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Employment in Croatia: Insights into the past and the future

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Abstract. The aim of this paper is to explore the relationship between the movement of GDP and the employment in Croatia (CRO). The objective of this paper is to give an estimate on the number of employees needed in the following period as well as possibilities to find workers, having in mind the negative demographic trends. The hypothesis indicates that there is a significant correlation between GDP movement and total employment as well as weak but positive correlation between GDP movement and unemployment. Numerous scientific methods, among which are the methods of analysis and synthesis, the method of descriptive statistics and the method of mathematical modelling, have been applied to achieve the goal of this research. The main result of this work leads to the

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conclusion that human resources will become the limiting factor for economic growth in the future. Therefore, economic policy measures should be taken in order to change the detected negative trends while forming the demographic capital of the country.

Keywords: employment, labour, labour market, demographic capital, Croatia.

JEL Classification: E24, J23, M51

1. INTRODUCTION

In a contemporary society, it is very important to establish a proportional division of labour by different production activities within the area, branches and groups, i.e., a certain proportion between the quantity and the type of work on the one hand, and the scope and structure of social needs on the other. In organized production of goods, there is a law of supply and demand which determines what will be produced, how it will be produced (to which production the work will be directed) and how much working time will be necessary for the production of certain goods and services (Pupavac et al., 2020, pp 8-9). The labour market has established relations between supply (employees) and demand for labour (employers). The total labour supply in a company depends on at least four factors: the number of inhabitants, the participation of workers in the total population, the average number of working hours per week or year and the quality, quantity and qualification of work. Labour market is an important segment of any economy and it is connected with the capital market, the market of goods and services, as well as all other economic entities (government, companies and households). Unlike the capital market and the market of goods and services, labour market is subject to far greater fluctuations, restrictions and regulation (Bilbao-Ubillos et al., 2018), which is justified by its impact on business activity due to the labour supply and HRM processes efficiency (Bilan et al., 2020a) as well as reasons for decent quality of life maintaining via the employment and income policy (Karamanis et al., 2018; Mishchuk et al., 2020), including structural changes in economy (Maris, 2019).

Governments all around the world are facing numerous challenges at the labour market. Insufficient number of workers, unemployment, underemployment, labour skills mismatches and discrimination (gender, racial) at the labour market are just some of the challenges faced by governments, regardless of their country's level of development. For example, Germany (Deastatis - German State Statistical Office, 2017) as one of the most developed countries in the world simultaneously shows the need for additional labour, unemployment of about 1.6 million and underemployment of the existing 5.1 million workers. Part-time employees are especially considered to be underutilized at work. There are also 1.4 million employees working overtime. According to the same survey, 5.9% of all the employees expressed a desire to work more. In this context, the innovative practice of the European Union countries in the part of stimulating human factors is significant.

Institutions of Croatian labour market are increasingly approaching the markets of developed Western economies (Popovic et al., 2020). In functional terms, Croatian labour market as an integral part of the European labour market AND is strongly influenced by European integration and globalization (Logarusic & Raguz Krstic, 2019). Internal factors that determine the relations at the national labour market are negative demographic trends (Becic et al., 2019) and deindustrialization of the economy which is peculiar to many post-socialist countries. Both of these factors had a negative impact on both aggregate supply and aggregate labour demand. The deindustrialization (Penava & Druzic, 2014) of the national economy had a decisive impact on the developing imbalances at the domestic labour market which is resulting in a significant

increase in unemployment. All this should be viewed through the prism of the impact of labour potentials on the competitiveness of any economy.

As one of the four basic macroeconomic goals (the so-called "magic quadrangle") is to achieve full employment, this scientific discussion explores the relationship between GDP growth and employment growth (ECB, 2017) in Croatia during the period from 1967 to 2019. According to the trends, a forecast of employment by 2050 will be presented, the main problems related to the future workforce will be detected and appropriate solutions will be offered.

2. THEORETICAL APPROACH

The labour market is a complex and significant area of the economic and social system, because it valorizes the value of labour force, determines working conditions, size of the wage, level and guarantees of employment, dynamics and structure of employment (branch, demographic, professional), social division of labour, labour mobility, unemployment dynamics, etc. In Western economic theories of the labour market, four conceptions of the analysis of its functioning stand out. The basis of the first concept, which is represented by the representatives of the neoclassical school and the theory of supply, is the understanding that the labour market, like all other markets, functions on the basis of price equilibrium. This means that the price of labour is the basic market regulator: wages regulate supply and demand relations and support their balance. Investing in the knowledge, education and qualification of staff can be compared to investments in machinery and equipment. These dependencies are appropriate for labour market equilibrium in general, without taking into account the impact of discrimination by specific reasons (Bilan et al., 2020b; Stavytskyy et al., 2020). Individuals invest in qualifications until the rate of return on those investments begins to decline. According to the neoclassical conception, the price of labour reacts elastically to the needs of the market (supply and demand), and there is no unemployment when there is a balance on the labour market. In general, according to neoclassical theory, unemployment is caused by supply-side factors (Bierens & Broersma, 1993).

Unlike neoclassicists, Keynesians and monetarists see the labour market as a phenomenon of constant imbalance. Labour has a fixed price (wage) that rarely changes. Since the price does not affect the establishment of balance in the labour market, this role is played by the state, which through the reduction or increase of aggregate demand (volume of production) acts to establish balance. Monetarists start from the same idea, but introduce the term of „natural" level of unemployment, which reflects the structural characteristics of the labour market and makes labour prices inelastic, which creates obstacles to the normal functioning of the market, deepens its imbalance and unemployment itself. According to post-Keynesian theory, the labour market is dominated by demand in both the short and medium term (Stockhammer et al., 2014). Institutionalists pay the greatest attention to the analysis of the professional and branch structure of the labour force and the appropriate level of wages. Finally, let us remember that the Marxist conception saw the labour market very specific. Labour was considered as a good that creates value in the process of production. Since labour is a subjective factor of production, it was considered that it can actively influence the supply-demand relationship, i.e. its market price.

None of the above concepts provides a complete and appropriate picture of how the mechanism of the labour market functions, which is considered as a specific market in many ways. These specifics arise primarily from demographic, socio-psychological, ethnic, migration and other factors, which, in addition to economic ones, affect the dynamics of employment. Most researchers divide the labour market into two segments: primary (independent and subordinate) and secondary jobs. Primary independent jobs are held by highly educated specialists, managers, administrative and highly qualified workers. The primary subordinate positions are occupied by technicians, administrative assistants and workers with secondary

qualifications. Secondary jobs are occupied by service (simple services) and unskilled workers. In this context, labour mobility (cross-border and inter-professional mobility) is very important. State regulation is a significant factor influencing the labour market. In practice, it is manifested in several direct ways (programs for stimulating employment growth in the public sector, programs for preparation and reorientation of the labour force, programs for social protection of the unemployed) and indirect ways (tax, monetary and depreciation policy of the government, labour law). A special place in the system of labour market regulation is occupied by the labour exchange as a special institution that performs an intermediary function in the labour market. Most labour exchanges have a state character, but in practice a large number of private intermediary companies also operate. Labour exchanges register the unemployed and vacancies, look for suitable employment, study the labour market situation and provide information about it, perform tests and professional preparation of the unemployed, etc.

3. DATA AND RESEARCH METHODOLOGY

Achieving full employment is one of the fundamental goals of each national economy. This goal is directly related to the realization of potential or maximum possible GDP (Okun, 1962). Increase of the GDP is usually accompanied with higher number of employees and the other way around. Trends in GDP and the number of employees in Croatia from 1967 to 2019 are shown in Table 1.

Table 1

GDP trends, number of employees and unemployed in Croatia, 1967-2019

Year	GDP, fixed prices in 1990 in million HRK	Employment (000)	Calculation of GDP by including the number of employees in the linear trend equation *	ε_t	Unemployment (000)
1967	139359,06	878	145878,42	-6519,36	58
1968	142692,20	882	146905,98	-4213,78	64
1969	155202,24	895	150245,55	4956,69	57
1970	164181,18	928	158722,92	5458,26	47
1971	183443,57	964	167970,96	15472,61	42
1972	187481,44	1005	178503,45	8977,99	47
1973	192305,01	1018	181843,02	10461,99	54
1974	218272,60	1055	191347,95	26924,65	55
1975	217393,53	1109	205220,01	12173,52	67
1976	224400,14	1143	213954,27	10445,87	83
1977	241634,62	1209	230909,01	10725,61	88
1978	255968,57	1262	244524,18	11444,39	83
1979	270873,52	1315	258139,35	12734,17	77
1980	277591,22	1357	268928,73	8662,49	78
1981	282220,66	1396	278947,44	3273,22	86
1982	287810,10	1419	284855,91	2954,19	99
1983	290761,67	1434	288709,26	2052,41	108
1984	298659,81	1457	294617,73	4042,08	114
1985	292006,43	1489	302838,21	-10831,78	120
1986	302134,80	1531	313627,59	-11492,79	123
1987	302525,04	1563	321848,07	-19323,03	123
1988	300807,94	1559	320820,51	-20012,57	135
1989	297392,40	1556	320049,84	-22657,44	140
1990	276277,54	1509	307976,01	-31698,47	161
1991	217982,98	1378	274323,42	-56340,44	254

1992	192478,97	1212	231679,68	-39200,71	267
1993	177080,65	1190	226028,10	-48947,45	251
1994	187528,41	1163	219092,07	-31563,66	243
1995	200280,34	1196	227569,44	-27289,10	241
1996	211968,42	1195	227312,55	-15344,13	261
1997	226346,67	1188	225514,32	832,35	278
1998	231158,76	1272	247093,08	-15934,32	288
1999	227685,12	1263	244781,07	-17095,95	322
2000	234589,65	1341	264818,49	-30228,84	358
2001	243585,96	1348	266616,72	-23030,76	380
2002	256841,78	1359	269442,51	-12600,73	390
2003	269575,02	1393	278176,77	-8601,75	330
2004	281031,02	1409	282287,01	-1255,99	310
2005	292859,83	1420	285112,80	7747,03	309
2006	306739,80	1468	297443,52	9296,28	292
2007	323522,76	1517	310031,13	13491,63	265
2008	331155,41	1555	319792,95	11362,46	256
2009	306981,06	1449	292562,61	14418,45	263
2010	302376,34	1432	288195,48	14180,86	302
2011	301469,22	1411	282800,79	18668,43	305
2012	294535,42	1395	278690,55	15844,87	324
2013	293062,75	1364	270726,96	22335,79	345
2014	292769,68	1342	265075,38	27694,30	328
2015	299796,16	1357	268928,73	30867,43	286
2016	310289,02	1390	277406,10	32882,92	242
2017	319907,98	1407	281773,23	38134,75	194
2018	328545,50	1498	305150,22	23395,28	154
2019	338073,32	1540	315939,60	22133,72	129

Source: Croatian bureau of statistics, SLJH, different years and author's calculation

* The data in table 1 in columns 4 and 5 are the result of their own calculation based on the linear regression model cf. infra chapter 4

The collected secondary data on GDP, total employment and unemployment rate in the

Croatia refer to the period from 1967 to 2019. Data were collected from the Statistical Yearbooks of the Croatia for different years. Real growth rates on annual level were used to calculate part of necessary data about GDP movement during constant prices for the reference year 1990. Descriptive statistics were used to obtain a clear idea of the observed variables (GDP, employment, unemployment), their arithmetic means, standard deviations and variance measures. Correlation analysis was used to determine the direction and degree of correlation between GDP on the one hand and employment and unemployment on the other. After a positive and strong correlation between GDP and employment was established, a regression analysis was carried out. Regression analysis analytically expressed the relationship between GDP and total employment in the form of a linear, quadratic and exponential model. Given that all three models showed high statistical reliability, the calculation of GDP by years was conducted by including the number of employees in the linear trend equation. This enabled to compare the actual value with projected value for the observed period from 1967 to 2019. The obtained regression model was also used to estimate the required number of employees in the economy of the Croatia by 2050, assuming GDP growth at an average annual growth rate of 2%. Subsequently an analysis of demographic trends was conducted. These trends were used to make an estimate of the total population of the Croatia in the future. This projection was made to compare the population and the required number of employees in 2050 and accordingly get an answer to the question: Will human resources become a limiting factor of economic growth? The answer to this question is extremely important for all countries in the region not only because of the connection of their

economies and similar economic structure but also because of the fact that Slavic peoples have a decreasing share in the population structure (Druzic, 2004).

4. RESEARCH RESULTS AND DISCUSSION

According to the data from table 1, short descriptive analysis of GDP movement and number of employees (NE) in the Croatia for period between 1967-2019 was made (cf. table 2).

Table 2

Descriptive statistics of GDP and number of employees in the Croatia, 1967-2019

	GDP	*NE*
MEAN case 1-53	256634,21	1309
MEDIAN case 1-53	276277,54	1359
SD case 1-53	53630,65	192
VALID_N case 1-53	53	53
MIN case 1-53	139359,06	878
MAX case 1-53	338073,32	1563
_25th% case 1-53	217982,98	1195
_75th% case 1-53	299796,16	1434

Source: own compilation

Based on the data in table 2 and according to fixed prices in 1990, average GDP in the observed period was 256.6 billion HRK (SD=53,6). The lowest GDP was 139.3 billion HRK in 1967 and the highest one was in 2019 when it reached 339, 07 billion HRK. During the observed period, GDP increased by 2.43 times or 143%. The highest GDP in the pre-transition period was realized in 1987 in the amount of 302.5 billion HRK, which points to the conclusion that in the last three decades, real GDP in Croatia has increased by only 11.7%. Real GDP in the observed period from 1967 to 2019 grew at an average annual growth rate of 1.68%. The average number of employees during the observed period was 1.3 million (SD=0.19). The lowest number of employees was 878,000 in 1967. On the other hand, the largest number of employees was 1.56 million and it was realized in 1987. In 2019, number of employees almost reached 1.54 million, and in 2020 it would have been exceeded if it were not for crises caused by the Covid-19 virus pandemic. During the observed period from 1967 to 2019, the number of employees in the Croatia grew at an average annual rate of 1.06%. The number of employees in 2019 was 75.4% higher than in 1967. Based on this, it can be concluded that in the observed period in the Croatia GDP growth of 2% was accompanied by an increase in the number of employees of 0.896%. More precisely, the average GDP growth of 1% is followed by an average increase in the number of employees of 0.61%. According to the data from table 1, short descriptive statistical analysis of unemployment in the Croatia for period between 1967 – 2019 was made (cf. table 3).

Table 3

Descriptive statistics of unemployment in the Croatia, 1967-2019

	UN
MEAN case 1-53	194
MEDIAN case 1-53	194
SD case 1-53	109
VALID_N case 1-53	53
SUM case 1-53	10276
MIN case 1-53	42
MAX case 1-53	390
_25th% case 1-53	86
_75th% case 1-53	288

Source: own compilation

During the period between 1967 and 2019, an average of 194,000 people was looking for a job annually (SD=109). The lowest unemployment rate was recorded in 1971 when only 42,000 people was looking for a job while the highest unemployment rate was recorded in 2002 when that number was 390,000. Even during the year with lowest number of unemployed people demand for work was higher than a supply which further confirms one of the basic specifics of the labour market: There is almost never a shortage of excess supply in the labour market - when there is no unemployment. The calculated coefficient of quartile deviation is 54.01%. The first quarter (quartile) consists of years in which the average annual unemployment was less than 86 thousand, and the last quarter (quartile) of those years in which the average annual unemployment was more than 288,000. During the remaining years, the average annual unemployment is ranged from 86,000 to 288,000. The calculated median value (M = 194) shows that in the first half of the observed period the average number of unemployed was less than 194,000 and in the second half higher than 194,000. Large values of standard deviation, i.e. large deviations from the arithmetic mean, also testify to a large degree of variability. The average deviation of the average number of unemployed is SD = 109 or 55.91% (coefficient of variation).

Unemployment causes many negative consequences, such as: social exclusion, poverty, demographic crisis, brain drain, grey economy, deteriorating labour conditions, psychosocial losses, etc. Therefore, the governments of countries with high unemployment rate implement a number of passive and active measures in the fight against it. Passive measures reflect the social role of the country, mainly addressing the consequences of unemployment, protecting and improving the situation of the most vulnerable part of the population in order to make it easier to cope with unemployment. Active employment policy measures or active labour market policies aim to reconcile supply and demand in the labour market. Active labour market policy measures concern the improvement of the qualification structure of the labour provider, employment mediation and direct creation of jobs. Based on the data in Table 1, a correlation analysis has been made (cf. table 4). Analysis confirmed the existence of a strong correlation between GDP and total employment ($r = 0,91$; $p < 0,05$), but also the existence of a weak and positive link between GDP and unemployment ($r = 0,29$; $p<0,05$).

Table 4

Correlation analysis between GDP, total employment and unemployment in the Croatia, 1967-2019

Correlations Marked correlations are significant at p < ,05000 N=53 (Casewise deletion of missing data)					
	Means	**Std.Dev.**	**GDP**	**NE**	**NU**
GDP	256634,2	53630,66	1,000000	**0,919331**	**0,290807**
NE	1309,2	191,93	**0,919331**	1,000000	**0,393391**
NU	193,9	108,86	**0,290807**	**0,393391**	1,000000

Source: own compilation

The existence of strong and positive correlation ($r = 0,91$; $p<0,05$) between GDP and total employment in the Croatia gives the right for the relationship between these phenomena to be analyzed in the form of appropriate regression models (cf. Figure 1).

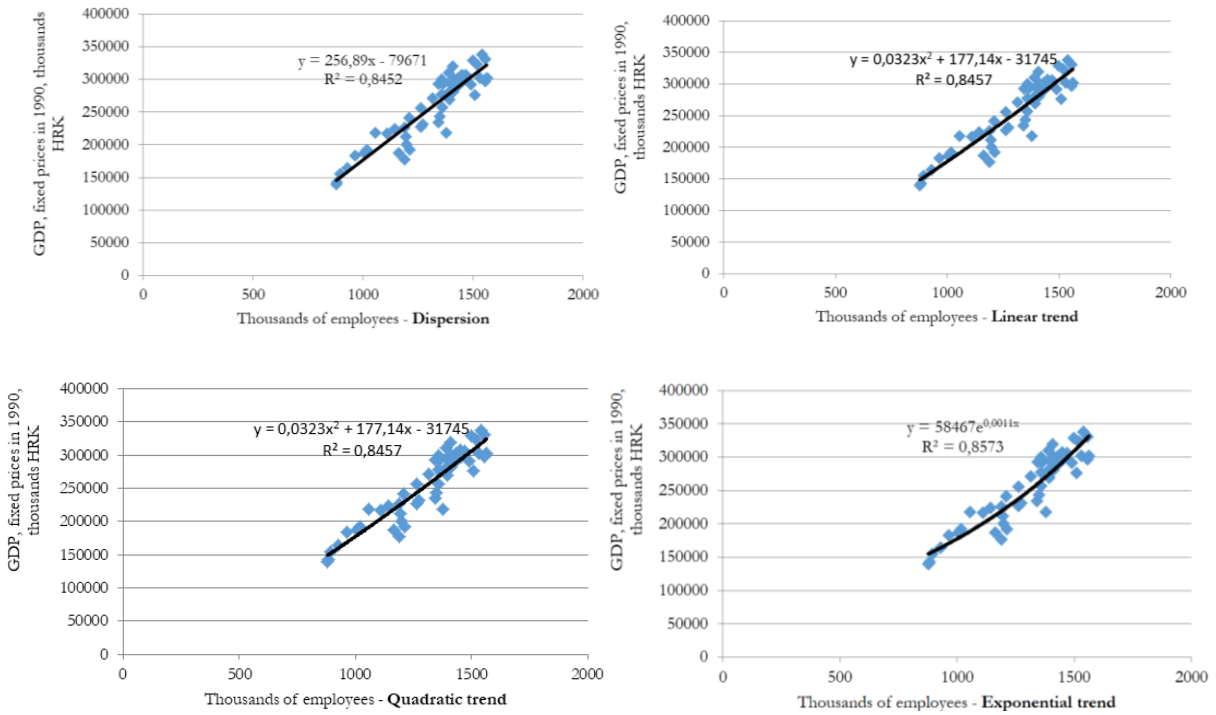

Figure 1. Employment and GDP in Croatia (1967-2019): Dispersion, linear trend, quadratic trend and exponential trend

Source: own

Linear model: Y = 256,89X – 79671 (R^2=0,8457)
Quadratic model: Y = 0,0323X^2 + 177,14X – 31 745 (R^2=0,8452)
Exponential model: 58 467$e^{0,0011x}$ (R^2=0,8573).

As all the three displayed models have almost the same statistical reliability based on the linear model (because of its simplicity), GDP has been calculated over the years by including the number of employees in the linear trend equation (cf. paragraph 1, column 4). Thus, the observed and projected GDP values can be compared. The difference between the observed and projected values was negative for the period from 1985 to 2004 (except 1997), while afterwards that difference was positive. Accordingly, it is possible to conclude that, under the conditions of economic crisis, the difference between the observed and projected GDP values is negative, meaning that in the existing GDP the number of employees should be lower, i.e. that the existing number of employees is greater than actually necessary - the performance of the work is lower. In terms of economic growth, the difference between the observed and projected GDP values is positive, meaning that the number of employees in the existing GDP could also be higher, i.e. that the existing number of employees is less than necessary - the performance of the work is higher.

It can be concluded that structural unemployment affected on positive but weak (r = 0,29; p<0,05) correlation between GDP and unemployment during the observed period. The consequence of changing the economic structure of the transition economy, Croatian economy is one of them, was the growth of unemployment.

With the assumption that, in the following period, GDP will grow at an average annual growth rate of 2% (between 1967 and 2019, the average growth rate was 1,6%) the required number of employees to achieve this level of GDP would move as shown in Table 5.

Table 5

Estimate of GDP trends and the required number of employees in the Croatia by 2050

GDP	GDP (fixed prices in 1990, in million HRK)	Required number of employees (000)	Difference between the required and real number of persons employed in 2019 (000)
2030.	420 351,68	1 946	+406
2040.	512 406,35	2 305	+765
2050.	624 620,48	2 742	+1202

Source: own compilation

Based on the data in Table 5, it is clear that the average annual GDP growth would correspond to the growth of the required number of employees with an average annual growth rate of 1,1% which would increase the number of employees in 2050 by 1,2 million or by 78,05% compared to 2019. Accordingly, the question here is: How will the Croatia provide the required number of employees within the next 30 years? This problem is particularly important due to negative demographic developments. The demographic growth observed during the period from 1857 to 1991 (+ 119,3%) has been reversed (cf. table 6).

Table 6

Population trends in the Croatia

Year	1857	1890	1910	1948	1971	1991	2001	2011	2020
Population (000000)	2,181	2,854	3,460	3,779	4,426	**4,784**	4,284	4,284	4,105

Source: own compilation

Based on data in table 6 it is clear that during the period between 1987-1991 population of the Croatia was growing stedily. The highest number was recorded in 1991. Afterwards, a negative trend appeared. When we compare population of the country during 2020 and 1991 we can determine that population decrease for 678,999 (14.2%). The annual decrease rate between 1991 and 2020 was -0.526. If this trend continues in the future, Croatia would have 3.5 million people in 2050 and at the end of the century less than 2.69 million people. It means that in 2050 Croatia would have little bit more than in 1910 and in 2100 little bit more than in 1880. Data on the natural and mechanical movement of the population in the Croatia are supporting such a black scenario.

The natural population increase measured as the difference between the number of births and deaths shows a negative trend in the Croatia. Since 1991, the death rate has exceeded the birth rate. With 1.5 children per woman Croatia belongs to the group of countries with the lowest fertility rate in the world. Croatia is on the 14th place in the rate of population reduction.

Negative rates of natural population growth do not favour the rejuvenation of the Croatian population. An ageing of the population in countries that are not at a high level of economic development is a factor in the economic recession. The Croatia has also recorded some negative migration balance years, i.e. the number of emigrants exceeds the number of immigrants (table 7).

Table 6

Natural change in population in the Croatia, 2009-2018

				Rate per 1 000 inhabitants			Chain indices	
Year	Live births	Deaths	Natural increase	Live births	Deaths	Natural increase	Live births	Deaths
2009	44 577	52 414	-7 837	10,1	11,8	-1,8	101,9	100,5
2010	43 361	52 096	-8 735	9,8	11,8	-2	97,3	99,4
2011	41 197	51 019	-9 822	9,6	11,9	-2,3	95	97,9
2012	41 771	51 710	-9 939	9,8	12,1	-2,3	101,4	101,3
2013	39 939	50 386	-10 447	9,4	11,8	-2,5	95,6	97,4
2014	39 566	50 839	-11 273	9,3	12	-2,7	99,1	100,9
2015	37 503	54 205	-16 702	8,9	12,9	-4	94,8	106,6
2016	37 537	51 542	-14 005	9	12,3	-3,4	100,1	95,1
2017	36 556	53 477	-16 921	8,9	13	-4,1	97,4	103,8
2018	36 945	52 706	-15 761	9	12,9	-3,9	101,1	98,6

Source: authors prepared according to https://www.dzs.hr/Hrv_Eng/publication/2019/07-01-01_01_2019.htm

The rate of natural increase is not equal to the difference in the rate of live births and deaths due to data rounding.

Table 7

International migration of population of Croatia, 2011-2018

Year	Immigrants	Emigrants	Migration balance
2011.	8534	12699	-4165
2012.	8959	12877	-3918
2013.	10378	15262	-4884
2014.	10638	20858	-10220
2015.	11706	29651	-17945
2016.	13985	36436	-22451
2017.	15553	47352	-31799
2018.	26029	39515	-13486
Ukupno	*105782*	*214650*	*-108868*

Source: authors prepared according to https://www.dzs.hr/Hrv_Eng/publication/2019/07-01-02_01_2019.htm

In only 8 years, 214,650 people moved out of the Croatia. Meanwhile, only 105,782 move in. That gives us negative migration balance of 108,868 people. Iti s particularly concerning that young people and inhabitants of less populated areas are moving out of the country. According to global estimates of International Labour Organization (ILO) there was 164 million immigrant workers out of total 258 million immigrants in 2017. That is 3.5% of the total population in the world. Number of immigrants in 2017 was 85 million (49.13%) higher than in 2000. Due to the inability of underdeveloped countries to achieve full employment, but also because of the increased demand for less professional workforce in developed countries and the constant desire for better living conditions, there is a growing number of people in the world who choose to look for happiness abroad. As a result, it is not surprising that 75% of the world's migrant workers are employed in high-income countries.

The Croatia is estimated to have around 50,000 domestic migrant workers: seafarers – 35,000, construction workers – 10,000 and drivers – 5,000 (Bubas et al., 2013). The number of foreign migrants according to Eurostat in Croatia in 2018 was estimated at 17,400 of which 2,100 refer to EU-27 nationals and 15,300 from countries out of the EU-27. The number of foreigners working in Croatia is modest. It is expected that number to grow in the following period because of flexibilization of the employment of foreigners in the Croatia.

CONCLUSION

Between 1967-2019 realistic GDP in the Croatia has increased by 2,43 times or by 143%. During the same period number of employees has increased by 75,4% which means that the average increase of the GDP by 1% followed the average growth of the number of employees by 1%. During the period 1967-2019, 194,000 people in average looked for a job each year (SD = 109). The highest number of unemployed people was recorded in 2002, when 390,000 people were looking for a job.

The conducted correlation analysis confirmed the existence of a strong correlation between GDP and total employment trends ($r = 0.91$; $p < 0.05$) as well as a weak and positive correlation between GDP trends and unemployment ($r = 0.29$; $p < 0.05$). The existence of a positive relationship between GDP and unemployment can be interpreted as structural unemployment. The relationship between GDP and total employment is presented analytically in the form of appropriate regression models. Based on the selected linear model, estimates of the number of employees until 2050 are made with an assumption that an average annual GDP growth rate is 2%.

Based on the forecasts made, Croatia could face a serious problem of labour shortage in the short term. Looked at from a long term perspective and bearing in mind the negative natural and mechanical movement of population, Croatia could face very serious, almost unsolvable problem. In order to achieve positive results, following policies should be carefully designed: demographic, migration, labour, employment, pension and education policy.

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