# MACROECONOMIC STABILITY AND SOCIAL PROGRESS IN THE EU MEMBER STATES AND UKRAINE
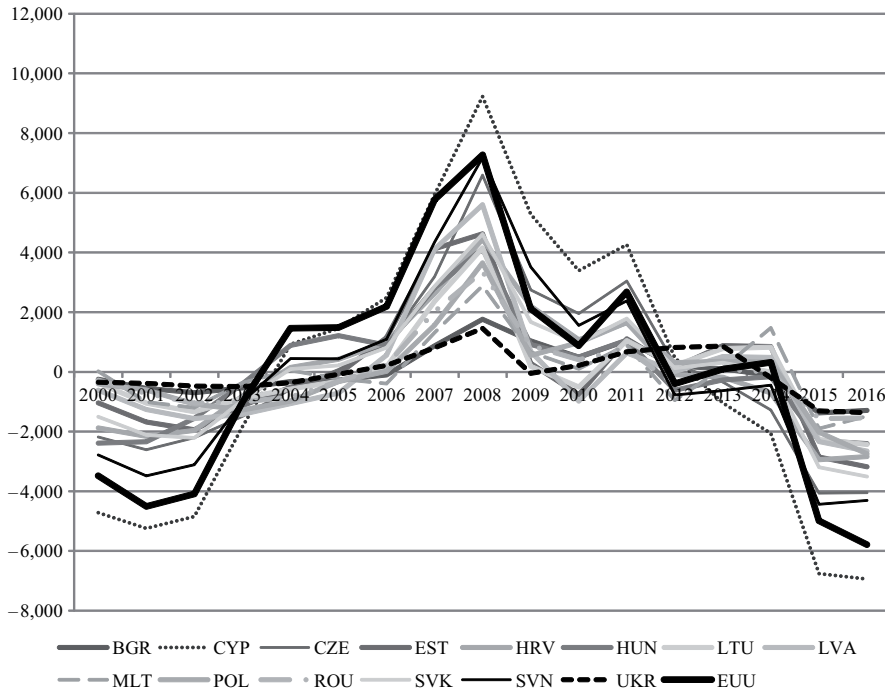
## Oleksii Lyulyov

Sumy State University, Ukraine

## INTRODUCTION

The issues of the countries' macroeconomic stability became widespread after the last world finance and economic crises had already become. Thus, the consequences of macroeconomic imbalances provoked the negative dynamics of economic development [Buti 2011]. As a result, the slow temp of economic development provides the decreasing of living standards, increasing the unemployment and unequal social progress in the countries. With purpose to soft the above mentioned negative tendency EU countries implement the special instruments to cut the gaps in the social and economic development. Should be underlined, that approved European vector for national economy development requires to investigate the experience of the latest members of EU which have the post soviet regime and had the similar with Ukraine start position of economic and social state. The results of analysing will be allowed to indicate the general parameters of social and economic development and correlation between them.

In his speech "Macroeconomic stability and growth in the European Monetary Union" Eugenio Domingo Solans, member of the Governing Council of the European Central Bank, notes that "Macroeconomic stability is a key element of the socio-economic model of the European Monetary Union. It is a precondition for sustainable economic growth and job creation" [Solans 2002].

The economic growth measured by the gross domestic product per capita in most of the considered EU member states varied unevenly around the trend line. The separation of the cyclic component in the time series of GDP per capita with the help of the Godric-Prescott filter allows us to conclude that there is an identical trend of short-term developmental fluctuations in the EU member countries (Fig. 1). So the correlation coefficient of GDP fluctuations per capita for most of the countries under consideration is 0.5066 or higher.

Bulgaria – BGR; Cyprus – CYP; Czech Republic – CZE; Estonia – EST; Croatia – HRV; Hungary – HUN; Lithuania – LTU; Latvia – LVA; Malta – MLT; Poland – POL; Romania – ROU; Slovak Republic – SVK; Slovenia – SVN; Ukraine – UKR. Europe Union – EUU.

FIG. 1. The deviation of GDP per capita from the trend line for the whole of the EU and in individual countries (the Godric-Prescott filter)

Source: the author's calculations based on World Bank data [World Bank 2017].

It should be noted that the use of the Godric-Prescott filter is one of the most popular ways to identify the trend and cyclic (fluctuation) components of the time series [Ravn and Uhlig 2002]:

$$y_t = \tau_t + c_t \tag{1}$$

where:  $y_t$  – the actual data,
   $\tau_t$  – the trend component,
   $c_t$  – the cyclic component.

The trend component $\tau_t$ is extracted from the actual data series $y_t$ by solving

$$\min_{\tau_t} \sum_{t=1}^{T} \left( (y_t - \tau_t)^2 + \lambda \left( (\tau_{t+1} - \tau_t) - (\tau_t - \tau_{t-1}) \right)^2 \right) \tag{2}$$

The most stable dynamics, which is characterized by a slight variation in the characteristics of this indicator, within 10–30%, have Austria (23.07%), Belgium (22.23%), Cyprus (24.37%), Germany (21.51%), Denmark (21.94%), Spain (23.24%), Finland (22.46%), France (20.63%), the United Kingdom (16.51%), Greece (26.78%), Hungary (28.76%), Ireland (23.12%), Italy (19.51%), Luxembourg (26.86%), Malta (26.86%), the Netherlands (22.16%), Portugal (21.32%), Slovenia (26.79%), Sweden (23.28%), but within 30–50% – Bulgaria (43.5%), the Czech Republic (34.67%), Estonia (41.13%), Croatia (30.4%), Lithuania (43.31%), Latvia (43.44%), Poland (35.43%), Romania (47.66%), the Slovak Republic (34.40%), which is primarily due to the obtained opportunities of these countries after entering the Europe zone. So in 2016 compared with the year of entry into the EU, Bulgaria was able to raise GDP per capita in 26%, the Czech Republic – 58%, Poland – 86%, Romania –16% and the Slovak Republic – 55%.

When assessing the labour market in the EU member states, based on observing the unemployment rate, it can be concluded that there are quite large differences in the Eurozone (Fig. 2). Despite the relatively low level of unemployment in the EU as a whole (7.96% in 2016), its value remains much higher in some countries than in the entire Eurozone: in Spain by +9.44%, Greece – +15.4%. On the other hand, in countries such as Bulgaria, the Czech Republic, Estonia, Hungary, Lithuania, Malta, Poland, Romania, the Slovak Republic, since the beginning of the entry into the Eurozone the unemployment rate has shown a downward trend, however, in 2017 in Cyprus and Slovenia this level increased by 7.6 and 1.5% respectively. It should be noted that with the increase in the unemployment rate in Cyprus and Slovenia, the value of their GDP per capita remains one of the highest in the group under analysis. Therefore, it becomes necessary to study the interdependence of the two processes mentioned.

Supplementing the analysis of the comparison of the unemployment rate with the coefficient of variation for the EU member states during 2000–2017, it can be argued that Austria (11.23%), Belgium (9.01%), Finland (15.09%), France (8.80%), Malta (12.36%) demonstrated the most homogeneous dynamics in the range of 10–20% but not exceeding the absolute value across the region.

The calculations for 2000–2016 for the EU as a whole and for Ukraine show a statistically significant correlation between the fluctuations of GDP per capita (Y) and the unemployment rate (Un), which can be represented in the form of a regression equation:
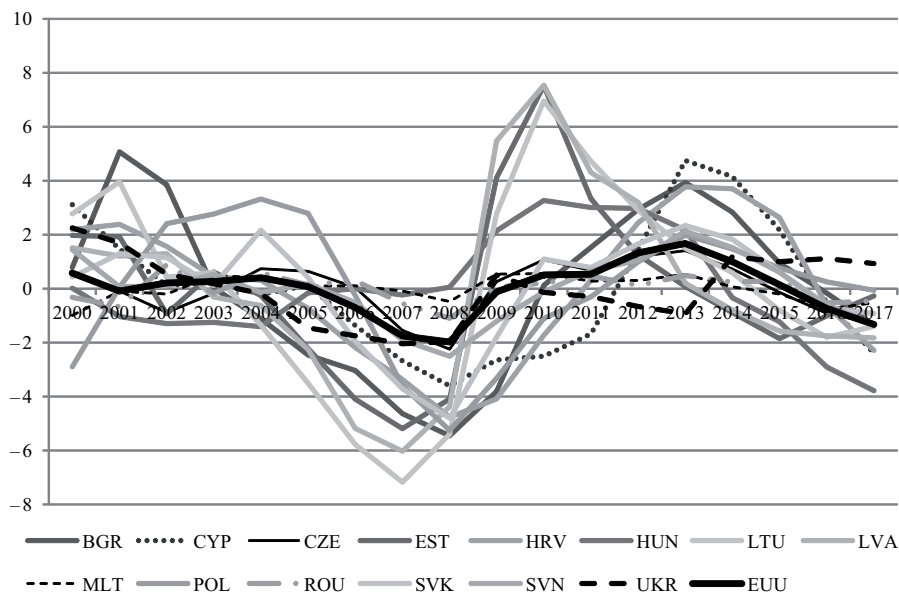– for the EU as a whole

$$Y(Un) = 1.406869 - 0.0805075 \times Un, \textit{R}\text{-squared} = 0.4567 \qquad (3)$$

– for Ukraine

$$Y(Un) = -22.71298 - 416.265 \times Un, \textit{R}\text{-squared} = 0.5019 \qquad (4)$$

As it can be seen from the above data, the integration processes of countries in the European Union encourage their social and economic development. At the same time, as noted above, the accumulation of macroeconomic instability leads to a variety of socio-economic conditions and quality of life in individual countries. The main hypothesis of Mauricio Cárdenas and Miguel Urrutia in their work [Cárdenas and Urrutia 1995] is that countries with greater macroeconomic stability achieve greater social progress.

Bulgaria – BGR; Cyprus – CYP; Czech Republic – CZE; Estonia – EST; Croatia – HRV; Hungary – HUN; Lithuania – LTU; Latvia – LVA; Malta – MLT; Poland – POL; Romania – ROU; Slovak Republic – SVK; Slovenia – SVN; Ukraine – UKR. Europe Union – EUU.

FIG. 2. Unemployment deviation from the trend line as a whole across the EU and in individual countries (the Godric-Prescott filter)

Source: the author's calculations based on World Bank data [World Bank 2017].

Marta E. Kuc studying the processes of social convergence with the help of the transition matrix from Markov chains in the 24 EU member states in the period 1995–2012, comes to the conclusion that there is the convergence towards stationary distribution; however, the peace of convergence is very slow [Kuc 2015]. The author traces the basic indicators of the study to ten groups: population, labour market and job security, health and social care, education, leisure time, living conditions, transport and communication, social security, population incomes and expenditures, natural environment.

The work of Soukiazis is devoted to the study of the issues of reducing the differences in the living standards of countries after integration into the EU [Soukiazis 2000]. Having analyzed per capita income to express the diversification of living standards among the 15 EU member states for the period 1960–1997, the scientist notes the lack of convergence between the countries studied. The author notes that the income growth rate per capita in the less developed countries is not high enough to guarantee an absolute reduction in the discrepancy between living standards among the EU countries.

Using the econometric model, Ana-Maria Popa explores the direction and significance of the influence of social factors on the economic growth of the EU countries in the period 2005–2009 [Popa 2012]. The author uses the real GDP per capita as the dependent variable, and the independent variables are: population at risk of poverty, unemployment rate, life expectancy and expected years of schooling. The result of the study was the confirmation of the hypothesis of the existence of a strong connection between the human

and economic development of the country. In the author's opinion, for a more complete analysis, in addition to the proposed parameters, it is necessary to consider the financial, political and legislative factors within each of the countries studied.

## AIM AND METHOD

The aim of the article is to study the impact of social progress on macroeconomic stability for the EU member states and Ukraine. To consider many aspects of social progress, we propose to calculate it as an integral human asset index (5) considering the influence of many factors in three separate spheres, which are presented in Table 1.

TABLE 1. Selected statistical indicators for assessing social progress

| Number and symbol of the indicator | Variable |
|---|---|
| Life. Health. Welfare | |
| $k_1$ | Human development index [HDR 2016] |
| $k_2$ | Global hunger index [GHI 2017] |
| $k_3$ | Prosperity index [LPI 2017] |
| $k_4$ | Health expenditure, total [% of GDP] [World Bank 2017] |
| $k_5$ | Population ages 15–64 [% of total] [World Bank 2017] |
| $k_6$ | Population ages 0–14 [% of total] [World Bank 2017] |
| $k_7$ | GNI per capita [current US$] [World Bank 2017] |
| $k_8$ | Poverty headcount ratio at national poverty lines [% of population] [World Bank, 2017] |
| $k_9$ | Life expectancy at birth, total [years] [World Bank 2017] |
| Science. Education. Culture | |
| $k_{10}$ | Patent applications, residents [World Bank 2017] |
| $k_{11}$ | Global innovation index [GII 2017]. |
| $k_{12}$ | Government expenditure on education, total [% of GDP] [World Bank 2017] |
| $k_{13}$ | Gross enrolment ratio, tertiary, both sexes [%] [World Bank 2017] |
| $k_{14}$ | Research and development expenditure [% of GDP] [World Bank 2017] |
| Freedom. Equality. Security | |
| $k_{15}$ | Index of economic freedom [EF 2018] |
| $k_{16}$ | Press Freedom Index [PFI 2017] |
| $k_{17}$ | Civil liberties index [CLI 2018] |
| $k_{18}$ | International property rights index [IPRI 2017] |
| $k_{19}$ | Networked readiness index [NRI 2017] |

Source: the author's research.

$$HAS = \sqrt[3]{I_{LHW} \cdot I_{SEC} \cdot I_{FES}}$$                                                               (5)

where:  $I_{LHW}$  – subindex "Life. Health. Welfare",
        $I_{SEC}$  – subindex "Science. Education. Culture",
        $I_{FEC}$  – subindex "Freedom. Equality. Security".

This approach will allow comparative analysis of different countries, to identify fluc-tuations in their development, and, along with other factors, to carry out an assessment of the impact on the macroeconomic stability of the country. In addition, each component of the integral index (5) can be used separately to characterize various aspects of social progress and assess the nature of the impact on the dynamics of its changes by certain complex factors.

In order to eliminate the multicollinearity of the indicators (Table 1), which show similar trends in time, have the same direction of impact on the integral assessment and can lead to complications in calculations without increasing the adequacy of the method-ology, it is necessary to conduct a procedure for filtering indicators on the basis of cor-relation analysis. In the case of detecting the relationship between the indicators not less than 0.7 of fraction of unit in absolute value, it is necessary to choose one more influential on the investigated indicator, while the other one should be removed from the subsequent calculations.

After carrying out the procedure of filtration of the indicators, the calculation of subindices of the integral index by the formula (6) is carried out preliminarily following the procedure of normalization of indicators (Table 1), which have a different direction of influence:

$$I_i = \sqrt[n]{\prod_{j=1}^{n} X_{jt}}$$                                                                              (6)

where:   $I_j$ – *i*-th subindex,
        $X_{jt}$ – corresponding normalized indicator of the *j*-th index for the *t*-th period of
           the time of the *i*-th subindex.

Actuality of the procedure for normalization of indicators (Table 1) is due to the pres-ence within the limits of the input information base of both indicators-stimulators and destimulators. Accordingly, the normalization of the indicators is carried out using the following formulas:
–   for indicators-stimulators, the increase of which is accompanied by an increase in the integral Human Asset Index:

$$X_{jt} = \frac{k_{jt}}{\max_t \{k_{jt}\}}$$                                                                         (7)

where:   $k_{jt}$ – actual value of the *j*-th indicator for the *t*-th period of time;
        $X_{jt}$ – normalized *j*-th indicator for the *t*-th period of time.

–   for indicators-destimulators, the increase of which is accompanied by a decrease in the integral Human Asset Index:

$$X_{jt} = \frac{\max_t \{k_{jt}\} - k_{jt}}{\max_t \{k_{jt}\} - \min_t \{k_{jt}\}} \tag{8}$$

The main target of changes in the integral indicator of human capital should be considered its approximation to one. Therefore, the classification of countries based on the integral Human Asset Index is proposed to be carried out according to a scale:

*HAS*є [0; 0,25) – critical level;
*HAS*є [0,25;0,50) – insignificant level;
*HAS*є [0,50; 0,75) – moderate level;
*HAS*є [0,75; 1) – high level.

The study of the influence and statistical significance of changes in social progress on macroeconomic stability, we propose to do with the model previously proposed in the work [Melnyk et al. 2018]:

$$MI = \alpha + \beta(HAS) + \delta(Z) + \varepsilon \tag{9}$$

where:  MI  – integral indicator of macroeconomic stability;
            Z  – vector of variables that explain the behavior of macroeconomic stability in time (openness of the economy measured as the percentage of total trade to GDP (Openness), foreign direct investments (FDI);
  α, β and δ  – constants of the equation;
            ε  – the error associated with the approximation of the model and the stochasticity of its factors.

As a measure of macroeconomic stability, we will use the following variables:
– the inflation rate. We use the annual change in the Consumer Price Index (CPI) as a given indicator [Martinez-Vazquez and Macnab 2006];
– Misery Index, which is the sum of unemployment rate and inflation rate [Iqbal and Nawaz 2010]:

$$MI = UR + INF \tag{10}$$

where:  MI  – Misery Index,
        UR  – unemployment rate;
        INF – inflation rate of the economy.
– synthetic indicator MSP, based on the concept of the pentagon of macroeconomic stability, which was proposed by the director of the Institute of Finance in Warsaw, professor of Economics Grzegorz W. Kolodko [Żuchowska 2013, Hurduzeu and Lazar 2015, Ionita 2015, Lyulyov and Shvindina 2017].

## RESEARCH RESULTS

For the purpose of approbation of the proposed methodology for evaluating social progress on macroeconomic stability, we have calculated the integral Human Asset Index on the basis of the collected and processed statistical data, for the part of the EU countries

(Latvia, Lithuania, Poland, Croatia, Romania) and Ukraine, covering the period from 2000 to 2015 (Tab. 2).

TABLE 2. Calculation of the integral Human Asset Index for the part of the EU countries and Ukraine in the period 2000–2015

| Year | Latvia | Lithuania | Poland | Croatia | Romania | Ukraine |
|---|---|---|---|---|---|---|
| 2000 | 0.472625 | 0.440838 | 0.509688 | 0.474581 | 0.299257 | 0.403911 |
| 2001 | 0.466392 | 0.506713 | 0.504098 | 0.44568 | 0.346526 | 0.419362 |
| 2002 | 0.494464 | 0.53406 | 0.520724 | 0.497064 | 0.371321 | 0.373284 |
| 2003 | 0.473491 | 0.528093 | 0.508682 | 0.49833 | 0.378692 | 0.403004 |
| 2004 | 0.482424 | 0.559209 | 0.523779 | 0.521673 | 0.398735 | 0.421055 |
| 2005 | 0.458974 | 0.533725 | 0.528677 | 0.48787 | 0.377312 | 0.457829 |
| 2006 | 0.620411 | 0.660946 | 0.585184 | 0.544836 | 0.493224 | 0.466312 |
| 2007 | 0.572403 | 0.626801 | 0.576961 | 0.557847 | 0.538957 | 0.48381 |
| 2008 | 0.564025 | 0.61679 | 0.581221 | 0.561141 | 0.513517 | 0.484217 |
| 2009 | 0.55122 | 0.627171 | 0.588015 | 0.555485 | 0.535377 | 0.482789 |
| 2010 | 0.549822 | 0.611005 | 0.590742 | 0.551684 | 0.526842 | 0.416824 |
| 2011 | 0.537617 | 0.603864 | 0.586228 | 0.545427 | 0.511958 | 0.43928 |
| 2012 | 0.565488 | 0.59369 | 0.602505 | 0.539281 | 0.508311 | 0.443934 |
| 2013 | 0.548991 | 0.584306 | 0.575183 | 0.563395 | 0.486565 | 0.458466 |
| 2014 | 0.5404 | 0.57529 | 0.601398 | 0.5549 | 0.489163 | 0.455948 |
| 2015 | 0.481404 | 0.533207 | 0.540267 | 0.552531 | 0.415555 | 0.35529 |
| *Mean* | 0.523759 | 0.570982 | 0.55771 | 0.528233 | 0.449457 | 0.435332 |
| *Std. Dev.* | 0.048028 | 0.056026 | 0.036489 | 0.036254 | 0.077854 | 0.038814 |
| *CV* | 0.091698 | 0.098123 | 0.065427 | 0.068633 | 0.173218 | 0.08916 |

Source: the author's calculations based on [HDR 2016, GHI 2017, GII 2017, IPRI 2017, LPI 2017, PFI 2017, World Bank 2017, CLI 2018 EF 2018, ].

The average level of social progress in the period 2000–2015 was insignificant for Romania (0.449457) and Ukraine (0.435332), according to Table 2. However, the coefficient of variation of the indicator for Romania was 17%, indicating the fluctuation in the dynamics of the time series, since the moment of accession to the EU, the integral Human Asset Index decreased by 6% in 2015 and increased by 4% in 2014. Latvia, Lithuania, Poland and Croatia are in the range of moderate levels by the average value of the integral Human Asset Index.

Table 3 presents results of using the OLS method (the least squares) for constructing a regression equation (10).

If the indicator of macroeconomic stability of the country is used as an integral indicator that characterizes the main objectives of the macroeconomic policy of the state: high rates of development of production, full employment, slowing down of inflation, balance of external payments, support of a stable exchange rate of the national currency, increases the accuracy of the estimation of the dependent variable , which is explained by the dependency model considered. In particular, the value of *R*-squared varies from

TABLE 3. Results of the assessment of the impact of social progress on macroeconomic stability for the part of the EU countries and Ukraine in the period 2000–2015 (based on our own calculations)

| Specification | CPI | Misery Index | MSP |
|---|---|---|---|
| for the part of the EU countries | | | |
| Opennes | 0.1134666 | 0.5408216 | 0.340598 |
| FDI | 0.0029677 | 0.0560233 | 0.0084758 |
| *HAS* | 0.1695302 | 0.094949 | 0.9678703 |
| Const | 0.0078111 | 0.0410598 | 0.0042102 |
| *R*-squared | 0.4495 | 0.4149 | 0.9354 |
| Ukraine | | | |
| Opennes | 2.191027 | 3.743012 | 2.26548 |
| FDI | 0.0423862 | 0.1896754 | 0.1423544 |
| *HAS* | 0.5419695 | 0.1666731 | 1.090892 |
| Const | −10.1752 | −14.50906 | −11.93013 |
| R-squared | 0.3464 | 0.2386 | 0.7668 |

Source: the Authors' calculations based on [HDR 2016, GHI 2017, GII 2017, IPRI 2017, LPI 2017, PFI 2017, World Bank 2017, CLI 2018, EF 2018].

0.3464 to 0.9354 when using CPI, Misery Index and MSP as an integral indicator of macroeconomic stability.

With some major results, the empirical findings of the study indicate a positive and statistically significant impact of social progress on macroeconomic stability. Signs for all variables are positive. However, the integral index of human capital is a statistically significant factor in explaining differences in the macroeconomic stability of Ukraine, the small size of the constant of equation (9) $\beta$ shows that it is economically insignificant compared to other included changes. For some EU countries, the value of this constant is in the range from 0.094949 to 0.9678703, which also does not give grounds to assert the significant impact of social progress on macroeconomic stability. Accordingly, the value of the integral index of human capital should increase sharply to cause a noticeable change in macroeconomic stability.

## CONCLUSIONS

Macroeconomic stability is a key element of the EU's social and economic policy, which must ensure sustainable economic growth and job creation. The calculations for 2000–2016 for the EU as a whole and Ukraine show a statistically significant correlation between GDP per capita fluctuations and unemployment. The main source of fluctuation was the accumulated macroeconomic instability in the countries, which more and more manifested itself during the last world financial and economic crisis.

Consequently, in the context of identifying factors for increasing macroeconomic stability, social factors are becoming increasingly important. In order to monitor the social progress, the author proposes using an integral index of human capital that takes into account the influence of many factors in three separate areas: Life, Health, Drbrobut; Science, Education, Culture; Freedom, Equality, Safety. This approach will allow comparative analysis of different countries, to identify fluctuations in their development, and, along with other factors, carry out an assessment of the impact on the macroeconomic stability of the country. In addition, each component of the integral index can be used separately to characterize various aspects of social progress and assess the impact of the impact on the dynamics of its changes by certain complex factors. The calculations of the integrated capital human capital index for some of the EU countries (Latvia, Lithuania, Poland, Croatia, Romania) and Ukraine for the period 2000–2015 allowed us to conclude that Romania and Ukraine were on a marginal level of social progress, while Lithuania, Poland and Croatia in the range of moderate level. The use of the OLS (the least squares) method to determine the significance of changes in social progress to macroeconomic stability has revealed a positive and statistically significant impact of social progress on macroeconomic stability.

## REFERENCES

BUTI M., 2011. Balancing Imbalances: Improving Economic Governance in the EU after the Crisis, CESifo Forum, ISSN 2190-717X, 12(2, 3–11).

CÁRDENAS M., URRUTIA M., 1995. Macroeconomic Instability and Social Progress. In Reform, Recovery, and Growth: Latin America and the Middle East, University of Chicago Press, 79–114.

CLI, 2018. Civil liberties index. The Freedom House, retrieved from https://freedomhouse.org/report-types/freedom-world [accessed: 31.03.2018].

EF, 2018. Index of economic freedom. The Heritage Foundation, retrieved from https://www.heritage.org/index/ [accessed: 31.03.2018].

GHI, 2017. Global Hunger Index. The International Food Policy Research Institute (IFPRI), retrieved from http://www.ifpri.org/publication/concept-global-hunger-index-1 [accessed: 31.03.2018].

GII, 2017. Global innovation index. Cornell University, INSEAD, and the World Intellectual Property Organization, retrieved from https://www.globalinnovationindex.org/analysis-indicator [accessed: 31.03.2018].

HDR, 2016. Human Development Report. United Nations Development Program retrieved from: http://hdr.undp.org/en/content/human-development-index-hdi [accessed: 31.03.2018].

HURDUZEU G., LAZAR M.I., 2015. An assessment of economic stability under the new European economic governance. Management Dynamics in the Knowledge Economy, 3(2), 301.

IONITA R.O., 2015. The Evolution Of The Macroeconomic Stabilisation Pentagon In Romania, Czech Republic And Hungary. The Annals of the University of Oradea, 25(1), 733–741.

IPRI, 2017. The International Property Rights Index. DC-based Property Rights Alliance (PRA), retrieved from https://www.internationalpropertyrightsindex.org/full-report [accessed: 31.03.2018].

IQBAL N., NAWAZ S., 2010. Fiscal Decentralization and Macroeconomic Stability Theory and Evidence from Pakistan, Paper present at 26th AGM and Conference, Islamabad, Pakistan, Pakistan Institute of Development Economics.

KUC M., 2015. The use of Markov chains in the social convergence analysis. The 9th Professor Aleksander Zelias International Conference on Modelling and Forecasting of Socio-Economic Phenomena, Foundation of the Cracow University of Economics, 118–126.

MARTINEZ-VAZQUEZ J., MCNAB R., 2006. Fiscal Decentralization, Macrostability, and Growth, Economics Faculty Publications 179 (4, 2006), 25–49.

MELNYK L., SINEVICIENE L., LYULYOV O., PIMONENKO T., DEHTYAROVA I., 2018. Fiscal decentralization and macroeconomic stability: the experience of Ukraine's economy. Problems and Perspectives in Management, 16(1), 105–114.

LPI, 2017. The Legatum Prosperity Index. Legatum institute, retrieved from http://www.prosperity.com/rankings [accessed: 31.03.2018].

LYULYOV O., SHVINDINA H., 2017. Stabilization pentagon model: application in the management at macro- and micro-levels. Problems and Perspectives in Management, 15(3), 42–52.

PFI, 2017. Press Freedom Index. Reporters Without Borders (RSF), retrieved from https://rsf.org/en/detailed-methodology [accessed: 31.03.2018].

POPA A.M., 2012. The impact of social factors on economic growth: Empirical evidence for Romania and European Union Countries, Romanian Journal of Fiscal Policy 3, 2, 1–16.

RAVN M.O., UHLIG H., 2002. On adjusting the Hodrick-Prescott filter for the frequency of observations. Review of economics and statistics 84(2), 371–376.

SANTOS A.D., RIBEIRO S., CASTELA G., da SILVA N.T., 2017. The Dynamics between Economic Growth and Living Standards in EU Countries: A STATICO Approach for the Period 2006–2014. Estudios de economía aplicada 35(3), 629–652.

SOLANS E.D., 2002. Macroeconomic stability and growth in the European Monetary Union. Speech delivered at The Economist Conference: Portugal and the European Union, Lisbon, 16 December 2002, retrieved from https://www.ecb.europa.eu/press/key/date/2002/html/sp021216.en.html [accessed: 31.03.2018].

SOUKIAZIS E., 2000. Are living standards converging in the EU? Empirical evidence from time series analysis. CEUNEUROP Working Papers, Discussion Paper Nº3, March, retrieved from http://www4.fe.uc. pt/ceue/working_papers/iliving.pdf [accessed: 31.03.2018].

ZHYLINS'KA O., 2017: Ukrayina 2030: Doktryna zbalansovanoho rozvytku (Ukraine 2030: Doctrine of the balanced development) [in Ukrainian], Kalvariya, Lviv.

World Bank, 2017. World Development Indicators, World Bank, retrieved from https://data.worldbank.org/indicator [accessed: 31.03.2018].

ŻUCHOWSKA D., 2013. Assessment of the Central and Eastern Europe Economies in the Years 2007–2010 Based on the Model of the Macroeconomic Stabilization Pentagon. Equilibrium. Quarterly Journal of Economics and Economic Policy 8(4), 49–64.

**Summary.** The main purpose of the study is the role and influence of social factors on macroeconomic stability. The research is based on the hypothesis that countries with greater macroeconomic stability achieve greater social progress. The integrated index of human capital is proposed as a target for the construction of an appropriate system for monitoring social progress, and in the future – identifying the impact on macroeconomic stability. The main stages of estimating the integral index of human capital are: identification of relevant indicators that will form each of the sub-indices; filtering the selected indicators in the previous stage based on the analysis of the correlation matrix of each of the subindices;

normalization of indicators in each of the subindices, calculation of the integral index for each of the subindices, calculation of the final integral index of human capital. The calculations of the integrated capital human capital index for some of the EU countries (Latvia, Lithuania, Poland, Croatia, Romania) and Ukraine for the period 2000–2015 allowed us to conclude that Romania and Ukraine were on a marginal level of social progress, while Lithuania, Poland and Croatia in the range of moderate level. The use of the OLS (the least squares) method to determine the significance of changes in social progress to macroeconomic stability has revealed a positive and statistically significant impact of social progress on macroeconomic stability.

**Corresponding author:** Lyulyov Oleksii, Sumy State University, Department of Economics and Business Administration, Ukraine, e-mail: alex_lyulev@econ.sumdu.edu.ua