

HOW ETHNIC GROUPS IN THE UNEMPLOYMENT STRUCTURE AFFECT INFLATION AND INDUSTRIAL PRODUCTION INDEX IN USA

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The article explores the impact of unemployment in the United States on inflation and the industrial production index. This research is relevant in view of how the most economically developed country in the world overcomes the problems associated with the crisis (financial crisis, pandemic) of the last 20 years. The purpose of this article is to explain the relationship between macro indicators, which are mentioned above and to investigate the role of some nations in these indicators, namely: Latinos, African-Americans and Americans of Asian descent. Correlation analysis and forecast based on neural network were used to solve the target. The analysis was carried out using the Python programming language. All graphs, tables, and other visual elements were built with using the Matplotlib library, and the graphical display of correlation matrices was built in Seaborn.

According to our research, the analysis showed that the unemployment rate has the greatest impact on the industrial production index, and the link between inflation and unemployment is quite specific and depends directly on the crisis. The hypothesis was expressed that there was no relationship between the unemployment rate and inflation in a stable period, a correlation analysis was made excluding the crisis of 2008 and the pandemic 2019 – 2021 years from the sample of data. The analysis showed a very small inverse relationship, which confirmed our hypothesis. Examining Phillips' curve, the thesis was refuted that influencing inflation could control the unemployment rate. Conducting its own research, this article answers the question: «How does the unemployment rate affect inflation?» and this answer applies not only to the US economy, but also to any other country. In addition, the article made a forecast of unemployment in the United States until February 2022 with the help of a neural network built using the TensorFlow library. The correctness of the forecast data was checked by real data, and the error does not exceed 0.5%.

The impact of unemployment on the industrial production index is most observed among Latinos. In majority cases, the areas in which Latin Americans worked suffered more than other ethnic groups. For other nations, the unemployment rate of Americans of Asian descent never exceeds the average level in the United States (only the pandemic period is an exception), and the unemployment rate of African Americans among all nations is the highest and gave way only to Hispanics at the peak of the pandemic. There was also a tendency that the unemployment rate always returns to its natural level, near 4-5%.

References

1. Lysiuk O.S. (2012). *Bezrobittia iak sotsial'no-ekonomichna problema naseleння Ukrainy* [Unemployment as a social-economical issue of Ukrainian]. *VNAU* [Economics, finance, management: current issues of science and practice], vol. 4., pp. 48-53.

2. Churylova O. A. (2010) *Bezrobittia v Ukraini: prychnyny, naslidky*. [Unemployment in Ukraine: reasons and consequences] *Zbirnyk naukovykh statey v 2 t. Kontynent* [Scientific works of youth, solving the problem of European integration], vol. 2, issue.12., pp. 182-184.

3. Federal Reserve Bank of St. Louis. Economic data center. Available at: <https://fred.stlouisfed.org> (Accessed 8 December 2021)

4. Ser'ohina N (2021) *Analogii ta vidminnosti Velykoi depresii ta suchasnykh realij zajniatosti ta bezrobittia v USA* [Analogies and differences between the Great depression and the current realities of employment and unemployment in the USA]. *Teoriya ta praktyka derzhavnogo upravlinnya* [Theory and practice of public management], Kharkiv, vol. 1 (72)., 204 p.
5. Friedman, M. (Mar., 1968), "The Role of Monetary Policy", *The American Economic Review*, vol. 58, no. 1, pp. 1-17.
6. Phillips, A. W. (1958). The Relationship between Unemployment and the Rate of Change of Money Wages in the United Kingdom 1861-1957, *Economica*, 25(100), 283-299.
7. Racial and ethnic composition of the US population. Available at: https://www.wiki_4UYf (Accessed 8 December 2021)
8. Immigrants Contribute Greatly to U.S. Economy, Despite Administration's "Public Charge" Rule Rationale. Available at: https://www.cbpp.org_research_poverty-and-inequality_immigrants-contribute-greatly-to-us-economy-despite-administrations (Accessed 8 December 2021)
9. Immigrants Contribute Greatly to U.S. Economy, Despite Administration's "Public Charge" Rule Rationale. Available at: https://www.cbpp.org_research_poverty-and-inequality_immigrants-contribute-greatly-to-us-economy-despite-administrations (Accessed 8 December 2021)
- 10 Barbieri P.(2009) Flexible Employment and I nequality in Europe, *European Sociological Review.*, pp. 621-628.
11. United States Department of Labor. Available at: https://www.dol.gov_ (Accessed 8 December 2021)
12. Economic News Release. Employment Situation Summary. Available at: https://www.bls.gov_news.release_empsit.nr0.htm (Accessed 8 December 2021)
13. Cohen P., Friedman G. (2020) Unemployment Claims Show Layoffs Continue to Batter Economy. *The New York Times*. 2020. Available at: https://www.nytimes.com_2020_09_03_business_economy_unemployment_claims.html?searchResultPosition=1. (Accessed 8 December 2021)
14. Roberto Dell'Anno (2008) Shadow Economy and Unemployment Rate In U.S.A. Is There A Structural Relationship? An Empirical Analysis. Available at: <https://hal.archives-ouvertes.fr/hal-00582021/document> (Accessed 8 December 2021)
15. Kitov I. (2006)., Inflation, Unemployment, Labor Force Change in the USA Available at: https://ssrn.com_abstract=886662 (Accessed 8 December 2021)
16. Grey B. Unemployment in America: No Economic Recovery for the Working Class. Available at: <https://www.wsws.org/en/articles/2010/04/pers-a07.html> (Accessed 8 December 2021)
17. Figura A. (2003) The effect of restructuring on unemployment Washington, D.C.: Federal Reserve Board. Available at: <https://www.federalreserve.gov/econres/andrew-figura.htm> opens in a new window (Accessed 8 December 2021).

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