Fiscal Decentralisation as a Factor of Macroeconomic Stability of the Country

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Abstract
The main purpose of the study is the role and effect of fiscal decentralization on macroeconomic stability on key measures that represent different and independent indicators of the degree of fiscal decentralization. It is proposed to use the fiscal decentralization as an indicator of expenditure decentralization, which is calculated as the ratio of subnational to total government expenditure, income decentralization as the ratio of subnational own source revenue to total government revenue. Along with the indicators of fiscal decentralization, it is proposed to take into account the potential economic, political and institutional determinants of macroeconomic stability that can be classified into the following groups: growth and development; indicators of the labor market; openness of the economy; monetary indicators; independence of the central bank; political system; corruption. The application of the proposed determinants has shown a non-linear relationship between fiscal decentralization and macroeconomic stability.
Key words: fiscal decentralisation, macroeconomic stability.
JEL Classification: E62, C33, O20, O40.

Introduction

Since the beginning of the 1990s, Ukraine has gradual stages of the policy of financial decentralization. In retrospect, decentralization policies were largely due to the emergence of the post-Soviet economic system and the transition from a centralized, planned economy to a market economy, but the nature and pace of reforms during the 1991-2017 biennium was uneven. Thus, the period 1991-2001 was characterized by the emergence of financial decentralization, during this period the national currency of the hryvnia was introduced, in February 1994 the Law of Ukraine "On the formation of local authorities and self-government", as well as in accordance with the Constitution of Ukraine adopted in 1996 decentralization as one of the principles of the exercise of state power (Boryslavska et al. 2012; Ostapchuk, 2017). The financial condition of the economy in the period was different from the deficit of 6.2 billion UAH in 1997 to the surplus of 1 billion USD in 2000 (Fig. 1) (Ministry of Finance of Ukraine, 2017).

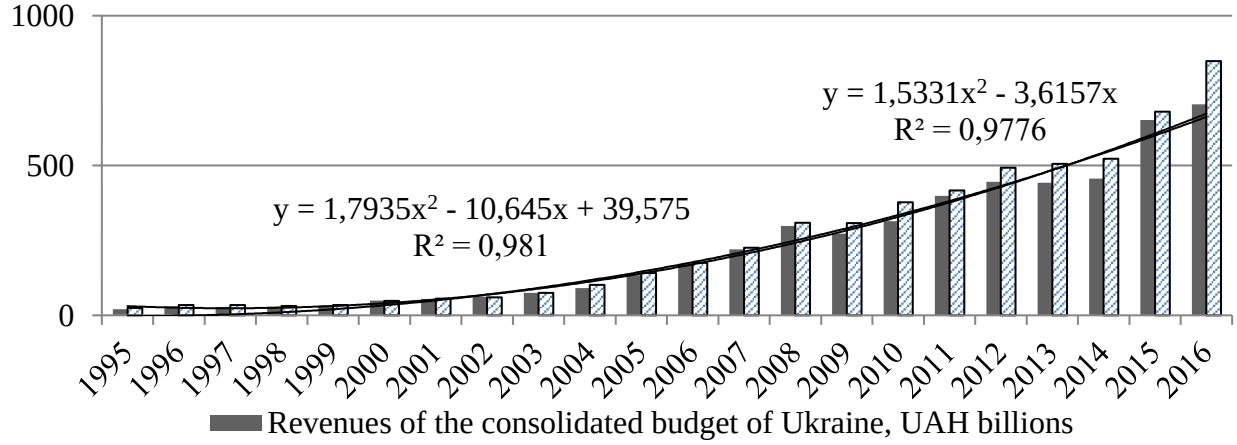

Fig. 1. Dynamics of revenues and expenditures of the consolidated budget of Ukraine in the period 1995-2016

Fig. 1 shows that in the period from 2001 to 2008, the total revenues of the consolidated budget of Ukraine has a growing dynamics (from 54.9 billion UAH in 2001 to 297.8 billion UAH in 2008) (State Statistics Service, 2017). This was due to the improvement of the dynamics of macroeconomic indicators, improvement of budgeting and adoption of appropriate reforms (in 2001, the Budget Code of Ukraine, the Concept of the Reform of Local Budgets in 2007, 2004 - the Law of Ukraine "On Intergovernmental Relations between the District Budget and the Budgets of the Territorial Communities of Villages, settlements, cities and their associations" (Shevchenko, 2008; Ostapchuk, 2017.) The level of growth in absolute terms of GDP during the specified period amounted to 779.6 billion UAH (from 211.1 billion UAH in 2001 to 990, 8 billion UAH in 2008), in relative terms grew This indicator was high (approximately 10% per year) in 2001 (9.2%), 2003 (9.4%), 2004 (12.1%) and 2007 (7.9%) (World Bank, 2017), the ratio of the state budget deficit to GDP fell to 0.89%, but did not exceed the regulatory threshold of 3%, according to the Copenhagen criteria of the European Union (Copenhagen criteria, 2017) Due to the government's anti-inflation policy in Ukraine, in 2002, deflation was recorded at 0.6%, while the current-account balance for the analyzed time interval was also fixed at record ysokomu equal to 10.3% of GDP in 2004 (World Bank, 2017). These trends have also been reflected in Ukraine's world rankings, in particular in the results of the annual Global Competitiveness Report by the World Economic Forum (WEF). Ukraine, in comparison with 2000-2001, has improved its position in the global competitiveness score by the indicator of macroeconomic stability by 1.72 points in 2007 -2008 (4.67) (WEF, 2017).

The period of significant decline in GDP dynamics of the country was in 2009 and 2010, respectively, by 14.33% and 3.78%, which was due to the effects of the global financial and economic crisis. At the same time, in 2009, the fall in the state budget revenue was 9.5% compared to 2008, local budgets by 2.1%, budget expenditures declined by 1.9% only at the local level, and an increase was observed at the state level Expenditures in absolute terms by UAH 0.94 billion. or by 0.3%. (Ministry of Finance of Ukraine, 2017). According to the Global Competitiveness Index 2010-2011, Ukraine ranked 89th among 139 countries in the world with a score of 3.9 on a seven-point scale, demonstrating in fact the newest methodology adopted since 2006, the worst result for the entire computing time (2006-2016) (Fig. 2). At the same time, the sub-index of macroeconomic stability decreased by 1.47, 1.42 and 0.76 points, as compared to 2006, 2007 and 2008, respectively.

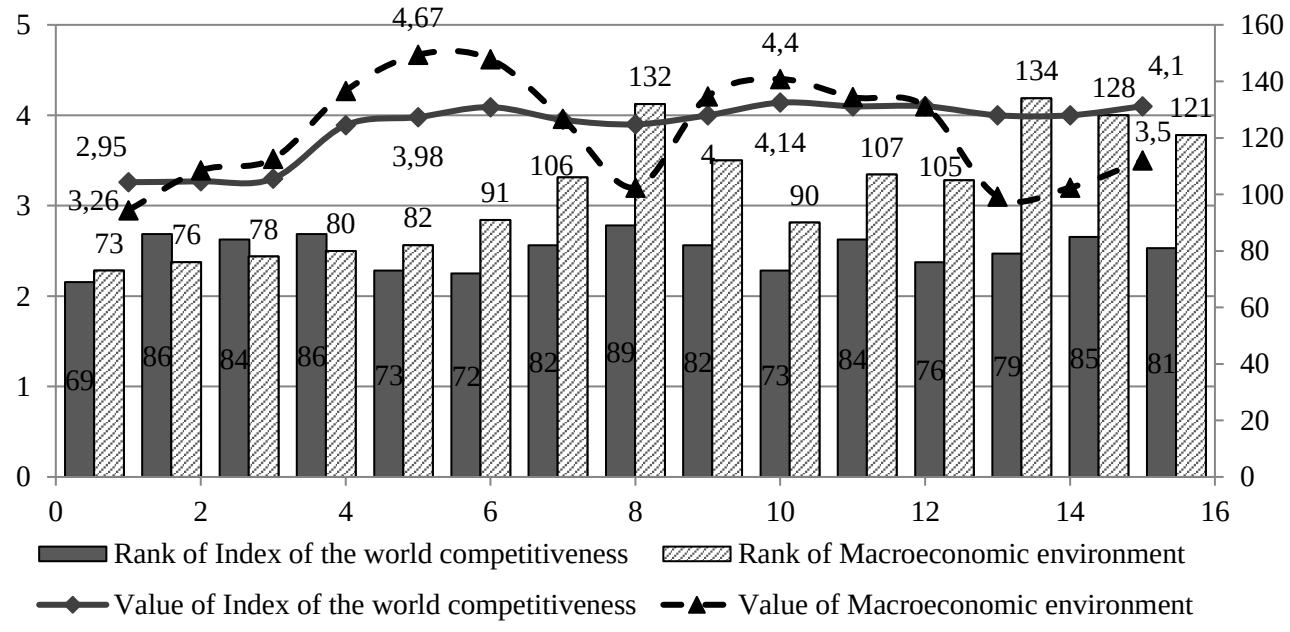

Fig.2. Dynamics of the Global Competitiveness Index and Sub-Indicator of Ukraine's macroeconomic environment

During 2011-2013, in accordance with the above criteria for assessing the level of decentralization by a member of the financial security department of the National Institute for Strategic Studies, Lohar L.P. in the work (Londar, 2017), the financial position of Ukraine is characterized by high budgetary centralization (the share of local expenditures is more than 45% of national expenditures - a high level of decentralization, 30-45% is the average level, less than 30% is low). Thus, despite the growth in 2013 in parts of local budgets in

the consolidated budget of Ukraine by 2.1% compared to 2011 (21.7%), the share of the state budget remains at a high level of 76-78% (78.3% in 2011 and 76.2% in 2013) (Ministry of Finance of Ukraine, 2017).

In the post-crisis period of 2014-2017, Ukraine introduced a number of important reforms on the path towards decentralization contained in key policy documents of the President, Government and Parliament: Ukraine-2020 Sustainable Development Strategy, Ukraine's Action Plan "Restoration of Ukraine" dated September 3, 2014, Coalition agreements, Program of activities of the Cabinet of Ministers of Ukraine (Yermolayev et al, 2015). It should be noted that according to the Ukraine-2020 Sustainable Development Strategy, decentralization reform serves as one of the key instruments for ensuring national macroeconomic stability. At the same time, the goal of decentralization policy is to move away from the centralized model of governance in the state, to ensure the capacity of local self-government and to build an effective system of territorial organization of power in Ukraine, fully implement the provisions of the European Charter of Local Self-Government, the principles of subsidiarity, universality and financial self-sufficiency of local self-government (Strategy 2015).

According to the results of 2016 among 138 countries of the world Ukraine ranked 81st in the Global Competitiveness Index rankings improved its positions by 4 places in comparison with the previous period. Partial stabilization of the macro environment by 7 positions (128th place in 2015, 121 position in 2016) was due to: improvement of the country's credit rating Country credit rating;

– Achievement of the goals of the National Bank of Ukraine defined by the "Monetary Policy Strategy for 2016-2020" (Monetary Policy, 2015), to reduce the rate of inflation from 48.7% in 2015 to 12.4% in 2016 due to well-balanced and planned monetary policy;

– Encrase Gross national savings to GDP on 2,9 % (17,9 % in 2016).

However, by the end of 2016, the ratio of Ukraine's public debt to GDP grew to 81.2%, and according to IMF forecasts by the end of 2020, the level of this indicator will be 71.0%, which also does not correspond to the maximum permissible ratios and will mean a gradual loss the solvency of the Ukrainian financial system (Request, 2015). By the indicator of the Government budget balance Ukraine fell to 28 positions and ranked 53rd in the world (-2.2% of GDP in 2016).

Formulation of the problem. In 1999 the World Bank (1999) had estimated that: "Some 95 percent of democracies now have elected subnational governments, and countries everywhere – large and small, rich and poor – are devolving political, fiscal, and administrative powers to subnational tiers of government".

Relevance of the implementation of decentralization reforms is explained, first of all, by the desire of the countries to improve the efficiency of the public sector and promote the socio-economic development of the regions. Wallace E. Oates in his "Toward A Second Generation Theory of Fiscal Federalism" (Oates, 2005) notes that the introduction of fiscal decentralization was firstly caused by the reaction of countries to the failure to achieve sustainable economic growth through central planning, and a second understanding of the importance decentralization programs aimed at changing the decision making process from the center to the provincial and local governments, since the latter have a better knowledge of local conditions and preferences in the provision of public goods. The effectiveness of the implementation of decentralization functions by local governments depends on the level of revenue revenues and cost decision-making powers, therefore, the financial responsibility of the World Bank (2001) is determined by the main component that reveals the essence of decentralization.

Empirical studies of the impact of decentralization on economic growth and macroeconomic stability have been reflected in the writings of economists (King & Ma, 2001; Neyapti, 2004; Feltenstein & Iwata, 2005; Martinez-Vazquez & Macnab 2006; Shah 2006; Bodman et al., 2009; Iqbal & Nawaz, 2010; Jalil et al., 2012; Makreshanska & Petrevski, 2015). However, despite a large number of studies, empirical data on the relationship between financial decentralization and macroeconomic stability do not give a definitive conclusion on the direction or value of the impact of relations. Some of them found that the introduction of financial decentralization contributed to economic growth and macroeconomic stability of the country both directly and / or indirectly, while others came to the conclusion that the relationship between macroeconomic stability, economic growth and decentralization had a negative link or fixed a lack of causative relationships between the respective variables.

In particular, the authors (Kmezic et al., 2016) studying the processes of fiscal decentralization and financing of local budgets in Montenegro from 2002 to 2015 come to the conclusion that the policy of the Montenegro Government in the period 2008-2015 has become the nature of financial centralization and, together with the effects of the economic crisis worsened macroeconomic stability of the country and hampered local economic development.

Yan Zhang and Liutang Gong (Zhang & Gong, 2005) studying the implications of fiscal decentralization for provincial economic growth in China, using the panel data set from 1994 to 2002, indicate a positive link between fiscal decentralization and economic growth in populated areas with higher per capita GDP. Zhou Ye'an and Zhang Qua (Ye'an & Quan, 2008) also point to the different direction of the impact of fiscal decentralization on the economic development of the provinces of China in the period from 1986 to 2004. However, the authors also note that, despite the different direction of the impact of such decentralization on the regions, in the long run, financial decentralization has in fact led to China's economic growth.

Norman Gemmell, Richard Kneller and Ismael Sanz (Gemmell & Kneller & Sanz, 2013), investigating the effectiveness of implementing fiscal decentralization on the basis of the 23 Organization for Economic Co-operation and Development (OECD) countries in the period 1972-2005, confirm the hypothesis Oates hypothesis that the maximum efficiency of economic growth gains require a close match between spending and revenue decentralization.

Contrary to their research, researchers (Neyapti, 2004; Feltenstein & Iwata, 2005) note the existence of a negative relationship between fiscal decentralization and macroeconomic stability and economic growth. Empirical results of Shahid Adil and Mumtaz Anwar (Adil & Anwar 2015) show that, despite the decentralization reforms undertaken by the Government of Pakistan, the impact of fiscal decentralization on economic growth is statistically insignificant for short run.

The purpose of the article is to determine the system of components of monitoring and analysis of the impact of financial decentralization on Ukraine's macroeconomic stability on the basis of an econometric model based on two measures that represent different and independent indicators of degree of fiscal decentralization.

Research results. In today's world practice, the most common model for describing the relationship between financial decentralization and macroeconomic stability is dependence (Bodman et al., 2009; Iqbal & Nawaz, 2010; Makreshanska & Petrevski, 2015):

$$MI = \text{f(FD)} \quad (1)$$

where MI – a dependent variable that assesses the level of macroeconomic stability in the country; f(FD) – the function of the dependence of macroeconomic stability on the level of financial decentralization.

Model (2) can be written in the form of a regression equation: $\text{MI} = \alpha + \beta(\text{FD}) + \delta(\text{Z}) + \varepsilon, \quad (2)$

Where FD represents different alternative directions of fiscal decentralization assessment; Z - vector of variables that explain the behavior of macroeconomic stability over time; α, β and δ – constants of the equation; ε – the error associated with the approximation of the model and the stochasticity of its factors.

The authors of the paper (Boryslavska et al., 2012) analyzing the experience of the establishment of decentralization processes in the European countries and member states of the Organization for Economic Co-operation and Development (OECD) indicate that there are two main areas of financial decentralization: by decentralizing incomes (consolidation of the right to some revenues or an increase in the share of certain revenues from the territorial communities) and expenditures (transfer of resources to perform tasks and functions). By distinguishing four types of fiscal decentralization: income decentralization, cost decentralization, fragmentation, and federalism, Yeung Ryan explores the effects of decentralization on the size and scope of government (Yeung, 2009). At the same time, the scientist concludes that it is better to use revenue and / or expenditure decentralization in the empirical study of the unit of analysis and degree of decentralization, since federalism applies only to cross-country analyzes in the form of a dummy variable that characterizes structural changes in the economy and takes values of 1 for federalism and 0 for unitary countries, while fragmentation is more suitable for analysis at the local level (Yeung, 2009).

By conducting a study on the relationship between fiscal decentralization and aggregate government size in the example of 32 industrial and developing countries from 1980 to 1994, Jing Jin and Heng-fu Zou (Jin & Zou, 2002) use fiscal decentralization as indicators of expenditure decentralization, which is calculated as the

ratio of subnational to total government expenditure, revenue decentralization as the subnational own source income to total government revenue), and vertically disbalanse as sub-nationally funded expenditure by central transfers, and the econometric model is taken as the basis of the study:

$$\text{GovtSize}_{i,t} = \alpha_i + \alpha_1 \text{FD}_{i,t} + \alpha_2 \text{Political}_{i,t} + \alpha_3 \text{Control}_{i,t} + \varepsilon_{i,t} \quad (3)$$

where $\text{GovtSize}_{i,t}$ represents the three different measures of government size (aggregate government size, or national government size, or subnational government size); α_i is the country fixed effects; $\text{FD}_{i,t}$ represents the fiscal decentralization; Political measure the influence of political/institutional factors on government size; Control – indicators of the macroeconomic environment.

Using a data set of 66 countries Daniel Treisman (Treisman, 2006) also uses fiscal decentralization as a measure of cost decentralization and revenue decentralization, which is based on a similar methodology (Jin & Zou, 2002).

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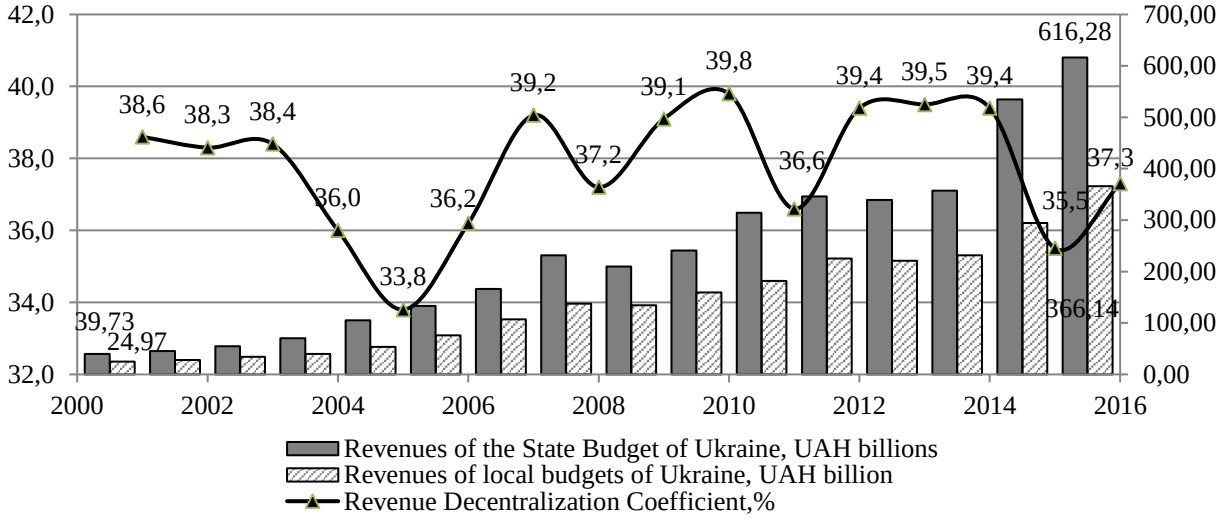

Fig. 3. Dynamics of changes in the indicator of income decentralization for Ukraine in the period 2001-2016

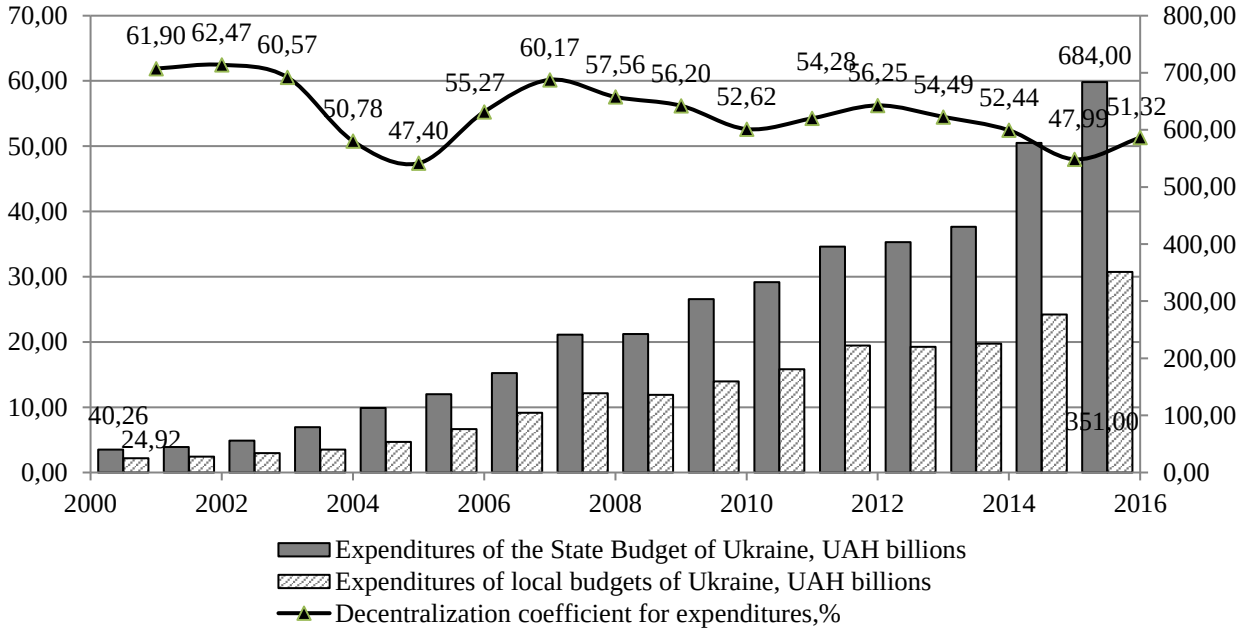

Fig. 4. Dynamics of changes in the indicator of expenditure decentralization for Ukraine in the period 2001-2016

On this basis, the study of the impact of the two main areas of financial decentralization on macroeconomic stability should be carried out using the equationsдля децентралізації доходів (FD_R):

$$MI = \alpha_1 + \alpha_2(FD_R) + \alpha_3(Z) + \varepsilon \quad (3)$$

where FD_R – the coefficient of decentralization of incomes (the share of revenues of local budgets in the revenues of the consolidated budget of Ukraine, %);

For decentralization of expenditures(FD_E):

$$MI = \alpha_1 + \alpha_2(FD_E) + \alpha_3(Z) + \varepsilon \quad (4)$$

where FD_E - coefficient of decentralization of expenditures (share of expenditures of local budgets in expenditures of the consolidated budget of Ukraine, %).

The variety of methods used to analyze macroeconomic stability, on the one hand, depends on the complexity of the problem with the definition of the essence and content of the concept of "macroeconomic stability", and on the other - on the deep analysis of all dependencies of indicators used as a result of this complexity.

From these positions in the economic literature, there are several approaches to the definition of the concept of macroeconomic stability: as the balance of the main macroeconomic indicators (Żuchowska, 2013; Hurduzeu & Lazar, 2015; Ionita, 2015); as a process of good macro-management of the country's economy through the introduction of an effective government policy (Kuroyanagi et al, 1996); as the stability of the financial and monetary system of the national economy (Guarata & Pagliacci, 2017); as a reduction in the amplitude of the fluctuation of key macroeconomic indicators (Ahangari et al., 2014; Montiel & Servén, 2006); as a basis for sustainable economic growth (Haghighi et al., 2012; Easterly & Kraay, 2000) and others. However, for the most part, the concept of macroeconomic stability includes price level stability as the key part.

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 & Macnab, 2006);

– Misery Index, which is the sum of unemployment rate and inflation rate (Iqbal & Nawaz, 2010; Okonkwo & Godslove, 2015):

$$MI = UR + INF \quad (5)$$

where MI is Misery Index, UR unemployment rate and INF is inflation rate of the economy.

The results of the correlation matrix (Table 1) show that the dependence of the consumer price index on the GDP growth rate is 41% (the determination coefficient is R2 = -0.41), and Misery Index from GDP growth - 38% (Determination coefficient is R2 = -0.38). This means that macroeconomic stability processes can only be described by 40% of the country's economic changes, measured by GDP growth, and 60% by the influence of other factors.

Table 1. Results of the correlation analysis of the dependence of the consumer price index, Misery Index on GDP growth

	CPI	MI	GDP growth
CPI	**1.00**	0.99	-0.41
MI	0.99	**1.00**	-0.38
GDP growth	-0.41	-0.38	**1.00**

Graphic interpretation of the dependence of the consumer price index, Misery Index on GDP growth on the example of Ukraine in the period from 2000-2015 is presented in Fig. 5.

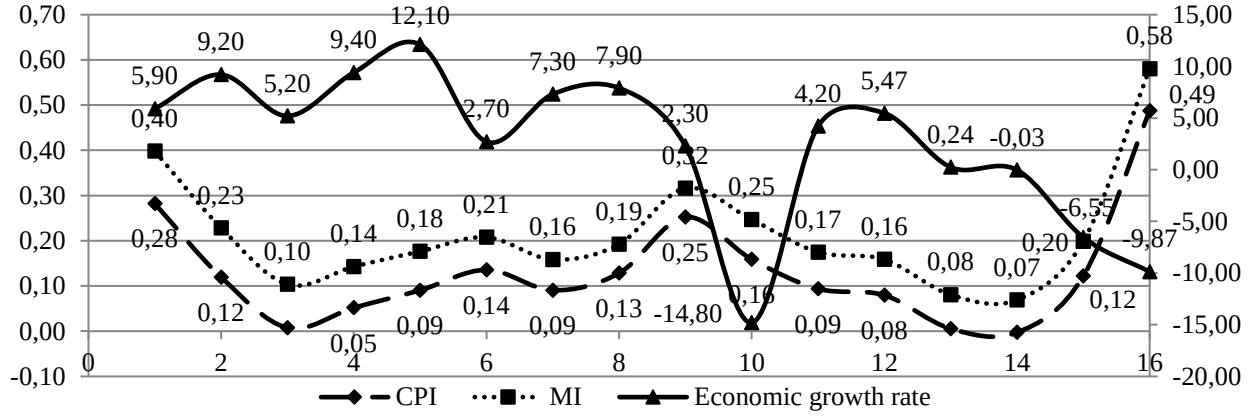

Fig. 5. Macroeconomic Instability Index and Economic Growth of Ukraine during 2000-2016

Since macroeconomic stability can not be directly estimated only through the indicator of economic growth, we must use the potential economic, political and institutional determinants of macroeconomic stability that can be classified into the following groups:growth and development (GDP).

– the growth of macroeconomic stability is not possible without strengthening the competitive advantages of the national economy on the world stage due to increased production of goods and the provision of more and more services, which is reflected in the increase of GDP. Therefore, the very achievement of stable economic growth, in line with (ILO & UNDESA, 2015), is the main goal of the macroeconomic stabilization policy. As an indicator of economic growth we use the GDP growth rate per capita in dollars of constant purchasing power;

– indicators of the labor market (Population). The macroeconomic stabilization policy along with the achievement of economic growth is also to ensure social welfare (ILO & UNDESA, 2015). As support for a high level of employment contributes not only to the growth of economic productivity of the country, but also allows the state to create sufficient fiscal space to address other critical social issues, such as access to medical services, sanitation, and others. In order to assess the level of the labor market we use the labor force participation rate, which reflects the proportion of economically active population aged 15 years and older (World Bank, 2017);

– openness of the economy (Openness). By studying the factors of macroeconomic instability in the system of models of economic development, scientists conclude that the main destabilizing effect on the state of the economy and its growth is exogenous factors, which is reflected in the indicator of openness of the economy measured by the percentage of total trade to GDP (Skrypnychenko et al., 2012);

– monetary indicators (M2). In the scientific national and foreign literature, the gold and exchange reserves of the states are considered as an insurance stock, which prevents the negative impact of exogenous shocks, therefore their assessment is carried out through correlation with other macroeconomic parameters: GDP, imports, external debt, money supply. Thus, in a study by J. Onno de Beaufort Wijnholds and Arend Kapteyn (Wijnholds & Kapteyn, 2001), the ratio of international reserves to the M2 money supply is considered to be optimal if the ROA covers 5-10% of the M2 money supply for floating exchange rate countries and 10-20% - for countries with a fixed currency regime;

– independence of the central bank (Financial Freedom). An open economy, dependent on international trade and foreign capital, requires an independent central bank. Viktor Koziuk (Koziuk, 2016) notes that one of the world's tendencies is the strengthening of an independent central bank, which is determined by one of the drivers of the formation of macroeconomic stability in the country. Independent central bank can help to avoid inflation, attract foreign capital and investments. As an assessment of the independence of the central bank, we used the Financial Freedom sub-index, which is used to calculate the Economic Freedom Index (2017), which is measured by the degree of the Central Bank's independence and ability of the government to restrict or impact the banking sector operations;

– political system (POLSTAB). To achieve the goals of macroeconomic stability, countries need a political space for the flexible use of macroeconomic instruments, including monetary policy aimed at boosting

economic growth and employment. Arvind Subramanian and Shanker Satyanath in their work (Subramanian & Satyanath, 2004) note that, along with the openness of the economy, democratic political institutions also have a strong and statistically significant causal impact on macroeconomic stability. The results of the empirical study measuring the impact of democracy on inflation by Mohamed Fenira (Fenira, 2014), conducted on the basis of 124 countries for the period 1996-2012, show that democracy is statistically significant in reducing inflation;

– corruption (corruption). According to the International Monetary Fund, the annual annual cost of bribery alone is estimated at around $ 1.5 to $ 2 trillion (roughly 2 percent of global GDP) (International Monetary Fund, 2016). The results of a study by American professor Daniel Treisman show the strong correlation between economic development and perceived corruption (Treisman, 2000). At the same time, in the democratic countries with free press, open economy, developed trade, a large proportion of women in the government observed a minimum level of corruption. To measure the impact of corruption on macroeconomic stability, we use the Corruption Perceptions Index (Corruption Perceptions Index), which is calculated annually by the Transparency International (Corruption Perceptions Index, 2017).

Taking into account the above, the regression equation (3) and (4) the impact assessment of the two main areas of financial decentralization on macroeconomic stability can be presented as:

for decentralization of incomes ($\mathrm{FD_R}$):

$$MI = \alpha_1 + \alpha_2(FD_R) + \alpha_3(\mathrm{GDP}) + \alpha_4(\mathrm{Population}) + \alpha_5(\mathrm{Openness}) + \alpha_6(\mathrm{M2}) + \alpha_7(\mathrm{Financial\ Freedom}) + \alpha_8(\mathrm{POLSTAB}) + \alpha_3(\mathrm{Corruption}) + \varepsilon \quad (5)$$

– for decentralization of expenditures (FD_E):

$$MI = \alpha_1 + \alpha_2(FD_E) + \alpha_3(\mathrm{GDP}) + \alpha_4(\mathrm{Population}) + \alpha_5(\mathrm{Openness}) + \alpha_6(\mathrm{M2}) + \alpha_7(\mathrm{Financial\ Freedom}) + \alpha_8(\mathrm{POLSTAB}) + \alpha_3(\mathrm{Corruption}) + \varepsilon. \quad (6)$$

The data properties of the main explanatory factors of the regression equation (5) - (6) and their descriptive statistical characteristics are given in Table 2.

Table 2. Descriptive statistics of the main dependent and explanatory variables of the regression equation (based on our own calculations)

Variable title	Average value	Standard deviation	Minimum value	Maximum value
CPI	0.1314192	0.1232604	-0.00276	0.487243
Misery Index	0.2146066	0.1279616	0.069238	0.580243
FD_R	0.3776875	0.0175184	0.338	0.398
FD_E	0.5510716	0.0463272	0.4739701	0.6247377
GDP	0.0348708	0.072331	-0.1442093	0.1295366
Population	0.5824781	0.0051313	0.57456	0.59071
Openness	1.032508	0.0817527	0.917877	1.198583
M2	0.35625	0.109476	0.09	0.51
Financial Freedom	2.4	0.3141125	1.5	2.8
POLSTAB	-.5469388	0.7373816	-2.020833	0.1731321
Corruption	0.38125	0.0981071	0.3	0.5

Considering different units of measurement, these data were normalized by the formula:

$$N_i = \frac{X_i - \bar{X}}{\delta} \quad (6)$$

Where Ni - normalized value of the indicator in the year;

Xi – unnormalized value of the indicator in the year;

$\bar{X}$ – the average of the indicator for the analyzed period;

δ – the standard deviation of the index over the analyzed period.

The need for a normalization procedure is also due to the existence of a close correlation between some factors, which confirms the hypothesis of their cohesiveness and the inability to use without appropriate correction (Table 3).

Table 3. Correlation matrix of estimation of the level of interconnection between factors of influence on macroeconomic stability of Ukraine in the period from 2000-2015

Variable title	CPI	MI	GDP	Pop.	Openness	M2	Financial Freedom	POLSTAB	Corruption	FD_R	FD_E
CPI	1.00										
MI	0.99	1.00									
GDP	-0.41	-0.39	1.00								
Population	0.37	0.31	-0.66	1.00							
Openness	0.32	0.39	0.44	-0.48	1.00						
M2	0.47	0.48	0.02	-0.34	0.42	1.00					
Financial Freedom	-0.09	-0.18	-0.02	0.41	-0.690	-0.12	1.00				
POLSTAB	-0.21	-0.2	0.41	-0.54	0.04	0.43	-0.2	1.00			
Corruption	-0.02	-0.08	0.31	-0.33	-0.01	0.5	0.26	0.49	1.00		
FD_R	-0.04	-0.04	-0.35	0.21	-0.4	-0.42	-0.04	0.09	-0.32	1.00	
FD_E	-0.01	0.02	0.032	-0.31	0.07	-0.05	-0.27	0.48	-0.13	0.56	1.00

Normalization of a series of data allows us to use the OLS method (least squares) to construct regression equations (3) - (4) whose results are presented in Table. 4 and Table 5.

Table 4. Results of the assessment of the impact of fiscal decentralization on Ukraine's macroeconomic stability (sonsumer price index) for the period 2000-2015 (based on our own calculations)

α_i	Coef.	Std. Err.	t	P>t	[95% Conf. Interval]	
For revenue decentralization						
GDP	0.108613	0.458702	0.24	0.82	-0.97604	1.193271
Population	0.701565	0.284296	2.47	0.043	0.029312	1.373818
Openness	0.423724	0.510133	0.83	0.434	-0.78255	1.629998
M2	0.819524	0.459011	1.79	0.117	-0.26586	1.904911
Financial Freedom	-0.04117	0.385253	-0.11	0.918	-0.95215	0.869805
POLSTAB	-0.34337	0.4131	-0.83	0.433	-1.3202	0.633452
Corruption	0.076431	0.255031	0.3	0.773	-0.52662	0.679483
FD_R	0.422075	0.270088	1.56	0.162	-0.21658	1.06073
const	-3.33E-06	0.164023	0	1	-0.38786	0.387849
R-squared =0.7991; Adj R-squared = 0.5695; Root MSE = 0.65609						
For expenditure decentralization						
GDP	-0.30025	0.329579	-0.91	0.393	-1.07958	0.479077
Population	0.661875	0.238217	2.78	0.027	0.098582	1.225169
Openness	0.516621	0.425347	1.21	0.264	-0.48917	1.522408
M2	0.535705	0.329841	1.62	0.148	-0.24425	1.315655
Financial Freedom	-0.01491	0.325112	-0.05	0.965	-0.78367	0.75386
POLSTAB	-0.36128	0.330343	-1.09	0.31	-1.14242	0.419858
Corruption	0.264068	0.235445	1.12	0.299	-0.29267	0.820808
FD_E	0.485346	0.197492	2.46	0.044	0.01835	0.952341
const	-3.31E-06	0.139575	0	1	-0.33005	0.33004
R-squared =0.8545; Adj R-squared = 0.6883; Root MSE = 0.5583						

Table 5. Results of the assessment of the impact of fiscal decentralization on the macroeconomic stability (Misery Index) of Ukraine for the period 2000-2015 (based on our own calculations)

α_i	Coef.	Std. Err.	t	P>t	[95% Conf. Interval]	
For revenue decentralization						
GDP	0.084891	0.455368	0.19	0.857	-0.99188	1.161665
Population	0.625914	0.28223	2.22	0.062	-0.04145	1.293281
Openness	0.445122	0.506426	0.88	0.409	-0.75238	1.642628
M2	0.823201	0.455675	1.81	0.114	-0.2543	1.9007
Financial Freedom	-0.07232	0.382453	-0.19	0.855	-0.97668	0.832037
POLSTAB	-0.34379	0.410097	-0.84	0.43	-1.31351	0.625939
Corruption	0.009624	0.253177	0.04	0.971	-0.58905	0.608292
FD_R	0.415088	0.268125	1.55	0.166	-0.21893	1.049102
const	-3.09E-06	0.162831	0	1	-0.38504	0.385031

Table 5. (cont.). Results of the assessment of the impact of fiscal decentralization on the macroeconomic stability (Misery Index) of Ukraine for the period 2000-2015 (based on our own calculations)

R-squared =0.8020; Adj R-squared = 0.5758; Root MSE = 0.65132						
For expenditure decentralization						
GDP	-0.31776	0.329579	-0.91	0.393	-1.07958	0.479077
Population	0.587902	0.238217	2.78	0.027	0.098582	1.225169
Openness	0.534736	0.425347	1.21	0.264	-0.48917	1.522408
M2	0.546572	0.329841	1.62	0.148	-0.24425	1.315655
Financial Freedom	-0.04798	0.325112	-0.05	0.965	-0.78367	0.75386
POLSTAB	-0.36996	0.330343	-1.09	0.31	-1.14242	0.419858
Corruption	0.199467	0.235445	1.12	0.299	-0.29267	0.820808
FD_E	0.488417	0.197492	2.46	0.044	0.01835	0.952341
const	-3.08E-06	0.139575	0	1	-0.33005	0.33004
R-squared =0.8613; Adj R-squared = 0.7029; Root MSE = 0.54509						

The presented results of the empirical study indicate that there is a statistically significant relationship between the indicator of macroeconomic stability and the components of the regressive equations (5) - (6). The determination coefficient R-squared is at a high level and varies depending on the chosen model for assessing the impact of fiscal decentralization on macroeconomic stability in the range from 0.7991 to 0.8613.

The estimated fiscal decentralization factor α_2 (Table 4 and Table 5) is positive and statistically significant in all regression equations, which include the estimation of the outflow in the consumer price index and misery index. This indicates a negative contribution of revenue and expenditure decentralization to achieving Ukraine's macroeconomic stability during 2000-2015, which confirms the results of the analysis of the stages of the implementation of decentralization policy.

At the same time, taking into account the potential economic, political and institutional determinants of macroeconomic stability in equations (5) - (6) has shown the existence of nonlinear relations between fiscal decentralization and macroeconomic stability. As can be seen from Table 4 and Table 5 coefficients before the above-mentioned determinants have a statistically significant magnitude and different orientation. In particular, the constant α_1 in all equations has a negative value, as well as for the Financial Freedom and POLSTAB indicators, which means that there is a certain threshold at which negative effects begin to disappear, that further increase of decentralization can lead to improvement of macroeconomic stability.

Conclusion

The paper analyzes the changes in key macroeconomic indicators of Ukraine during the gradual stages of the policy of financial decentralization. It was determined that retrospectively decentralization policy was mainly due to the emergence of the post-Soviet economic system and the transition from a centralized, planned economy to a market economy, however, the nature and pace of reforms during the years 1991-2017 were uneven.

Throughout the analyzed period, based on the criteria set out in the work, the financial situation in Ukraine was characterized by high budget centralization. Thus, in spite of the growth in 2013, the share of local budgets in the consolidated budget of Ukraine by 2.1% compared to 2011 (21.7%), the share of the state budget remains at a high level of 76-78% (78.3% in 2011 and 76.2% in 2013), and in 2016 the share of state budget revenues reached 62.7%.

Despite the large number of studies on the impact of decentralization on economic growth and macroeconomic stability, empirical data on their interconnections do not give a definitive conclusion on the direction or value of the impact of relations. Some of them found that the introduction of financial decentralization contributed to economic growth and macroeconomic stability of the country both directly and / or indirectly, while others came to the conclusion that the relationship between macroeconomic stability, economic growth and decentralization had a negative link or fixed a lack of causative relationships between the respective variables.

It has been determined that, in the majority of cases, the concept of macroeconomic stability includes price level stability as the key part, and all approaches to the definition of the concept of macroeconomic stability in the economic literature are considered; as a process of good macro-management of the country's economy through the introduction of an effective government policy; as the stability of the financial and monetary

system of the national economy; as a reduction in the amplitude of the fluctuation of the main macroeconomic indicators; as a basis for sustainable economic growth and others.

In order to carry out an empirical study of the impact of fiscal decentralization on macroeconomic stability, two main measures have been identified that represent different and independent indicators of the degree of fiscal decentralization. Along with indicators of fiscal decentralization, it is proposed to take into account the potential economic, political and institutional determinants of macroeconomic stability that can be classified into the following groups: growth and development (GDP); indicators of the labor market (Population); openness of the economy (openness); monetary indicators (M2); Independence of the central bank (Financial Freedom); political system (POLSTAB); corruption (corruption). The application of the proposed determinants has shown a non-linear relationship between fiscal decentralization and macroeconomic stability.

The empirical studies carried out on the example of Ukraine in the period from 2000 to 2015 show that there is a statistically significant relationship between the indicators of the model for assessing the impact of fiscal decentralization on macroeconomic stability. The determination coefficient of R-squared calculated equations for revenue and expenditure decentralization in achieving macroeconomic stability in Ukraine is high and varies depending on the model of fiscal decentralization impact assessment on macroeconomic stability in the range from 0.7991 to 0.8613. The estimated coefficient of fiscal decentralization α_2 indicated a negative contribution of revenue and expenditure decentralization to achieving Ukraine's macroeconomic stability during 2000-2015, which confirms the results of the analysis of the stages of the implementation of decentralization policy.

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