

## **INDUSTRY, DEVELOPMENT AND EMPLOYMENT BY SECTOR IN RUSSIA, UKRAINE AND 3 CAUCASIAN COUNTRIES, 1990-2022**

Maria-Carmen GUISAN

---

### **Abstract**

We analyze economic development of Ukraine, Russia and 3 Caucasian countries (Armenia, Azerbaijan and Georgia) for the period 1990-2022. The highest percentage of increase of real production per capita corresponded to Armenia (higher than the World average). The other countries of this study experienced a moderate positive evolution, but Ukraine that unfortunately has experienced a strong diminution for the period 1990-2000, a slight recovery for 2000-2015 and a decrease for 2015-2022. We analyze the evolution of Industrial and Non Industrial Production, Population, Employment and Net Migration. For the period 1990-2020, Industry experienced a high increase in Azerbaijan while there was a high decrease in Ukraine. In 2022, Azerbaijan and Russia had values of Industrial development higher than World average, while Armenia and Georgia were slightly below World average and Ukraine reached only a 52% of World average. There was increase of Employment in Azerbaijan and Russia and a decrease in the other 3 countries. The main conclusions highlight the great importance of fostering a Peace agreement, in the conflict between Russia and Ukraine, to favour development and quality of life in both countries, and the convenience to foster industrial development due to its important effects on non-industrial production, income per capita and employment in the set of countries of this study.

Keywords: Russia, Ukraine, Caucasian Countries, Industry, Employment, Population, Immigration, Development 1990-2020

JEL Codes: I3, J1, J2, L6, O5, O57

---

### **1. Introduction.**

Section 2 includes a reference to some interesting publications that include analysis of data of the 5 countries of this study for the period 1990-2022. Includes table 1 with an international comparison of several development indicators.

Section 3 analyzes the evolution of real Gross Domestic Product (GDP), Population, production per capita and net immigration for the period 1990-2022 in comparison with World average. The highest percentage of increase of production per capita corresponded to Armenia, followed by Azerbaijan, Georgia and Russia. Ukraine experienced a strong decrease for the period 1990-2000, a slight recovery for 2000-2015 and a net diminution for 2015-2022. After

Section 4 shows the evolution of Industrial real Value-added and Manufacturing and the important impact of Industry on non Industrial production. Section 5 analyses the evolution of Employment by sector. Section 6 presents the main conclusions.

---

Maria-Carmen Guisan, Honorary Professor of Econometrics, Faculty of Economics and Business. University of Santiago de Compostela, Spain. E-mail: [mcarmen.guisan@usc.es](mailto:mcarmen.guisan@usc.es). Website: <https://euroamericanassociation.blogspot.com>

## 2. Literature Review

Dabroski (2023) presents an interesting analysis of the evolution of 14 Former USSR countries, for the period 1990-2021 and shows a positive balance, from the economic point of view of transition to a market economy:

*“Our analysis demonstrates that the post-communist transition in the FSU cannot be considered entirely successful, especially in the political and institutional spheres. Nevertheless, in the economic sphere, the transition process succeeded in rebuilding the foundations of a market economy based on private ownership by the early 2000s, even if the adopted policies and institutions proved suboptimal and distortive in many countries.”*

This author analyzes the dissagregate Index of Heritage Foundation 's Index of Economic Freedom in year 2021, with an overall Index lower than 60% in Ukraine, between 60 and 70 in Russia, and higher than 70% in the 3 Caucasian countries. This author points to the problems of territorial conflicts, like the Ukraine war, that difficult the evolution of Peace and Development with political and economic destabilization.

It is very important, both for Ukraine and Russia, to try to reach an agreement of peace that contributes to a better quality of life and development in both countries. All the efforts to avoid war and get reasonable agreements should be welcome.

Guisan (2021) and (2024) includes interesting international comparisons of former USSR countries with other countries of the World in many indicators of economic development (real GDP per capita por the period 1995-2019, “educational level of population”, indicators of “life satisfaction”, “voice of citizens”, political stability”, “peace”, “freedom”, “homicides rate”. Table 1 shows the values of the several indicatos of development and quality of life in the 5 countries of this study in comparison with the European and World averages in year 2019.

Table 1. Indicators of development in year 2019

| Country    | PH19  | Tyr19<br>School | X1<br>Happy | X2<br>Voice | X4<br>Stability | X5<br>Peace | X6<br>Freedom | X8<br>Homicides |
|------------|-------|-----------------|-------------|-------------|-----------------|-------------|---------------|-----------------|
| Armenia    | 13654 | 11.3            | 5.28        | 4.76        | 4.81            | 4.2         | 6.5           | 3.0             |
| Azerbaijan | 14439 | 10.6            | 5.17        | 4.66        | 4.17            | 3.6         | 6.2           | 2.1             |
| Georgia    | 14989 | 13.1            | 4.89        | 6.58        | 4.87            | 4.0         | 7.2           | 1.0             |
| Russia     | 27211 | 12.2            | 5.48        | 5.06        | 2.52            | 3.9         | 5.6           | 10.8            |
| Ukraine    | 12809 | 11.4            | 4.88        | 4.28        | 3.35            | 2.2         | 5.4           | 6.3             |
| Europe     | 42189 | 11.7            | 6.50        | 6.01        | 6.01            | 6.1         | 7.1           | 1.3             |
| World      | 14250 | 8.8             | 5.53        | 4.98        | 4.93            | 4.67        | 6.04          | 6.43            |

Sources: Elaborated by Guisan(2021) and (2024), from sources of data indicated in the Bibliography: WB(2021a,b) for PH and X2; UNDP(2021) for TYR19, WHR(2021) for X1, EIP(2021) for X4, Heritage Foundation for X6, and UN(2021) for X8=Homicides rate per 100 thousand population. Note: PH is real Production per inhabitant at 2017 prices and Purchasing Power Parities (PPPs). The indicators X1=Life Satisfaction, X2=Voice of Citizens, X4=Peace, X5=Politica Stability and X6=(Freedom/10) are in decimal Scale (0 is minimum and 10 maximum). Indicator X8 is the Homicides rate (Hom) per thousand inhabitants. The European data of each indicators is the non-wighted average of 34 countries, published in chapter 5 of the e-book by Guisan(2024). PH19 of the World is from WB-WDI (wighted average) and the other indicators are non-weighted averages of 164 countries elaborated by Guisan (2021) and (2024).

PH19: Production per head in year 2019 was over World average (14250) in Russia (27211), although below European average (42189), close to World average in Azerbaijan and Georgia, and below World average in Armenia and Ukraine.

Tyr19: Average years of schooling of population 25+ was over World average in all the countries of table 1.

X1: Satisfaction with Life was close to World average (5.53) in Armenia, Azerbsijan and Russia. It was over the World average in Europe (6.50) and below in Georgia (4.89) and Ukraine (4.88).

X2: The indicator of Quality of Government, measured by Voice of Citizens, was higher than 6 in Georgia and Europe, between 5 and 6 in Russia, and below 5 in Armenia, Azerbaijan and Ukraine.

X4: The indicacor of Political Stability, was higher than 5 in Europe, between 4 and 5 in Armenia, Azerbaijan and Georgia, and below 4 in Russia (2.52) and Ukraine (3.35).

X5: The indicator of Peace (in decimal scale, with 0 minimum and 10 maximum peace) was higher than 6 in Europe, between 4 and 5 in Armenia and Georgia, and below 4 in Russia (3.9) and Ukraine (2.2).

X6: Economic Freedom was higher than 7 in Europe and Georgia, between 6 and 7 in Armenia and Azerbaijan, and between 5 and 6 in Russia and Ukraine.

X8: Homicides rate per 100 thousand people was around World average (6.4) in Ukraine, below that average in Europe, Armenia, Azerbaijan and Georgia, and higher than the World average in Russia.

The values of Russia and Ukraine in the indicators X4=Political Stability and X5=Peace are in the group of lowest values among 164 countries of the World, as seen in Guisan(2024) and other studies cited in the bibliography.Usually there is a great importance of Political Stability, Freedom and Peace for economic development and quality of life.

Korhonen (2024), in the Bank of Finland Bulletin, presents an interesting overview of the Ucraina economy for the perido 2013 and 2023, with reference to the consequences of the war for the period 2022-2023. The estimated value of GDP in 2023 was lower than 70% of the value in year 2012. This autor cites an interesting joint study from the World Bank, United Nations, The European Commission and Ukraine evaluating the reconstruction budget around 486 billion Dollars, three times the value of the Ukranian GDP in 2023. To get an agreement for peace will be very much welcome.

Usually there are several options to avoid territorial conflicts with pacific agreements and transactions. It should be a great step for humanity of the 21<sup>st</sup> century to increase voices in favor of agreements for peace in those countries and in other areas of the World. Several international institutions should foster the role of experts with capacity to offer pacific agreements that may avoid wars and increase quality of life.

3. Gross Domestic Product and Population

3.1.Real GDP and Production per capita 1990-2022

Evolution of real Gross Domestic Product (GDP) has important impact on the increase of Population, Employment and real income per capita. In the countries of this study, there were important differences in the evolution of real GDP for the period 1990-2022.

Table 2 shows the evolution of real GDP in Billion (thousand million) Dollars at 2021 prices and Purchasing Power Parities (PPPS). Table 3 shows the evolution of real GDP per capita in thousand Dollars per inhabitant in Dollars at 2021 prices and PPPs.

In these tables we may notice a positive percentage of increase of both variables in 4 out of the 5 countries of this study, but in Ukraine where ther was a negative evolution.

The diminution of the period 1990-1995 was a consequence of the adaptation to the new political organization of former USSR countries. For the period 1990-2022 thre was an increase of real GDP and real GDP per capita in 4 out of the 5 countries of those tables.

The only exception was Ukraine with diminution of 52% in real GDP from 1990 to 2022. In Ukraine there was a strong decrease fro 1990-1995, a small decrease for 1995-2000, a high increase for the period 2000-2005, a small increase for 2005-2010, a slight decrease for 2010-2015 and a strong decrease for 2015-2022.

Table 2. Real Gross Domestic Product in million Dolarss at prices and PPPs of year 2021

| Year                    | Armenia | Azerbaijan | Georgia | Ukraine | Russia  | World  |
|-------------------------|---------|------------|---------|---------|---------|--------|
| 1990                    | 21.80   | 76.15      | 64.54   | 1187.66 | 4416.25 | 59660  |
| 1995                    | 11.51   | 31.88      | 18.24   | 567.44  | 2735.80 | 65440  |
| 2000                    | 14.78   | 44.84      | 24.21   | 513.61  | 2974.93 | 78420  |
| 2005                    | 26.31   | 83.10      | 34.45   | 742.84  | 4008.89 | 93980  |
| 2010                    | 31.78   | 177.66     | 44.49   | 781.01  | 4759.35 | 111470 |
| 2015                    | 39.40   | 199.69     | 56.67   | 705.56  | 5098.03 | 131750 |
| 2022                    | 53.11   | 213.30     | 76.52   | 568.12  | 5490.53 | 160740 |
| % Increase<br>1990-2022 | 144%    | 180%       | 18.58%  | -52.16  | 24.33%  | 169%   |

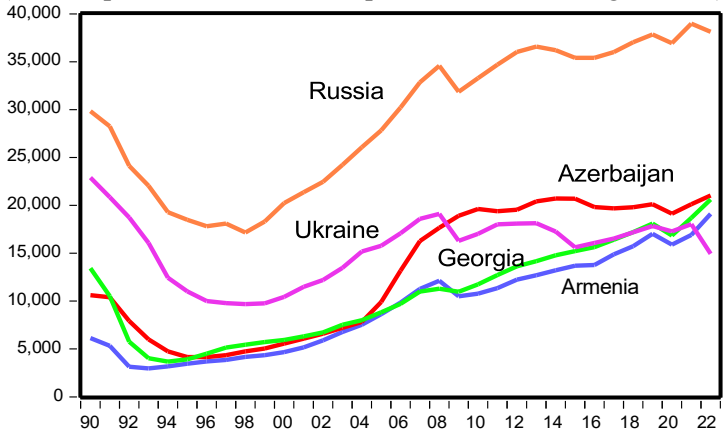
Source: Elaborated from World Bank(2024).

Table 3. Real Production per capita (Dollars at 2021 prices and PPPs)

| Year       | Armenia | Azerbaijan | Georgia | Ukraine | Russia | World |
|------------|---------|------------|---------|---------|--------|-------|
| 1990       | 6130    | 10613      | 13440   | 22887   | 29840  | 11237 |
| 1995       | 3465    | 4148       | 3915    | 11016   | 18485  | 11427 |
| 2000       | 4665    | 5571       | 5937    | 10444   | 20238  | 12762 |
| 2005       | 8635    | 9902       | 8829    | 15770   | 27839  | 14341 |
| 2010       | 10788   | 19621      | 11750   | 17026   | 33282  | 15988 |
| 2015       | 13687   | 20695      | 15213   | 15626   | 35403  | 17770 |
| 2022       | 19100   | 21032      | 20612   | 14951   | 38129  | 20142 |
| % Increase | 211.6   | 98.2       | 53.4    | -34.7   | 27.8   | 169.4 |

Source: Elaborated from World Bank(2024).

Graph 1. Real Production per capita, 1990-2022  
(Dollars per inhabitant at 2021 prices and Pruchasing Parities)



Source: Elaborated by M.C. Guisan from World Bank statistics.

In year 1990, Georgia, Ukraine and Russia, had a value of Production per capita over World average, while Azarbaijan and Armenia where below World average.

In year 2022, Russia is highly over World average, while Azerbaijan and Georgia are slightly over World average, Armenia slightly below World average, and Ukraine very low in comparison with World average.

### 3.2. Population and Net Immigration, 1999-2022

#### *Population, 1990 to 2022*

Table 4 shows the evolution of Population in the countries of this study in comparison with the World, for the period 1990-2022.

Table 4. Country Population for 1990-2022 (thousand) and World (million)

| Year                         | Arme<br>nia | Azerba<br>ijan | Georgia | 3 Cauca<br>sian | Ukraine | Rus<br>sia | World<br>million |
|------------------------------|-------------|----------------|---------|-----------------|---------|------------|------------------|
| 1990                         | 3557        | 7175           | 4802    | 15534           | 51891   | 147969     | 5290             |
| 1995                         | 3323        | 7685           | 4658    | 15665           | 51513   | 148376     | 5730             |
| 2000                         | 3169        | 8049           | 4077    | 15294           | 49177   | 146597     | 6140             |
| 2005                         | 3047        | 8392           | 3902    | 15342           | 47105   | 143519     | 6555             |
| 2010                         | 2946        | 9054           | 3787    | 15787           | 45871   | 142849     | 6970             |
| 2015                         | 2879        | 9649           | 3725    | 16253           | 45154   | 144097     | 7400             |
| 2022                         | 2780        | 10142          | 3713    | 16635           | 38000   | 144237     | 7950             |
| % of change<br>For 1990-2022 | -21.84      | 41.35          | -22.68  | 7.09            | -26.77  | -2.52      | 50.28            |

Source: Elaborated from World Bank statistics. Note: Population of each country in thousand people (th). World Population in million people.

The highest percentage of Populaltion increase, among countries of table 1, corresponded to Azerbaijan, with 41.35%.

Russia experienced a diminution for the period 1995-2010 and a slight increase for 2010-2022, with a percentage of change for all the period 1990-2022 of -2.52%.

Armenia, Georgia and Ukraine experienced a disminution higher than 20% of the initial population of year 1900.

Population of Ukraine diminished from 43.5 million to 36.7 million for the period 2021-2023, what amounts to a 26.77% in comparison with the population of year 1990.

Armenia experienced a diminution of 21.84% and Russian Federation a -2.52%. Azerbaijan increased by 41.35%.

*Immigration, Emigration and Net Immigration*

Table 5 shows the Rate of Immigration and the Rate of Emigration. The rates are calculated as the percentage of immigrants (living in the country) and emigrants (living in other countries) on the country's population. The Rate of Net Migration is the difference between Rate 1 and Rate 2.

Table 5. Rates of Immigration, Emigration, and Net Immigration on Population  
(Percentage of Migrant stock on country's population in year 2020)

|              | <b>Rate 1<br/>Immigration</b> | <b>Rate 2<br/>Emigration</b> | <b>Rate 3<br/>Net immigration</b> |
|--------------|-------------------------------|------------------------------|-----------------------------------|
| Armenia      | 6.42                          | 32.34                        | -25.92                            |
| Azerbaijan   | 2.49                          | 11.50                        | -9.01                             |
| Georgia      | 2.13                          | 23.09                        | -20.96                            |
| Ukraine      | 12.07                         | 14.82                        | -2.75                             |
| Russian Fed. | 7.96                          | 7.36                         | 0.60                              |

Source: Rates of Stock of Migration from United Nations published by Datos Macro.

The figures of table 5 show the stock of immigrants and emigrants in year 2020: In Armenia a 32.34% of population has emigrated and a 6.42% has immigrated. In Azerbaijan, 11.50% of population has emigrated and 2.49% has immigrated. In Georgia 23.09% of population has emigrated and 2.13% has immigrated. In Ukraine, 14.82% of population has emigrated and 12.07% has immigrated.

Table 6 shows the evolution of the stock of immigration and emigration, in million of people, for the period 1990-2020.

Table 6. Evolution of the stock of migrants for 1990-2020

|            | <b>Stock of Immigrants</b> |          | <b>Stock of Emigrants</b> |          | <b>Net Immigration</b> |          |
|------------|----------------------------|----------|---------------------------|----------|------------------------|----------|
|            | 1990                       | 2020     | 1990                      | 2020     | 1990                   | 2020     |
| Armenia    | 658789                     | 190349   | 899678                    | 958190   | -240889                | -767841  |
| Azerbaijan | 360600                     | 252228   | 1634157                   | 1163922  | -1273557               | -911694  |
| Georgia    | 304470                     | 79368    | 919438                    | 861077   | -614968                | -781709  |
| Ukraine    | 6892920                    | 4997387  | 5545517                   | 6139144  | 1347403                | -1141757 |
| Russia     | 11524948                   | 11636911 | 12653331                  | 10756697 | -1128383               | 880214   |

Source: Elaborated from UN data published by Datos-Macro(2024).

<https://datosmacro.expansion.com/demografia/migracion/inmigracion?anio=1990>

### *Evolution of Net Stock of Immigration from 1900 to 2022*

In Armenia: it has evolved from -241 thousand people in 1990 to -768 thousand people in year 2020. The stock of immigrants diminished and the stock of emigrants increased.

In Azerbaijan: it has evolved from -1274 thousand people in 1990 to -912 thousand people in year 2020. Both the Stock of Immigrants and the Stock of Emigrants diminished

In Georgia: it evolved from -615 thousand to -782 thousand people. Both the Stock of Immigrants and the Stock of Emigrants diminished.

In Ukraine: it was positive in 1990 (1347 thousand people) and negative in 2020 (-1142 thousand people). The Stock of Immigrants in Ukraine was very high in 1990 and diminished by 1896 thousand for the period 1990-2020. The stock of Emigrants increased from 5.5 millions to 6.1 millions for the period 1990-2020.

In Russia was negative in 1990 (-1128 thousand people) and positive in 2020 (880 thousand people). The Stock of Immigrants increase slightly (from 11,5 millions to 11.6) and the Stock of Emigrants diminished from approximately 12.7 million in 1990 to 10.8 millions in 2020.

## **4. Evolution of Industrial and Manufacturing Production per capita**

### *Industrial real Value-Added per capita*

Table 7 shows data of real Value-Added of Industrial Production, based on World Bank Indicators, where Industry includes Manufacturing, Energy and Building

Table 7. Industry (including Building) per capita in Dollars at 2021 prices and PPPs.

|            | <b>QHI = Dollars per head</b> |             |             | <b>% of QI on GDP</b> |             |             |
|------------|-------------------------------|-------------|-------------|-----------------------|-------------|-------------|
|            | <b>1990</b>                   | <b>2015</b> | <b>2022</b> | <b>1990</b>           | <b>2015</b> | <b>2022</b> |
| Armenia    | 3188                          | 3519        | 4828        | 52.0                  | 25.71       | 25.28       |
| Azerbaijan | 3184                          | 9290        | 11765       | 30.0                  | 44.89       | 55.94       |
| Georgia    | 4207                          | 2913        | 4403        | 31.3                  | 19.15       | 21.36       |
| Ukraine    | 9750                          | 3396        | 2877        | 42.6                  | 21.73       | 19.24       |
| Russia     | 13428                         | 10547       | 12502       | 45.0                  | 29.79       | 32.79       |
| World      | 3585                          | 4762        | 5519        | 31.9                  | 26.8        | 27.4        |

Source: Elaborated from World Bank percentages of real Value-Added of Industry on GDP; applied to the values of GDP per capita. Estimation for Armenia in 1990 from Guisan and Aguayo (2003).

We may notice a high increase in Azerbaijan for the period 1990-2022, while in Armenia and Georgia there was a slight increase, in Russian Federation a slight diminution and in Ukraine a strong diminution.

In year 2022, Azerbaijan and Russia, presented values of real Value-Added of Industry (including Building) per capita more than twice the World average, and the other 3 countries of the table had values of this variable below World average.

*Manufacturing real Value Added per capita*

Tabla 8 shows the evolution of Manufacturing production per capita for 2000-2022. The initial values, in year 2000, were below World average in the 5 countries and in year 2022 Russian Federation reached a value over the World average. For the period 2015-2022 there was an increase in 4 countries of table 7 but in Ukraine there was a decrease.

Table 8. Real value of Manufacturing per capita (QMH at 2005 and at 2021 prices)

|            | QMH05, at 2005 prices |      |      |      | QMH21 at 2021 prices |      |
|------------|-----------------------|------|------|------|----------------------|------|
| Country    | 2000                  | 2010 | 2015 | 2022 | 2015                 | 2022 |
| Armenia    | 435                   | 539  | 624  | 1064 | 1232                 | 2101 |
| Azerbaijan | 149                   | 357  | 423  | 525  | 1863                 | 2314 |
| Georgia    | 211                   | 592  | 823  | 1239 | 1369                 | 2061 |
| Ukraine    | 702                   | 904  | 808  | 503  | 1875                 | 1167 |
| Russian F  | 1465                  | 2127 | 2063 | 2407 | 4248                 | 4957 |
| World      | 1651                  | 1723 | 2047 | 2321 | 2843                 | 3223 |

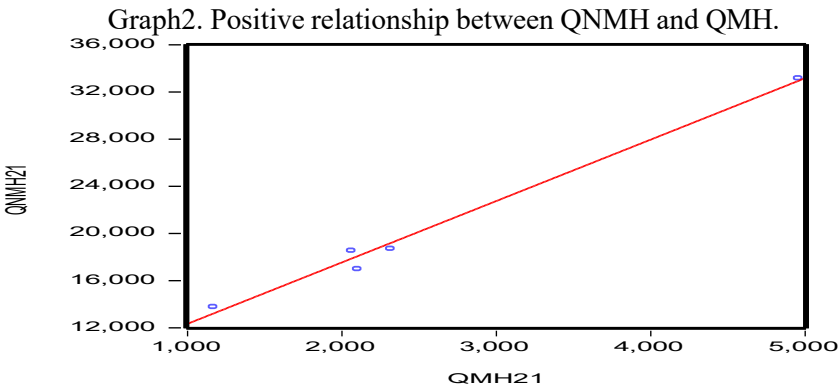
Source: Elaborated by author from World Bank and from Guisan(2017) and (2024).  
World averages of the years 2000 to 2015 are non-weighted averages of 132 countries.  
Note: QMH05 is expressed in Dollars per capita at 2005 prices and PPPs, and QMH21 and QMH21 in Dollars per capita at 2021 prices and PPPs.

Table 9. shows the values of QMH21and QNMH21, and graph2 shows the positive relationship between both variabels.

Table 9. QMH21, QNMH21 and GDP per capita at 2021 prices and PPPs, year 2022

|            | Manufacturing<br>QMH21 | Non Manufacturing<br>QNMH21 | GDP per capita |
|------------|------------------------|-----------------------------|----------------|
| Armenia    | 2101                   | 16999                       | 19100          |
| Azerbaijan | 2314                   | 18718                       | 21032          |
| Georgia    | 2061                   | 18551                       | 20612          |
| Ukraine    | 1167                   | 13784                       | 14951          |
| Russia     | 4957                   | 33172                       | 38129          |
| World      | 3234                   | 16981                       | 20215          |

Source: Elaborated by M.C. Guisan from WB(2024).



Source: Elaborated with data from table 9: 5 countries in 2021.

## 5. Employment by sector for the period 1990-2022

Tables 9.1 to 9.5 show the evolution of Employment by sector, for the period 1990-2022, of each of the 5 countries of this study. The source of data is World Bank, and in case of some missing data for year 1990 we have taken the value of 1991.

The variables LA, LI, LS, LT, include data, in thousands, of persons working in Agriculture, Industry, Services and Total.

Pop is Population in thousand people

LHA, LHI, LHS, LHT are the rates of employment=number of employed people in each sector per thousand inhabitants.

Table 9.1. Armenia: Employment, Population and rates of Employment per thousand

|      | LA  | LI  | LS  | LT   | Pop  | LHA | LHI | LHS | LHT |
|------|-----|-----|-----|------|------|-----|-----|-----|-----|
| 1990 | 697 | 202 | 384 | 1283 | 3557 | 196 | 57  | 108 | 361 |
| 1995 | 771 | 194 | 410 | 1374 | 3323 | 186 | 47  | 99  | 413 |
| 2000 | 716 | 176 | 389 | 1280 | 3169 | 177 | 43  | 96  | 404 |
| 2005 | 686 | 197 | 400 | 1282 | 3047 | 163 | 47  | 95  | 421 |
| 2010 | 685 | 203 | 410 | 1298 | 2946 | 156 | 46  | 93  | 441 |
| 2015 | 653 | 193 | 405 | 1251 | 2879 | 150 | 44  | 93  | 435 |
| 2022 | 655 | 176 | 419 | 1250 | 2780 | 146 | 39  | 93  | 450 |

Note: Employment in Agriculture (LA), Industry including building (LI), Services (LS) and total (LT) and Pop=Population in thousand people. LHA, LHI, LHS, LHT are the rates of Employment by thousand people. Source: Elaborated by M.C. Guisan from World Bank(2024).

Table 9.2. Azerbaijan: Employment, Population and rates of Employment per thousand

|      | LA   | LI  | LS   | LT   | Pop   | LHA | LHI | LHS | LHT |
|------|------|-----|------|------|-------|-----|-----|-----|-----|
| 1990 | 1472 | 770 | 1113 | 3354 | 7175  | 205 | 107 | 155 | 467 |
| 1995 | 1659 | 680 | 1368 | 3707 | 7685  | 216 | 88  | 178 | 482 |
| 2000 | 1544 | 410 | 1812 | 3766 | 8049  | 192 | 51  | 225 | 468 |
| 2005 | 1501 | 461 | 1855 | 3817 | 8392  | 179 | 55  | 221 | 455 |
| 2010 | 1513 | 543 | 1902 | 3957 | 9054  | 167 | 60  | 210 | 437 |
| 2015 | 1599 | 618 | 2180 | 4397 | 9649  | 166 | 64  | 226 | 456 |
| 2022 | 1826 | 765 | 2535 | 5126 | 10142 | 180 | 75  | 250 | 505 |

Note: See footnote of table 9.1. Data of LA, LI, LS, LT and POP in thousand people.

Table 9.3. Georgia: Employment, Population and rates of Employment per thousand

|      | LA   | LI  | LS  | LT   | POP  | LHA | LHI | LHS | LHT |
|------|------|-----|-----|------|------|-----|-----|-----|-----|
| 1990 | 1101 | 302 | 920 | 2322 | 4802 | 229 | 63  | 192 | 484 |
| 1995 | 1057 | 244 | 882 | 2184 | 4658 | 227 | 52  | 189 | 469 |
| 2000 | 932  | 175 | 679 | 1787 | 4077 | 229 | 43  | 167 | 438 |
| 2005 | 933  | 160 | 625 | 1717 | 3902 | 239 | 41  | 160 | 440 |
| 2010 | 774  | 171 | 665 | 1609 | 3787 | 204 | 45  | 175 | 425 |
| 2015 | 760  | 190 | 775 | 1725 | 3725 | 204 | 51  | 208 | 463 |
| 2022 | 648  | 225 | 752 | 1625 | 3713 | 175 | 60  | 202 | 438 |

Note: See footnote of table 9.1. Data of LA, LI, LS, LT and POP in thousand people.

Table 9.4. Ukraine. Employment, Population and rates of Employment per thousand

|      | LA   | LI   | LS    | LT    | POP   | LHA | LHI | LHS | LHT |
|------|------|------|-------|-------|-------|-----|-----|-----|-----|
| 1990 | 4583 | 8087 | 11039 | 23710 | 51891 | 88  | 156 | 213 | 457 |
| 1995 | 5083 | 6328 | 11192 | 22602 | 51513 | 99  | 123 | 217 | 439 |
| 2000 | 4560 | 4814 | 11106 | 20480 | 49177 | 93  | 98  | 226 | 416 |
| 2005 | 4276 | 5135 | 11501 | 20912 | 47105 | 91  | 109 | 244 | 444 |
| 2010 | 3368 | 5472 | 11508 | 20347 | 45871 | 73  | 119 | 251 | 444 |
| 2015 | 2989 | 4837 | 11766 | 19592 | 45154 | 66  | 107 | 261 | 434 |
| 2022 | 2391 | 3816 | 9627  | 15834 | 38000 | 63  | 100 | 253 | 417 |

Note: See footnote of table 9.1. Data of LA, LI, LS, LT and POP in thousand people.

Table 9.5. Russia. Employment, Popularion and rates of Employment per thousand

|      | LA    | LI    | LS    | LT     | POP    | LHA | LHI | LHS | LHT |
|------|-------|-------|-------|--------|--------|-----|-----|-----|-----|
| 1990 | 13782 | 38364 | 61841 | 113989 | 148000 | 93  | 259 | 418 | 770 |
| 1995 | 14376 | 35993 | 65796 | 116164 | 148000 | 97  | 243 | 445 | 785 |
| 2000 | 17401 | 35110 | 67558 | 120069 | 147000 | 118 | 239 | 460 | 817 |
| 2005 | 12381 | 35728 | 73991 | 122100 | 144000 | 86  | 248 | 514 | 848 |
| 2010 | 9399  | 33659 | 78263 | 121320 | 143000 | 66  | 235 | 547 | 848 |
| 2015 | 8034  | 32545 | 79155 | 119735 | 144000 | 56  | 226 | 550 | 831 |
| 2022 | 6706  | 31489 | 80311 | 118506 | 144000 | 47  | 219 | 558 | 823 |

Note: See footnote of table 9.1. Data of LA, LI, LS, LT and POP in thousand people.

### *Countries with increase of Employment: Azerbaijan and Russia*

In Azerbaijan the percentage of increase of Employment was 52.83% and the increase of Population of 41.35%.

In Russia the increase of Employment was 41.31% and there was not an increase of Population but an small decrease of -2.70%.

Armenia, Georgia and Ukraine experienced decrease of Employment and Population, with the following percentages of change, for the period 1990-2022: Armenia -2.57% in Employment and -21.84% in Population. Georgia -30.02% of change in Employment and -22.68% in Populaltion. Ukraine experienced decrease of Employment and Population for the period 1990-2019, and stronger, due to the consequences of war, for the period 2019-2022. Accordingly to World Bank statistics, the change of Employment was negative, with -16.85 for the period 1990-2019, -18.44 por the period 2019-2022, and a percentage of diminution of -33.22% for the period 1990-2022. The change of Population was also negative: -14.39% for the period 1990-2019 and -14.46% for 2019-2022. The total change of Population for 1990-2022 was -26.77%.

## **6. Conclusions.**

Table 9 shows that real Gross Domestic Product per capita in year 2022 was close to World average in the 3 Caucasian countries of this study (Armenia, Azerbaijan and Georgia), higher than World average in Russia and lower in Ukraine.

Table 7 shows an increase of Industrial Production per capita (QHI), for 1990-2022, in Armenia (from 3188 to 4828), a strong increase in Azerbaijan (from 3184 to 11765),

a slight increase in Georgia (from 4207 to 4403), a strong decrease in Ukraine (from 9750 to 2877) and a slight diminution in Russia (from 13428 to 12502). The World value of QHI evolved from 3585 to 5519 Dollars per head, at constant prices and Purchasing Parities of year 2021. Russia and Azerbaijan reached high values of QHI in year 2022, in comparison with World average, while Armenia and Georgia were slightly below the World Average and Ukraine had a very low value (2877) in comparison with World average.

Regarding the evolution of Employment and Population for the period 1900-2020, Azerbaijan experienced an important increase of both variables. Russia had an increase of Employment but little increase of Population. Armenia, Georgia and Ukraine experienced both a decrease of Employment and Population.

Our suggestions to increase development and quality of life in the set of 5 countries of this study include to foster a peace agreement in the war between Russia and Ukraine and to foster industrial development in all the countries, with its positive effects production and employment in Services, as well as on real income per capita and quality of life.

## **Bibliography**

Datos Macro (2024). Migration and Immigration. Data from United Nations  
<https://datosmacro.expansion.com/demografia/migracion/inmigracion?anio=1990>

DOBROWSKI, Maek (2023). Thirty years of economic transition in the former Soviet Union: Microeconomic and institutional dimensions. *Russian Journal of Economics*, Vol. 9-1, pp, 1-32. At <https://rujec.org/article/104761/>

IEP(2021), [Global Peace Index](#). Institute for Economics and Peace

Indexamundi(2022). [PM2.5 air pollution, mean annual exposure \(micrograms per cubic meter\) - Country Ranking](#).

ILO-Gallup(2021). Towards a Better Future for Women and Work: Voices of Women and Men. International Labor Organization and Gallup.

KORHOHEN, Likka (2024). Ukraine's economy grows amidst the rising toll of war . Published on [23 Feb 2024 International economy. Bank of Finland Blog](#).

GUISAN, Maria-Carmen, 2017. "[Manufacturing And Development In Countries And Areas Of Europe And Eurasia, 2000-2010](#)," [Regional and Sectoral Economic Studies](#), Euro-American Association of Economic Development, vol. 17(1), pages 129-142.

Guisan, M.C. Development 1990-2022 . *Regional and Sectoral Economic Studies* Vol.24-2 (2024)

GUISAN, Maria-Carmen, 2021. "[World Development For 1995-2020: Econometric Relationships Of Human Capital, Development, Quality Of Government And Life Satisfaction In 164 Countries](#)," *Applied Econometrics and International Development*, Euro-American Association of Economic Development, vol. 21(2), pages 83-112.

GUISAN, Maria-Carmen, 2022. "[Quality Of Life In Countries And Regions Of Europe, America, Asia And Oceania: Subjective And Objective Indicators, 2000-2020](#)," *Regional and Sectoral Economic Studies*, vol. 22(2), pages 5-36.

GUISAN, Maria-Carmen, 2024. Development Studies of Europe and Eurasia, 2001-2023. [Chapter 4, of the book by Guisan\(2024\), EE12](#), of the Series Economic Studies of the Euro-American Association of Economic Development Studies, pages 89-100.

GUISAN, Maria-Carmen, 2024. "[Education, Freedom, International Development and Quality of Life, 2001-2023. Economic Studies of America, Europe, Africa and Asia](#)," *ESTUDIOS ECONOMICOS EBOOK*, Euro-American Association of Economic Development, volume 12.

GUISAN, Maria-Carmen, AGUYAO, Eva, 2003. [Education, Industry, Trade and Development of European and Eurasian Countries in 1980-99](#)," *Applied Econometrics and International Development*, Euro-American Association of Economic Development, vol. 3(1), pages 115-141.

OPTEM (2001). <https://archives.eui.eu/en/fonds/152124?item=GJLA.ENLARG-03-217>

UNDP(2019). "United Nations, Population Division, World Population Prospects, 2019 Revision, (Medium Variant)".

UNODOC(2019). Global Study on Homicide. UN Office against Drug and Crime.

UNDP (2021). Human Development Report: Mean Years of Schooling. United Nations Development Programme, <http://hdr.undp.org/en/indicators/10300>.

WB(2024). World Development Indicators (WDI). World Bank. Washington.

WB(2024). World Government Indicators (WGI). World Bank. Washington.

WHR. World Happiness Report. United Nations. Several years

*Regional and Sectoral Economic Studies*: Links to free downloadable articles of Regional and Sectoral Economic Studies (RSES), since May of 2026, are scheduled to be updated at [Dialnet](#), Ideas.Repec, [USC-Econometrics Research Team](#), and at [Entry 65](#) of the Blog <https://euroamericanassociation.blogspot.com>