
PROJECTION OF ECONOMICALLY ACTIVE POPULATION OF MOSCOW REGION USING FUZZY LOGIC

A.V. Chernysh

chernysh.artur@gmail.com

Financial University under the Government of the Russian Federation, Moscow, Russian Federation

Abstract

In this paper we introduce the analysis of economically active population upon incomplete and inaccurate information. We studied the possibilities of using the fuzzy set theory in modeling demographic aspects of labour market. For every individual year over specific time frame (2014–2016), we forecasted economically active population growth taking into account the population growth rate. To test the adequacy measure of the developed model, we estimated the error by approximation method. The error demonstrated the sufficient proximity of data, which, in turn, fosters more research in this field.

Keywords

Projection, population, fuzzy set theory, fuzzification, defuzzification, demographic projection, approximation

© Bauman Moscow State Technical University, 2017

References

- [1] Kapelyushnikov R.I. Rossiyskiy rynok truda: adaptatsiya bez restrukturizatsii [Russian labor-market: adaptation without reorganisation]. Moscow, HSE publ., 2001, 307 p.
- [2] Ponomarev I.V., Rodionov E.D., Rodionova L.V., Slavskiy V.V. Models set for constructing and assessment the development cases of regional labor-market. *Vestnik altayskoy nauki*, 2013, no. 1, pp. 86–88.
- [3] Zadeh L.A. The concept of a linguistic variable and its application to approximate reasoning. New York, Elsevier, 1973. (Russ. ed.: *Ponyatiye lingvisticheskoy peremennoy i ego primenenie k prinyatiyu priblizhennykh resheniy*. Moscow, Mir publ., 1976, 165 p.)
- [4] Mamedova M.G., Dzhabrailova Z.G. Fuzzy logic in forecasting demographic aspects of labor-market. *Iskusstvennyy intellekt*, 2005, no. 3, pp. 450–460.
- [5] Maslova I. Full employment and labour market. *Vestnik statistiki*, 1990, no. 12, pp. 8–19.
- [6] Kendall M.G. Time series. London, Griffin, 1976. (Russ. ed.: *Vremennyye ryady*, Moscow, Finansy i statistika Publ., 1981, 191 p.)
- [7] Afanas'yev V.N., Yuzbashev M.M. Analiz vremennyykh ryadov i prognozirovaniye [Time series analysis and forecasting]. Moscow, Finansy i statistika publ., 2010, 317 p.
- [8] Yarushkina N.G. Osnovy teorii nechetkikh i gibridnykh system [Theory fundamentals of fuzzy and hybrid systems]. Moscow, Finansy i statistika publ., 2004, 320 p.
- [9] Gladunova O.P., Kurkina M.V., Neriz'ko pp.V., Oskorbin D.N., Perekarenkova Yu.A., Ponomarev I.V., Rodionov E.D., Rodionova L.V., Rodionova O.E., Slavskiy V.V. Matematicheskoe modelirovaniye v sotsial'no-ekonomicheskikh i estestvennykh naukakh [Mathematical modelling in social-economical and nature sciences]. Barnaul, IP Kolmogorov I.A. publ., 2012, 141 pp.
- [10] Shniper R.I., Novoselov A.S. Regional'nye problemy rynkovedeniya: ekonomicheskiy aspect [Regional problems of market study: economical aspect]. Novosibirsk, Nauka Siberian publ. company, 1993, 436 p.

Chernysh A.V. — Master's Degree student, Faculty of Applied Mathematics and Information Technology, Financial University under the Government of the Russian Federation, Moscow, Russian Federation.

Scientific advisor — A.A. Kochkarov, Dr. Sc. (Phys.-Math.), Assoc. Professor, Department of Data Analysis, Decision-making and Financial Technology, Financial University under the Government of the Russian Federation, Moscow, Russian Federation.