The Influence of Wages Growth on Inflation: Case Study- Republic of North Macedonia

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Abstract

Inflation and salary increase generally move in the same direction and they are driven by different inputs. Salaries are driven by changes to supply/demand for labor which can be caused by demographic trends, technological advances, labor participation rates and growth in productivity. On the other hand, inflation represents changes in the cost of a market basket of goods (such as groceries and fuel). In the Republic of North Macedonia in the first quarter of 2022 the inflation rate had an upward trend and reached 7.7%. It reflects the price pressures on the supply side caused by global factors, which resulted in an upward trend in the prices of primary products on the international market, and were transmitted to the domestic economy, mainly through increased food prices, oil derivatives and energy and in October reached 13,2%. The analysis is made on the basis of historical data for Real annual rate and inflation rate for the period from 2015 to 2021, in order to answer the question did higher salaries lead to higher inflation. The data analysis was accomplished with testing the hypothesis and correlation between the variables.

Keywords:

inflation;
salary;
supply;
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1. Introduction

The global economy developments such as Russian invasion of Ukraine and Covid 19 pandemic are expected to adversely affect economic growth, causing significant increases

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in inflation, rising interest rates and public debt management difficulties that will hamper fiscal consolidation.

The statement that higher salaries lead to inflationary pressures; is well presented by Hess and Schweitzer [2], there is little systematic evidence that salary (either conventionally measured by compensation or adjusted through productivity and converted to unit labor costs) are helpful for predicting inflation. The policy conclusion to be drawn is that inflation can appear regardless of recent salary trends. Aaronson [1] finds that restaurant prices generally rise with changes in the wage bill.

According by Layard, Nickell and Jackman [3], when buoyant demand reduces unemployment (at least relative to recent experienced levels), inflationary pressure develops. Companies start bidding against each other for labour, and workers feel more confident in pressing salary claims. If the inflationary pressure is too great, inflation starts spiralling upwards: higher salary leads to higher price rises, leading to still higher salary rises, and so on. This is the salary-price spiral.

They are more empirical evidence, but still, most studies find a weak relationship between higher salary growth and higher inflation.

2. Research Method

Our research model analyzes the data from the World Economic Outlook, IMF, Eurostat and National Statistical Office compare them and thru use of hypotheses we make our own conclusions.

Global growth is projected to slow from an estimated 6.1% in 2021 to 3.6% in 2022 and 2023. This is 0.8 and 0.2 percentage points lower for 2022 and 2023 than projected in January. Global growth is forecast to decline to about 3.3% over the medium term.

The economies of developed countries are expected to grow by 3.3% in 2022 and slow to 2.4% in 2023, while the economies of developing countries are expected to have a different course after the projected growth of 3.8% in 2022 it is expected to increase to 4.4% in 2023. Ukraine and Russia are expected to face a significant decline in GDP. From the larger world economies, downward revision is recorded by the China, USA and Germany, which are expected to achieve economic growth rates of 3.7%, 4.4% and 2.1% in 2022 and 2.3%, 5.1% and 2.7% in 2023. In the medium term, global growth after 2023 is expected to decline to around 3.3%

Inflation is expected to be high for a long period of time than in the previous projection and to be driven by rising intermediate commodity prices and shock prices induced by the war. In 2022, inflation is expected to be 5.7% in developed and 8.7% in developing countries, representing an upward correction of 1.8 percentage points. ie 2.8 percentage points compared to January projections. In 2023, inflation in developed countries is expected to fall to 2.5%, but in developing countries to remain at a relatively high level of 6.5%.

The risks associated with the projection are going down. While a quick resolution of the Ukraine war will boost confidence, reduce price pressures and reduce supply bottlenecks, it is likely that growth will continue to slow and inflation will remain higher than expected. The continuation of the war can be reflected in the deepening humanitarian crisis, the increase in the number of refugees and the strengthening of sanctions against Russia, which would adversely affect foreign trade, foreign investment and further deepen the energy crisis. Rising interest rates amid rising public debt as a result of the pandemic are expected to widen budget deficits and impose tough fiscal consolidation choices. The re-emergence of the pandemic could also be a source of adverse effects, especially as restrictive measures have been introduced in China recently, and the emergence of a new dangerous variant of the virus could pose a serious risk(table 1) [4].

Table 1. IMF projections for economic growth in the world, EU and region (%)

	April 2022		October 2021	
	2022	2023	2022	2023
World	3,6	3,6	4,9	3,6
EU	2,9	2,5	4,4	2,3
Euro Area	2,8	2,3	4,3	2,0
Germany	2,1	2,7	4,6	1,6
France	2,9	1,4	3,9	1,8
Italy	2,3	1,7	4,2	1,6
Spain	4,8	3,3	6,4	2,6
Great Britain	3,7	1,2	5,0	1,9
USA	3,7	2,3	5,2	2,2
China	4,4	5,1	5,6	5,3
North Macedonia	3,2	2,7	4,2	3,8
Albania	2,0	2,8	4,5	4,1
Bosnia & Hercegovina	2,4	2,3	3,3	3,0
Kosovo	2,8	3,9	4,5	4,2
Montenegro	3,8	4,2	5,6	3,6
Serbia	3,5	4,0	4,5	4,5
Bulgaria	3,2	4,5	4,4	4,0
Croatia	2,7	4,0	5,8	4,0
Slovenia	3,7	3,0	4,6	3,7
Greece	3,5	2,6	4,6	2,6
Turkey	2,7	3,0	3,3	3,3

The GDP growth rate for Republic of North Macedonia in 2022, according to the April projections of the IMF, is expected to be 3.2% and compared to the projection from October 2021 it is lower by 1.0 percentage point. For 2023 the projection for GDP growth was 2.7% and decreased by 1.1 percentage point in relation to the projections from Octobrer 2021.

The inflation rate for Republic of North Macedonia in 2022 is expected to be 6.9% and compared to the report published in October 2021, the projection has increased by 4.7 pp. The projection of the inflation rate for 2023 is 3, 6%. The current account deficit as a percentage of GDP in 2022 is expected to be 5.8%, compared to the projection from October 2021 of 2.1%. For 2023, the current account deficit projection is 3.6% of GDP (table 2) [4].

Table2. Prediction of the IMF for North Macedonia

	2022	2023	2024	2025	2026	2027
GDP, real growth	3,2	2,7	3,7	3,6	3,5	3,5
Inflation rate	6,9	3,6	1,9	2,0	2,1	2,0
Export, real growth	3,3	7,9	9,1	7,4	7,3	6,3
Import, real growth	3,2	6,5	8,6	7,5	7,4	6,3
Unemployment rate	15,7	15,1	14,7	14,4	14,2	14,0
Budget revenues,% of GDP	30,2	30,4	30,4	30,5	30,5	30,5
Budget expenditures,% of GDP	36,5	34,8	34,2	33,9	33,6	33,5
Budget balance,% of GDP	-6,3	-4,4	-3,8	-3,3	-3,1	-2,9
General government debt, % of GDP	55,3	55,6	55,9	55,8	55,6	55,3
Current account balance, % of GDP	-5,8	-3,6	-2,9	-2,7	-2,6	-2,5

During the observation period from2015-2021, the inflation in EU and the region is presented in Table 3 and we can see that inflation rate in Republic of North Macedonia is moving as in other countries. But we can see that in 2021 in every country inflation rate is going up as a result of Covid 19 pandemic.

Table 3. Inflation, by years (average)

	2015	2016	2017	2018	2019	2020	2021
Greece	-1,1	0,0	1,1	0,8	0,5	-1,3	0,6
Malta	1,2	0,9	1,3	1,7	1,5	0,8	0,7
Portugal	0,5	0,6	1,6	1,2	0,3	-0,1	0,9
Slovenia	-0,5	-0,1	1,4	1,7	1,6	-0,1	1,9
Italy	0,1	-0,1	1,3	1,2	0,6	-0,1	1,9
Denmark	0,2	0,0	1,1	0,7	0,7	0,3	1,9
B&H	-1,0	-1,6	0,8	1,4	0,6	-1,1	2,0
Albany	1,9	1,3	2,0	2,0	1,4	1,6	2,0
France	0,1	0,3	1,2	2,1	1,3	0,5	2,1
Finland	-0,2	0,4	0,8	1,2	1,1	0,4	2,1
Cyprus	-1,5	-1,2	0,7	0,8	0,6	-1,1	2,2
Montenegro	1,5	-0,3	2,4	2,6	0,4	-0,2	2,4
Ireland	-0,1	-0,2	0,3	0,7	0,9	-0,5	2,4
Croatia	-0,5	-1,1	1,1	1,5	0,8	0,1	2,6
Sweden	0,7	1,1	1,9	2,0	1,7	0,7	2,7
Austria	0,8	1,0	2,2	2,1	1,5	1,4	2,8
Netherland	0,2	0,1	1,3	1,6	2,7	1,1	2,8
Slovakia	-0,3	-0,5	1,4	2,5	2,8	2,0	2,8
Bulgaria	-1,1	-1,3	1,2	2,6	2,5	1,2	2,8
Spain	-0,5	-0,2	2,0	1,7	0,7	-0,3	3,1
Deutschland	0,7	0,4	1,7	1,9	1,4	0,4	3,2
Belgium	0,6	1,8	2,2	2,3	1,2	0,4	3,2
North Macedonia	-0,3	-0,2	1,4	1,5	0,8	1,2	3,2
Latvia	0,2	0,1	2,9	2,6	2,7	0,1	3,2
Kosovo	-0,5	0,2	1,5	1,1	2,7	0,2	3,3
Luxembourg	0,1	0,0	2,1	2,0	1,7	0,0	3,5
Czech Republic	0,3	0,7	2,5	2,1	2,8	3,2	3,8
Serbia	1,4	1,1	3,1	2,0	1,9	1,6	4,1
Estonia	0,1	0,8	3,7	3,4	2,3	-0,6	4,5
Lithuania	-0,7	0,7	3,7	2,5	2,2	1,1	4,6
Romania	-0,6	-1,6	1,3	4,6	3,8	2,6	5,0
Poland	-0,9	-0,6	2,0	1,6	2,3	3,4	5,1
Hungary	-0,1	0,4	2,4	2,8	3,4	3,3	5,1

In Table 4 are presented annual inflation rate that is increased to 14% in Lithuania, 12.5% in Estonia and 7.7% in North Macedonia until march 2022. If we compare the

western Balkan countries we can see that Serbia has a higher inflation 8,7% for the observed period.

Table 4. Inflation, annual growth rates (monthly data)

	jan.22	feb.22	mar.22	jan-mar.22
EU	5,6	6,2	7,8	6,5
Lithuania	12,3	14,0	15,6	14,0
Estonia	11,0	11,6	14,8	12,5
Czech Republic	8,8	10,0	11,9	10,2
Latvia	7,5	8,8	11,5	9,3
Belgium	8,5	9,5	9,3	9,1
Poland	8,7	8,1	10,2	9,0
Bulgaria	7,7	8,4	10,5	8,9
Netherlands	7,6	7,3	11,7	8,9
Serbia	8,2	8,8	9,1	8,7
Slovakia	7,7	8,3	9,6	8,5
B&H	7,0	8,1	10,2	8,4
Hungary	7,9	8,4	8,6	8,3
Romania	7,2	7,9	9,6	8,2
Kosovo	7,1	7,5	10,0	8,2
Spain	6,2	7,6	9,8	7,9
Macedonia	6,7	7,6	8,8	7,7
Montenegro	5,7	6,7	9,7	7,4
Luxembourg	4,6	7,8	7,9	6,8
Greece	5,5	6,3	8,0	6,6
Croatia	5,5	6,3	7,3	6,4
Slovenia	6,0	7,0	6,0	6,3
Germany	5,1	5,5	7,6	6,1
Italy	5,1	6,2	6,8	6,0
Ireland	5,0	5,7	6,9	5,9
Cyprus	5,0	5,8	6,2	5,7
Austria	4,5	5,5	6,7	5,6
Denmark	4,9	5,3	6,0	5,4
Sweden	3,9	4,4	6,3	4,9
Finland	4,1	4,4	5,8	4,8
Portugal	3,4	4,4	5,5	4,4
Albania	3,7	3,9	5,7	4,4
Malta	4,1	4,2	4,5	4,3
France	3,3	4,2	5,1	4,2

In Table 5 are presented minimum monthly gross salary for the countries in Europa and the region to see did gross salary grow up relating to inflation rate. We can see that in every country presented below, the monthly gross salary is grow up. Minimum salary levels are set using different methods – including predetermined formulas, expert committee recommendations and consultation with social partners – and are often also subject to government discretion.

The frequency of change differs from one country to another, but most countries revise their minimum salary every one or two years. Changes in minimum salary can have a

direct mechanical effect on aggregate salary growth in an accounting sense. An increase in minimum salary pushes up the salary level of those who previously received a salary below the new minimum salary. The increase of the minimum salary can – especially in the case of large increases – also push up the share of minimum salary recipients in the economy. Minimum salary changes can also have an indirect impact through knock-on effects on above-minimum salary in order to keep a certain distance from minimum salary or through the use of minimum salary increases as a benchmark for salary negotiations.

Table 5. Minimum monthly gross salary (in euros)

	2018 P1	2018 P2	2019 P1	2019 P2	2020 P1	2020 P2	2021 P1	2021 P2	2022 P1
Belgium	1.563	1.563	1.594	1.594	1.594	1.626	1.626	1.626	1.658
Bulgaria	261	261	286	286	312	312	332	332	332
Czech Republic	478	469	519	525	575	546	579	596	652
Germany	1.506	1.506	1.561	1.561	1.544	1.544	1.569	1.585	1.621
Estonia	500	500	540	540	584	584	584	584	654
Ireland	1.614	1.614	1.656	1.656	1.656	1.707	1.724	1.724	1.775
Greece	684	684	684	758	758	758	758	758	774
Spain	859	859	1.050	1.050	1.108	1.108	1.108	1.108	1.126
France	1.498	1.498	1.521	1.521	1.539	1.539	1.555	1.555	1.603
Croatia	462	466	506	507	546	546	563	567	624
Latvia	430	430	430	430	430	430	500	500	500
Lithuania	400	400	555	555	607	607	642	642	730
Luxembourg	1.999	1.999	2.090	2.090	2.142	2.142	2.202	2.202	2.257
Hungary	445	418	464	461	487	452	442	476	542
Malta	748	748	762	762	777	777	785	785	792
Netherlands	1.578	1.594	1.616	1.636	1.654	1.680	1.685	1.701	1.725
Poland	503	480	523	529	611	583	614	619	655
Portugal	677	677	700	700	741	741	776	776	823
Romania	408	407	446	439	466	461	458	467	515
Slovenia	843	843	887	887	941	941	1.024	1.024	1.074
Slovakia	480	480	520	520	580	580	623	623	646
Montenegro	288	288	288	331	331	331	331	331	533
North Macedonia	279	282	341	341	343	342	353	359	:
Albania	181	191	211	212	213	209	243	245	248
Serbia	285	283	308	308	344	344	366	366	401

One useful and widely used statistical indicator is the ratio of the minimum salary to the average salary. As mean salary is affected by extreme values, average salary provides a better point of reference, especially in countries that have high salary inequality. This indicator shows the level of the minimum salary relative to that of the "average worker", and to the extent that average salary reflect at least in part average productivity levels also provides information on economic factors (table 6). The table below shows that in developed economies, the minimum salary ranges usually from 35% to 60% of the average salary. But in developing countries, the ratio of minimum to average salary is frequently higher. This could be due to the fact that in developing countries, the average salary earner is often relatively lowpaid. Thus, considerations related to the needs of workers and their families sometimes lead to higher minimum salary ratios than in developed economies [5].

Table 6. Minimum and average net salary in EU countries and the region (in euros)

Country	Effective from	Minimum salary	Period	Average salary	Ratio of minimumtoaveragesalary
B&H	01/2022	365	02/2022	542	67,3%
N. Macedonia	03/2022	300	02/2022	485	61,9%
Albania	01/2022	236	Q2 2021	384	61,5%
Slovenia	01/2022	758	02/2022	1.240	61,1%
Slovakia	01/2022	520	2021	919	56,6%
Montenegro	01/2022	383	02/2022	706	54,2%
Poland	01/2022	521	02/2022	962	54,2%
Ireland	01/2021	1.574	Q3 2021	3.041	51,8%
Croatia	01/2022	505	02/2022	987	51,2%
Lithuania	01/2022	534	Q4 2021	1.059	50,4%
Serbia	01/2022	301	01/2022	603	49,9%
Estonia	01/2022	604	Q3 2021	1.214	49,8%
Spain	01/2022	965	Q3 2021	2.039	47,3%
Czech Republic	01/2022	571	Q2 2021	1.250	45,7%
Hungary	01/2022	369	01/2022	835	44,2%
Germany	01/2022	1.301	Q4 2021	2.970	43,8%
Bulgaria	01/2022	282	12/2021	665	42,4%
Latvia	01/2022	426	12 2021	1.050	40,6%
Romania	01/2022	308	12/2021	785	39,2%

In table 7 are presented average net salary in countries in the region where we can see that Croatia and Slovenia has a biggest average net salary according to fact that they are members of EU, from other countries that are not EU members the biggest salary has Serbia, North Macedonia is down on the list [5]. The biggest grow rate there is alsoSerbia and in the second place is our country partly as a result of the transfer effect of the minimum salary increases in 2020, as well as the regular increase of the minimum salary from April 2021 year. Additional structural factors, such as the lack of labor force in certain segments, had an additional impact on increasing the average salary, but also as an effect of the crisis which is expressed through the reduction of the number of employees with salaries lower than the average. Thus, nominal net and gross salary registered annual growth of 5.7%, respectively (table 8) [5].

Table 7. Average net salary in countries in the region - in euros

	2015	2016	2017	2018	2019	2020	2021
Serbia	379,8	394	409	424	469	513	560
Montenegro*	480	499	510	511	515	524	537
Bosnia and Herzegovina	421	434	441	455	477	496	510
N. Macedonia	355,6	363	372	395	410	441	466
Kosovo	376	382	390	409	430	416	/
Croatia	743	755	795	829	858	898	943
Slovenia	1.013	1.030	1.062	1.092	1.133	1.210	1.270

*For Montenegro, the data for 2021 refers to the net salary in December 2021

Table 8. Average net salary in countries in the region – growth rates

	2015	2016	2017	2018	2019	2020	2021
Serbia		3,7	3,8	3,7	10,6	9,4	9,2
Montenegro		4,0	2,2	0,2	0,8	1,7	2,5
Bosnia and Herzegovina		3,1	1,6	3,2	4,8	4,0	2,8
N. Macedonia		2,1	2,5	6,2	3,8	7,6	5,7
Kosovo		1,6	2,1	4,9	5,1	-3,3	/
Croatia		1,6	5,3	4,3	3,5	4,7	5,0
Slovenia		1,7	3,1	2,8	3,8	6,8	5,0

In 2021 the inflation rate was 3,2% but in the first quarter of 2022, the inflation rate had an upward trend and reached 7.7%.It reflects the price pressures on the supply side caused by global factors, which resulted in an upward trend in the prices of primary products on the international market, and were transmitted to the domestic economy, mainly through increased food prices (of 10.4%). oil derivatives (by 29.1%) and energy (by 8.5%) (table 9) (Fig.1) [5].

Table 9. Data for average net salary and inflation rate

|	Net salary			inflation rate	core inflation index (2001=100)
	average (in denars)	nominal annual rate (in %)	real annual rate (in %)		
2002	11.550	6,9	5,0	1,8	101,8
2003	11.955	4,8	3,6	1,2	103,0
2004	12.534	4,0	4,4	-0,4	102,6
2005	12.597	2,5	2,0	0,5	103,1
2006	13.517	7,3	4,0	3,2	106,4
2007	14.584	7,9	5,5	2,3	108,9
2008	16.096	10,4	1,9	8,3	117,9
2009	19.957	24,0	25,0	-0,8	117,0
2010	20.553	3,0	1,4	1,6	118,8
2011	20.847	1,4	-2,4	3,9	123,5
2012	20.902	0,3	-2,9	3,3	127,6
2013	21.145	1,2	-1,6	2,8	131,1
2014	21.394	1,2	1,5	-0,3	130,7
2015	21.906	2,4	2,7	-0,3	130,3
2016	22.342	2,0	2,2	-0,2	130,1
2017	22.928	2,6	1,2	1,4	131,9
2018	24.276	5,9	4,4	1,5	133,8
2019	25.213	3,9	3,1	0,8	134,8
2020	27.182	7,8	6,5	1,2	136,4
2021	28.718	5,7	2,3	3,2	140,8
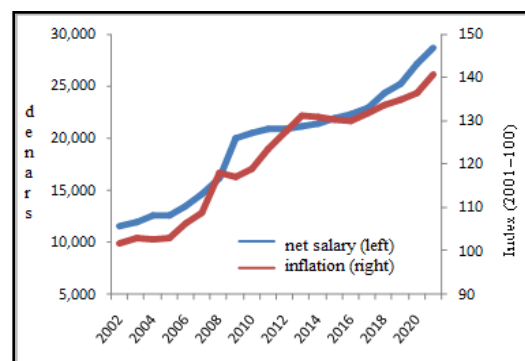
Figure 1.Movement of average net salary and inflation

3. Results and Analysis

Test of independence has been carried out to analyse the hypothesisof two variablesPearson χ2 (Chi-Square).

In order to examine the dependence between the real annual rate with the inflation rate, the following hypotheses were tested.

H_0: there is no dependence between the real annual rate and inflation rate in the Republic of North Macedonia.

H_1: there is correlation between the real annual rate and inflation ratein the Republic of North Macedonia

Expected frequencies is calculated as follows:

$$f_{ij}^{(t)} = \frac{\sum_{i=1}^{m} f_i \cdot \sum_{j=1}^{n} f_j}{\sum_{i=1}^{m} \sum_{j=a}^{n} f_{ij}} \dots\dots\dots\dots.(1)$$
$$i = 1, 2, \dots.. m$$
$$j = 1, 2, \dots\dots n$$

The value of x_0^2 is calculated as follows:

$$x_0^2 = \sum_{i=1}^{m} \sum_{j=1}^{n} \frac{\left[f_{ij} - f_{ij}^{(t)} \right]^2}{f_{ij}^{(t)}}$$

The main data for calculating the expected frequencies f_i^* are presented in table 10:

Table 10. Data for calculating the expected frequencies

Years	Real annual rate	Inflation rate	Total
2002	5,0	1,8	6,8
2003	3,6	1,2	4,8
2004	4,4	-0,4	4,0
2005	2,0	0,5	2,5
2006	4,0	3,2	7,2
2007	5,5	2,3	7,8
2008	1,9	8,3	10,2
2009	25,0	-0,8	24,2
2010	1,4	1,6	3,0
2011	-2,4	3,9	1,5
2012	-2,9	3,3	0,4
2013	-1,6	2,8	1,2
2014	1,5	-0,3	1,2
2015	2,7	-0,3	2,4
2016	2,2	-0,2	2,0
2017	1,2	1,4	2,6
2018	4,4	1,5	5,9
2019	3,1	0,8	3,9
2020	6,5	1,2	7,7
2021	2,3	3,2	5,5
Total	69,8	35,0	104,8

Expected frequencies are calculated based on equation (1).

$$f_{11}^* = \frac{69.8 \times 6.8}{104.8} = 4.53 \quad f_{12}^* = \frac{35.0 \times 6.8}{104.8} = 2.27$$

$$f_{21}^* = \frac{69.8 \times 4.8}{104.8} = 3.20 \quad f_{22}^* = \frac{35.0 \times 4.8}{104.8} = 1.60$$

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In the same way are calculated the other frequencies.
Observed and expected frequencies and the data for realization of the test on indepency are presented in the following table 11:

Table 11. Observed and expected frequencies for realization of the test of independence

Observed frequencies (f_{ij})	Expected frequencies (f_{ij}^*)	$f_i - f_i^*$	$(f_i - f_i^*)^2$	$x_0^2 = \dfrac{(f_i - f_i^*)^2}{f_i^*}$
5,0	4,53	} +1,80	3,24	0,4764706
3,6	2,27			
4,4	3,20	1,20	1,45	0,4527250
2,0	1,60	} +1,73	3,00	0,7036693
4,0	2,66			
5,5	1,34	4,16	17,34	12,9801636
1,9	1,67	0,23	0,06	0,0331451
25,0	0,83	24,17	583,95	699,4063522
1,4	4,80	-3,40	11,53	2,4041432
-2,4	2,40	-4,80	23,08	9,6000087
-2,9	5,20	-8,10	65,53	12,6138906
-1,6	2,60	-4,20	17,68	6,7877018
1,5	6,79	-5,29	28,02	4,1247098
2,7	3,41	-0,71	0,50	0,1465222
2,2	16,12	-13,92	193,71	12,0182255
1,2	8,08	-6,88	47,36	5,8602334
4,4	2,00	2,40	5,77	2,8873371
3,1	1,00	2,10	4,40	4,3936036
6,5	1,00	5,50	30,26	30,2893992
2,3	0,50	1,80	3,24	6,4608018
1,8	0,27	1,53	2,35	8,8280168
1,2	0,13	1,07	1,14	8,5130164
-0,4	0,80	-1,20	1,44	1,7994277
0,5	0,40	0,10	0,01	0,0245729
3,2	0,80	2,40	5,76	7,2114620
2,3	0,40	1,90	3,61	9,0005729
8,3	1,60	6,70	44,91	28,0958467
-0,8	0,80	-1,60	2,56	3,2000029
1,6	1,33	0,27	0,07	0,0538949
3,9	0,67	3,23	10,45	15,6394818
3,3	1,73	1,57	2,46	1,4203724
2,8	0,87	1,93	3,73	4,2972437
-0,3	3,93	-4,23	17,89	4,5524834
-0,3	1,97	-2,27	5,15	2,6160954
-0,2	2,60	-2,80	7,83	3,0129184
1,4	1,30	0,10	0,01	0,0073014
1,5	5,13	-3,63	13,17	2,5671654
0,8	2,57	-1,77	3,14	1,2204406
1,2	3,66	-2,46	6,07	1,6562703
3,2	1,84	1,36	1,86	1,0116476
104,8	104,8	0,0		916,3673362

With margin of error of 5 %, ie α = 0,05 and with degrees of freedom $r = (m-1) \times (n-1) = (20-1) \times (2-1) = 19$ (where m is number of rows and n is the number of columns) from the statistical table we can see the table value for $x_{(0.05;19)}^2 = 30.144$.

Because $x_0^2 = 916,3673362 \geq x_{(0.05;19)}^2$=30.144 which means that alternative hypothesis is accepted and the zero hypothesis is rejected. This means that there is a statistically significant relationship between the variables.

The statistically significant relationship is very important between the variables and we can calculate as follow

$$C = \sqrt{\frac{x_0^2}{n+x_0^2}} = \sqrt{\frac{916,3673362}{104.8+916,3673362}}=0.89732$$

This means that there is a statistically significant relationship between the variables, because the value C=0.89732 is closer to one than to zero.

To determine the relationship between the variables, as well as their strength and direction Pearson Correlation Coefficients (Pearson Correlation Coefficients), is applied. The Pearson Correlation Coefficientswas accomplished using SPSS20 statistical software for data science.

Table 12. Descriptive Statistics

	Mean	Std. Deviation	N
real annual rate n %	3,490	5,6363	20
inflation rate	1,750	2,0793	20

Table 13. Correlations

		real annual rate n %	inflation rate
real annual rate n %	Pearson Correlation	1	(,383)
	Sig. (2-tailed)		,095
	N	20	20
inflation rate	Pearson Correlation	(,383)	1
	Sig. (2-tailed)	,095	
	N	20	20

In Table 13 it can be seen that there is a Positive correlation and the Pearson correlation coefficient has medium correlation 0.383. This means that factors with a medium correlation have a significant correlation between them. Real annual rate has a significant correlation with inflation rate.

4. Conclusion

In this paper we have demonstrated that real annual rate lead to higher inflation but the results are somewhat sensitive without considering other factors that could affect prices. With testing the hypothesize we can conclude thatthere is correlation between the real annual rate and inflation rate in the Republic of North Macedoniaand with Correlation Coefficients we can conclude that variables have a medium correlation and have a

significant correlation between them. We can conclude that our paper is successful in replicating the empirical evidence and increase in minimum salary can cause minimum inflation.

During the year, with the lifting of restrictive measures to deal with the pandemic and the gradual recovery of personal demand, the disruption of global supply chains became more pronounced, combined with shortages of workers, border controls, demands for higher wages and flexibility work arrangements, contributed to a reduced supply of products and services and launched a cycle of inflation growth globally. Inflationary pressures were further intensified at the end of the year due to the energy crisis (especially in Europe).

Consequently, participants in the international financial markets strengthened the expectations for normalization of the monetary policies of the leading central banks.

The inflation rate in July 2022 reached 10,9%. Macroeconomic indicators and expectations still continue to create an uncertain macroeconomic environment for the implementation of monetary policy.

In May 2022, the nominal annual growth of the average net salary slowed down slightly and amounted 9.4% (10.9% in the previous month). Minimum wage increased on 18.5% in March 2022 accordance with the latest legal amendments. At the same time, there is an annual increase in salaries in May in almost all activities.

With the increase in the cost of living on an annual basis, the real net salary in May recorded a decrease of 2.3% on an annual basis.

The nominal annual change and the real annual change in wages in the first two months of the second quarter of 2022 corresponds for the time being to the rates that were expected for the second quarter within the framework of the April projection, but with a more moderate intensity in the nominal wage according to the last Report of National Bank of the Republic of North Macedonia [6].

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