

Unemployment and output dynamics in CIS countries: Okun's law revisited

Ibragimov M., Ibragimov R.

Kazan Federal University, 420008, Kremlevskaya 18, Kazan, Russia

Abstract

© 2016 Informa UK Limited, trading as Taylor & Francis Group. Okun's law is a well-known relationship between the change in the unemployment rate and output growth. The main objective of this article is to provide a rigorous econometric analysis of Okun's law for several CIS countries using different models and theoretically justified econometric methods. The traditional approach to Okun's law estimation using OLS regressions does not account for possible endogeneity of regressors and the implied inconsistency of the estimates obtained. These problems point out to incorrectness of applications of the standard OLS estimation techniques. Our study addresses these issues by using econometrically justified instrumental variable regression methods. The article provides the results and discussions on practical use of Okun's relationships for evaluation of average effects of economic growth on the unemployment rate, and vice versa; importance of accounting for confidence intervals in applications of Okun's models to economic development analysis and cross-country comparisons and evaluation of effects of crises and other structural shocks on the economies considered. We also discuss in detail the results of formal econometric tests and economic motivation for validity of instrumental variables used in the study. The formal econometric tests, together with economic arguments, allow us to determine the most appropriate Okun-type models for each of the CIS countries under consideration.

<http://dx.doi.org/10.1080/00036846.2016.1262519>

Keywords

exogenous and endogenous variables, GDP growth, instrument relevance, instrumental variable regressions, instrumental variables, Okun's law, robust standard errors, seasonality, the 2008 global economic and financial crisis, unemployment

References

- [1] Akhundova, O. V., A. G., Korovkin, and I. B., Korolev. 2005. "The Relationship between the Dynamics of GDP and Unemployment:Theoretical and Practical Analysis." [In Russian.] In Proceedings of the Institute for Economic Forecasting, Russian Academy of Sciences, edited by I. B., Korovkin. Moscow:MAKS-Press. <http://www.ecfor.ru/pdf.php?id=books/kor03/02>
- [2] Anatolyev, S., 2007. "Optimal Instruments." *Quantile* 2:61-69. <http://quantile.ru/02/02-SA.pdf>.
- [3] Arabaci, R. Y., and O., Arabaci. 2010. "Asymmetries in Okun's Law:Evidence from Turkey." IREC 2010-Workshop 1. <http://www.fafu.no/irec/workshop1.html>
- [4] Boeri, T., and K., Terrell. 2002. "Institutional Determinants of Labor Reallocation in Transition." *Journal of Economic Perspectives* 16:51-76. doi:10.1257/0895330027111.

- [5] CII-EDB. 2012. "Labor Migration in the Single Economic Space: Analysis of the Economic Effect and Institutional and Legal Consequences of Ratification of the Agreements on Labor Migration." Report 3. Center for Integration Studies, European Development Bank. <http://www.eabr.org/general/upload/reports/migration-report.pdf>
- [6] Commander, S., and A., Tolstopyatenko. 1997. "Unemployment, Restructuring and the Pace of Transition." In *Lessons from the Economic Transition. Central and Eastern Europe in the 1990s*, edited by S., Zecchini. Dordrecht: Kluwer Academic Publishers.
- [7] Denisenko, M., 2010. "Migration and remittances in Central Asia and South Caucasia." Economic and social commission for Asia and the Pacific. Expert Group Meeting on Strengthening Capacities for Migration Management in Central Asia, Bangkok, September 20 and 21.
- [8] Ebbes, P., 2007. "A Non-Technical Guide to Instrumental Variables and Regressor-Error Dependencies." *Quantile* 2:3-20. <http://quantile.ru/02/02-PE.pdf>.
- [9] Gabrisch, H., and H., Buscher. 2006. "The Relationship between Unemployment and Output in Post-Communist Countries." *Post-Communist Economics* 18:261-276. doi:10.1080/14631370600881804.
- [10] Gimpelson, V. E., and R., Kapeliushnikov. 2011. "Labor Market Adjustment: Is Russia Different?" IZA Discussion Paper No. 5588. http://www.eerc.ru/article_admin?page=3
- [11] Gimpelson, V. E., and R. I., Kapeliushnikov. 2008. *Wage in Russia: Evolution and Differentiation*. [In Russian.] Moscow: Higher School of Economics.
- [12] Gordon, R. J., 1984. "Unemployment and Potential Output in the 1980's." *Brookings Papers on Economic Activity* 15:537-564. doi:10.2307/2534438.
- [13] Harris, R., and B., Silverstone. 2001. "Testing for Asymmetry in Okun's Law: A Cross-Country Comparison." *Economics Bulletin* 5:1-13.
- [14] Ibragimov, M., R., Ibragimov, and J., Walden. 2015. "Heavy-Tailed Distributions and Robustness in Economics and Finance." In *Lecture Notes in Statistics*. Vol. 214. New York: Springer.
- [15] Ibragimov, M., R., Khamidov, and Z., Davidova. 2011. "Heavy-Tailedness and Volatility in Emerging Foreign Exchange Markets: Theory and Empirics." EERC working paper No. 10/06E. <http://eerc.ru/paperinfo/303>
- [16] Ibragimov, R., and U. K., Müller. 2010. "T-Statistic Based Correlation and Heterogeneity Robust Inference." *Journal of Business & Economic Statistics* 28:453-468. doi:10.1198/jbes.2009.08046.
- [17] IMF. 2010. "Unemployment Dynamics during Recessions and Recoveries: Okun's Law and Beyond." In *World Economic Outlook April 2010: Rebalancing Growth*, Ch. 3, 69-107. Washington, DC: International Monetary Fund.
- [18] Izyumov, A., and J., Vahaly. 2002. "The Unemployment - Output Tradeoff in Transition Economies: Does Okun's Law Apply?" *Economics of Planning* 35:317-331. doi:10.1023/A:1024441219635.
- [19] Kaufman, R. T., 1988. "An International Comparison of Okun's Law." *Journal of Comparative Economics* 12:182-203. doi:10.1016/0147-5967(88)90002-9.
- [20] Knoester, A., 1986. "Okun's Law Revisited." *Weltwirtschaftliches Archiv* 122:657-666. doi:10.1007/BF02707853.
- [21] Knotek, E., 2007. "How Useful Is Okun's Law? Federal Reserve Bank of Kansas City Economic Review." *Fourth Quarter* 73-103. <http://www.kc.frb.org/publicat/econrev/PDF/4q07Knotek.pdf>
- [22] Kulekeev, Z. A., 1997. "Shadow Economy in Kazakhstan: Causes of Its Appearance and Consequences for Macroeconomic Stabilization." [In Russian.] *Kazakhstan Economy* 2:76-83.
- [23] Layard, R., and A., Richter. 1995. "Labour Market Adjustment: The Russian Way." In *Russian Economic Reform at Risk*, edited by A., Aslund, 119-148. London: Pinter.
- [24] Moosa, I. A., 1997. "A Cross-Country Comparison of Okun's Coefficient." *Journal of Comparative Economics* 24:335-356. doi:10.1006/jcec.1997.1433.
- [25] Okun, A. M., 1962. "Potential GNP: Its Measurement and Significance." *American Statistical Association, Proceedings of the Business and Economics Statistics Section*, 98-104. Washington, DC.
- [26] Pagan, A., 2007. "Weak Instruments." *Quantile* 2:71-81. <http://quantile.ru/02/02-AP.pdf>.
- [27] Pollock, S., 2007. "Estimation of Structural Econometric Equations." *Quantile* 2:49-59. <http://quantile.ru/02/02-SP.pdf>.
- [28] Prachowny, M. F. J., 1993. "Okun's Law: Theoretical Foundations and Revised Estimates." *The Review of Economics and Statistics* 75:331-336. doi:10.2307/2109440.
- [29] Prokhorov, A., 2001. *The World Unobserved Economy: Definition, Measurement and Optimality Considerations*. Russia: Petersburg State University. http://www.ibrarian.net/navon/paper/The_World_Unobserved_Economy_Definition_Measure.pdf?paperid=1313072
- [30] Reznikova, O., 2012. "Perspectives of Migration on the Post-Soviet Space." Moscow: Institute of the World Economy and International Relations, Russian Academy of Sciences.
- [31] Schneider, F., and D., Enste. 2002. "Hiding in the Shadows." *The Growth of the Underground Economy*, IMF. <http://www.imf.org/external/pubs/ft/issues/issues30/index.htm>
- [32] Sims, C. A., 2007. "Thinking about Instrumental Variables." *Quantile* 2:83-94. <http://quantile.ru/02/02-CS.pdf>.
- [33] Smith, G., 1975. "Okun's Law Revisited." *Quarterly Review of Economics and Business* 15:37-54.
- [34] Soltwedel, R., D., Dohse, and C., Krieger-Boden. 2000. "European Labor Markets and EMU Challenges Ahead." *Finance and Development*, IMF 37 (2):37-40.

- [35] Stock, J. H., and M. W., Watson. 2007. *Introduction to Econometrics*. 2nd ed. New York: Addison Wesley.
- [36] Tsyplakov, A., 2007. "A Guide to the World of Instrumental Variables." *Quantile* 2:21-47. <http://quantile.ru/02/02-AT.pdf>.
- [37] Weber, C. E., 1995. "Cyclical Output, Cyclical Unemployment, and Okun's Coefficient: A New Approach." *Journal of Applied Econometrics* 10:433-445. doi:10.1002/(ISSN)1099-1255.
- [38] Wright, P. G., 1928. *The Tariff on Animal and Vegetable Oils*. New York: Macmillan.
- [39] Yakusheva, A. E., 2010. "Labor Migrants' Remittances as a Channel for Retranslation of the World Economic Crisis on the Post-Soviet Space." [In Russian.] In *Crisis Phenomena in the World Economy and International Relations, World Development, Issue 6*, edited by F. G., Vojtlovskiy and A. V., Kuznetsov, 81-87. Moscow: Institute of the World Economy and International Relations, Russian Academy of Sciences (IMEMO RAN).