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IMPROVEMENT OF METHODICAL APPROACH TO COMPREHENSIVE ASSESSMENT OF COUNTRIES' FINANCIAL MARKETS DEVELOPMENT (ON THE EXAMPLE OF THE EUROPEAN UNION)

Abstract

The theoretical generalization of countries' financial markets development assessment issue investigation was conducted, potential factors of financial markets development have been defined, the existing methods for assessment of countries' financial markets development were reviewed, the shortcomings and their improvement necessity were revealed, the improved methodical approach to comprehensive assessment of (group of) countries' financial markets development with the usage of the Composite Index as the instrument of assessment (in the example of the European Union countries) was offered.

Key words:

Assessment of countries' financial markets development, potential determinant factors of development, methodical approaches to comprehensive assessment, Composite Index, countries of the European Union.

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Introduction

Problem Statement. Imbalances of the global financial development and national financial markets development determine the necessity of a comprehensive assessment with the construction of specific instruments aiming to determine peculiarities, progress, risk areas and the prospects for further development of (group of) countries' financial markets. However, in practice, such an assessment appears to be a complicated task, as the financial market development has many directions, and it is impossible to be estimated using simple indicators (primary, that is, absolute), because they do not cover all aspects of such a complex phenomenon as countries' financial markets development.

Correct measurement of the financial market development is extremely important for understanding how financial development affects the opportunity to solve global social and economic problems, including poverty reduction and improvement of life quality, as well as overall economic growth of counties around the world.

Analysis of the latest researches and publications. Studies of factors affecting the countries' financial markets development have been conducted by many researchers, among them we should mention D. Acemoglu, T. Beck, J. Gruber, L. Zingales, R. Levine, Ya. Mirlin, P. LaPorta, E. Prasad, R. Rajan, D. Rodrik, B. Rubtsov, A.Subramanian, Y. Huang, I.Shkol'nikand others. Creation of instruments for comprehensive assessment of financial markets development and their further impact on other economic indicators have been studied by the following authors: A. Abiad, A. Demirguc-Kunt, R. Goyal, L. Klapper, S. Crean, M. Kugler, R. Levine, A. Mody, K. Neusserand others.

The objective of the article is improvement of the methodical approach to a comprehensive assessment of financial markets development around the world. Achieving this goal is possible through the consistent solution of the following problems: 1) theoretical generalization of the factors potentially determining the financial markets development; 2) study of existing methods for assessing the financial market development and identification of their shortcomings; 3) development of improved methodical approach to comprehensive assessment of countries' financial markets development with the usage of the Composite Index as an integral indicator of financial market development in the example of the European Union.

Objective study of the role and development of the financial market in a modern economy requires not only a description of the quality of the changes taking place, but also their quantitative analysis. The use of assessment tools allows us to transfer theoretical discussion about the financial markets' role into macroeconomic analysis.

Any methodical approach to the study of financial markets development degree should start with determining the scope of the market, a system of indicators, which allows forming a significance picture of financial markets development degree for a country, or a group of states.

Three types of indicators can be used in scientific study: primary (absolute), secondary (relative) and synthetic (comprehensive, composite).

But it should be noted that the analysis of primary indicators dynamics for financial markets development assessment has little result in the case of international comparisons, so to assess the problem in the scale of the global economy it is more expedient to use the secondary (relative) indicators and comprehensive evaluation tools.

Potential determinants of financial markets development

Nowadays, leading scientists from all around the world assembled a large database of qualitative and quantitative indicators of financial markets development, identified in numerous studies: from macroeconomic (inflation, income level, savings rate, etc.) to the geographic and demographic factors.

But not all the applied economic researches on the financial markets development substantiate the influence of factors, especially for interstate comparisons, so the question of whether to include these or other factors arises.

Therefore, one of the first tasks is to determine the range of potential factors affecting the financial markets development around the world.

Most of the authors make the selection of factors grounding on their theoretical hypotheses. One of the first attempts to determine comprehensively the impact of financial markets development factors on economic growth using basically the mathematical approach was made by Y. Huang. He applied the Bayesian Model Averaging (BMA) and General-to-specific (Gets) approaches and defined the special role of institutions, policies and geography in the process of financial development: institutional factors, macroeconomic policy and geographical factors combined into one group, together with the cultural characteristics, as

well as countries' income level significantly affect the financial development degree.

Out of the 39 factors, taken separately, legal factors, the index of the Government quality, the index of trade policy, the country's area, GDP and population are the most important determinants of financial development.

Results discovered by Y. Huang, were also confirmed in other studies (D. Acemoglu et al. (Acemoglu, 2001), D. Dollar and A. Kraay (Dollar, 2003), W. Easterly and R. Levine (Easterly, 2003), D. Rodrik and A. Subramanian (Rodrik, 2004)). For example, W. Easterly and R. Levine, and also D. Rodrik and A. Subramanian emphasize the dominant role of the institutions over the geographical and political factors, as the latter affect the economic and financial development through institutions. More detailed consideration of factors potentially influencing the financial markets development will be presented below.

Research on the role of institutions in financial market development is reflected during definition of the issue concerning how the legal and regulatory environment effects the functioning of financial markets. Legal and regulatory systems involving protection of property rights, contract enforcement and high accounting standards can be identified as essential for financial markets development.

D. Acemoglu, S. Johnson and J. Robinson (Acemoglu, 2001) explored the historical aspect of financial development, and found that in the colonies, where natural conditions were more favourable for the life of the Europeans all the institutions, including financial ones, were reconstructed.

In the colonies, where the living conditions did not suit the Europeans, the interest of the colonialists was focused just on the resources: there were not created legal and political institutions, private property was not protected.

The Europeans created colonial states or supported local authoritarian regimes to ensure the mobility of resources. Therefore created in countries such political structures hindered long-term economic growth. These political and economic institutions have maintained their performance nowadays.

Researchers (La Porta, 2000) of legal traditions' impact on on the formation of the financial market consider the financial relationship through contractual relations, which influence the extent of contractual enforcement mechanisms in the country. C. Mayer and O. Sussman (Mayer, 2001) emphasize the importance of information disclosure, accounting standards, permissible practice of banks for financial market development.

Political system and ownership structure, in their turn, determine the system of economic interests in the country and, therefore, the structure of the financial market. To develop the capital market effectively the ownership structure of the country must include both owners with substantial funds at their disposal

and small property owners, which will allow forming the optimal structure of the capital market in the country. The financial markets growth in the 1990-s is believed to be the result of the slackened state interference in the economy, liberalization and the lifting of restrictions on capital movement. Y. M. Mirkin notes that «...the lower the degree of centralization of resources in society, the degree of state control or influence of the few largest owners or corporations are, the more developed the capital and money markets are, including the stock market and the futures market (Mirkin, 2002, p. 17).

He also highlights features that determine directly the structure of ownership in the country, the role, scope and structure of the financial market: 1) Degree of risk assumed by the population, activity of population, innovative component in its behaviour, need for individual economic freedom, or vice versa, for social care, hierarchy; 2) Degree of control and security on the part of the state and corporations, expected and accepted by population; 3) Influence of religious and socio-cultural factors (religious characteristics of economic activity, «behavioural finances», linking social and cultural standards of investors, their psychology and investment decisions); 4) Propensity to save, to improve the material side of life, pragmatism, tradition of financial product choice.

The predominance of large owners and their economic interests leads to a financial market narrowing and simplifying of its structure. Conversely, the more retail resources ownership is, the more volumetric and diversified the financial markets are. The theory of group interests by R. Rajan and L. Zingales (Rajan, 2003) confirms the importance of political factors for financial development. The authors denote that in the absence of openness, incumbents have strong incentives to block the development of a more transparent and competitive financial environment.

When both trade openness and financial openness are implemented, the incumbents have incentives to support financial development from which more funds can be sought to meet foreign competition at the new markets that allows partial compensation of their loss at the domestic market.

Y. Huang (Huang, 2005) studies the issue whether political liberalization intending to limit the influence of the elite group (or interests group) over policy making, widen suffrage in the political system as basic political rights and civil liberties are important for financial development. He concludes that a higher level of financial development typically follows political liberalization at least in the short term. The level of institutional development in a country determines the sophistication of the financial systems.

The more often the political situation in the country changes and the more precarious socio-economic situation is, the more risky market is formed, a minor in scale and speculative in nature. Political stability minimizes that part of country risk, which «can be defined with social and political conditions and involves the

risky consequences of official actions, which result in the refusal to fulfil the obligations…» (Basle committee on banking supervision, 1996).

Econometric analysis of the past 15–20 years show the importance of institutional development, which leads to the conclusion that the countries where 1) the rights of creditors are protected well, 2) legal systems are designed to protect its contractual obligations, and 3) accounting standards allow to obtain reliable and high-qualitative financial statement of companies, – have more developed financial intermediaries.

The policy view on financial markets development highlights the importance of macroeconomic policy, openness of goods markets and financial liberalization in promoting financial development. Support for low inflation rate and high rate of investment have positive influence the financial markets development.

Russian scientist Ya. Mirkin (Mirkin, 2002, pp. 60–61) notes that too tight fiscal and monetary policies in the phase of financial stabilization, the lack of tax incentives, ill-timed transition to economic growth stimulating policy, ill-conceived liberalization of capital account, misuse of interest policy, which artificially creates a high interest level in some sectors of the financial market in prejudice of others – there are all examples of distortions that can cause serious strain in the structure of the financial market in any country.

In the1970s R. McKinnon and E .Shaw defined that financial repressions reduce the quantity and quality of investment, while financial liberalization can foster economic growth by increasing investment and productivity.

Claessens S. et al. (Claessens, 1998) gives evidence that opening of banking markets improves the functioning of national banking systems and the quality of financial services, with positive implications for banking customers and lower profitability of domestic banks. G. Bekaert (Bekaert, 2002) argues that opening up the stock market to foreign investors renders stock returns more volatile and more highly correlated and synchronized with the world market return.

J. R. Barth, G. Caprio and R. Levine (Barth, 2000) made a comparative analysis of banks in more than 60 countries to determine the effect of banking activity bans on the financial markets development and found that the severe restrictions on the activities of banks were not favourable, but in some respects quite disastrous.

A positive relationship between financial liberalization and development of financial markets though exists, but the financial liberalization may carry certain risks. The study «Does financial openness lead to deeper domestic financial markets?» (Calderón, 2009), issued by the World Bank, shows the positive effects of financial openness on the financial markets development, but only providing high investor protection rate, the high quality of institutions rate and trade openness.

Prasad E., R. Rajan and A. Subramanian (Prasad, 2006) have investigated that financial openness is positively correlated with the economic development in mature economies, but negatively – in developing and transitional countries: a decrease of interest rates in mature economies relatively to domestic interest rates in most developing countries does not produce higher domestic investment financed with foreign savings at home. Financial openness owing only to financial account liberalization without enforcing of juridical and regulatory determinants would only boost consumption, with foreign savings simply substituting for domestic savings. D. Rodrik and A. A. Subramanian (Rodrik, 2008) underline that governments of developing and transitional countries will be having the opportunity to tap a large pool of funds abroad, hence having little incentive to develop domestic markets, while local private investors would have fewer incentives to lobby for reforms at home if they are allowed to allocate their funds abroad.

Djankov S. et al. (Djankov et al., 2008) confirm that the opening of financial markets without adequate institutional and legal environment may lead to increased use of international markets not in favor of internal ones by firms and investors. The same problem may occur if the local debt markets have been liberalized without sufficient strengthening of the national currency and the development of the domestic financial market.

The development of financial markets can be also influenced by other factors that we have combined into a group called the «human factor»: these factors are difficult to measure, but they cannot be neglected. This group includes the economic behavior of people, financial literacy and awareness (which is a prerequisite for efficient and transparent financial markets, especially in countries that have moved from a centrally planned to a market economy (Rutledge, 2010)).

Among the most popular factors used for financial markets development assessment there are quantitative development factors.

Quantitative factors, which determine the financial market development, are as follows: income level of the world population, development characteristics of the individual financial market segments, financial intermediation and use of financial instruments, financial depth, etc.

Before proceeding to consideration of the quantitative factors of financial market development, we should mention the group of factors related to access to the world financial markets. For the more objective analysis we must use not only quantitative development indicators of various financial market segments, but also know to what extent the economic agents have access to financial services. That is, an efficient financial market should be characterized both with the high level of financial market segment development indicators, and with relatively steady participation of economic agents in the formation of these indicators. The

World Bank emphasized the necessity of maximal inclusion of the population in the use of financial services «financial inclusion».

For a long time, until 2012, the measurement of access to financial services was very difficult, as it was based only on the individual countries' surveys. There were some differences in the polling methodologies, which caused problems in comparing data and their further interpretation, but still these data were quite informative.

In 2012, experts of the World Bank (Demirguc-Kunt, 2012) constructed a database of Global financial inclusion indicators (named «Global Findex»), including data for 148 countries around the world, showing how people make savings, loans, payments, and manage risk. Constructed indicators are based on interviews of more than 150,000 respondents of different nationalities at the age from 15 years for 2011. A well-functioning financial market of any country plays an important role by offering savings, loans, payment services and risk management services to those who need them. Financial market, providing access to financial services without the price and non-price restrictions, is particularly important for the poor and other vulnerable groups.

Due to lack of easy access to financing, to qualitatively improve their lives or activities, poor people can only rely on their own limited savings (if any), small and medium business – at their limited income. All this trends may increase income inequality and cause slow economic growth in the future.

The main indicators of access to financial services are the quantity of commercial bank branches and ATMs per 1000 adult population (or 1,000 km). Such information greatly increases understanding the level of financial market development compared to traditional analysis of indicators for financial market segments development.

One of the most important concepts, linking the development of financial instruments and countries' national financial markets, is the financial deepening. This concept was introduced in the mid-1980-s and represents the economy saturation with money, financial instruments and financial institutions. By financial deepening scientists understand the following: (King, 1993; Rajan, 1998): 1) sectors and agents can use the financial markets to place savings and investment, including the long-term ones (improved access); 2) financial intermediaries and markets are able to place large amounts of capital and keep a large turnover, without significant change in asset prices (increase in market liquidity); 3) financial market can create a wide range of financial instruments to share risk (hedging diversification). In other words, deep financial markets allow the owners of savings to invest in a wider variety of quality investment and risk sharing instruments, as well as allow the borrowers to get a wide range of financing and risk management instruments.

Also one of the most important external factors is the relative competitiveness. Competitiveness of the financial market, by Y. M. Mirkin, is a set of its advantages and disadvantages compared to other financial markets, which form a certain level of its risk, liquidity and profitability, as well as determine the market appeal for non-speculative investors in comparison with other financial markets. Financial market competitiveness depends on a country's competitiveness, assessed by international financial institutions, including the specialists of World economic forum.

The study of World economic forum (WEF) «Global competitiveness report» (Global competitiveness report 2010) confirms that there is a strong statistical connection between the country well-being and its levels of economic freedom and competitiveness. This indicates that countries with high level of economic freedom and competitiveness show a high economic potential, which affects the standard of well-being in the country. The formation of a state economic policy must take into account its regularity, especially if the main purpose of the policy is GDP growth.

The development of science and financial market is bi-directed. Financial market institutions affect significantly the development of industries associated with research work. For example, U.S. firms representing the pharmaceutical and electronics industries, as well as biotechnology, are much more dependent on external financing access than the companies of more traditional industries, such as steel or motor ones (Rajan, p. 107). Therefore, development of science and technology is a specific distribution channel of financial market influence on the state economy. At the same time, development of scientific and technological activities within the country provokes quantitative and qualitative development of the financial market, diversification of financial instruments and financial intermediaries. The emergence and success of leasing in the world is the striking example.

Y. Chang et al. (Chang, 2005) assessed the importance of the financial markets and the research and development expenditures for export growth, using the theoretical and econometric models. The results showed that financial development and the research and development expenditures are positively correlated with growth in exports and production of high-tech goods. Obviously, countries that want to increase the volume of exports should increase their own research and development expenditures and to recognize their priority in the development strategy of the state.

J. Gruber and S. B. Kamin (Gruber, 2008) develop a point of view that the level of financial market development is related to global imbalances in the countries' balances of payments.

A. Ghosh and U. Ramakrishnan reviewed the balance of payments deficit issue (Ghosh). They note, if the country is in a state of negative balance of payments, it increases the level of obligations to other countries, which will be settled

in the future. If the negative trend remains for a long time, the solvency of the country becomes a great question. If the deficit reflects the excess of imports over exports, it indicates a problem with the competitiveness of the country. It is therefore evident that the balance of trade, foreign debt, high-tech export and other external economic and technological factors influence the financial markets development. It is the internal high-tech development that is an extremely important factor, including the number of patents registered by residents.

The impact of financial factors on the financial markets' development is no doubt among neither domestic nor foreign researchers. Therefore, the influence of non-financial factors of financial markets' development around the world is more important issue. In previous publications, we have analyzed the quantitative factors in financial market development (Vlasenko, 2012).Summarizing the above findings, we draw the systematization of non-financial factors that influence the financial markets development, by grouping (Table 1).

Table 1

Systematization of non-financial factors that influence the development of financial markets around the world

Group of factors	Researchers	Influence description
Macroeconomic and political factors	Y. Mirkin, R. Ra-jan, L. Zingales, Y. Huang, S. Claessens	Factors influence through the degree of state intervention in the economy, governance and bureaucracy quality, political stability, the existence of prohibitions and through financial depth, the inflation rate, the quality of public finances management, etc.
Law and regulatory factors	C. Mayer, O. Sussman, R. La Porta, T. Beck, A. Demirguc-Kunt	Factors influence through the legal and regulatory systems of countries: property rights, guarantees of contract enforcement, quality and and reliability of reporting standards.
External economic factors	G. Bekaert, J. Bart, J. Shapiro, R. Levine	Factors influence through the state and dynamics of the balance of payments, international reserves, external debt and the ability to service it. Factors of financial liberalization and development of the foreign exchange market affect the financial markets' development too, but in different countries this effect can be multidirectional*.

Group of factors	Researchers	Influence description
Scientific and technical factors	R. Rajan, Y. Chang, S. Pienknagura	Factors influence through the existence of a high level of funding for scientific and technological development, the adequate number of the scientific staff and scientific patents of own development.

* Explanations to the table:
1) Financial openness positively affects the development of financial markets in developed countries, which already have developed legal and regulatory system that favors the flow of financial resources from abroad. Without these factors in transitional and developing countries financial openness increases the flow of financial resources not to the benefit of domestic financial markets. .
2) If to consider the development of the currency market (in particular foreign exchange transactions)as a factor of financial markets' development, it should be pointed out that in countries with weak currencies the increase in foreign exchange transactions may be indicative of the distrust growth to the national currency and the desire to keep savings in a more stable currency.

The results of our research up dated the importance of macroeconomic, institutional, external economic and scientific-technical factors for financial markets' development of any country.

Methods for comprehensive assessment of financial markets development

From the date that people became interested in assessing the financial markets development, the techniques and methods have become more sophisticated, the numbers of factors, countries and time periods have been increasing.

At first, to assess the financial markets development separate the relative indicators were used: the performance of the banking systems and capital markets were separately analysed in different time periods, and with the involvement of different countries, mostly mature economies. The results of these studies have shown the allocation of factors affecting the financial markets development.

R. G. King and R. Levine offered one of the first comprehensive methods for assessment of financial markets development in 1993 (King, 1993). The authors involved data for 80 countries during 1960–1989 to investigate whether higher rates of financial development correlate with higher current and future

rates of economic growth, capital formation and economic efficiency. The offered indicator includes4 sub-indices.

Although this work is an example of a more comprehensive assessment, other authors continued the study of individual indicators secondary type in parallel aiming to expand the panel of new indicators, which will be included in the more complex calculations of other researchers in the future (P. Demetriades and Kh. Hussein; P. Rousseau; K. Neusser and M. Kugler; E. A. Gelbard and S. Pereira Leite; A. Abiad and A. Mody; Ph. Lane and G. M. Milesi-Ferretti; J. Ju and Sh. Wei and others). The value of the mentioned research is a narrower and more careful study of individual groups of countries at different stages of development. In fact, the creation of integrated assessment tools started in the 2nd half of the 2000s, a review of which we have carried out in our previous publications (Vlasenko, 2012).

The last study concerning instruments for assessment of financial markets development has been published in 2012 by the World Bank, devoted to the issuance of the new annual survey «Global financial development report». Based on previous studies (Creane et al., Čihák at al., 2012; Demirguc-Kunt, 2012) the World Bank has designed relatively simple conceptual system «4x2» for countries' financial markets development assessment. The given system contains 4 sets of variables, which characterize well-functioning financial market: financial depth, access, efficiency and stability (table 2).

The significant contribution to the study of financial markets development has been made by the World Bank researchers, whose final publication was devoted to financial inclusion measurement (Demirguc-Kunt, 2012). Global inclusion Index, developed in the study, contains 4 sets of indicators (4 sub-indices).

It is obvious that calculation must include all the factors proposed in the last technique of the World Bank, but there are no values of many of them in public Financial Development databases(of the World Bank, the Bank for International Settlements, the International Monetary Fund, the World Economic Forum, etc.) that makes it difficult to perform the calculations and reduces the reliability of the final figure. This concerns not only developing and transition countries, but also the countries with a developed financial market, which leads to practical imperfection of the concept proposed by the World Bank. Therefore, in our study and calculations we will use the principle of maximum presence of factors to form the effective index.

A critical analysis of the existing methodologies for assessing the development of financial markets

Having examined the numerous studies on financial markets development assessment, it is worth substantiating the need of improvement of the existing methodologies for financial markets development assessment and pointing out their drawbacks (Table 3).

Table 2

Conceptual system for study the development of financial markets, offered by the World Bank (Global financial development report, 2013, p. 23)

	Financial institutions	Financial markets
Depth	Private sector credit to GDP; Financial institutions' assets to GDP; Money (M2 aggregate) to GDP; Deposits to GDP; Value-added of the financial sector to GDP.	Stock market capitalization plus outstanding domestic private debt securities to GDP; Private debt securities to GDP Public debt securities to GDP; International debt securities to GDP; Stock market capitalization to GDP; Stocks traded to GDP.
Access	Accounts per thousand adults (commercial banks); Branches per 100,000 adults (commercial banks); Percent of people with a bank account (from user survey); Percent of firms with line of credit (all firms); Percent of firms with line of credit (small firms).	Percent of market capitalization outside of top 10 largest companies; Percent of value traded outside of top 10 traded companies; Government bond yields (3 month and 10 year); Ratio of domestic to total debt securities; Ratio of private to total debt securities (domestic); Ratio of new corporate bond issues to GDP.
Efficiency	Net interest margin; Lending-deposits spread; Noninterest income to total income; Overhead costs (percent of total assets) Profitability (return on assets, return on equity) Boone indicator (Herfindahl, or H-statistic)	Turnover ratio (turnover/capitalization) for stock market; Price synchronicity (co-movement); Price impact; Liquidity/transaction costs; Quoted bid-ask spread for government bonds; Turnover of bonds (private, public) on securities exchange; Settlement efficiency.
Stability	z-score (or distance to default); Capital adequacy ratios; Asset quality ratios; Liquidity ratios; Other (net foreign exchange position to capital, etc).	Volatility (standard deviation/average) of stock price index, sovereign bond index; Skewness of the index (stock price, sovereign bond); Price/earnings (P/E) ratio; Duration; Ratio of short-term to total bonds (domestic, international); Correlation with major bond returns (German, United States)

Table 3

Critical analysis of the existing methods of financial markets' comprehensive assessment

Author	Methodology description	Drawbacks
R. King and R. Levine (1993)	One of the first methods of financial markets' comprehensive assessment, a large number of countries (80 countries) was analysed. Period of analysis: 1960–1989. 4 financial indicator and 4 indicators of economic development were used.	There is no single integrated indicator.
Y. Huang (2005)	Period of analysis: 1990–2001. 4 directions were investigated (institutions, politics, geography, and «other factors»). The most influencing factors were identified – institutional and political ones.	It's impossible to make international and intertemporal comparisons by the offered method.
IMF (2006)	The index is calculated for the 18 mature economies (period: 1995–2004) It contains 3 sub-index (traditional financial intermediation, the new financial intermediation, financial markets).	Assessment is possible only for themature economies, the data for the selected factors in other countries are not available. There is no single integral indicator.
S. Creane, R. Goyal, A. Mobarak and R. Sab (2007)	The financial development Index for the group of Middle East and North Africa countries was offered. 6 different areas of financial development were explored: 1) size, structure and efficiency of the banking sector; 2) development of non-bank financial sector; 3) quality of banking regulation and supervision; 4) development of the monetary sector and monetary policy; 5) openness of the financial sector; 6) institutional environment. Data were collected through the survey.	The excessive attention was paid not to the development of financial markets and financial instruments, but to the bans or restrictions, in particular, to the foreign currencies exchange in the country, and other issues that are not relevant to more developed countries, for example, to privatization of the banking sector.
World Economic Forum (WEF) (2008)	55 countries (number of countries is increasing annually) was investigated by 7 subindex 1) policies and institutions (institutional environment, business environment and financial stability), 2) financial intermediation (banking financial services, non-banking financial services and financial markets), and 3) access to financing. Integral index – Index – is reviewed annually.	Great attention was paid to derivatives markets, most of which are absent in the financially less developed countries, or there is no statistical information about them, which limits the potential number of the countries studied.
World Bank (2012)	The conceptual system of measurement «4 x 2» was offered. Factors: financial depth, access, efficiency, and stability. Directions: financial institutions and financial markets.	The absence of the offered factors for too many countries. There is no single integrated indicator.

Taking into account the shortcomings of the existing technical approaches accumulated in the theoretical works by the leading scientists and international practice, we have developed our own Method of Composite Index (CI) Calculation to assess the level of the financial market development of countries (groups). This Method differs from the existing ones in ability to explore and evaluate the financial market development not in space but in time, making possible the international comparison. The advantage of this Method is higher reliability, since while selecting the factors we took into account their maximum presence.

Indicators, that we used to assess the financial market development, are combined into 4 groups, and each group is characterized by a corresponding sub index (I_1, I_2, I_3 and I_4): 1) General economic and political factors (11 indicators), 2) Legal and regulatory factors (5 indicators); 3) Financial market development factors (financial instruments, financial institutions, and access to the financial market – 32 indicators); 4) Foreign-economic and scientific-technical factors (11 indicators). Since all the selected factors have different units of measure, we carried out the procedure of their normalization, giving them value from 0 to 1. Then we will determine the complex index of development – CI, based on the weighted average value method, by the examined years, using an additive index model (detailed type):

$$CI = I_1 n_1 + I_2 n_2 + I_3 n_3 + I_4 n_4, \quad (1)$$

Where I – sub-indices values;

n – weights (0,16; 0,10; 0,55 и 0,19 for every sub-index, according to the quantity of factors in every group).

Using the method of chain substitutions, the estimation of every weighted sub-indices impact on the CI dynamics has been made.

According to the proposed method, we carried out the study of financial markets development in the European Union. To create a database study we used statistics from the international organizations such as the World Bank, International Monetary Fund, Bank for International Settlements, Organisation for Economic Cooperation and Development, World federation of exchanges, World economic forum Eurostat – European Union statistical agency. Statistical dataof the organizations exploring the different socio-economic issues have also been used in the calculations: Heritage foundation (economic liberties and rule of law), Transparency international (corruption perception rate), Political risk services group (political risks), Leaseurope (leasing), Factors Chain International (factoring), Swiss Re (insurance) and others.

More then 10,000 numerical values have been processed and normalized, 59 indicators have been calculated and combined into 4 groups presented in the form of sub-indices (aggregated factors) of the selected financial markets. Results of the financial markets' assessment for the group of countries are shown in the table 4.

To display the CI values dynamics we have built a chart below (chart 1).

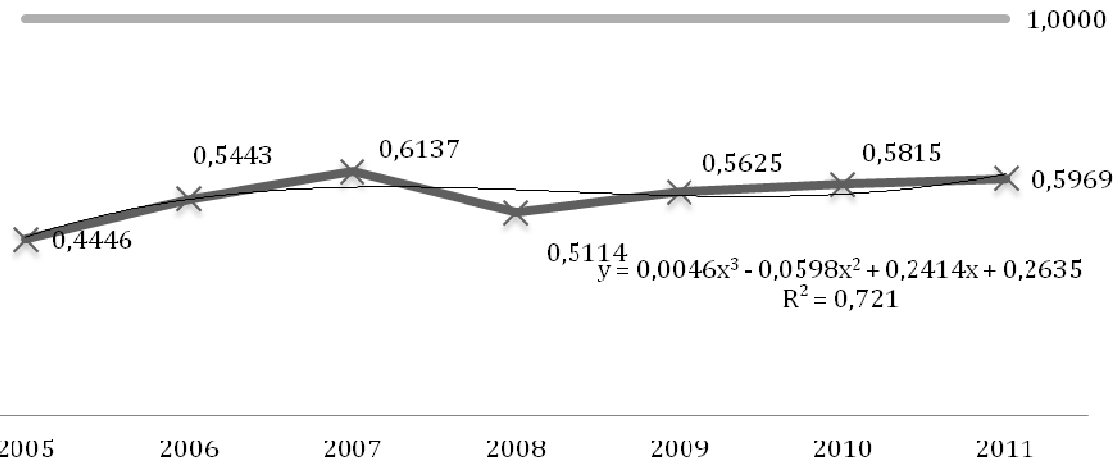
Table 4

Sub-indices weighted values and Composite Index of the EU financial market development (2005–2011)

Weighted values	2005	2006	2007	2008	2009	2010	2011
Sub-index I_1	0,1030	0,1117	0,1197	0,1099	0,0908	0,0988	0,0835
Sub-index I_2	0,0654	0,0656	0,0660	0,0655	0,0661	0,0664	0,0663
Sub-index I_3	0,1857	0,2542	0,3357	0,2566	0,2929	0,3103	0,3238
Sub-index I_4	0,0906	0,1128	0,0922	0,0793	0,1126	0,1059	0,1233
Composite Index	**0,4446**	**0,5443**	**0,6137**	**0,5114**	**0,5625**	**0,5815**	**0,5969**

Figure1

Values dynamics for the CI of the EU financial market development

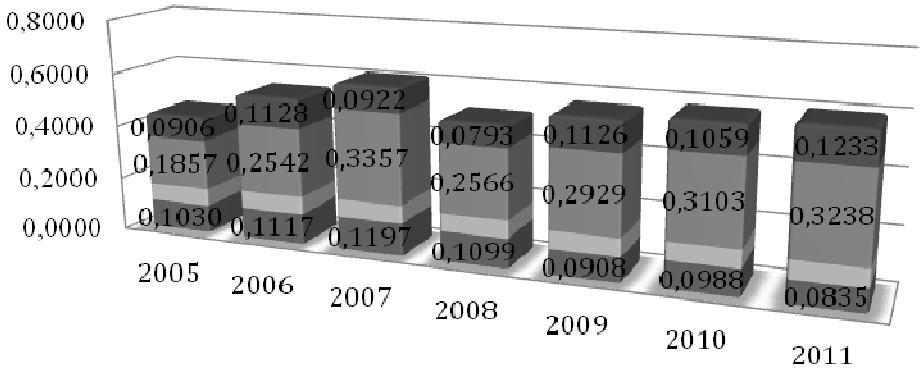


Values dynamics for the built CI has a view of parabola (three power polynomial) with the downward trend in 2008, which coincides with the beginning of the global financial crisis. The calculations, displayed in Figure 1 show that the financial market of the European Union is in the process of post-crisis recovery, but the pre-crisis level wasn't been reached by the end of 2011.

It should be mentioned that contribution of every sub-index to the CI increase is different (Figure 2). Each of the aggregate factors' impact has been calculated by the method of chain substitutions, and the results are shown in the table 5 (table of deviations).

Figure 2

Weighted CI of the European Union financial market development: structure and dynamics



Throughout the studied period the contribution of the 3rd and the 4th sub-indices increases while the value of the 2nd sub-index remains relatively stable and the contribution of the 1st sub-index decreases.

Table 5

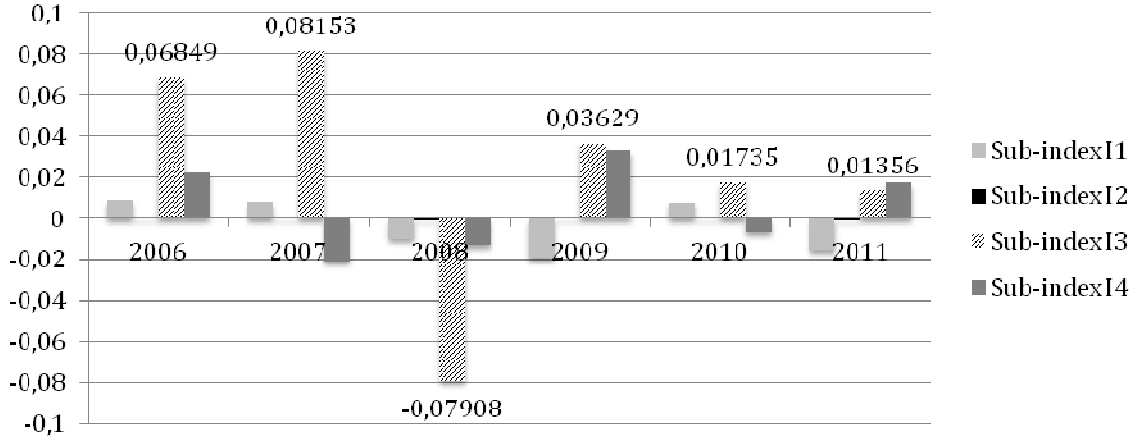
Estimation of all sub-indices impact on the Composite Index result

	2006	2007	2008	2009	2010	2011
Sub-index I_1	+0,00874	+0,00806	–0,00984	–0,01907	+0,00799	–0,01529
Sub-index I_2	+0,00022	+0,00036	–0,00041	+0,00059	+0,00030	–0,00019
Sub-index I_3	+0,06849	+0,08153	–0,07908	+0,03629	+0,01735	+0,01356
Sub-index I_4	+0,02221	–0,02054	–0,01292	+0,03328	–0,00665	+0,01732
Total deviation	+0,09966	+0,06940	–0,10225	+0,05109	+0,01899	+0,01540

Then we'll display the deviation dynamics in the chart (Figure 3) and analyse the impact of each sub-index on the CI.

Figure3

Impact of values deviations on the CI



Macroeconomic and political factors had a positive influence on the development of financial markets in the period up to 2008 and in 2010 – as a result of an active struggle against the financial crisis. But already in 2011, macroeconomic and political factors were the ones that had a negative impact due to deterioration of such indicators as increased amount of government debt, rising rate of inflation, constant reduction in gross savings and capital accumulation. It should be noted that the macroeconomic problems that had led to the debt crisis began in 2010. Unfortunately, this problem have not been solved completely yet.

According to the analysis results, the most stable group comprises legal and regulatory factors: the EU countries have consistently high values of the investor protection index, disclosure of credit information, accounting standards compliance (transparency of disclosure), legislation on pledge and bankruptcy, as well as supremacy of law, which has a positive impact not only on financial market development, but also on social-economic development of this group of countries.

Considering the influence of the 3rd and 4th sub indices, it is worth mentioning that in the period 2006-2007 the most positive influence on financial market development had the increased volume of financial assets and financial instruments, positive results of the financial intermediaries and improvement of financial market access indices. But already in 2007 the negative trends were outlined; they were provoked by a group of foreign economic and scientific-technical factors and can be considered the forerunners of the shortly begun crisis: there was a net flow decrease of foreign portfolio investments, an increase of trade

balance deficit and at the same time a reduction of the science intensive goods export ratio and deterioration of the international investment position.

CI value in 2008 fell to its lowest level for the period. All sub-indices contributed to the decrease in value of the effective index, but the greatest impact was caused by the third sub-index. This is the largest sub-index according to the number of factors, it was affected by the financial crisis the most, that is why let us consider it in detail.

The following three tables show the 3rd sub-index factor value changes (up to the normalization procedure) grouped on the basis of recovery by 2011. The values of the factors listed in Table 6have decreased with the start of the financial crisis in 2008 (increased – for disincentives («d» – marked)) and have not recovered yet to the pre-crisis level.

Table 6

Factors values, deteriorated in 2008 and not regenerated by 2011*

List of factors	2007	2008	2011
Leasing, amount outstanding, % to GDP;	6,98	6,95	5,25
Leasing, new contracts, % to GDP;	3,63	3,19	1,83
Stock market capitalization, % to GDP;	74,03	55,65	44,63
Institutional investors' assets growth, %;	0,73	0,45	0,62
(d) Non-performing loans, % of total bank loans**	2,02	2,66	7,03
Market capitalization of listed companies, % to GDP;	77,76	30,61	32,56
Stock turnover ratio, %;	88,61	73,43	59,12
Net interest margin;	1,92	1,91	1,74
Return on bank assets (ROA);	1,03	0,27	0,14
Return on bank equity (ROE);	14,46	0,76	0,75
Ease of access to credit (score from 1 to 7);	4,92	3,06	3,45
Financing through local equity market(score from 1 to 7);	5,14	4,02	3,89
Venture capital availability(score from 1 to 7);	4,20	3,34	3,00
ATMs per 1,000 km^2;	108,91	113,24	105,51
Commercial bank branches per 100,000 adults.	43,77	43,81	42,27

* calculated by the author;

** d – disincentives.

Factors values, given in the table 7, diminished due to the beginning of the financial crisis in 2008 (increased– for disincentives («d» marked)), but regenerated by 2011 and even exceeded the pre-crisis level.

Table 7

Factors values, deteriorated in 2008, but regenerated by 2011*

List of factors	2007	2008	2011
Private pension funds' assets,% to GDP;	21,42	18,88	23,89
Non-life insurance premium,% to GDP;	2,81	2,51	3,77
Domestic public bond market capitalization,% to GDP;	37,08	35,50	37,82
International bond issues,% to GDP;	56,01	55,42	74,40
(d) Lending interest rate (average), %;	7,29	7,67	5,55
Bank capital to assets ratio, %;	6,70	6,46	7,52
Commercial bank branches per 1,000 km^2.	63,36	63,31	66,29

* calculated by the author;

** d – disincentives.

Factors values, given in the table 8, have not been affected by the financial crisis; the values continued their increasing during the whole studied period. These factors form the basis for a sustainable post-crisis financial recovery.

Table 8

Factors values increasing during the whole studied period (Including the financial crisis period)*

List of factors	2007	2008	2011
Life insurance premium, % to GDP;	5,10	5,19	6,80
Factoring (outstanding amount), % to GDP;	5,71	5,83	6,89
Domestic private bond market capitalization, % to GDP;	36,22	37,46	43,90
Domestic credit to private sector,% to GDP;	114,83	122,33	127,57
Deposit money bank assets, % to GDP;	115,63	121,98	145,09
Outstanding deposits with commercial banks, % to GDP;	122,58	122,95	122,88

List of factors	2007	2008	2011
Outstanding loans from commercial banks, % to GDP;	122,37	131,35	127,20
Domestic credit provided by banking sector, % to GDP;	121,09	129,32	140,20
Private credit bureau coverage (% of adults);	34,01	37,33	46,57
ATMs per100,000 adults.	81,02	84,40	81,72

*calculated by the author;

Thus, we can make a conclusion about positive trends in the financial markets development in the European Union, as the underlying institutional factors of the financial market development are high, despite the temporary crisis period. To increase the level of financial markets development and solve the problematic issues European Union countries should pay attention to the problems, such as public finances (government debt increases while the growth rate of GDP falls), external economic imbalances (a negative balance of trade) and improvement of financial intermediaries' functioning (those who provide long-term financial services and supply the financial market with «long-term» money (institutional investors, life insurance companies, private pension funds, leasing companies and so on).

Conclusions

Theoretical generalization of factors potentially affecting the financial markets development has shown that the most influential factors are institutional development, balanced policy of freedoms and restrictions, financial depth of the economies, access to financing (financial inclusion), external economic factors and the level of science and technology development, as well as a number of subjective «human» factors.

From the date that people became interested in assessing the financial markets development, the techniques and methods have become more sophisticated. At first, to assess the financial markets development separate the relative indicators were used. The creation of integrated assessment instruments actually started in the 2nd half of the 2000s. The main disadvantages of the existing methods are not universal (it is possible to calculate the value of the indicator either in space, or in time, too much concentrated on separate groups of countries), omission of certain financial instruments' development (other than bank loans, stocks

and bonds) and the lack of data on many of the proposed indicators, which badly affects the final result.

For the purpose of levelling the identified drawbacks, we have developed the improved method of the Composite Index calculation to measure the level of financial market(s) development around the world. The method is different from the existing researches by the capability of conducting the assessment of financial markets development not only in space but also in time. Selected factors have been combined into 4 groups (sub-indices), are used for the calculation of the Composite Index of financial market development in the European Union and the conclusions about the positive trends have been made.

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