0$, $\sigma_z(s_i,z) \geq 0$[13]. We assumed that the cost of a vacancy, pc, is out of the control of the firm. Here we assume that the cost depends on the level of advertising that the firm chooses for the job. We write:$c = c(a_j), c'(a_j) > 0, c''(a_j) \geq 0$. The firms expected profit from one more job vacancy is: $rV_j = -pc(a_j) + q(a_j;.)(J - V_j)$ also,$-pc(a_j) + \frac{\partial q_i}{\partial a_j}(J - V_i) = 0$, and $\frac{\partial q_i}{\partial a_j} = \frac{q(s,a,\theta)}{a}(J - V_j) = 0$. The final result about the choice of advertisement is :

equation 12

$$J = \frac{pc(a_j)}{q(a_j;.)}\,;\ \frac{c'(a)a}{c(a)} = 1$$

wages are given by : $w = (1-\beta)[z-\sigma(s,z)] + \beta p(1+c\theta)$.And the steady state search effort and unemployment are : $s\sigma_s(s,z) = \frac{\beta}{1-\beta}pc\theta$; $u = \frac{\lambda}{\lambda+\theta q(s,a,\theta)}$. If z represents entirely the imputed value of leisure, then net income during unemployment, $z — \sigma(s,z)$, has to be recalculated as the imputed value of total hours net of the hours of search, $h(s)$,z is the unemployment income. In the linear case the marginal cost of search is $\sigma_s,(s,Z) = zh'(s)$, and so the condition for equilibrium intensity, becomes $zsh'(s) = \frac{\beta}{1-\beta}pc\theta$,$z = \rho w\ cs = \rho w h'(s)$ from where $w = \frac{\beta(1+c\theta)}{1-(1-\beta)[b+\rho(1-h(s))]}p$. The equilibrium condition for search intensity then becomes:

equation 13

$$\frac{\rho s(1+c\theta)h'(s)}{1-(1-\beta)\left[b+\rho\left(1-h(s)\right)\right]} = \frac{c\theta}{1-\beta}$$

[13] The optimal s_i satisfies :$-\sigma_s(s_i,z) + \frac{\partial q_i^w}{\partial s_i}(W - U_i) = 0$; $W - U = \frac{w+z+\sigma(z,s)}{r+\lambda+q^w(s,a,\theta)}$; $-\sigma_s(s_i,z) + \frac{w+z+\sigma(z,s)}{r+\lambda+q^w(s,a,\theta)}\frac{q^w(s,a,\theta)}{s} = 0$

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4.7 Stochastic job matchings

When the jobs and workers are brought together, one pair may be more productive than the other. The new feature now introduced is the ex post match specific heterogeneity. We refer to this extension of the model as stochastic job matchings. Then the rate of job contacts is given by :$m = m(u, v)$. Because all firms and workers are ex ante identical, the reservation productivity α_r is common to all job-worker pairs. So if all productivities $\alpha \geq \alpha_r$ are accepted, the fraction of acceptable job contacts is:$\int_{\alpha_r}^{1} dG(\alpha) = 1 - G(\alpha_r)$. Process of arriving at the job $q = [1 - G(\alpha_r)]\ \frac{m(u,v)}{v} = [1 - G(\alpha_r)]m$, $[1 - G(\alpha_r)]m$ is the rate of job matching. And workers move from unemployment to employment at the rate

equation 14

$$q^w = [1 - G(\alpha_r)]\frac{m(u,v)}{v} = [1 - G(\alpha_r)]\theta q(\theta)$$

4.7.1 The choice of reservation wage

In general, the wage rate offered will depend on the productivity of the job match[14],$w_j = w(a_j)$; $w_r = w(\alpha_r)$; $q_i^w = \theta q(\theta)[1 - G(\alpha_{ri})]$. The reservation wage then becomes:

equation 15

$$w_{ri} = \frac{(r+\lambda)z + q_i^w w_i^e}{r+\lambda+q_i^w}\ ;\ w_r = \frac{(r+\lambda)z + q^w w^e}{r+\lambda+q^w}$$

4.7.1 The choice of hiring standard

Hiring standard a_f satisfies: $a_f^e = E(a|a \geq a_f)$.Where : $rJ_f^e = pa_f^e - w_f^e - \lambda J_f^e$:$rJ_j = pa_j - w(a_j) - \lambda J_j$ and $rV = -pc + q_f(J_f^e - V)$. q_f is the rate at which vacant job becomes filled :$q_f = q(\theta)[1 - G(a_f)]$ and $J_f^e = \frac{pc}{q_f}$. The net effect is : $\frac{\partial \alpha_r}{\partial \beta} = \frac{(r+\lambda)c\theta}{(1-\beta)^2}\frac{\eta(\theta)-\beta}{\beta\theta q(\theta)[1-G(\alpha_r)]+(r+\lambda)\eta(\theta)}$.

The slope of probability of leaving employment is given as:$\frac{\partial q^w}{\partial \theta} = q(\theta)(1-\eta)[1 - G(\alpha_r)] - \theta q(\theta)q(\alpha_r)\ \frac{\beta c}{1-\beta}$, or in simplified terms:

equation 16

$$\frac{\partial q^w}{\partial \theta} = \frac{\partial q^w}{\partial \theta}\frac{\partial \theta}{\partial \beta} - \theta q(\theta)g(\alpha_r)\frac{c\theta}{(1-\beta)^2}$$

4.8 The role of policy

We will follow a simple approach to the modeling of hiring and firing taxes by assuming that the firm that hires a worker whose initial (general) productivity is p receives a hiring subsidy of pH, and when the separation takes place, it has to pay a tax pT. Unemployed workers receive some compensation, which is policydetermined. We assume that the policy parameter is the after-tax replacement rate[15], that is, the ratio of net unemployment benefit to average net income from work. We define the net unemployment benefit b by:

equation 17

$$b = \rho[w - T(w)]$$

[14] The net worth of unemployed worker i satisfies : $rU_i = z + q_i^w(W_i^e - U_i)\ \ rW_j = w_j + \lambda(U_i - W_j)$

[15] Here we introduce the possibility of progressive or regressive taxation by assuming that if the gross wage at a job j is w_j the net wage received by the worker is $(1 - t)(w_j + \tau)$.the net transfer from the worker to the tax authorities is $T(w_j) = tw_j - (1-t)\tau$.

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Where $-T(w)$ is the average net wage rate, ρ is the policy parameter $0 \leq \rho \leq 1$. The firms net worth from a vacancy and from job paying w_j are given by :$rV = -pc + q(\theta)(J + pH - V)$; $rJ_j = p + a - w_j - \lambda(J_j + pF)$.Hiring subsidy of pH, Employment is subsidized at the rate a per job, firing tax pF, tax subsidy τ ,the replacemet rate ρ ,marginal tax rate t . Therefore the initial wage is chosen to maximize the product : $B_0 = (W_j - U)\hat{}\beta(J - j + pH - V)^{1-\beta}$. But after the worker is taken on, the benefit to the firm from continuation of the contract is only J_j since no further hiring subsidies are received. In contrast, now the firing tax becomes operational, and if the firm fails to agree to a continuation wage, its loss will be $J_j + pF$ and $B\left(W_j - U\right)^{\beta}\left(J_j + pF - V\right)^{1-\beta}$.Following the terminology introduced in the literature by Lindbeck and Snower (1988), we refer to w_{0j}, as the "outside" wage and to w_j as the "inside" wage: w_{0j}, is negotiated by those still outside the firm, before the firm gets locked in by turnover taxes, and w_j, is negotiated by those inside the firm, who benefit from the firing restrictions imposed on the firm. Given our assumptions, the outside (initial) wage solves: $\beta\frac{\partial W_j}{\partial w_{0j}}\left(J_j + pH - V\right) + (1-\beta)\frac{\partial J_j}{\partial w_{0j}}\left(W_j - U\right) = 0$ and and the inside (continuation) wage solves $\beta\frac{\partial W_j}{\partial w_{0j}}\left(J_j + pF - V\right) + (1-\beta)\frac{\partial J_j}{\partial w_j}\left(W_j - U\right)$. In the presence of taxes: $\frac{\partial W_j}{\partial w_{0j}} = \frac{\partial W_j}{\partial w_j} = \frac{1-T\prime(w_j)}{r+\lambda}$and $\frac{\partial J_j}{\partial w_{0j}} = \frac{\partial J_j}{\partial w_j} = -\frac{1}{r+\lambda}$. Imposing $V = 0$ and $w_j = w$ for all j—are:

equation 18

$$w_0 = \frac{1-\beta}{1-\rho(1-\beta)}\left[\frac{z}{1-t} - (1-\rho)\tau\right] + \frac{\beta}{1-\rho(1-\beta)}[(1 + c\theta - \lambda F + (r+\lambda)H)p + a]$$

$$w = \frac{1-\beta}{1-\rho(1-\beta)}\left[\frac{z}{1-t} - (1-\rho)\tau\right] + \frac{\beta}{1-\rho(1-\beta)}[(1 + c\theta - rF)p + a]$$

Equilibrium with policy now is given as:$p + a + \tau - \lambda pF + (r+\lambda)pH = \frac{z}{(1-\rho)(1-t)} + \frac{pc}{(1-\rho)(1-\beta)}(\beta\theta[1-(1-\beta)\rho]\frac{r+\lambda}{q(\theta)}$ and $u = \frac{\lambda}{\lambda+\theta q(\theta)}$. Job destruction with policy is given as: $rJ(x) = px - w(x) + \lambda\int_R^1 J(s)dG(s) - \lambda J(x)$.The Nash wage bargaining equation is given as: $w(x) = (1-\beta)z + \beta(x + c\theta)p$.Unemployment compensation with taxes is : $b = \rho(1-t)[E(w(x)|x \geq R) + \tau]$; $b = \rho(1-t)(p+\tau)$. The outside wage is given as: $w_0 = 1 - \beta\left[\frac{z}{1-t} - (1-\rho)\tau + \rho p\right] + \beta[(1 + c\theta - \lambda F + (r+\lambda)H)p + \beta a]$.The inside wage is: $w = (1 - \beta)\left[\frac{z}{1-t} - (1-\rho)\tau + +\rho p\right] + \beta[(x + c\theta + rF)p + \beta a]$.Reservation productivity is:$J(R) + pF = 0$ and $J(x) = (1-\beta)\frac{p(x-R)}{r+\lambda} - pF$. The job destruction rule with policy now becomes:

equation 19

$$R + \frac{a + (1-\rho)\tau}{p} = \rho + rF - \frac{z}{p(1-t)} - \frac{\beta c}{1-\beta}\theta + \frac{\lambda}{r+\lambda}\int_R^1 (s-R)dG(s) = 0$$

To close the model, we need to derive the equation for market tightness (job creation).And it goes as follows:

equation 20

$$w_o - w(R) = \beta[1 - R + (r+\lambda)(H-F)p$$

$$(r+\lambda)[J^0 - J(R)] = (1-\beta)(1-R)p - \beta(r+\lambda)(H-F)p$$

$$J^0 = \frac{pc}{q(\theta)} - pH$$

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$$(1-\beta)\left(\frac{1-R}{r+\lambda}-F+H\right)=\frac{c}{q(\theta)}$$

The net subsidy to hiring and firing, $H-F$, increases θ. And the steady stae employment is:$u=\frac{\lambda G(R)}{\lambda G(R)+\theta q(\theta)}$. Compensating Policy Changes follow:$F=H$ and $a+(1-\rho)\tau-p\rho+rpF-\frac{z}{1-t}=-z$: $a+\tau=-rpF+\frac{t}{1-t}z+\rho(p+\tau)$. Tax subsidy τ should be chosen to : $\tau=\frac{\rho}{1-\rho}p$ and $\tau=\frac{t}{1-t}z+\rho(p+\tau)$ where $\tau=\frac{tz+b}{1-t}$. The net revenue raised by the government is :

equation 21

$$T=[tw^e-(1-t)\tau](1-u)-ub$$

w^e is conditional expectation pre-tax wage $T=t(w^e-z)(1-u)-b$ and pre-tax wage rate for given x is also:

equation 22

$$w(x)=(1-\beta)\left(\frac{z+b}{1-t}-\tau\right)+\beta(x+c\theta+rF)+\beta a$$
$$w(x)=(1-\beta)z+\beta(x+c\theta)$$

Optimal subsidy is given as:$H=F+\left(\frac{1}{1-\beta}-\frac{1}{1-\eta}\right)\frac{c}{q(\theta)}$ and $a+\tau=\rho(p+\tau)+\frac{t}{1-t}z-rpF+\left(\frac{\beta}{1-\beta}-\frac{\eta}{1-\eta}\right)cp\theta$. It follows that the reservation productivity R with policy intervention is higher than in the policy-free environment if :$a+(1-\rho)\tau-p\rho+rpF-\frac{z}{1-t}<-z$; $a+\tau<\frac{tz+b}{1-t}-rpF$.). The effect on job creation is neutralized if hiring subsidies and firing taxes are chosen such that

equation 23

$$-\frac{dR}{r+\lambda}-F+H=0$$

On unemployment insurance see, for example, the papers in the Phelps(1970) volume which address the positive aspects of the question of unemployment compensation and search, as do numerous papers on partial models of search; see, for example, Mortensen (1977) and the other papers collected in the same issue of the journal[16].

5. Labor and wages in Real business cycles model (RBC)

Kydland, and Prescott introduced three revolutionary ideas in their (1982) paper “Time to Build and Aggregate Fluctuations.”, see Rebelo (2005). The first is the business cycles models can be studied in general equilibrium framework. Second, is the possible unification between growth theory and business cycles theory, and that business cycle models must be consistent with the empirical regularities of long-tun growth. And the third is the possibility of calibration with the parameters drawn and generating the artificial data that can be compared with the original data. Here we will simulate RBC model with habits and RBC model presented by the IRF function and we will outline some characteristics of the wages and employment in relation to spending and productivity shocks.

5.1 Real business cycles with habits

Economy is populated by a large number of households $j\in[0,1]$, the utility function of the representative household j is given as:

[16] For empirical work on the effect of unemployment compensation on search activity, see the survey by Devine and Kiefer (1991), the book by Layard, Nickell and Jackman (1991), and the evaluations by Atkinson and Micklewright (1985, 1991).

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equation 24

$$u\big(c_t(j), h_t(j)\big) - \frac{c_t(j)^{1-\sigma^c}}{1-\sigma^c} - \frac{h_t(j)^{1+\frac{1}{\sigma^L}}}{1+1/\sigma^L}$$

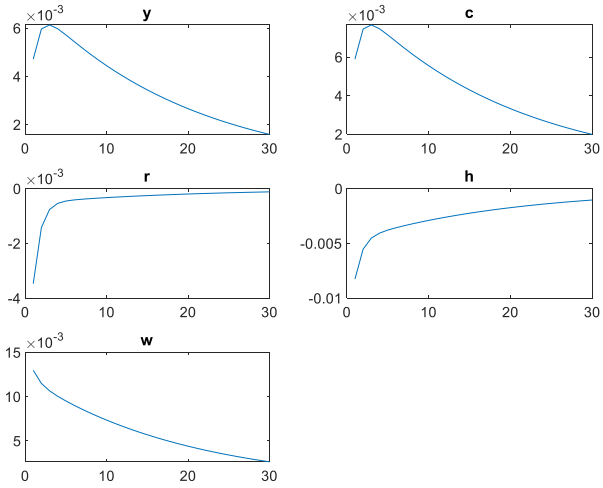
Where σ^c is the risk aversion and σ^L is the frischian elasticity of labour[17], $u(\cdot)$ is increasing in consumption $c_t(j)$ and decreasing in hours worked $h_t(j)$. Welfare index is defined as a sum of current and expected utilities:

equation 25

$$\mathcal{W}_t(j) = \sum_{\tau=0}^{+\infty} \beta^\tau u(c_{t+\tau}(j), h_{t+\tau}(j))$$

Additionally, the production technology follows a Cobb-Douglas technology:$y_t(j) = e^{\varepsilon_t^A} h_t(j)^{1-\alpha}$.Where $\varepsilon_t^A \sim \mathcal{N}\big(0, \sigma_{A,t}^2\big)$is an IID exogenous disturbance associated with a productivity shock. The resources constraint is given by the demand from households and authorities and it is equal to: $y_t = c_t + g^y \bar{y} e^{\varepsilon_t^G}$ .Where ε_t^G is a IDD normal shock,$\bar{y}$ is the steady-state level of GDP, and g^y is the spending to GDP ratio. Basic parameters for RBC model are:$\alpha = 0.36$ (capital factor); $\beta = 0{,}99, g^y = 0{,}2$; $\sigma^c = 2.5$; $\sigma^L = 0.5$, and habit parameter

Figure 1 RBC model with consumption habits and productivity shock $VC(1,1) = 0.01^2$



[17] The Frisch elasticity measures the relative change of working hours to a one-percent increase in real wage, given the marginal utility of wealth λ .In the steady-state benchmark model is given as: $\frac{dh/h}{dw/w} = \frac{1-h}{h}\left(\frac{1-\eta}{\eta}\theta - 1\right)^{-1}$

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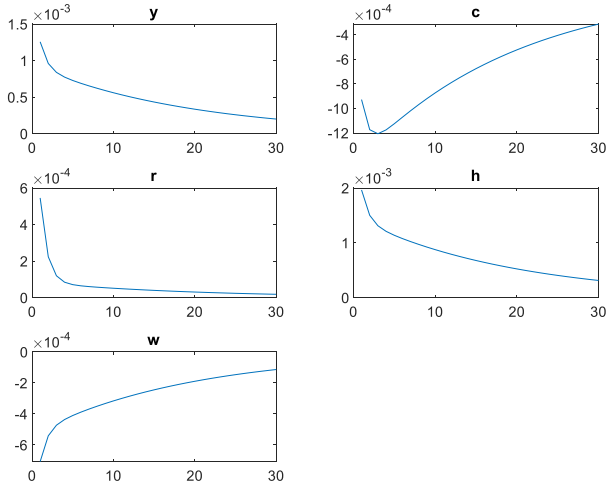
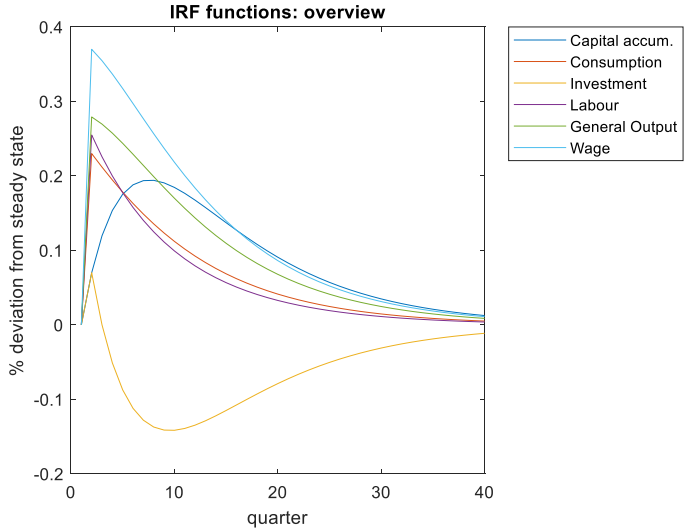
Figure 2 RBC model with consumption habits and spending shock $VC(1,1) = 0.01^2$



Variance covariance matrix for shocks, for productivity shock $VC(1,1) = 0.01^2$ and for spending shock $VC(2,1) = 0.01^2$.So in the fig.1 as production falls, real interest rate rises, same with labor hours or labor supply. Since the productivity shock many workers are unemployed. Also, real wage decreases with consumption decreasing also. Real interest rate here may be causing productivity fall, and downward real wage. However, with government spending shock(endogenous), productivity increases, also real wage is rising. While the real interest rate is failing.Next graph ,shows the movement of 6 macro variables and their IRF functions[18] labor market in RBC framework is presented by two variables: Labour and wage.

Figure 3



The IRF functions of all six macro variables: Capital accumulation, Consumption, Investment, Labour, General output and Wage, shows that each of the six variables after the shock in the

[18] The irf function returns the dynamic response, or the impulse response function (IRF), to a one-standard-deviation shock to each variable in a VAR(p) model. A fully specified varm model object characterizes the VAR model.

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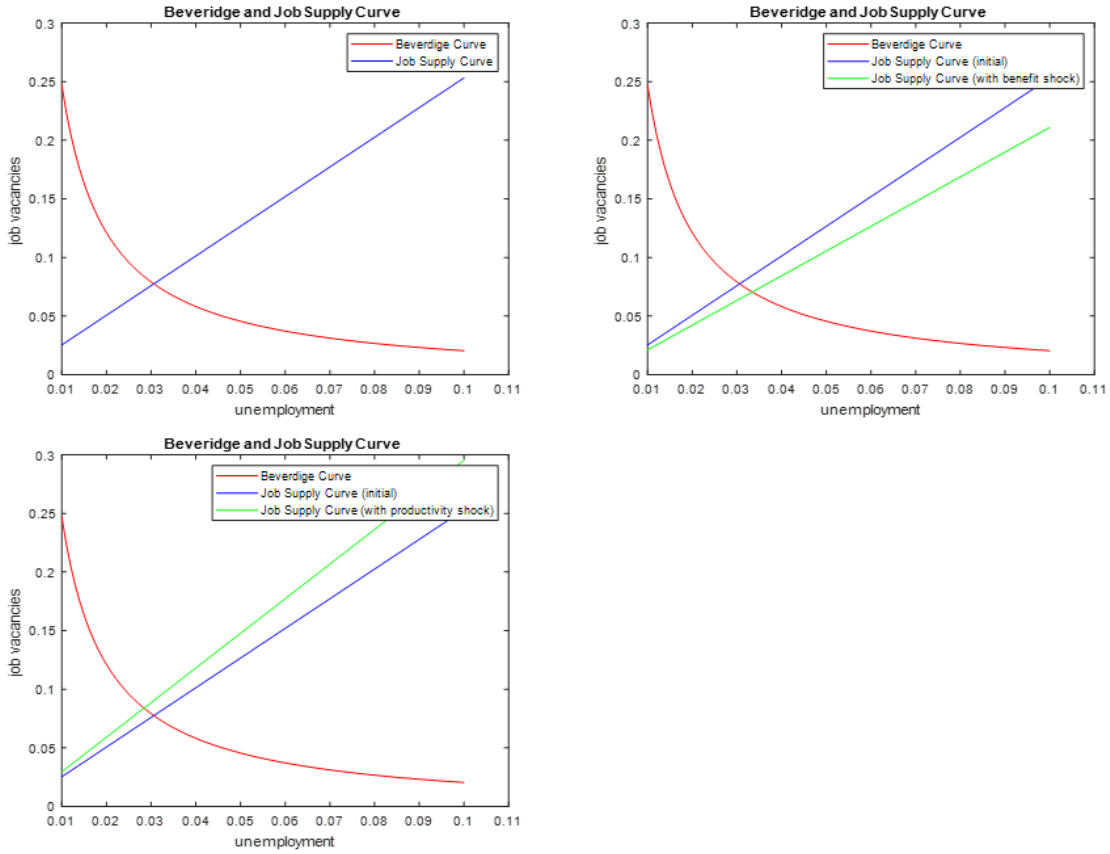
error term converges to steady-state (around 0% deviation from steady-state) in around 40 quarters.

RESULTS AND DISCUSSION

6.Diamond-Mortensen -Pissarides (DMP) simulation

Diamond-Pissarides-Mortensen model is a dynamic version of labor market depiction. In the next three figures are presented: in fig.4 Beveridge curve and job supply curve,in fig.5 Beveridge curve and job supply curve with benefit shock,and in fig.6 Beveridge curve and job supply curve (initial) and job supply curve (productivity shock). Diamond-Mortensen-Pissarides search model and calculates a Beveridge curve (mathematical description of the labor market)

Figure 4 DMP model dynamics (with benefit shocks and productivity shocks)



The association between unemployment productivity and benefits in DMP framework is as follows. Constant returns matching function is $M(uL, vL)$ where uL-are unemployed, vL-are vacancies and $M(uL, vL) = vL \cdot M\left(\frac{u}{v}, 1\right)$ and $\theta \equiv \frac{v}{u}$ and the vacancy filling rate is:$q \equiv \frac{M}{vL} = M\left(\frac{u}{v}, 1\right) = M\left(\frac{1}{\theta}, 1\right) = q(\theta)$. And unemployed exit hazard is :$\theta q(\theta) = \frac{M}{uL}$, where $\theta q(\theta) \to 0$ as $\theta \to 0$ and $\theta q(\theta) \to \infty$ as $\theta \to \infty$. Value of job vacancy is: $J = \frac{c}{q(\theta)}$, $1/q(\theta)$ is the expected time to fill a vacancy, and c are the cost per period.Where $c = y - w$; where y is output and w are the wages, and if we know that $rV = -c + q(\theta)(J - V)$, where J-is the value of filled vacancy,and $V$is the value of unfiled vacancy.Now if we assume that $V = 0$ than $J = c/q(\theta)$.Now if we equate job creation $\theta q(\theta) \times uL$ and job destruction rate $\delta(1 - u)L$ we get equilibrium unemployment equation such as:

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equation 26

$$u = \frac{\delta}{\delta + \theta q(\theta)} = \frac{\delta}{\delta + \left(\frac{v}{u}\right) q\left(\frac{v}{u}\right)}$$

Where $q(\theta) = \frac{(r+\delta)c}{y-w}$ so that we can write: $u = \frac{\delta}{\delta + \theta\frac{(r+\delta)c}{y-w}} \Rightarrow \frac{\delta(y-w)}{\delta(y-w)+\theta(r+\delta)c} = 1 + \frac{\delta(y-w)}{\theta(r+\delta)c}$.If we take logs from both sides:

equation 27

$$\ln(u) = \ln\left(\frac{\delta(y-w)}{\theta(y-w)+\theta(r+\delta)c}\right) = \ln(\delta) + \ln(y-w) - ln\theta(y-w) - \ln(\theta) - ln(r+\delta) - \ln(c)$$
$$= \ln(\delta) + \ln(y) - \ln(w) - \ln(\theta)\, y - \ln(\theta) - \ln(r+\delta) - \ln(c) = \ln(\delta) + \ln(y) - \ln(w) - \ln(\theta)\, y - \ln(\theta) - \ln(r+\delta) - \ln(y) + \ln(w) = \ln(\delta) - \ln(\theta)\, y - \ln\,(\theta) - \ln(r+\delta)$$

For the association benefits and unemployment, the solution might be straightforward, since the value of unemployment is $rU = b + y(\theta)[W-U]$, where w is intertemporal value of employment and u-is intertemporal value of unemployment and $rW = w - \theta(W-U)$, and b are unemployment benefits. And now from previous we know that following applies:

equation 28

$$W - U = \frac{\beta}{1-\beta}(J - V) \iff (r+\delta)(W-U) = (r+\delta)(J-V)$$
$$\iff (r+\delta)\big(w - b + \theta q(\theta)(W-U)\big) = y - w$$

For a free entry we have $J = \frac{c}{q(\theta)}$, and $W - U = \frac{\beta}{1-\beta}\frac{c}{q(\theta)}$; and the wage equation now becomes: $w = (1-\beta)b + \beta(y + c\theta)$ where $\beta$is the bargaining power of labor.If $\beta = 1$ real wage is equal to productivity +average search costs $\frac{cv}{u}$. If $\beta = 0$ real wage is equal to unemployed income. Labor market equilibrium is established on the intersection between wage setting curve (labor supply curve) and free entry conditions (which is approximately equal to labor demand curve), and now:

equation 29

$$w = (1-\beta)b + \beta(y + c\theta)$$
$$(1-\beta)(y-b) = \frac{c}{q(\theta)}[\delta + r + \beta\theta q(\theta)$$

Or if we define unemployment to be supply minus demand for labor i.e $u = w - (1-\beta)(y-b)$ and if we simplify $u = w - (y - b - \beta y + \beta b) = w - y + b - \beta y - \beta b$ and :

equation 30

$$u = (1-\beta)b + \beta(y + c\theta) - (\frac{c}{q(\theta)}\big[\delta + r + \beta\theta q(\theta)\big)$$
$$\Rightarrow b - \beta b + \beta y + c\beta\theta - \left(\frac{c\delta}{q(\theta)} + \frac{cr}{q(\theta)} + c\beta\theta\right) = b - \beta b + \beta y - c\frac{(\delta + r)}{q(\theta)}$$

Since $b - \beta b > 0$ since we know that labor bargaining power ideally is around $\beta = \frac{1}{2}$.

7. Bhattacharya et al. (2017) model version of DMP model

The number of new hires h_t is equal to :

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equation 31

$$h_t = A\sqrt{u_t \cdot v_t}$$

Where A is the efficiency of the matching process; u_t are the unemployed and v_t are vacancies. The job finding rate f_t is equal to:

equation 32

$$f_t = \frac{h_t}{u_t} = \frac{A\sqrt{u_t \cdot v_t}}{u_t} = A \cdot \sqrt{\theta}$$

Where $\theta = \frac{v_t}{u_t}$is the market tightness. The number of unemployed workers in $t+1$ is $u_{t+1} = (1 - f_t)u_t + \lambda e_t$, e_t are the employed workers but λe_t are employed workers who became separated from their job at time t. The law of motion of unemployment can be written as:

equation 33

$$\dot{u} = \left(1 - A \cdot \sqrt{\theta} - \lambda\right)u_t + \lambda$$

And the Beveridge curve BC relationship is :

equation 34

$$u = \frac{\lambda}{A \cdot \sqrt{\theta} + \lambda}$$

Thee probability q that a firm fills a vacancy in a given period is found by using the mathing function:

equation 35

$$q_t = \frac{h_t}{v_t} = \frac{A\sqrt{u_t \cdot v_t}}{v_t} = \frac{A}{\sqrt{\theta}}$$

An employed worker produces y units of output each period and is paid a wage w and so the period profit to a firm from a filled job is $y - w$. Firms incur a cost κ each period that they advertise a job vacancy.

equation 36

$$\kappa = q_t(y - w)\frac{1}{\lambda}$$

$\frac{1}{\lambda}$ is the expected life if vacancy, and the vacancy setting equation (curve) is :

equation 37

$$\theta = \left[\frac{A}{\kappa}\left(\frac{y - w}{\lambda}\right)\right]^2$$

And finally, the wage setting relation WS is given as:

equation 38

$$w = \beta(y + \theta\kappa) + (1 - \beta)b$$

Where β is the labor bargaining power.

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Figure 5 Increase in cost of advertising a vacancy κ

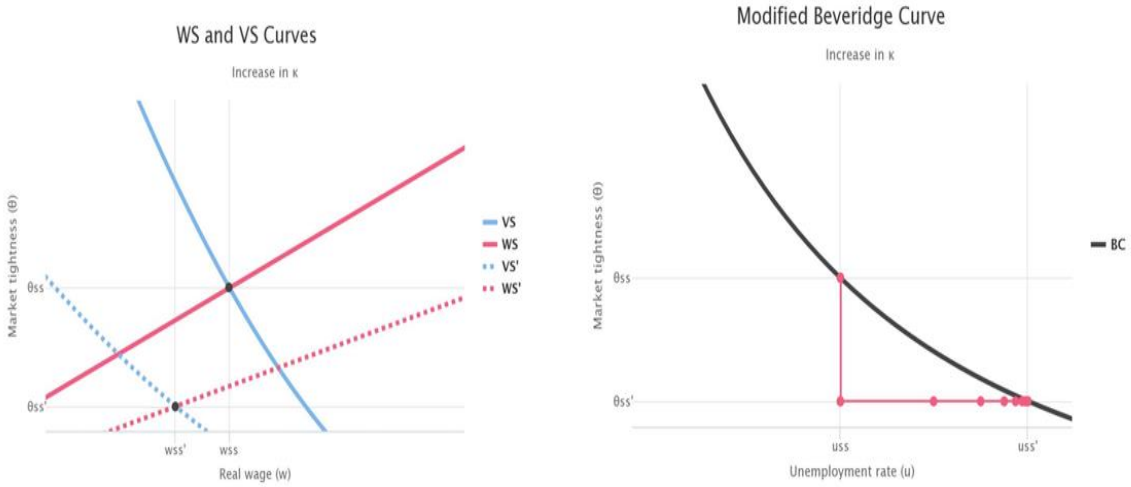

Figure 6 Increase in matching efficiency A

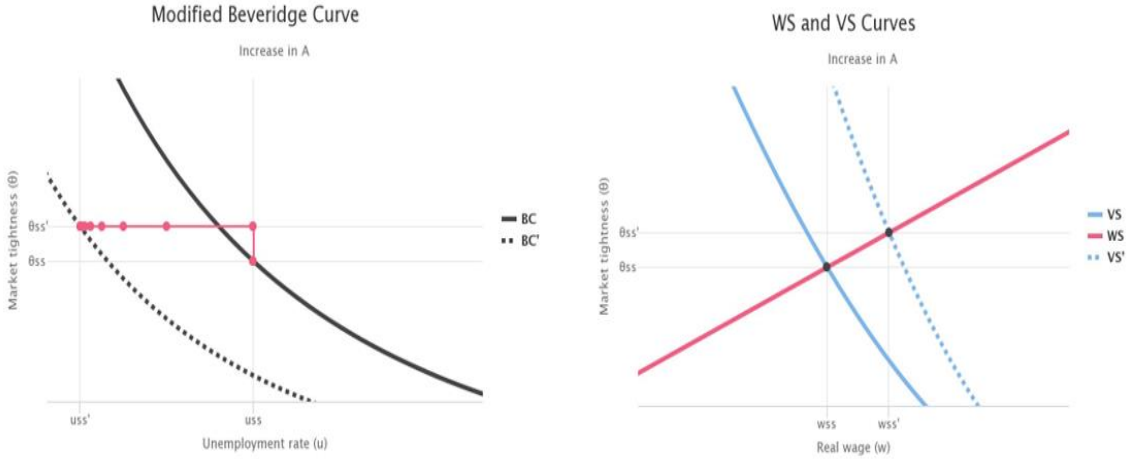

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Figure 7 Increase in labor bargaining power β

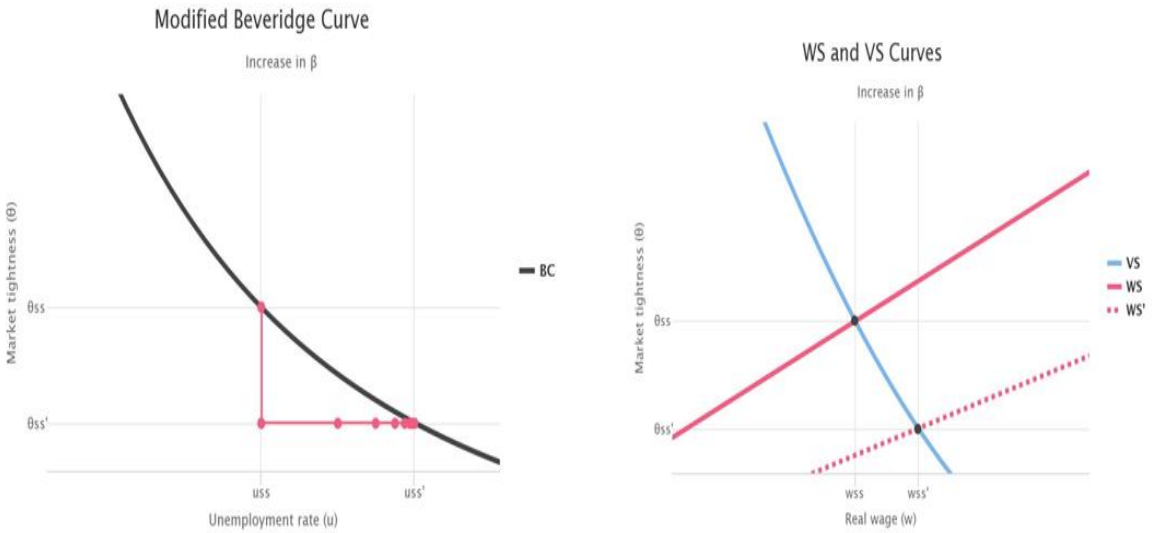

Figure 8 Increase in unemployment benefits b the value to the worker of not being employed

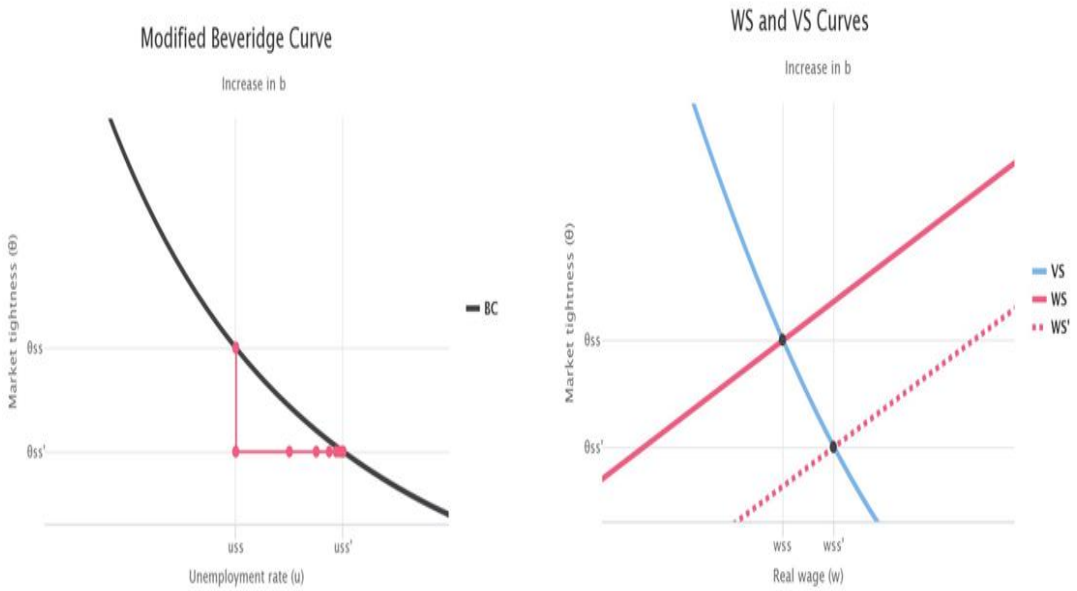

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Figure 9 Increase in the exogenous separation rate λ

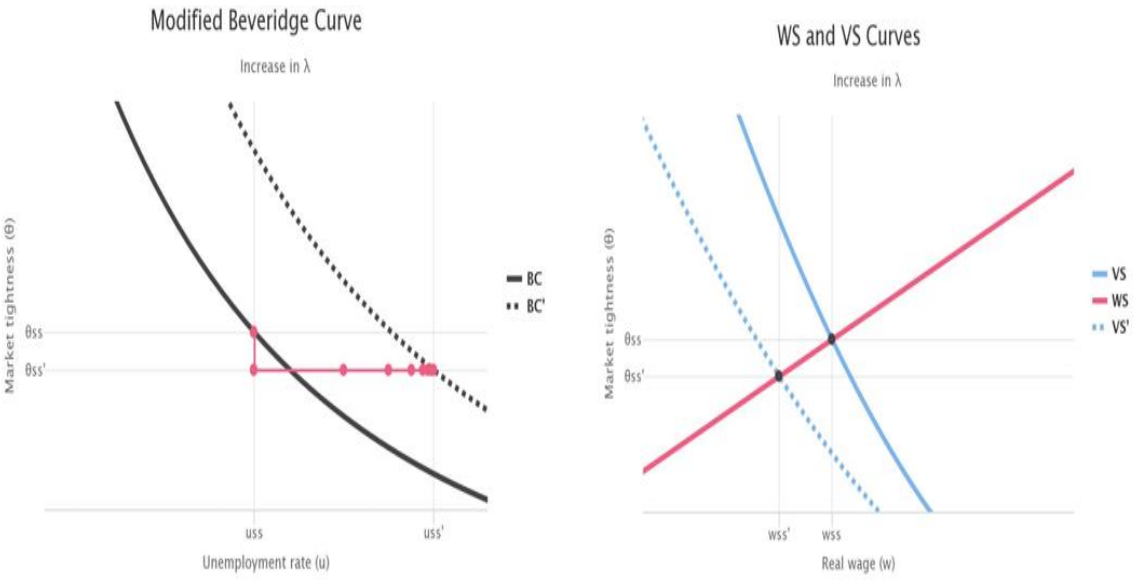
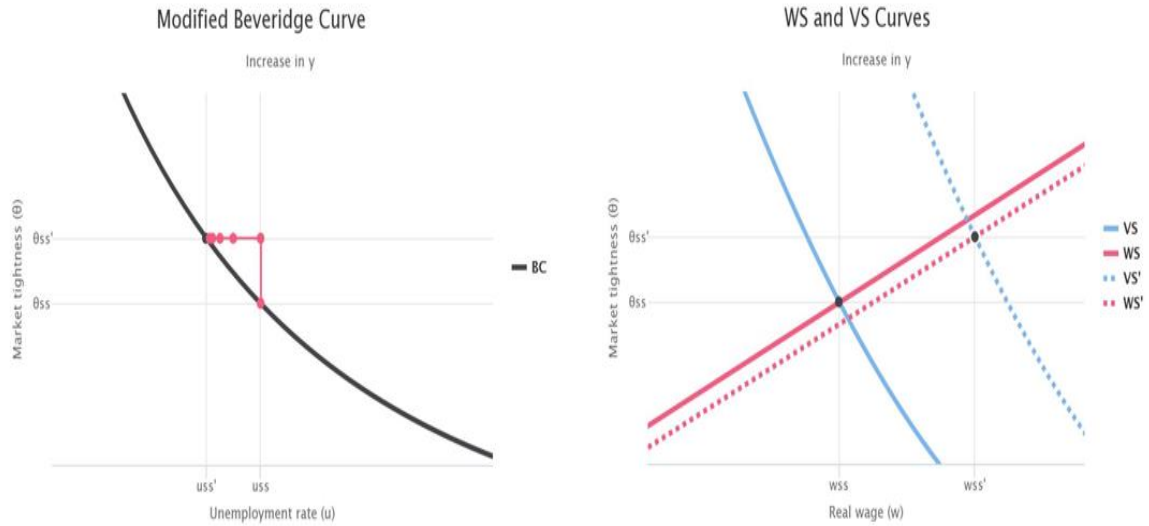


Figure 10 Increase in the units of output in each period y



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8.Conclusion

In the case of productivity shock or aggregate demand shock negative movement between vacancies and unemployment along the Beveridge curve exists, and this is due to aggregate demand shock. This is along with the traditional positive co-movement that is due to efficiency of the matching process. Opposite movements between Vacancy setting curve (VS) and unemployment rate(u) as well as market tightness θ occur during negative productivity shock (recession). Other variables such as matching efficiency for instance also provides opposite movement between VS curve and θ.Labor bargaining power case VS curve and θ to move in same direction, though unemployment will rise but also real wage w will rise, and a rise (downward) movement along the vacancy setting VS-curve. With the increase of the vacancy advertising costs κ , vacancy setting curve moves to the left, market tightness θ is decreasing, while the wage setting curve moves downwards and intersects now to the right with the VS curve, meaning growth in real wage. Bargaining power of labor β, increases real wage w, decreases market tightness θ and causes downward movement along the vacancy setting curve VS. Exogenous separating rate λ moves vacancy setting curve VS to the left and causes negative movement towards the graph origin on to the wage setting curve WS, Also in this case market tightness decreases as unemployment rises. Some of the empirical paper draw similar conclusions e.g. Pater (2017). Unemployment benefits b on the other hand, cause a decrease in market tightness and increase in unemployment. In the MATLAB simulation of the DMP model benefit shock caused movement in the job supply curve downwards to the right which as consequence increased the unemployment rate and lowered the job vacancies curve. While in the same version of DMP model productivity shock caused job supply curve to move to the left and unemployment rate was decreasing, while the equilibrium vacancies were increased. RBC model proved that labor, and wages, along with 4 other macroeconomic variables: capital accumulation, consumption, investment and general output, converge to steady-state in 40 quarters. New- Keynesian models with habits was tested when in presence of productivity shock and consumption shock. In the former working hours h increased, as output per capita y declined, and interest rate r rose, while the real wages fall along with consumption per capita c.In the latter working hours h decreased, and interest rate r decreased, real wages w were increasing, along with consumption per capita c. Results from this paper are ambiguous at best to us whether unemployment is inadequate aggregate demand problem or mismatch problem. But the main conclusion is that DMP model as a central component of contemporary macroeconomics, also is most realistic account of unemployment. Its building blocks are three (see also Hall (2012)), namely: first it is a stochastic model of labor turnover, workers become unemployed (separate from jobs), and find new jobs, second it is a model of labor market tightness, where employers are choosing job creation volumes and are exerting recruiting efforts that control the job finding rate, in response to the payoff to job creation, and third it is a bargaining model of wage determination that sets incentive to create jobs because of the difference between workers' productivity and workers' wages.

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OUTSOURCING STRATEGY: OUTSOURCING THE FINANCE AND ACCOUNTING FUNCTION BY SMEs

Dushko Kocev[1]

Abstract

In this study, the outsourcing as a world trend cost saving strategy in businesses will be explained. Outsourcing is strategic use of outside resources to perform activities traditionally handled with internal staff and resources. Companies are increasingly deciding to hire firms from outside the company to handle some of their internal operations, but some of the companies hire outsourcing companies for every aspect from the operational circles except its core technologies. Outsourcing can be seen as a strategic way for managing technology initiatives and business goals, strategy for managing technology operations in today's difficult business environment, and as a way to reduce operating costs. Outsourcing succeeds when the client understands its business and its goals. Outsourcing fails when there is a lack of focus, clarity, process and procedure. The emphasis of this research is on the outsourcing strategies of SMEs, their implementation and contributions to organizational performance. In the following lines, the strategy for hiring outsourcing accounting companies by SMEs is analyzed in form of case study for SMEs operating in Macedonia business area.

Key Words: Outsourcing, Off-shoring, Appropriate Multi Sourcing

1. Outsourcing definition

The concept of outsourcing came from the American terminology "outside resourcing", what means to get resources from the outside. The term was used in the economic terminology to indicate the use of external sources to develop the business in connection with the operations previously managed with internal resources. Having in mind the demands of customers and shareholders, organizations are in permanent mission for finding ways that will improve their comparative advantage on the market. For many companies, the payoff for recent investments is unclear. Forced by investors and boards to rationalize expenditures, many managers increasingly look to improve performance by shifting resources, outsourcing various departments and the enterprise applications upon which fortunes depend. Outsourcing works best, analysts say, for companies that are resource constrained, can't bring new products and services to market quickly with existing staff and need for speed response. Most in-house staffs are already tasked with multiple responsibilities. Internal obstacles can delay or block new initiatives. Sourcing externally gives companies flexibility, shortens development cycles, and creates a distributed, multi-function business. Outsourcing succeeds when the client understands its business and its goals. Outsourcing fails when there is a lack of focus, clarity, process and procedure. Usually organizations look for the best service providers to whom to outsource their work, this gives them a chance to get their work done by experts which means good quality work leading to a good company name.

Outsourcing is one management tool that has gained relevance among managers in addressing today's business dynamics (Jae, et al. 2000). It is the replacing of in-house provided activities by subcontracting it out to external agents. In present day outsourcing is no more limited to peripheral activities such as cleaning, catering and security. As noted by (Jennings 1997) and (Dominguez 2006), outsourcing also includes critical areas such as design, manufacturing, marketing, distribution, information system etc.It is therefore pertinent

[1] *University Goce Delchev Shtip, Faculty of Economics, PhD student, dusko.kocev@t.mk*

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to submit here that, all forms of organizations engage in one form of outsourcing or another regardless of their size (Isaksson & Lantz, 2015).
(Rob Aalders 2001) note the fact that outsourcing is not a new phenomenon; otherwise companies have outsourced advertising, legal services, maintenance and production, many years before. (A. Duhamel and B. Quélin 2003) say that outsourcing is often accompanied by a transfer of material and human resources to the chosen provider. It has the task of substituting domestic services in a medium or long term relationships with the customer enterprise. In order to achieve its set goals in the presence of technological advancement, sophistication of business processes, knowledge explosion and need for constant growth, an organization looks out for strategies to enhance performance (Dominguez, 2006). It therefore reflects on the capabilities of its own workers, its technological knowhow, business processes and so on, and answers the question of whether it can achieve its own goals with what it already has on ground or look out for ways to complement (Isaksson and Lantz, 2015). It therefore focuses on core competences and seeks to reduce operation cost which presents outsourcing as the right strategy (Akewushola and Elegbede, 2013).Outsourcing avails organizations the opportunity to concentrate her core competencies on definable preeminence business area and provides a unique value for customers (Dominguez 2006).
Studying the views of the authors, we could identify the following options for outsourcing, given the multiple criteria of classification (Wilcocks et al. 2004):
-The proportion of outsourcing: total, selective, partial.
-Outsourcing can be applied in: human resources, project development management, and service management.
-The outsourcing contract can be: general, transitional or of an economic process.
-The type of outsourcing relationships can be described as: one provider
- One customer, one supplier more customers, some vendors - a client or several vendors - more customers.
-The period of outsourcing can be on long term or short term.
-Location of the supplier is local, international (offshore) and regional (near shore) - closer to the customer.
Just like any other concept in the academic world, outsourcing has diverse definitions. This is due to the diverse nature of the perceptions of those who use it. It is therefore not feasible for one to state in a clear cut manner a definition that is generally acceptable (Troaca and Bodislav 2012).According (Eya2006), outsourcing is a decision by firms to have an external supplier to take over an activity that would have otherwise been performed in-house by organization employees. (Lysons and Gillingham2003), states that outsourcing is the strategic use of resources to perform activities traditionally handled by internal staff and their resources. It is a management strategy by which an organization outsources major non-core functions to specialized and efficient service providers to help the organizations perform best where it is best capable. Outsourcing is a decision and subsequent transfer process by which activities that constitute a function that earlier have been carried out by a company are instead purchased from an external supplier. Usually companies that provide outsourced services choose what they can do better, this means training their workers to perform to the best of the clients expectations. This means specialization with all its benefits to organizations. Outsourcing is defined according to (Yalokwu 2006), as the process of subcontracting operations and services to other firms that specialize in such operations and services that can do them cheaper or better (or both). (Dominguez 2006) views outsourcing as the practice of hiring functional experts to handle business units that are outside of a firm's core business. She describes it as a method of staff augmentation without adding to headcount.
Base on the above definitions, outsourcing can be comprehensively said to be the contracting and/or subcontracting of operations and services whether they are outside of a firm's core

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business or not to other firm(s) that specializes in it and can do it better or cheaper (or both)(Troaca and Bodislav 2012).
This definition supports the fact that organizations have their areas of specializations. An organization that performs its administrative and business services and operations may not perform all of them efficiently.
This may lead to low quality products/ services. When an organization focuses on areas that it has advantage comparatively and outsource those it performs minimally this would lead to efficiency and high quality productivity.
(Baily 1998) claims that many organizations today are turning to external procurement, where we even find that functions such as transport, accounts, computer services, even purchasing can be outsourced. This gives the company employees time to perform their duties to the company's satisfaction and this improves the organizational performance which is every company's objective to achieve competitive advantage.
Business Process Outsourcing (BPO) is that an external service provider can be given operational ownership of the company's business for one or more than one activities. The firms seeking a BPO strategy can also outsource back office functionalities to an outsider at relatively lower cost. Outsourcing decision is variable to the type of the business entity and the structure of the corporate but the cost factor has been dominating and overall lower global cost advantages cannot be ignored. According to (Narayanan 2009) there are four strategic reasons to outsource respectively: improved cash flow, improved control of payment, scalable staffing and to improve overall business performance. Outsourcing decision is not solely to bring the cost down but the fundamental objective of the business is to gain and maintain competitive advantage.
However, outsourcing decision is not easy to take because the key question is what to outsource? The firms need to identify core competences before outsourcing them, according to competence based view, but firms also outsource their core competences now a days.
There is complementary meaning by different authors like, that the following activities should not be outsourced or if done it should be done with great management consideration; management of strategic planning, management of finance, management of consultancy, control of supplies quality and environmental management.

2. The difference between Outsourcing vs Off-shoring

The phenomenon of outsourcing generally refers to procurement of materials and services inputs by a firm from a source outside. In this context, outsourcing can be both internal and international. Internal outsourcing is the purchase by a company of services or material inputs from a source located in another firm within the same country.
International outsourcing is defined as the purchase by a company of services or material inputs from a source located in another country. This term includes both intra-firm international outsourcing (by which foreign supplier of inputs is still held by the firm), and distance international outsourcing (by which foreign supplier of inputs is independent of the company that uses inputs). International outsourcing is part of imports of goods and services of the country. Another term often used for international outsourcing is "off shoring". International outsourcing is mostly used by firms in advanced economies, which directs part of the work by companies located in developing countries in particular to reduce costs.
"Outsourcing refers to the practice of transferring activities traditionally done within a firm to third party providers within the country or "off-shore" (Sen and Shiel, 2006). Offshore outsourcing is an old phenomenonand many of the multinational companies' strategies to bring the operating cost down. Outsourcing is handingover one or many of the business

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processes to an outside vendor or the utilization of outside available servicesprovided by third party to carry out business activities is the outsourcing strategy.
Outsourcing, traditionally known as “make-or-buy” decision, is the act of contracting internal business activities to outside (either domestic or offshore) suppliers.
Outsourcing and/or off-shoring is one of the important and key strategic approaches in complex, dynamic and competitive global supply chains. It is one of the sustained trends of business undertaken by the firms. Despite having debate about the impact on the firms of outsourcing, outsourcing / offshoring is considered as a typical competitive strategic phenomenon in both the domestic and international marketplaces. Outsourcing can produce positive, negative, mixed, moderated or no significant impact on the firm. Cost saving, improvedmanagement effectiveness and flexibility, access to market and better product/service quality are some of the benefits ofoutsourcing and offshoring identified in literature.
Several definitions of outsourcing and offshoring are reported in the outsourcing/offshoring literature. According (Ishizaka et al. 2019),outsourcing is a business agreement, either domestic and/or international (known as offshoring), and strategic management initiative for gaining a competitive advantage of a firm by contracting out their existing internal and/or external non-value added functions, and/or value-added functions, and/or core competencies to competent supplier(s) to produce products and/or services efficiently and effectively for the outsourcing firm. Outsourcing is a strategic tool used by organizations to achieve competitive advantage. The unfavorable economic context determines the large companies to outsource business processes in the main line, thereby sacrificing a part of control over resources and information to reduce costs. The level of savings made by outsourcing companies can reach 10 to 15% on the total cost, mainly due to economies of scale. Short-term outsourcing can bring some benefits, providing a shortcut to a more competitive product', but consider that this does not allow creation of the necessary abilities to maintain competitive advantage gained.
There can be seen some factors that influence changes in the world and, at the same time, make outsourcing attractive to business people around the world. Globalization and competitiveness forces companies to find better ways to develop and use the technologies to obtain competitive advantages and increased performance. Development of information systems has become increasingly expensive, requiring human resources skills and competencies growing, highly trained and professional. To cope with fierce competition, companies must be efficient, to provide products to market on time and within a budget as small. Moreover, the requirements and preferences are in a continuous change. In response to these challenges, companies are trying to transfer the responsibility of having specialists, facilities and equipment to a third party, localized mostly in developing countries where there is great potential for human and multiple opportunities, which favors the development projects in a short time and at minimal cost.
The novelty at this time in the field of outsourcing is that it has gained momentum in the services. For a long time the service sector was considered impenetrable to international competition. With improved communications technology, such as the internet, services can cross political borders via the airwaves, getting at the same time, access to cheap labor, but well prepared.

3. Advantages and Disadvantages in outsourcing strategy

Although outsourcing is seen by many as a future trend, which brings many benefits to the partners, yet there are voices that question the effects of this phenomenon.

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Not all functions and processes can, or should be outsourced, without careful analysis of the advantages and disadvantages. This analysis forms the basis for a plan of action that deals with the true costs, risks and tradeoffs of outsourcing.

Besides financial considerations, there are some advantages of outsourcing, such as increased focus on core processes, access to resources not available internally and standardizing processes. On the other hand, there are some concerns about outsourcing, organizational strength, loss of control and doubts about the quality and performance.

If in the choice of outsourcing routine activities, accounting, human resources, marketing things are relatively clear and can call on previous experiences in the systems development quite a few problems appear, due to demanding requirements of clients, lack of experience leading to difficulties in selecting the strategy that best meet business objectives.

Although outsourcing may be expected to bring long term benefits, there may be adjustment costs in the form of job losses, a process visible especially at the microeconomic level, since even in the advanced process outsourcing service is started.

(Troaca and Bodislav 2012) cited the Outsourcing Institute, a strong voice in the field of outsourcing, have built a top 10 reasons that a company would have to resort to such services:

1. Cost reduction and operations control;
2. Improving company focus;
3. Gaining access to the various possibilities;
4. Free internal resources for other purposes;
5. Resources are not available within the company;
6. Accelerate the benefits reengineering;
7. Driving is expensive for some time;
8. Employment equity becomes available;
9. Sharing risks;
10. Capital injection.

There are also additional benefits such as specialized, complete, professional solutions ease of installation and configuration, integrated applications, powerful, flexible and secure, increase accuracy, productivity and efficiency, reduce or even eliminate storage needs.

Also, outsourcing brings benefits at the macroeconomic level, directing capital flows to developing economies in the process. These capital flows materializing by building units of production and in creating jobs, helping to raise living standards and sustainability of these economies primarily by reducing unemployment rate and by increasing the gross domestic product.

Of course there are also disadvantages, as in any association in which one of the basic conditions is a compromise. One disadvantage is lack of knowledge of his client outsourcer environment, both internally and externally. Of course, with good collaboration, communication and patience, this impediment can be easily removed.

A second disadvantage would be an incorrect definition of the objective of outsourcing an activity, after a serious analysis of the outsourcing decision. Decision must be made taking into account both benefits and other considerations. From these considerations we can remember poor alignment of objectives, response time and quality, with control by various methods pre supplier, and the difference in mentality between “the company employees” and “outsource colleagues' level of personal pride to compensation packages.

Outsourcing results are not immediate. Most organizations had a 20% decline in labor productivity in the first year of an outsourcing contract, mainly because of time spent on knowledge transfer to the outsourcing provider. After bringing their customer and supplier knowledge and goals, they can work together more effectively, thereby generating cost savings.

At the macroeconomic level, the disadvantages are more pronounced for advanced economies, because the outsourced activities are transferred to a different economy, and

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along with it and jobs, leading to a diminution of the living standards and an increasing at least on short-term of the unemployment rate.

4. Appropriate Multi-sourcing model for outsourcing

The need for flexibility, control and risk management, make traditional outsourcing a less-than-ideal strategy for many businesses. Result from these factors is the executives to consider Appropriate Multi-sourcing, a model recommended and translated in practice by (Cohen and Young 2006) which is based on an analysis of business needs, costs, market pressures, need for process and productivity enhancement, requirements for integration, complexity and volume of work. By considering carefully which aspects of the business are core functions with high communications requirements versus non-core functions with stable requirements and fewer variables, companies can develop a methodology for selecting what to keep in house and what to source elsewhere.

If a business determines that it is appropriate to consider outsourcing, managers should realize that they need an appropriate multi-sourcing strategy. Issues to consider in formulating such a strategy include:

Business process: Is this a core competency that differentiates your company from your competition? Is the performance of this process visible to your key customers? Or is this an internal, back-office function that supports, but does not drive, business operations?

Interaction requirements: Does the process require constant, real-time communication? Is the accuracy and currency of information critical? Or is this a process that can be defined, documented and transmitted to an independent work group, with periodic status updates?

Complexity: What kind of expertise is required to perform the function? If the process is inherently complex, undocumented and high variable only personnel with extensive institutional knowledge and experience should be involved. Straightforward, well-defined, common business practices can be performed well by trained and experienced external providers.

Current Cost: Cost efficiency is always desirable, but cost is relative to value. If the current cost of a function is well matched by the value received, and the cost does not impair competitive performance, then cost reduction should not be the driving factor in sourcing. If the current cost is out of proportion to value received, or if competitors have found ways to operate at lower costs, then cost becomes more important.

Control Requirements: Loss of control is often a serious concern in outsourcing decisions. How tightly coupled is the process to business performance? Does the process consume key resources, or does it directly impact other key operations? Will changing business conditions require rapid response? Or is this a loosely coupled process that can be performed independently of other operations?

Risk of Failure: Risk assessment and mitigation is a core fiduciary responsibility of executives making outsourcing decisions. The higher risk is probability of catastrophic failure and the greater impact to business performance.

According to (Cohen and Young 2006), the best sectors for outsourcing are those that are the most isolated from the rest of your business, and those that do not face your customer.

When the functions will be outsourced are determined, the requirements and expectations for the outsourcing should be defined. Expectations should be rigorously defined as specific and objective metrics that you can use to verify that the outsourcing is meeting those expectations. Quality of work can be measured by references and trials. Consistency of performance may be judged by whether the organization's processes have been certified byISO or CMM. Because an external organization will functionally become part of your organization, you should make sure that the interface between the organizations completely defines your relationship and that there is a cultural compatibility between the organizations.

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Appropriate Multi-sourcing is good business practice. Companies that choose to multi-source are best positioned to realize the benefits of investments in intellectual property while gaining flexibility in staffing and skills, controlling costs, strengthening global reach, shortening development cycles and improving operations.
A multi-sourcing strategy, where some work is done in house, some remotely with a near shore provider, and some with an offshore provider –yields what the authors calls sourcing 'at the intersection of access, cost and quality'. Multi-sourcing offers the best mix of risk containment, financial control and flexibility for most companies seeking to improve processes or expand development or customer service without growing operations. Fundamentally, any outsourced work is distributed work. The challenge client's face is how to source work externally – to near shore and offshore providers – while keeping the outsourced efforts operating as a relevant, vital part of the host company. Companies that use Appropriate Multi-sourcing successfully use management, business and work processes that enable them to diversify core operations without losing control. Multi-sourcing transforms companies, enabling them to control forward trajectory, meet goals, and satisfy customers by steeringmore than by leading, choosing partners and distributing operations to meet the demands of a difficult world economy.

5. Outsourcing Accounting Services

Business process outsourcing is an act of delegation of one or more information-intensive business processes to a third-party provider (Borman 2006). Companies commonly outsource processes in non-core business functions, such as finance and accounting, call centers and human resources, to third-party service providers for various reasons. The extant literature identifies a plethora of these outsourcing motivations, the most widely cited being access to expertise, cost reduction and scalability (Redondo-Cano and Canet-Giner, 2010).
Developments in the outsourcing market have enabled greater flexibility in designing outsourcing deals. For example, in accounting, cloud computing provides a platform where two parties (a client company and an outsourcing service provider) can jointly access the data and workflow in real time. Endowed with greater transparency and control through, this new breed of accounting information systems (AIS) allows the outsourcers to make outsourcing decisions on a task level instead of outsourcing the whole business function (Asatiani et al. 2014).
For example, in accounting outsourcing, some may outsource a particular payroll-related task (e.g. payroll calculations), while others may choose to outsource the preparation and submission of financial statements. This emerging complexity and flexibility in outsourcing calls for a revised understanding of outsourcing motivations, which requires us to delve deeper from a company level analysis into a task-level analysis.
Most SMEs outsource their major accounting operations to external accounting firms instead of employing accountants (Kumar et al. 2019). They most at times have one or few accountants whose job is to record transactions and then acquire the services of external accountants who do the computation and preparation of sophisticated accounts and also audit their operations.
More recently, some businesses have begun outsourcing at a more strategic level not just to reduce costs in non-core processes but to improve business performance. This is being driven by a number of factors such as competitive and budgetary pressures, advances in technology and communications and the need to transform the finance and accounting function. Finance and accounting outsourcing (FAO) has undergone major transformation over the years. The market for FAO has matured in terms of the type of work undertaken from routine, transactional work to delivering customized, complex and higher-value services (such as fore casting and planning and treasury).Some companies are consolidating their outsourcing work, citing reduction in complexity, streamlining operations and increased efficiency as benefits,

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while others are still taking a multi-sourcing route based on particular provider expertise. Also, globalization of services opens up new opportunities for companies to outsource finance activities to service providers worldwide. Companies which choose to outsource one or more finance processes continue to benefit from global differences in wages, and they access new talent and expertise (such as in systems implementation and process improvement) to create further competitive advantages.

Organizations, these days, not only look for cost effective solutions to systematically run non-core activities like accounting and payroll services, but also expect to add value in order to achieve better control and understanding of cash flow and thereby make informed decisions. In spite of being considered as non-core, accounting services form an integral part of an organization's operational capabilities and systematic functioning. Therefore, outsourced accounting and payroll services definitely help streamline core business operations of an organization. (Kumaran 2013) further highlighted top 10 advantages of outsourcing accounting and payroll services as; achieving high level of accuracy, cost effective services, fraud check, direct deposit through efficient payroll processing, avoiding penalties during tax processing, reaping benefits with up-to-date technology, saving up on processing time, gaining from the assistance of experts, avoiding reconciliation worries related to financial institutions and staying informed with up-to-date accounting status. The above notwithstanding, other authors asserts that, the activities which are typically performed by outside accountants that can be grouped under accounting activities include those of financial reporting and tax processing.

6. Case study – Outsourcing financial and accounting services in Macedonia SME's

In this title, to give an individual contribution to the research on the outsourcing topic, a research was conducted between 50 micro companies that operates in various business sectors in town Shtip, Macedonia. Especially, the delivering of the function of finance and accounting to external suppliers was analized. The research was translated in practice with structured interview with the owners of the companies, which contained several questions, which aim to give an answer regarding the activities for hiring an external supplier for this essential function. Also, the financial statements of the companies in the research were analyzed, in order to get information about their costs when using an external supplier of accounting services, in relation to the costs of having own and entire accounting sector.

The answers of the respondents were complementary regarding the reasons for using an external provider of financial and accounting services. Almost all respondents answered that the main reason arethe lower expenditures for hiring an external finance and accounting supplier, in terms of having its own sector. No less important, the owners noted the expertiseand professionalism who receive it from the external accounting companies. Furthermore, the respondents examine the absence of a certain workforce and licensed staff on the market in the field of finance and accounting.

If we analyze the cost structure that circulates around the functions of finance and accounting, it is noticeable that companies save on the basis of gross salaries, investments in hardware and software for accounting, saving in infrastructure in terms of equipping offices, monthly costs for internet, telephone, heating, cooling, maintenance of space hygiene, etc..

The companies hiring external supplier of financial and accounting services, based on the previously concluded Accounting and Finance Services Contracts, which define the obligations of the providers and the users of the service. The cost of taking this type of service is determined as a monthly cost, with the amount that differs in relation to the volume and type of documents that are characteristic of the respective entity. From the overall structure of costs circulating in this sector, the gross salary compared to direct cost in the form of a monthly cost for external accounting services, is analized.

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The minimum gross salary in Macedonia for year 2021 isthe amount of 22.146,00 denars. Immediately, we must to note the fact that the licensed staff in the field of finance and accounting works for the amount of salary much higher than the minimum gross salary. For the example, if we take into consideration the minimum gross salary that company will spent in 12 months, it comes to the amount of 265.752,00 denars or approximately 4,300 EUR if you there is only one own employee in the finance sector.
The monthly cost to an external accounting bureau, assuming that the company has small and medium-sized financial documentation, is less than 6.000,00denars approximately 100 EUR monthly or EUR 1,200 per year. The decision for hiring an external supplier of financial and accounting services is more than clear. The costs in relation to the above amounts, if the companies have their own finance and accounting department, significantly highert. The companies concludes accounting service contracts with external accounting companies with several employees, which means that for the lower monthly amount, the companies users hire not one, but more experts in the field of finance and accounting.

Conclusion

A study made by the Economist Intelligence Unit (EIU) shows that the countries of Central and Eastern Europe, along with those of North Africa are becoming favorites for displaying the following destinations centered outsourcing, especially for companies based in Europe. According to EIU, India is becoming increasingly expensive, and European companies want countries that have a greater cultural affinity. In Eastern Europe, the process of outsourcing is a relatively new phenomenon, which is viewed with skepticism and considered by many to be one full of risks. In highly developed countries, things are better defined, and outsourcing, in some cases, is considered a natural and necessary process in improving the situation of the company.
According (Troaca and Bodislav 2012), in Romania, the market began to grow in 2005, once the multinational IT outsourced services to local subsidiaries. Companies hire sub-contractors when it needs additional staff and delegate them to undertake short-term activities. Outsourcing projects are made due to lack of resources and expertise of the company.
Outsourcing initially a preferred option for small businesses to support activities of their specialization, in recent years has become a solution for medium and large firms.
Therefore, the outsourcing have contributed greatly to accelerating the process of globalization, interconnecting developing economies with the already developed countries. In present time, we can talk about a global redistribution of the income, from developed economies to developing economies. In Macedonia according the outsourcing strategy used by the micro, small and medium sized companies, the situation replace the world trends. A number of companies, driven by the cost saving strategy, outsource various working practices. We can notice the fact that there are many multi-national companies that operates in Macedonia using off-shoring strategy for their services. They are off-shoring in IT services, transport and logistic functions, marketing and research function, etc. In form of case study, the usage of external suppliers of finance and accounting services by Macedonian SMEs was analyzed. The research shows the fact that there is strictly defined reason for outsourcing these services, viewed in practice with significantly cost cutting on costs that operates around these function.

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THE IMPACT OF COVID PANDEMIC AND THE POLICY ACTION FOR RECOVERY OF THE SMALL AND MEDIUM ENTERPRISES

Marija Magdinceva-Sopova,[1] Aneta Stojanovska-Stefanova[2]

[1] University Goce Delcev-Stip, e-mail:marija.magdinceva@ugd.edu.mk

[2]University Goce Delcev-Stip, e-mail: aneta.stojanovska@ugd.edu.mk

**Corresponding author: marija.magdinceva@ugd.edu.mk*

Abstract

The current pandemic circumstances caused by the impact of the COVID-19 virus is an obstacle for the management of small and medium enterprises (SMEs). Due to the crisis, the management of SMEs is forced to introduce changes and policies in order to quickly adapt to the changes in the environment and overcome the situation swiftly.

It is an indisputable fact that the SMEs are drivers of the inclusive economic growth and operators for creating productive and sustainable occupations. Therefore, the subject of this paper focuses on recognizing the negative effects on the work of the SMEs caused by the impact of the COVID-19 virus and the pandemic, as well as the policies and measures taken by management and the state in order to overcome the situation, which has been going on for two years.

The changes in the life and the work that consist of the introduction of restrictive measures, changes in the social life of people have caused reduced workload or the closure of many SMEs for a certain period of time. This paper presents an overview of the impact of the COVID-19 virus on the work of the SMEs, as well as the policies and measures implemented by the SMEs and the state in order to overcome the situation.

The main focus of the paper is on the operational adjustment policies of the enterprises implemented by the managers in the new working conditions.

Keywords: *strategy, negative effects, state measures, pandemic*

JEL Classification: L20, L26, L1

INTRODUCTION

The global health crisis caused by the impact of the COVID-19 virus is in a way forcing managers to make significant changes in the operations in order to quickly adapt the operations to the changes in the environment. Globalization increases the inequality in relations between the countries and especially the economic and the social inequality (Hurrell A.and Woods N., 1999, 15-35). Successful projects are a basic goal for managers and the changed working conditions caused by the impact of COVID-19 virus are both a challenge and an opportunity. In order to successfully cope with the impact of the health and economic crisis, different types of restrictive measures have been introduced in different time periods in the past two years. Restrictive measures and policies have led to changes that have manifested themselves in reduced physical socialization, inability to leave home at certain hours, limited movement, reduced working hours and, in the worst case, the closure of enterprises. As a result of the impact of the COVID-19 virus crisis on a global scale, the greatest negative consequences have been observed in the SMEs operating in the tourism and hospitality sector as well as in the other industries such as construction, crafts and transport. New economic conditions have imposed the need for companies to change the traditional organization and structure of work and the development of information and

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communication technology has enabled the emergence of new organizational structures that differ from those based on the static concept (Lukic A, Novovic M., 2021 , 79).
Changes in the global environment have led a number of SMEs to focus on the introduction of digitalization policies and measures in the operation, whereby many of the core activities have shifted to digital way of performing and applying various IT devices in the operation. This process leads to the creation of new businesses and the transformation of enterprises by renewing the basic ideas (Guth, W. D., and Ginsberg, A. 1990, 5-15). The digitalization and application of IT devices and programs are the mechanisms through which companies have successfully faced the challenges of the pandemic. Adapting to the new situation is associated with the effort of the management of enterprises to become enterprises that are constantly learning and transferring new skills, techniques (Magdinceva-Shopova M., Stojanovska-Stefanova A. and Postolov, K., 2020, pp.1-17). In contrast, companies whose core business depends on the physical presence of visitors or consumers, such as hospitality and tourism companies, such as hotels, restaurants and cafes, and other similar businesses, have suffered heavy losses. These types of companies were forced to reduce the number of employees for a certain period of time. In order to reduce the negative impact of the health crisis, the management of the SMEs has adopted appropriate policies and measures. The state has also implemented an appropriate set of measures in the form of financial assistance such as: financial support for the payment of net salaries to employees, providing financial assistance to small enterprises to pay bills, financial assistance to small and medium enterprises to employ new employees, reduction at the interest rate on loans and reprogramming of the overdue debts.

MATERIAL AND METHODS

SMEs faced serious financial problems due to the pandemic and unfavorable business climate. The introduction of restrictions and restrictions have helped to reduce consumption which has directly affected the reduction of corporate revenues. Small enterprises, due to their small size and resources, find it difficult to adapt to the current situation and changes in the work environment. The protracted duration of the crisis has forced businesses to adapt to change. The introduction of restrictive policies and measures has contributed to the change in the organization of work in enterprises. The distancing measures helped to reorganize the execution of work activities. Many companies have introduced telecommunications as one of the safest ways to respond to a crisis. Many companies focused on the most important work activities that can be accomplished through remote work or work from home. In order to see the activities undertaken by the management of enterprises to adapt to the new situation and the need to implement appropriate policies for the "recovery" of the enterprises, a practical survey was conducted. The practical research was conducted using the method of a questionnaire which consisted of 10 questions from a content point of view. The research was conducted electronically in the period from 01.09.2021 until 31.11.2021. The survey questionnaire was submitted to 130 SMEs. Out of the 130 questionnaires submitted, feedback was received from 75 managers of small and medium enterprises who showed interest and answered the questions from the survey questionnaire. During the preparation of this paper, the method of analysis and the method of synthesis were used, as well as the specific, quantitative and interrelated scientific methods - modern methods and classical methods of analysis.

RESULTS AND DISCUSSION

As a result of the answers received from the survey and based on the number of total observations of each question, it is concluded that the survey questionnaire which was

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submitted to the managers of SMEs and answered by 75 respondents. Most of the surveyed companies (36%) belong to the tourism and catering industry. An overview of the structure of the activity of the companies involved in the research is given in Figure 1.

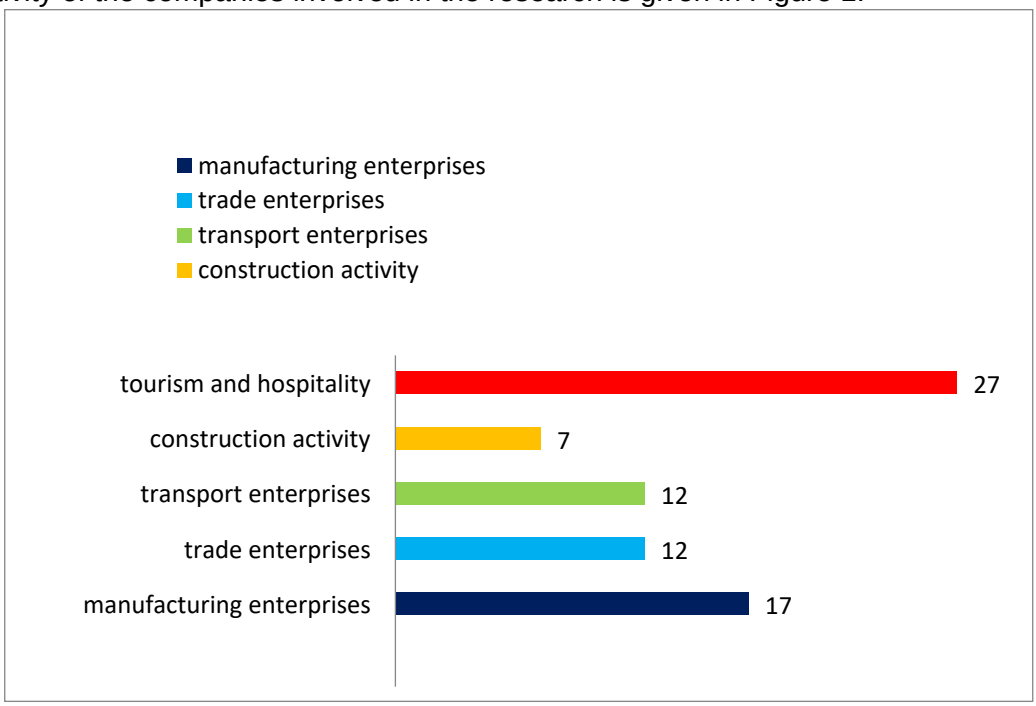

Figure 1. Structure of the enterprises involved in the research by occupation

According to the answers to each question, it is concluded that on the first question - Did you make changes in the work as a result of the introduced restrictive measures?, all managers answered positively to the question, ie 75 respondents said they had introduced organizational changes in the work. The results obtained are graphically shown in Figure 2.

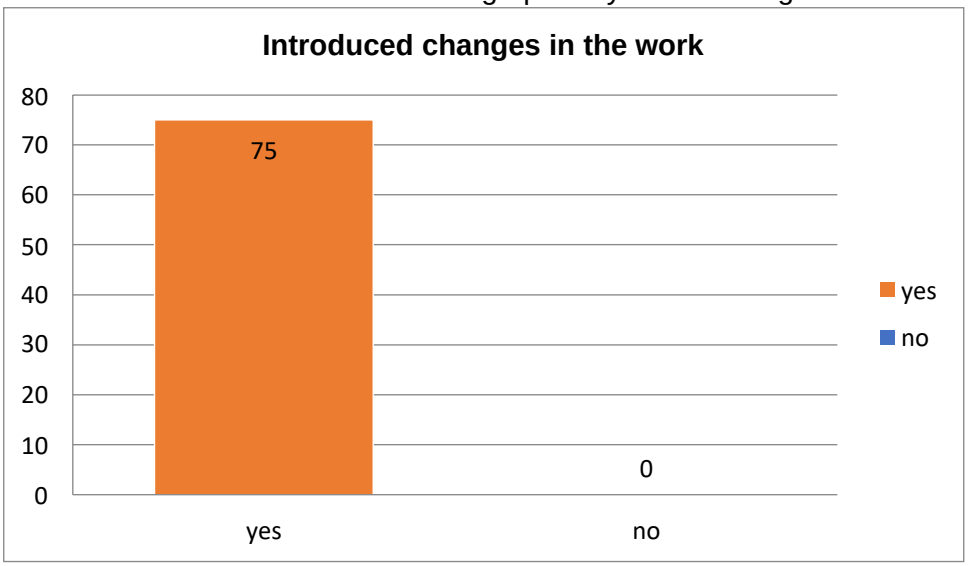

Figure 2: Graphic presentation of the results of the question - Did you make any changes in the work as a result of the restrictive measures introduced? Source: Own research

Regarding the second question from the conducted survey- Have you introduced measures to reduce working hours?, the following answers were received: 56 managers answered that working hours have been reduced and 19 managers answered that the working hours of the

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company have not been reduced as a result of restrictions imposed due to the pandemic. The results obtained are shown in Figure 3.

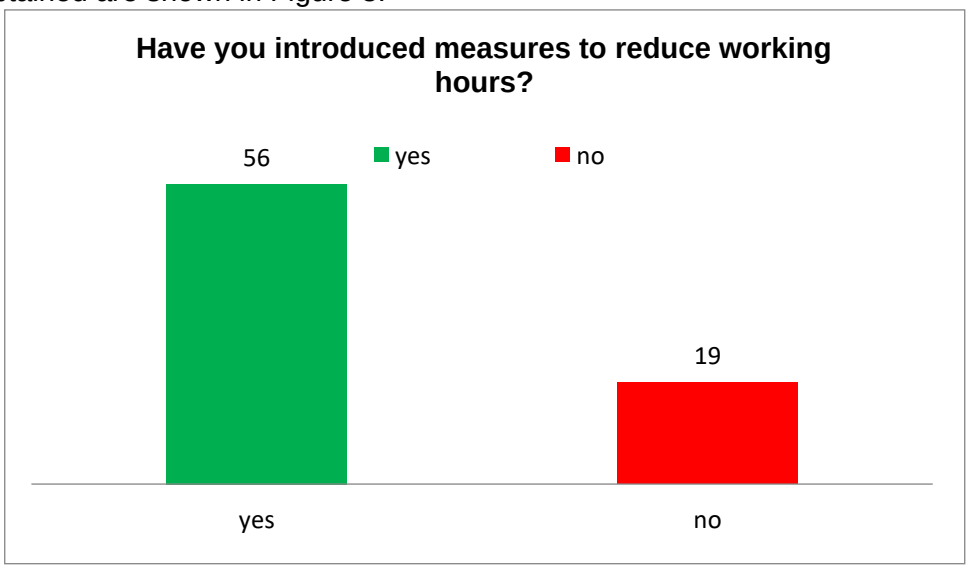

Figure 3: Graph of the results of the question - Have you introduced any measures to reduce working hours? Source: Own research

Did you introduce shift work? – is the third question in the survey. The majority of the asked managers or 34 companies stated that they did not introduce shift work and 41 managers stated that they introduced shift work. The results obtained are graphically shown in Figure 4.

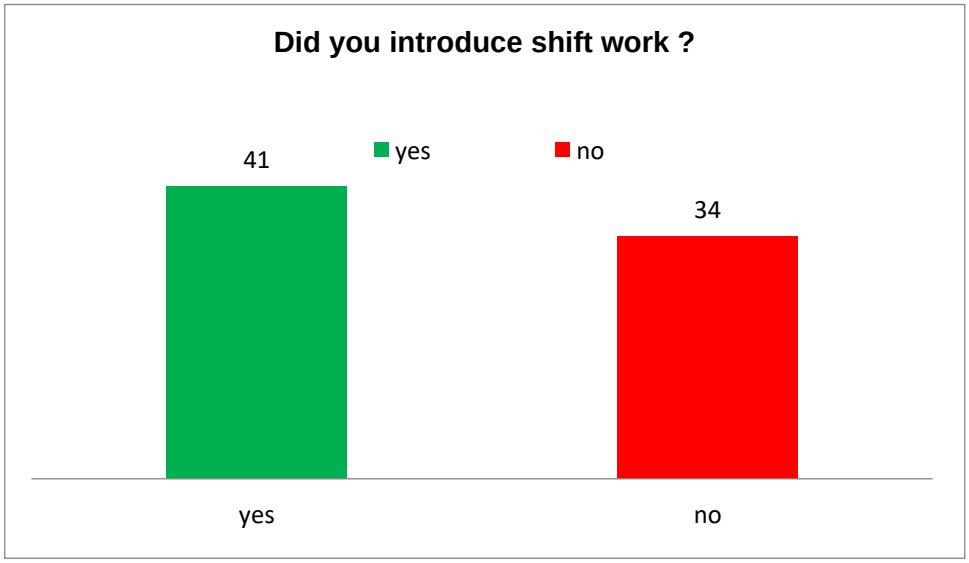

Figure 4: Graphical presentation of the results of the question - Did you introduce shift work? Source: Own research

On the fourth question regarding the statement on whether the home resource management methods were introduced, most of the respondents or 46 managers stated that they have not introduced policies and practices for work from home due to the nature of the work and 29 managers stated that the execution of work activities was diverted from home. The obtained results are graphically shown in Figure 5.

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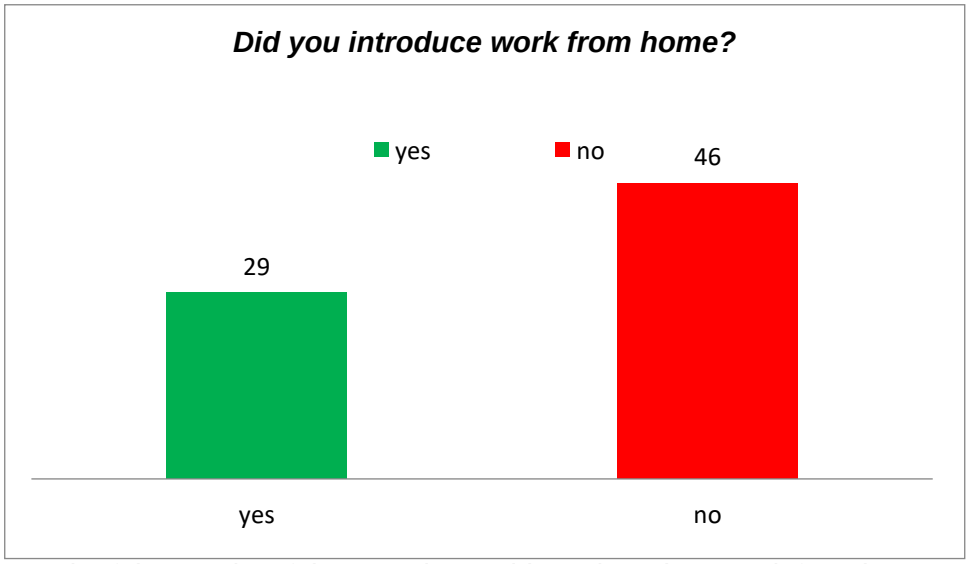

Figure 5: Graph of the results of the question - Did you introduce work from home? Source: Own research

The following question in the survey was - Have you introduced policies to change the approach to consumers?, most of the managers surveyed or 58 managers have introduced policies to adapt to the needs of consumers and 17 managers answered that they have not introduced changes. The results of the answers to this question are graphically shown in Figure 6.

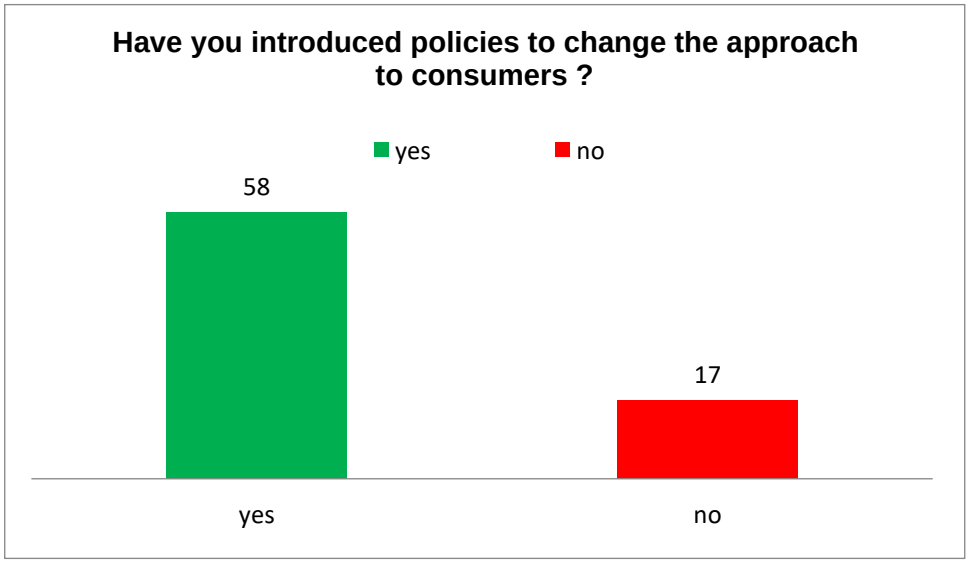

Figure 6: Graph of the results of the question - Have you introduced policies to change the approach to consumers? Source: Own research

The next question in the survey was related to the consumer access policies or more precisely as follows - What consumer access policies and changes have you introduced? (A) online sales, b) home delivery or c) online sales and home delivery, which only applies to managers who have responded to the previous question positively, the following answers were received: 45 managers practice to apply in the work of companies both forms of work - online sales and home delivery, 11 companies work on the principle of home delivery and only two companies work by applying the policy of online sales . Figure 7 shows the answers of this question.

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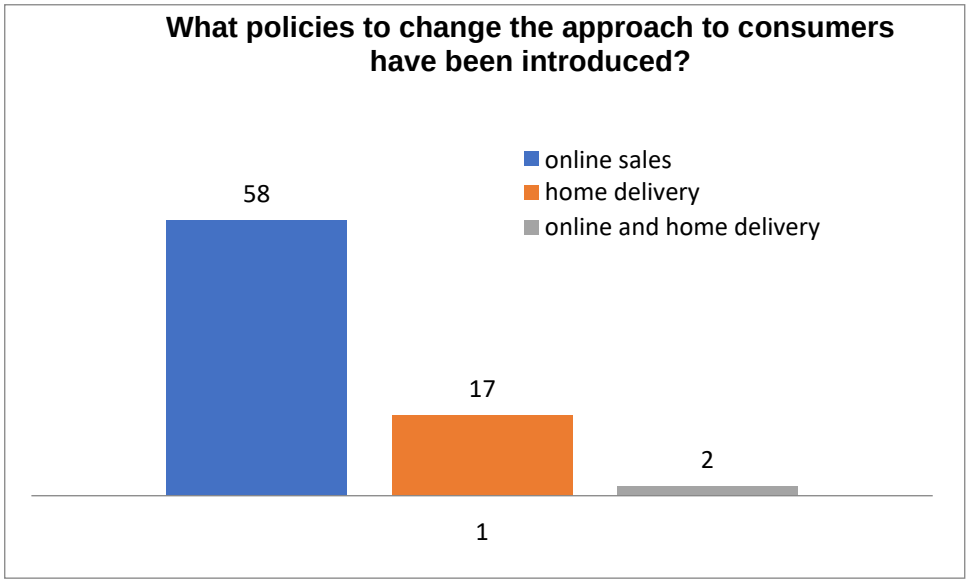

Figure 7: Graph of the results of the question - What consumer access policies and changes did you introduce? Source: Own research

The next question from the questionare - Have any changes been introduced in the offer assortment?, 43 of the managers involved in the survey stated that their companies have changed the range and 32 companies have not made any changes to the offer range. The received answers are graphically shown in Figure 8.

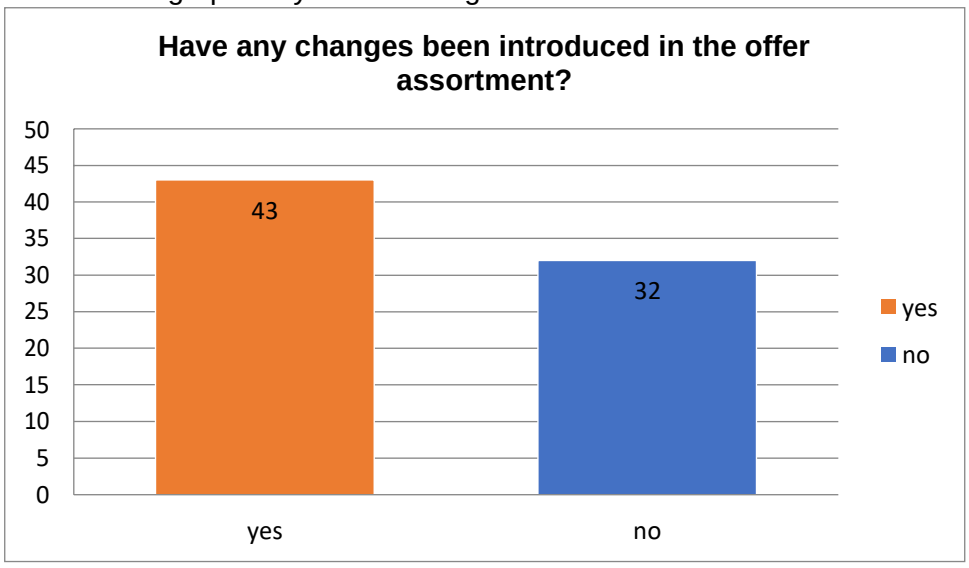

Figure 8: Graphic presentation of the results of the question - Have any changes been introduced in the offer assortment? Source: Own research

In our survey managers and companies were asked with the next question - As a result of restrictive measures, whether the company stopped working for a certain period of time?, 35 managers said that their companies did not stop working and 40 companies stopped working. The answers obtained are shown in Figure 9.

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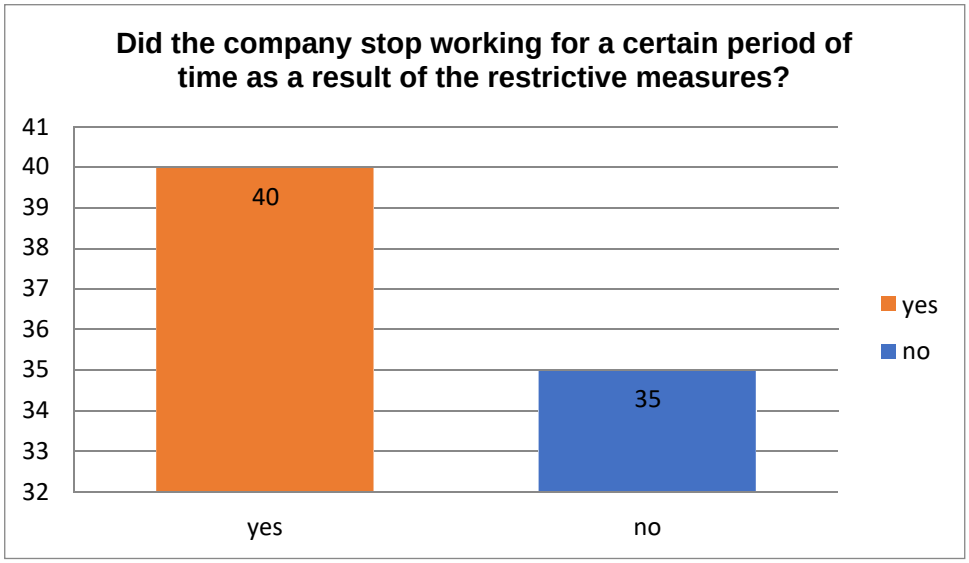

Figure 9: Graphic presentation of the results of the question - Did the company stop working for a certain period of time as a result of the restrictive measures? Source: Own research

Regarding the ninth question which refers only to the companies that have a work stoppage or a total of 40 companies - What is the time period of the work stoppage?, a) up to 30 days b) up to 90 days c) up to 180 days, 4 companies have a work stoppage up to 30 days, 26 companies or most of the respondents have a work stoppage of up to 90 days and 10 companies have a work stoppage of up to 180 days. The answers to this question are shown in Figure 10.

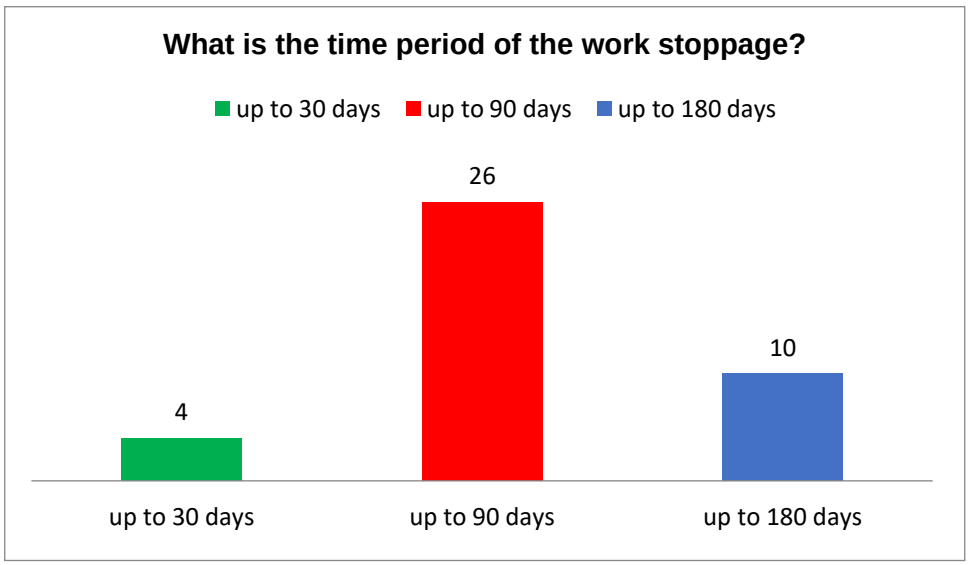

Figure 9: Graphic presentation of the results of the question - What is the time period of the work stoppage? Source: Own research

Last but not the least - the tenth question regarding the companies that had interruptions - Did you reduce the number of employees during the interruption of work? 2 companies did not reduce the number of employees. Figure 10 graphically shows the received answers.

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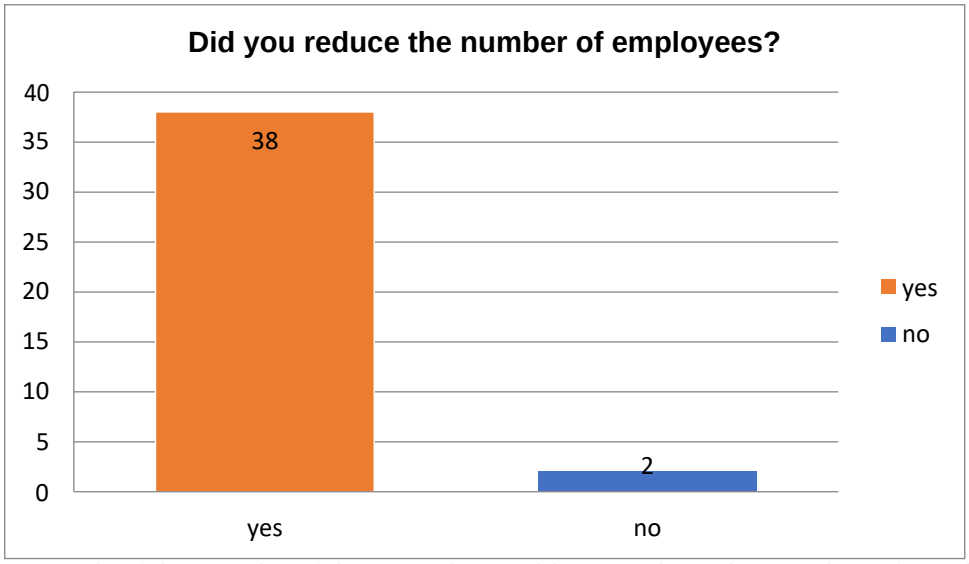

Figure 10: Graph of the results of the question - Did you reduce the number of employees?
Source: Own research

CONCLUDING REMARKS

The health crisis caused by the impact of the COVID-19 virus followed by the economic crisis are the most important issues for the functioning of economic processes worldwide. This situation has prompted managers to think about a number of issues related to the implementation of appropriate policies and measures for the operation of companies in crisis situations. The impact of the health crisis has contributed to the introduction of restrictive measures and restrictions as well as special rules of operation that have forced the managers to introduce changes in the current operations of companies. The crisis is a phenomenon that negatively affects the business efficiency, business performance, ie the company and success in achieving the set goals (Radovanovic T., 2004, 19-21). According to the results obtained from the conducted research, it is concluded that this situation and the introduction of restrictive measures and policies caused changes in all companies in order to adjust the situation, such as introduction of shift work, reduction of working hours, work from home (on online platforms), changes in access to consumers and changes in supply. Adapting to the new situation is related to the effort of the management to timely identify the causes of crises. This crisis means that there are unforeseen crises including the current pandemic caused by the COVID-19 virus which has a major impact on society (Ratten Vanesa, 2020, 503–516). Prolonged non-operation and restrictive policies have contributed to many negative effects on the operation of enterprises, such as interruptions in the ongoing operation for a certain period of time (from 30 days to 180 days depending on the condition of the enterprise). The economic challenges of the health crisis have not been overcome and many enterprises can not be solvent and financially stable due to which the management of the enterprises should focus on the introduction of new policies and methods of work. Cooperation is also needed to deal with the COVID-19 virus crisis, especially with regard to knowledge sharing. (Kirk and Rifkin, 2020, 124-131) As a result of the global health crisis, corporate management needs to make quick decisions and to adapt to the changes in the environment. Uncertainty about future operations is present because the crisis caused by the Covid-19 virus still exists (Magdinceva Sopova M., Stojanovska-Stefanova A. and Postolov K., 2021, 171-175).

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Research paper

WINTER TOURISM IN NORTH MACEDONIA AND ITS IMPACT IN THE ECONOMIC GROWTH

Prof.Dr Cane Koteski, cane.koteski@ugd.edu.mk
Blerta Zimeri blert.zimeri@gmail.com

Abstract
In this paper we gave an overview of winter tourism in North Macedonia, how tourism is developed here, which are the best and attractive places to visit ,also the highest and prettiest mountains have been mention ,best hotels for accommodation in Mavrovo, Popova Sapka and Pelister, best restaurants for food that will make it easier for the tourists to decide where to eat. What North Macedonia offer for people who like winter tourism and skiing, which are the most popular places that are visited by domestic and foreign visitors and most atracttive places for Skiing, what people can enjoy while they visit mountains in North Macedonia. Also is given a good picture and explanation of the famous place like Mavrovo,one of the Largest National Park and best ski resort to be offered, the Mountain Of Ice Lakes And Popova Sapka also best places for skiing and snowboarding, where there are 20 km of slopes available, and *Pelister is another famous National Park* in the Municipality of Bitola, filled with remarkable flora and fauna, where we presented the natural beauties and capacities of these places. In this paper have also been mentioned what could be the possible benefits from winter tourism, who is the most visited and preferred by visitors and has there been a large influx of tourists for this year, have there been changes and investments by the government, are the roads to these destinations accessible, what prices are offered, do they offer good conditions for the visitors? What impact does winter tourism have on the economic growth of the country and how attractive is it for tourists from the neighboring countries, from which countries most of the visitors are that visit Macedonian mountains, what need to be improved in the near future in order to attract more tourist.

Keywords: Winter tourism, turists, visitors, mountains, country, skiing, best places

WHAT IS THE POTENTIAL OF WINTER TOURISM IN MACEDONIA?

Tourism in North Macedonia is a large factor of the nation's economy. The country's large abundance of natural and cultural attractions make it suitable for tourism. Winters in Macedonia can be cold, but they can be cold anywhere in Europe. Macedonia is particularly beautiful in winter and it is less crowded so you are able to enjoy the sites without overcrowding.It is very picturesque, Macedonia is still a very mountainous country and can be cold. As we know geographically, almost 80 percent of Macedonian land is covered by mountains so Macedonia has very good potential and opportunities to develop winter tourism. Some of the most popular places for winter tourisem are Mavrovo,Popova Sapka and Pelister.During winter season those places are mostly visited ,by domestic and foreign tourist,usually visitors that came from the neighbourd countries.
Macedonia has many mountain beauties on which are spread several ski centers. They have been known at home for a long time, but also abroad, All have one or more hotels, , ski slopes, cable cars, elevators,coffe shops for tea, coffee or mulled wine.

NATIONAL PARKS AND NATURAL RESERVES

North Macedonia has three national parks and 33 natural reserves:
Mavrovo, located in the northwestern part of the country, is the largest of the three national parks. It is home to several river valleys, gorges, waterfalls, caves, and other morphological formations.

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- Pelister, located in the southern part of the country, near Bitola, is the smallest of the three national parks. The park consists of land that surrounds Baba Mountain. On top of the mountain are two glacial lakes, known as Gorski Oči, or mountain eyes.
- Galičica, located between Lake Ohrid and Lake Prespa, is the second largest national park in the country. The park is home to an abundance of diverse flora and fauna, and offers terrific views of Ohrid and Lake Ohrid.
- Ezereni Bird Sanctuary, located on the northern shore of Lake Prespa, is a strict natural reserve. It is home to over 120 different bird species.
- Tikveš Strict Natural Reserve, located 30 km southeast of Kavadarci, is a natural reserve that covers an area of approximately 100 square kilometres. 23 species of predatory birds are present in the reserve and 17 of these nest in the area. Tikveš is said to be one of the most important ornithological sites in Europe.
- Lokvi-Golemo Konjari Strict Natural Reserve, located near Kruševo, is a natural reserve that is the last remnant of a once enormous swamp.

Mavrovo National Park

The largest of Macedonia's national parks, Mavrovo boasts some of the best scenery in the country and is an ideal travel destination for nature lovers. The Mavrovo Mountain peak is the highest in the region, thus the park is also a popular destination for climbers, and it operates as a winter ski resort too, bustling with snowy adventures. Lake Mavrovo stretches out over an expanse of 10 kilometers and makes for some of the country's best trout fishing, whilst also being a wonderful place to swim, sail and walk. Visitors to the lake should be sure to take some time to marvel at the half-submerged Church of St Nicolas, once left completely underwater by floods in the 1950s before gradually re-emerging to form the mystical sight that it is today. Explorers should bring a tent and spend a few peaceful days enjoying the tranquility of the park's lush expanse of forests, lake, and craggy mountains. For those who don't want to rough it, the neighboring village of Mavrova offers a small selection of cozy hotels and restaurants.Some of the best hotels for accommodation and food are Hotel Mavrovo,Hotel Radika,Mia's favorite Hotel etc.The ski resort Mavrovo is located in Polog (Položki region) (North Macedonia). For skiing and snowboarding, there are 25 km of slopes available. 14 lifts transport the guests. The winter sports area is situated between the elevations of 1,255 and 1,860 m.Ski Mavrovo is one of Macedonia's longest established ski resorts, and one of the most prestigious winter & summer sports destinations in Macedonia.

Pelister National Park

Renowned for its diverse ecology and hiking trails, a visit to Pelister National Park makes for a great walking holiday. Here hikers can view a diversified range of flora and fauna, and will perhaps be lucky enough to spot a roe deer, a wild boar or a red-billed chough. A celebrated ski resort alongside Mavrovo, Pelister is an intimate destination and a great spot in which to take advantage of 1172 meters of vertical descent void of the crowds of other popular ski resorts. As well as gorgeous natural camping grounds, there are a number of hotels dotted around the park and Bitola is only 30 km away, meaning that visitors can split their time between the urban buzz of the city and the refreshing natural beauty of the park.

Popova Sapka Ski Resort

Macedonia's premier ski resort, Popova Sapka is located west of the capital, Skopje. Set amongst North Macedonia's highest peaks in the Shar (Šar) mountains, Popova Sapka (Popova Šapka, Popova Shapka) is home to some superb cat skiing operations and high alpine freeride terrain.Even though the village & resort feels like a crumbly shadow of its

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former self, a visit to Popova Sapka is a cultural & culinary experience vastly different to other European ski holidays. Popova is not necessarily a family ski holiday destination as such, but anyone that can already ski & has their own backcountry touring gear will enjoy it immensely.

Pros & Cons for Popova Šapka Ski Resort

Pros

- Uncrowded & intriguing powder skiing destination.
- Great terrain inbounds & via ski touring or snow-cat.
- Food, drink, accommodation & lift passes are incredibly cheap.
- Local cuisine is awesome – plentiful & delectable.
- 'Ski-in' accommodation available.

Cons

- Generally aging & dilapidated infrastructure (but they are gradually improving it).
- Chairlift operation can be unreliable.
- Accommodation can be of a lower standard than the rating would otherwise suggest (but they are improving!)
- Piste trails are limited & grooming is poor.
- No quality ski rental or repair location available (other than the cat ski operators).
- The best restaurant is incredibly hard to find without local knowledge (should possibly be listed below)!

Pro or Con (depending on your perspective)

- Snow-pack can change dramatically from day to day.
- Choice of cat-ski operators
- Packs of dogs wander the ski area, intimidating some visitors & intriguing others!
- Not necessarily a family friendly ski destination!

Skiing & Snowboarding, Lifts & Terrain

Popova Shapka ski resort will appeal to powder hounds looking for a sense of adventure & something completely different. The ski slopes are all set above the treeline on high alpine meadow terrain requiring very little snow base to become skiable.The on-piste terrain in the resort is limited to about 20km of not so well-groomed trails (if you are lucky). Skiable vertical is around 800m. Ski lifts include a couple of very old double chairs & several surface lifts, some of which have a questionable functionality. A new hooded six-seater chairlift was finally fully installed in 2019. It serves around 300m of skiable vertical including some tasty, advanced terrain. The off-piste has loads of opportunity & minimal competition, unless the cat ski clients have a down day! There is night skiing on weekends on one of the lower surface tows.Only one lift is important. The double chair heading up to the 2,510m summit opens-up the real business at Popova Shapka - the expansive backcountry ski terrain. Access via the lift and then either human-powered or snowcat-powered! Terrain is varied and can include easy alpine bowls, steep chutes, tree skiing & everything in between. Several peaks can be climbed & skied without too much effort, including the area's tallest, Tito's Peak (Titov Vrv) (2,747m).The area is best experienced through a combination of ski touring via the chairlift plus cat skiing.

Cat Skiing

To truly experience the area, the main reason to ski Popova Sapka is cat skiing. The longest established cat ski company in Europe is based here, as are a group of upstart locals

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running new snowcats across some of the same terrain, much to the chagrin of the original operator!

Snow & Weather

The Shar Mountains are amongst the highest in the region and have historically received a high annual snowfall of around 5 to 10m, but it can vary markedly from month to month, and season to season. A reasonably settled snow base is on the ground by December. The months of January, February & March provide the best conditions, with the coldest month being February and the most snow falling in March. Quality snow can sometimes still be accessible into May.As with all high alpine areas, mother nature can fickle. During the Powderhounds visit in mid-January 2019, the snow was blower powder early in the week, then after a huge windstorm, was stripped back to the worst kind of variable alpine muck. A week later it was pristine powder again. Who can judge what it will be like when you visit. Either way, the area doesn't need much of a base to be skiable. Hoorah!The ski terrain in Popova is mainly south-facing so it gets plenty of sun. With that the snowpack can become baked if temps rise too much. Days can warm up quickly in these lower latitudes, so the key is to make the most of any cold, dry powder as soon as it settles.

What impact does winter tourism have on the economic growth of the country?

One of the biggest benefits of tourism is the ability to make money through foreign exchange earnings. Tourism expenditures generate income to the host economy. The money that the country makes from tourism can then be reinvested in the economy. those famous places for winter tourism in North Macedonia have a big impact in the economic growth,expesselly during winter season which are frequented by foreign tourist also.During this season hotels and restorants that are located in those areas have more benefits.The bigger is the number of turist ,the bigger are benefits for our country,which have pozitiv impact for the economic growth every year.

CONCLUSION

Those beautiful places for skiing during winter tourism are frequented currently,but the government need to invest more on them,in order to have more visitors in the near future.
But the problem is that they are far from attractive for years. At least compared to what the competition from the neighborhood offers. Without concrete investments, this ski season will start with insignificant novelties in the offer. Macedonia generally needs a new strategic approach for tourism and ski resorts are another special story. We must work on the infrastructure and definitely think about Public Private Partnership projects. Some kind of concession, to ensure competitiveness. "If we leave the current situation like this, things are unlikely to move forward," The concept of public-private partnership would be a novelty for the ski resorts in the country, which are partly state-owned and partly operated by private owners. But the problem, according to insiders, is that even where the private factor operates, there is no concrete state support. Especially in the part of the accompanying infrastructure, which needs modernization. There is money, or sources of money, but the problem is how to use it.

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SALT AND SEASONINGS AS A FOOD PRODUCTS

Florim Asani, floriasani@hotmail.com
Perparim Qahili *perparim.qahili@gmail.com*

Abstract
Production and trading company; IZVOR Vadin Skopje 1992. Sector for organization, production and control. Industry for production, technology, equipment for production which includes cleaning, drying, packaging, warehouse. Quality and safety of food(salt) from the consumers point of view in Macedonia. Salt: The history of salt, the resources of salt in different part of planet, salt as an irreplaceable product of the food industry in the kitchen. Features of salt: physical, chemical, biological and technological. Salt as a chemical-inorganic component despite using in food industry is used in medicine, gastronomy etc. The form of transport like sea transport, rail, land transport, administrative barriers, economic, geographical barriers during transport. Salt is imported from Tuzla 5000t, Egypt 1500t, Albania 1000t, Himalayas 2500t, total 10.000t. Well -known countries of import of dried vegetable products; China, India, Pakistan, Brazil, Hungary, Serbia etc. The main export countries; Kosovo, Albania, Turkey, Montenegro, Slovenia, Croatia, Bosnia etc. Salts consumed in RNM; sea salt for cooking, sea salt for industry, sea salt for deicing roads, machinery etc. In the department of seasonings production, we have many products such as those of our brand and production with other brands. Seasoning production sector, management, organization, production, capacity of production for the spices-vegetable ingredients. Company Izvor Vadin Skopje has a capacity of over 3.000.000 kilograms and most of that is exported.

Key words; transport, production capacities, seasonings.

INTRODUCTION
Salt is a white substance wet and strong, in crystalline form. It is composed of Sodium (40%) and Chlorine (60%) it is also soluble in water, which is extracted from sea water (through salt) or from land (in mines) and from that long process ends up in use of the dish. It also enhances the taste of food and is added to products to preserve them for a long time and safely. Otherwise salt is the oldest spice on the surface of the earth without which there is no life,not coincidentally they call it white gold

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Photo 1. Narta salt flat at the southern end of the coastal lowland, near the city of Vlora
In the period of September-October, the area offers a rare view with the colors produced because the water dries and only salt from the evaporation process remains. Narta salt shaker is the first of its kind in Albania. It covers an area of 1 472 ha. The production of salt began in 1958. In the first years, the saltworks produced about 25-30,000 tons / year and employed about 250 people from the villages of the area and the city of Vlora. Production increased in 1970 by 70,000 tons and employed up to 800 people. In 1975, the saltworks started marketing iodized salt with a capacity of 5,000 tons / year. Production peaked in 1975-1985 with a total of 140,000 tonnes of salt. At that time, the saltworks employed about 1250 people.
While today this saltworks is one of the most active saltworks that supplies Albania, Macedonia, Kosovo, Serbia, Montenegro

Photo 2. Sea salt

Chemical and physical properties
Sodium chloride, Na Cl - is a solid substance which forms crystals with cubic structure. Relatively well soluble in water 0.9% solution.
Sodium chloride is obtained by evaporation of seawater or from rock salt ores. The evaporation of seawater in the saline is done by the energy of the sun in the hot periods of the year starting from March to September.
NaCl is used in the household as a raw material for the production of many chemical compounds: HCl -> Hydrochloric, and other compounds of sodium, as well as chlorine and hydrogen.

It is also used for the production of soap colors, glass and porcelain. In chemistry, salt is known as a chemical compound formed by the complete partial replacement of hydrogen with a metal acid and its equivalent. In medicine salt is known as a white and crystalline substance. One small tablespoon of salt contains approximately 2300mg sodium.Sodium plays a very important role in the human body it maintains the osmotic balance and secretion of hydrochloric acid in the human stomach. However, excessive salt consumption often exceeds the recommended norms. Sodium as an excess salt causes an increase in blood pressure while Potassium helps to relax blood vessels, and also to eliminate sodium from

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circulating in the human body. It also serves to reduce blood pressure, for which Sodium and Potassium have opposite effects on the system of human organs.
The human body needs more POTASSIUM than Sodium food salt must be iodized, this salt is highly processed and artificially iodized.Rock or volcanic salts like Himalayan salts, are the purest and highest quality salts as they contain less Sodium and more useful minerals.

Effects of salt
Salt is not served only in the kitchen, it is also served in other industrial, medical processes.Salt is used to clean glass.Salt is used to soften water, it is used in some cases when the water is solid. Salt is used to melt snow and ice, including sodium chloride, calcium chloride. Salt absorbs moisture indoors and outdoors. Salt in the dairy industry serves for the fermentation of cheese, (serves for the longevity of the cheese). Salt in the human kidneys serves to absorb the effect of salt on the human body increases blood pressure. Salinity represents the amount of salt dissolved in seawater expressed in promille (‰).

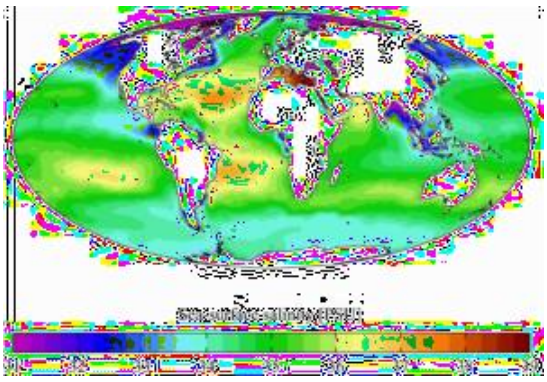
Salinity is not the same in all seas and oceans regardless of the same planet, it depends on the intensity of evaporation, solar energy, surface, position as well as the amount of rainfall, the exchange of freshwater in the seas and oceans.

The average salinity of sea and ocean water is not the same, each time moving around 35 depending on the country. Subtropical seas have the highest salinity of about 38 ‰, while in the rest of the Red Sea they reach 40 ‰.

Here I must also quote the Dead Sea where the salinity is so great that there is no life, except for some microorganisms and bacteria that withstand salinity. In the Dead Sea the salinity is 10 times higher than ordinary sea water, and due to the salinity, the density of the water is higher. At the beginning of the surface from 30m above the salinity is 40% and the temperature reaches 40 degrees Celsius.

Let's say one of the Dead Sea's most incredible curiosities is that it is located about 400 feet above sea level. Seas with larger land areas have lower amounts of salt, such as the Baltic Sea, since it is such a shallow sea, it is normal for all the salt to be concentrated faster and at a higher concentration. It has an average salinity of 6-8 ‰, although in some parts the percentage is lower and has only 3.5 ‰.

From this we understand that due to dissolved salts, sea water can not be used directly for human needs such as drinking, irrigation in agriculture, use of water in industry, medicine, laboratory, etc. In isohaline maps a zonal extension to the surface of the world ocean is observed.



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History and methods of salt production as well as Salt Mining Technology
Refined salt process

The production process is right depends on the type of salt.One of the most beneficial is sea salt. It contains various minerals that are very useful to man. Raw salt first of all goes through several stages of purification from physical, mechanical and chemical impurities. The beginning of the process first begins to be transported in bunkers, there is placed magnetic equipment for reasons of unnecessary metal impurities, then the salt passes to the purification phase where it is cleaned twice with clean water. And by automatic means passes to the centrifuge system where the separation of pure salt and impure water takes place. Once the salt has passed the stage of purification from impurities, it passes through a special industrial centrifuge where the cap is dried.

This happens with hot air, which reaches temperatures of 200 to 300 degrees Celsius depending on the humidity. From this phase it passes to the milling phase where the granules acquire the desired size where it is made on request with different granules starting from 2.5mm to 20mm.

From this it is automatically transported in a metal sieve where the salt is separated through bunkers from that thick salt, medium salt and fine salt. depend on the type of deposit and product characteristics: purity, granule size depending on market demand or special orders. During the process of transportation through the elevator there is the second phase of cleaning placed magnetic equipment where the final elimination of metal particles is done and at the same time here is the system where the iodization of salt is done depending on the market where it will be sold.

If the salt is edible, it must be iodized where the analysis and controls are done every 30 minutes. From here it is transported through automatic packaging machines where it is made in packages from 1kg to 1000kg. Salt as products does not have an expiration date, but if it goes through the process of iodization then it has a certain time of 3 years and that should be stored in the dark and dry space where there is no moisture.

TYPES OF SALT
There are several types of salt on the market

Refined salt or table salt

The most commonly used salt in our homes is crystallized white salt, easy to cook. This salt is iodized to meet the legal regulations that exist and relate to certain amounts of iodine in salt, for example in the Republic of Northern Macedonia, legal regulations have been adopted according to which processed salt for cooking must be iodized with potassium iodine 20- 30 mg iodine in 1kg salt.

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Sea salt

Sea salt is filtered through plants to obtain salt by evaporating seawater in swimming pools. Depending on the place of production, the form and the way in which the salt is obtained (how much and how it is processed), it, unlike ordinary salt, most often contains amounts of minerals such as: potassium, iron, and zinc and a small amount of iodine.

Roasted salt

Vacuum evaporated salt is obtained from salt reserves in the place where the sea once existed, and with its withdrawal salt is layered. By drilling it is reached to the salt depots where water is dissolved that dissolves the salt, then it is pumped to the factory for processing. After evaporation, ie after digestion, pure sodium chloride remains. The best example of this is the salt mine in Tuzla.

Himalayan salt

The healthiest type of salt comes from Pakistan, the Khewra salt mine - the second largest salt mine in the world. Himalayan salt contains amounts of iron oxide which gives it a pink color. It also contains 84 minerals and elements found in the human body. Some of these minerals include: calcium, magnesium, potassium, sulfate,

iron, but also contain very small amounts of sodium from common salt

Black salt

Black salt is found in Hawaii, it is not processed and it is volcanic, that is why it got the name "Black salt". The black color comes from activated charcoal which is healthy for digestion and removal of toxins in the human body. In addition to this miracle the black color of the salt gives a very interesting look to the food for decor.

Red salt

Red salt originates in Hawaii and acquires its color from volcanic clay. Perhaps this salt is richer in microelements, especially iron. Recommended as an excellent food supplement, especially at low iron concentrations

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Salt tablets

For the production of tablets, a high degree of cleaning raw materials is used. The sodium content of chlorine reaches 99.7%. The product is obtained by evaporation in special devices, dosing and printing on tablets. This type of salt is used to soften water in cases where the water is very solid

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TREND OF GROSE POLISED PREMIUMS ACCORDING TO INSURANCE CLASSES. COMPARATION 2020 WITH 2019

Baton Zimeri, baton.zimeri@hotmail.com
Erda Shabani, shabanierda@gmail.com

Abstract
The purpose of this work is to introduce with the parameters or the amounts of the premium for two consecutive years of non-life insurance companies which give us a clear insight and controls of the moving trends in the Republic of North Macedonia. With the analysed parameters we get clear guidelines and better directions for better management in order to increase the stability, representation and profitability of the insurance sector.

The current figures and numbers confirm that insurance is a serious, stable and loyal partner of the citizens, the economy and in general of the whole society of our country. Insurance is included in a lot of spheres of human activity. These growths are followed with increasing the number of participants in the insurance sector or the number of insurance companies as its main pillar. The aim is to take a decisive step to pave the way to an industry that conquers the industrial market by offering a wide range of specific, stable insurance products, designed and created according to customer requirements.

By analysing the data from the two consequence years we get the clear target of where we should be focused in order to maximize the measures we take.

Key words: Insurance, grose premium, risks, premium parameters.

Gross written premium 2019-2020

GWP(Gross written premiums) in insurance and reinsurance of non-life insurance companies includes all amounts of premiums that are agreed (policy) in the current accounting period, whether they fully or partially refer to the following period, while in life insurance the total policy premium includes all premiums paid up to the end of the accounting period. In 2020, the GWP was realized in the total amount of 8.3 billion denars (Table 1), which is a decrease of 4.89% compared to the GPP realized in 2019 (2019: 8.8 billion denars).

Table nr.1

Insurance class	Gross written premium 2020	Gross written premium 2019	20/19
Insurance from injuries	784.395	694.160	
Health insurance	273649	188.885	
Vehicles insurance	823.735	838.236	
Insurance of aicrafts	9.084	53.321	
Insurance of floating objects - CascoO	1104	565	95,4%
Insurance of goods during transport - kargo	84696	81562	3,84%
Property insurance – from fire	768 207	751603	2,21%

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Others forms of property insurance	1.092.265	1.020.788	7%
TPL	4.136.297	4.577.080	-9,63%
Liability insurance while using aicrafts	6.787	14.336	-52.66%
Liability insurance – floating objects	2.709	3.063	-11.56%
Other forms of liability insurance	211.970	226.948	-5,6%
Kredits	25.158	12.927	94,62%
Insurance of warranties	536	1241	-56,81%
Insurance from financial losses	64478	67203	-4.05
Legal protectio	8	5	60%
Trawel insurance (assistance)	76325	220692	-65,42
TOTAL	8.325.403	8.752.625	-4.89%

Source:ACO

The negative trend is present in most insurance products with some exceptions in certain products where, despite the general crisis as a result of the Covid pandemic, we have some increase.

Table nr. 2: Gross written premiums by nonlife insurance companies(thousands denars)

		Gross written premium		Trend	Participation in total GWP	
		2020	2019	20/19	2020	2019
1	Triglav	1231614	1424892	-13,56	14,79%	16,28%
2	Eurolink	963579	1013069	-4,89	11,57%	11,57%
3	Macedonia	862860	927978	-7,02	10,36%	10,60%
4	Sava	848.398	886.426	-4,29%	10,19%	10.13%
5	Uniqa	827544	823176	0,53%	9,94%	9,40%
6	Halk	821.730	523.287	57,03%	9,87%	5,98%
7	Euroins	726.996	813.562	-10,64%	8,73%	9,30%
8	Winner	712.129	808.989	-11,97%	8,55%	9,24%
9	Insurance policy	602.980	710.064	-15,08%	7,24%	8,11%
10	Croatia non-life	%	459102	0,36	5,53%	5,25%
11	Grawe non-life	266817	362.080	-26,31%	3,20%	4,14%

Source:ACO

Motor vehicle insurance has a significant share in the total gross premium with a share of 49.28% in 2019, of which 51.17% consists of the mandatory motor third party liability insurance (AO), which participates with 41.09% (2019 , 43.25% and from voluntary motor vehicle insurance, ie casco insurance which participates with 8.18% or 7.92% in 2019. An important place in the amount of gross written premium has the property insurance which participates with 18, 48 % or 16.75% in 2019.

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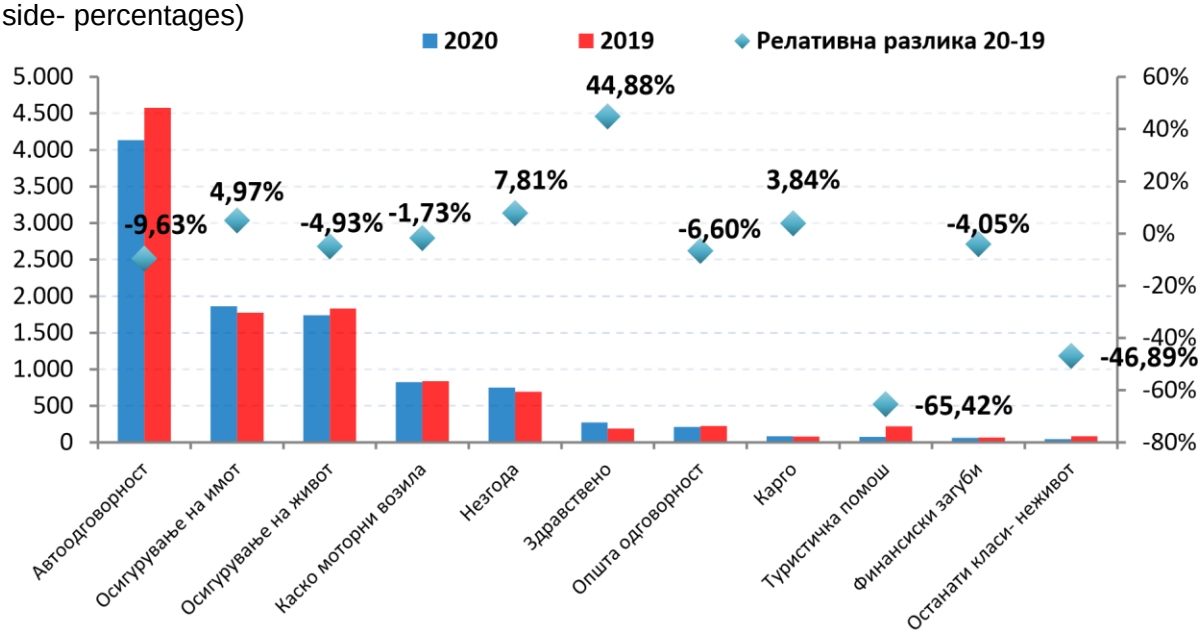
Review paper

A decline in GWP of 9.63% compared to 2019 was recorded in the class of car liability insurance (TPL- Third party liability), with a total premium of 4.14 billion denars (2019: 4.58 billion denars) and a decrease in the number of concluded contracts by 12.63%, as well as by motor insurance casco with a decrease of 1.73% and total premium in the amount of Denar 823.73 million (2019: Denar 838.24 million), amid simultaneous increase in the number of concluded contracts of 0.43%. Property insurance increased by 4.97% with GWP at Denar 1.86 billion (2019: Denar 1.77 billion), amid simultaneous growth in the number of concluded contracts by 3.75%. Analyzing by groups, natural persons registered an increase of 1.91% in the concluded contracts, followed by an increase of 4.49% of GRP, while in legal entities there was an increase of 9.81% in the concluded contracts and an increase of 5, 73% of GDP. Within the property insurance, the agricultural insurance registered a decrease of 1,37% in the number of concluded contracts and an increse of 24,81% in the realized GWP for agricultural insurance which amounts is 482,53 million denar(2019 GWP ; 386,63 milion denars).

There is a big increase in 2020 in the sale of health insurance with 10,706 concluded health insurance contracts with a total GWP of 273.65 million denars, which compared to 2019 is an increase of 35.60% in the number of concluded contracts, ie an increase of 44.88% of the total GWP. This type of insurance becomes one of the priority goals where, among other things, it contributes to the direction of companies towards people.

An additional impetus for this type of insurance was given by the crisis caused by Covid-19 which affected the whole world. The pandemic helped to raise the awareness of societies and give them a different and more complex look, and thus a different approach to health services, and pointed out the advantages and benefits of this type of insurance.

Graf nr. 1 : Trends of gross written premiums by insurance classes(millions of dennars; right side- percentages)



Извор: *АСО*

Financial results

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Review paper

During 2020, the insurance sector made a profit in the amount of Denar 456.81 million, compared to the realized profit in the amount of Denar 25.37 million in 2019. The non-life insurance companies made a profit of Denar 273.81 million (2019: loss of Denar 125.91 million), which results from the result of ten companies that made a profit of Denar 341.83 million and one company that made a loss of Denar 271.83 million. of 67.72 million denars.
Life insurance companies made a profit of 177.86 million denars (2019: profit of 100.54 million denars), which results from the result of four companies that made a profit of 198.64 million denars and one company that realized a loss in the amount of Denar 20.79 million. The improvement in profitability in the non-life insurance segment is the result of several movements. Namely, the reduction of the gross reserves for portable premiums in 2020 is visible, which has a positive impact on the revenues from the earned premium in 2020, compared to the same realized in 2019.

Then, the decrease of the net damages in 2020 is evident compared to 2019 (this decrease is, primarily, a result of the reduced activity and the undertaken risks in the insurance, in a period when the measures for restrictions and prohibitions for travel abroad are in force and economic downturn due to pandemic).

An additional factor for the high profitability of life insurance companies is the temporary regulatory framework created by the ISA during the pandemic, in order to make corrections for late payments (which are a cost in the operation of each company) with extended deadlines, which obviously improve the financial statements of companies in 2020 (ie until the entry into force of the temporary regulation).

Improving the profitability of life insurance companies is for reasons similar to non-life insurance companies. The growth of the mathematical reserve in 2020 is significantly smaller compared to the growth of the same in 2019. The growth of the mathematical reserve affects the increase of the total expenditures in the period.

The large variations in the profitability of the non-life insurance segment (if we analyze Chart 13 for the years 2018, 2019 and 2020), result from the significant improvement of the profitability in 2020 of two non-life insurance companies, which during 2019 performed significantly increase in the amounts of provisions for claims (liabilities), which contributed to end 2019 with large losses.

In addition, during 2019, the two insurance companies performed accounting harmonization of the value of real estate with the requirements of the amended rulebook, reducing their value significantly. In both companies there were ownership changes, recapitalizations and changes in operations, which led to the financial results achieved in 2020 to be much better compared to 2019.

Graf np. 2: Financial results of insurance companies(millions od denars)

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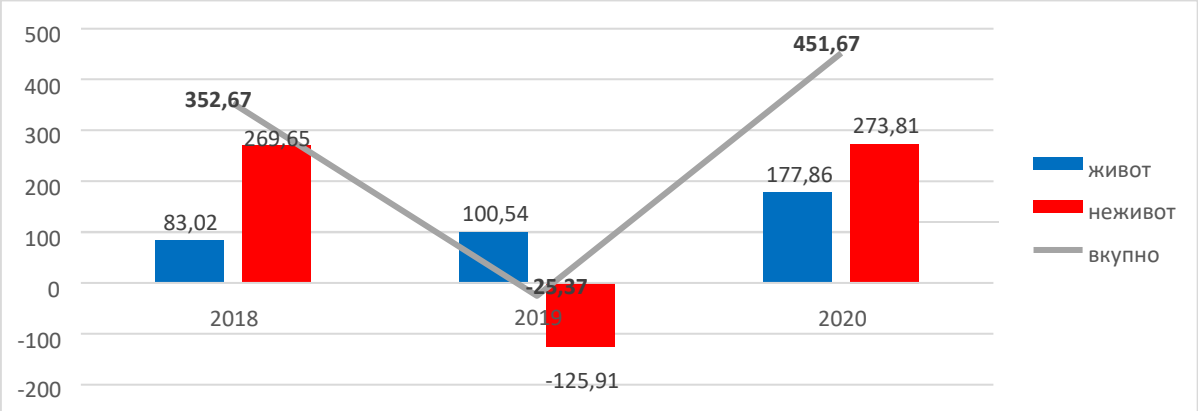

Source:ACO

Indicators of the insurance sector

The indicators in the insurance activity are used for better monitoring of the work of the insurance companies. The coefficient of claims is calculated as the ratio between the incurred damages in the period and the premium, and the cost coefficient is the ratio between the costs of implementing insurance and the premium. The sum of these two coefficients is given by the combined coefficient. In more detail, by insurance groups in table no. 15 are presented the ratios on a gross basis and on a net basis, ie after isolating the reinsurance effect.

Табела бр. 17: Technical coefficient

	2020			2019		
	Damage coefficient	Costs coefficient	Combined coefficient	Damage coefficient	Costs coefficient	Combined coefficient
Nett coefficients						
Non- life	47,82%	51,41%	99,23%	52,50%	51,46%	103,96%
Gross coefficients						
Non life	50,09%	45,16%	95,25%	47,94%	45,44%	93,38%

Source:ACO