

Serhiy Kozmenko (Ukraine), Vadim Kozyriev (Ukraine)

## The research and development of financial conglomerates based on the estimate of integration of components of financial market

### Abstract

The state of affairs in financial markets is characterized by strengthening of financial integration and occurrence of their new forms. All these factors are embodied in a qualitative transformation of financial intermediaries and amplify connections between the principal participants in the market. For this very reason the research of conceptual framework and practical mechanism of financial integration, as well as optimal and organic interactions of banking, insurance and investment intermediaries from the perspective of development and stability of financial market and execution of its main functions are all important and topical.

**Keywords:** financial integration, globalization, insurance companies, banking, conglomerate formations, financial market.

### Introduction

**Problem statement.** Most of the focus in the academic circles is on the study of financial globalization and integration of financial markets; these matters were examined by such scholars abroad as Lutgart Van den Berghe and Kurt Verweire, Andrew Kuritzkes and Til Schuermann, et al. This question was also carefully studied by national scientists, like A. Belorus, I. Shkolnik, O. Kozmenko, O. Kuzmenko, B. Gubskii, etc. Whereas the integration of the most advanced sectors of the market is not fully disclosed. Analyzing the globalization processes the researchers give them a different estimate: on the one hand the acceleration of positive changes in the economy considers the fusion of national markets to European and global financial area, on the other hand – convergence and consolidation of financial intermediaries promote influence of instability on the functioning of the domestic financial market.

**The statement of primary material.** The investigation of integration of financial market sectors is principally associated with the amplification of the tendency of globalization on the world financial markets. On the other hand, conglomerate formations emerge in consequence of close collaboration between financial intermediaries. These integrated formations can effectively operate under general instability and react to the imbalances caused by the exacerbation of crisis. Consequently, there is a need to examine integration processes and estimate their influence on the development of financial conglomerates.

To assess the level of integration of financial market sectors, we suggest developing the model of

participants' cooperation in financial conglomerate on the basis of multifactor optimization. The logical scheme of the model is shown in Figure 1 (see Appendix). At the beginning of integration calculation of the participants of financial conglomerate it is necessary to define initial data, which reflect the real configuration of concerned sectors of financial market. We selected statistical data of financial stability indicators of the National Bank of Ukraine, which are calculated according to the recommendations of the International Monetary Fund (IMF) and at the same time, serve as the primary data base for forecasting periods of instability and prevention from financial imbalances and crises. It should be noted that NBU performs the monitoring of the financial market and collects necessary statistical reporting beginning from 2005. Consequently, we analyzed the period from 2005 to 2014. The logical distribution of indicators is shown in Table 1.

Table 1. The distribution of indicators of banking, insurance and investment sectors of financial market

	BANK	INS	INV
BANK <sub>1</sub>	$IB_1$	$IS_1$	$IV_1$
BANK <sub>2</sub>	$IB_2$	$IS_2$	$IV_2$
...	...	...	...
BANK <sub>m</sub>	$IB_m$	$IS_m$	$IV_m$
INS <sub>1</sub>	$IB_{m+1}$	$IS_{m+1}$	$IV_{m+1}$
INS <sub>2</sub>	$IB_{m+2}$	$IS_{m+2}$	$IV_{m+2}$
...	...	...	...
INS <sub>m+k</sub>	$IB_{m+k}$	$IS_{m+k}$	$IV_{m+k}$
...	...	...	...
INV <sub>1</sub>	$IB_{m+k+1}$	$IS_{m+k+1}$	$IV_{m+k+1}$
INV <sub>2</sub>	$IB_{m+k+2}$	$IS_{m+k+2}$	$IV_{m+k+2}$
...	...	...	...
INS <sub>m+k+g</sub>	$IB_{m+k+g}$	$IS_{m+k+g}$	$IV_{m+k+g}$
...	...	...	...
INS <sub>m+k+n</sub>	$IB_{m+k+n}$	$IS_{m+k+n}$	$IV_{m+k+n}$

The model development of integration of financial conglomerate based on the method of multifactor

optimization suggests the disclosure of stimulants and disincentives using binary approach.

The logic of such distribution is as follows: essential values that increase or decrease the level of integration are defined for each analyzed group by expertise. Stimulants get “1” and disincentives (and indicators which have no effect on the integration level) get “0” in considering market sector. As for instance, the size of total bank’s assets affects the integration level of banking and insurance sectors (BANK-INS), and banking and investment sectors (BANK-INV), but has no effect on the integration level between the insurance and investment sectors of the banking market (INS-INV). It is worthy of note that the list of indicators includes values which, in our opinion, influence over each of the considered sectors, namely the ratio of bank assets to GDP, the ratio of liquid bank’s assets to short-term liabilities and the amount of insurance reserves in insurance companies (Table 2).

Table 2. The distribution into stimulants and disincentives using binary approach

Indexes	BANK	INS	INV
Banking sector indicators			
Total banks assets, mln. UAH.	1	0	0
Deposits, mln. UAH.	1	0	0
Authorized capital stock, mln. UAH.	1	0	0
Reserves of active banking transactions, mln. UAH.	1	0	1
Assets/GDP	1	1	1
Coefficient of credit activity (C/A)	1	0	0
C/D	1	0	0
The ratio of regulatory capital to risk-weighted assets	1	0	0
The ratio of non-performing loans to total gross loans	1	0	0
Return on assets	1	0	0
Return on capital	1	0	0
Ratio of liquid assets to total assets	1	0	0
Ratio of liquid assets to short-term liabilities	1	1	1
Ratio of foreign currency loans to total gross loans	1	0	0
Interest income	1	0	0
Interest expense	1	0	0
Interest income	1	0	0
Gross income	1	0	0
Interest expense	1	0	0
Net income (after tax)	1	0	0
Insurance sector indicators			
Assets of insurance companies	0	1	0
Capital of insurance companies	0	1	0
Insurance reserves of insurance companies, mln. UAH.	1	1	1
Gross premiums, mln. UAH, of them:	0	1	0
Gross written premium, mln. UAH, of them:	0	1	0
The sum of paid authorized capital	0	1	0
Investment sector indicators			
Debt securities	0	0	1
Shares and other forms of equity interest	0	0	1
Derivative financial instruments	0	0	1

Authors propose to conduct the normalization of studied sectors of financial market using the methods of relative and natural normalization.

For banking sector indicators (BANK) we get:

$$\text{Stimulants: } \tilde{b}_{it} = \frac{b_{it}}{\max_t \{b_{it}\}}. \quad (1)$$

Where  $\tilde{b}_{it}$  is a normalized value of the i-th indicator, which describes the banking sector during t-year.  $b_{it}$  – the value of the banking sector;  $\max_t \{b_{it}\}$  – the maximum value of the banking sector;  $\min_t \{b_{it}\}$  – the minimum value of the banking sector.

$$\tilde{b}_{it} = \frac{b_{it} - \min_t \{b_{it}\}}{\max_t \{b_{it}\} - \min_t \{b_{it}\}}. \quad (2)$$

$$\text{Disincentives: } \tilde{b}_{it} = \frac{\min_t \{b_{it}\}}{b_{it}}. \quad (3)$$

For insurance sector indicators (INS) we obtain:

$$\text{Stimulants: } \tilde{s}_{jt} = \frac{s_{jt}}{\max_t \{s_{jt}\}} \quad (4)$$

$$\text{Disincentives: } \tilde{s}_{jt} = \frac{\min_t \{s_{jt}\}}{s_{jt}}. \quad (5)$$

For investment sector indicators (INV) we receive:

$$\text{Stimulants: } \tilde{v}_{gt} = \frac{v_{gt}}{\max_t \{v_{gt}\}}. \quad (6)$$

$$\text{Disincentives: } \tilde{v}_{gt} = \frac{\min_t \{v_{gt}\}}{v_{gt}}. \quad (7)$$

Considering the level of integration between banking and insurance sectors of the financial market, the authors note that Ukrainian insurance company before starting work with clients of commercial banks should go through several stages. Initially, it should implement a set of measures intended to be adequately introduced to the market, then go through appropriate procedures of risk management, and only after that the insurance company will get a chance to become an accredited company. On the basis of the contract between the insurance company and a banking establishment the commission payments are paid to the bank, which acts as a sales agent of insurance products. Thus,

the integration of banking and insurance sectors has certain limitations, however, considered to be very promising area of cooperation in the creation of new products in the financial market. Today Ukrainian insurance companies provide a limited range of insurance services in comparison to companies in advanced industrial countries. Among other things only a few insurance companies are engaged in life insurance, as this particular insurance type requires the mobilization of long-term investment resources. This is precisely why some banks and insurance companies interact in this direction. Typically, banks may be interested in investment integration with insurance companies because insurers can minimize the risks sharing portion in lending and agree to allocate available cash assets on payment accounts and deposits. It must be admitted that insurance companies should command the services of banking establishments in the process of acquisition of shares, obligations etc., but, unfortunately, under current conditions of development of financial intermediation in Ukraine via low liquidity of capital issues and instability of

the domestic stock market, insurance companies are compelled to use the banking establishments as instruments for saving their cash resources. The bank deposits remain a forced guideline for investment.

The next step is to calculate the level of integration between banking and insurance sectors of the financial market. The method of multifactor optimization is applied for the purpose.

$$I_{BSit} = \tilde{b}_{it} (IB_i + IS_i), \quad (8)$$

where  $I_{BSit}$  – the absolute level of integration of banking and insurance sectors;

$$I_{BSit} = s_{jt} (IB_{m+j} + IS_{m+j}). \quad (9)$$

$$I_{BSgt} = \tilde{v}_{gt} (IB_{m+j+g} + IS_{m+j+g}). \quad (10)$$

$$I_{BSi} = \frac{\sum_{i=1}^m I_{BSit}^+ + \sum_{j=1}^k I_{BSjt}^+ + \sum_{g=1}^n I_{BSgt}^+}{\sum_{i=1}^m I_{BSit}^- + \sum_{j=1}^k I_{BSjt}^- + \sum_{g=1}^n I_{BSgt}^-}. \quad (11)$$

$$\max I_{BSi} = \frac{2p}{\sum_{i=1}^m \min_i \{I_{BSit}^-\} + \sum_{j=1}^k \min_j \{I_{BSjt}^-\} + \sum_{g=1}^n \min_g \{I_{BSgt}^-\}}, \quad (12)$$

where  $\max I_{BSi}$  – the maximum possible level of integration of banking and insurance sectors;  
 $p$  – number of stimulants.

$$RI_{BSi} = \frac{I_{BSi}}{\max I_{BSi}}. \quad (13)$$

$RI_{BSi}$  – the relative level of integration of banking and insurance sectors.

As a result of conducted calculation we get absolute and relative levels of integration of banking and insurance sectors of the financial market (Table 3).

Table 3. Calculated level of integration of banking and insurance sectors

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
The absolute level of integration	1.54	2.15	3.21	3.91	4.26	5.09	4.95	4.98	4.97	6.04
The level of integration, %	9.00	12.00	18.00	22.00	24.00	29.00	28.00	28.00	28.00	35.00

The interaction between banking and insurance institutions in the investment space is determined by penetration of insurance companies into banking groups.

Special mention should go to the benefits of banking and insurance integration into such spheres: payments and cash management (insurance companies open accounts with banks and use the services of payments and cash management); joint activity on provision of comprehensive services to customers (banks and insurance companies provide comprehensive services to customers – insurance and banking services). The banking and insurance and investment integrations give the following opportunities to the insurance companies:

- ◆ to allocate their financial resources on deposits in banks or invest in corporate securities (the banks are the emitters);
- ◆ to utilize consulting and related services on the acquisition of shares, obligations.

For banks such advantages are the following:

- ◆ the availability of long-term financial resources, especially from companies specializing in life insurance;
- ◆ the opportunity to employ services of insurance companies as to the insurance of specific investment risks (own risks and by the customer's order);
- ◆ providing comprehensive services to customers in investment banking.

As it can be seen, the level of integration between banks and insurance companies constantly rises and for the moment is about 35%. The “interpenetration” of banking and insurance markets is up to par. This is evidenced by a business expansion of bank centric financial conglomerates and distribution of conception “bancassurance”.

Further we calculate the level of integration between insurance and investment sectors on the financial market with the application of abovementioned method of multifactor optimization with the aforementioned formulas.

Under modern conditions of search of additional sources of funds available for investment, the motives of banks’ integration with other financial intermediaries are not limited to the needs of optimization of current activities and comprehensive service.

As a general principle, banking institutions play the main role in investment intermediary process of Ukraine, but in recent years the number of non-bank investors grows among which insurance companies take the leading position. Competing as to mobilization of investment processes, banks and insurance companies should cooperate simultaneously, which provides more efficient use of investment resources.

Choosing investment projects domestic insurance companies give precedence to liquidity over profitability, as evidenced by a substantial proportion of assets: monetary funds on current and deposit bank accounts and right of demand to reinsurers.

Despite the fact that Ukrainian insurance market is developed quite rapidly, domestic insurance companies still do not fully perform the functions of institutional investors due to a slack demand for life insurance products, insufficient level of insurance culture, unfavorable conditions for investment, insufficient savings of economic agents, lack of liquid financial instruments, a high proportion of speculative operations on the domestic stock market, the absence of state guarantees on capital investment projects of national character etc. In addition, in recent years there are crises of global and local dimensions, which greatly complicate the process of making effective investment decisions. In recent years there are crisis developments of global and local dimensions, which greatly complicate the process of making effective investment decisions.

The result of calculation of insurance and investment integration of financial market is presented in Table 4.

Table 4. Calculated level of integration of insurance and investment sectors of the financial market

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
The absolute level of integration	2.20	2.89	7.21	13.60	13.68	21.37	18.81	20.16	21.89	33.10
The level of integration, %	1.00	2.00	5.00	10.00	10.00	16.00	14.00	15.00	17.00	26.00

Thus, the level of integration of insurance and investment sectors constantly increases owing to the development of the domestic insurance market. The reason for this is that the insurers are in constant search for new investment sources, with account for more efficient investment strategies.

The low level of integration at a rate of 10-11% prior to the crisis and at the time of crisis is attributable to a low level of investment activity of insurance companies and a general state of uncertainty on the financial market. However, the easing of restrictions in investment activity on the part of the regulator and acceptance of new Tax Code, that changes the taxation environment of insurance companies (transition to general principles of taxation conditioned by the need to correspond to international practices) activate convergent processes on the financial market, which is attended by the formation of new forms of interaction of insurance and investment sectors of the financial market. As in 2014, pursuant to conducted estimations the level of integration between analyzed sectors was on the level of 26.2%.

The level of integration between banking and investment sectors is calculated by the same algorithm.

The analysis of global experience and national practices of integration of banking and investment sectors on the financial market is regarded from the perspective of interaction between the banks and non-governmental pension funds (NGPF).

The main benefits for NGPF from integration interaction between the banks and NGPF are the following: a significant sprawling of the customer base, an ability to use bank instruments for income provision, an application of banks’ investment experience.

For commercial banks the investment cooperation with NGPF allows to overtake available cash assets, which, in turn, leads to the growth of a banking capital and income.

It should be noted that the National pension fund’s (NPF’s) investment activity in Ukraine is characterized by a significant level of investment of pension assets in bank deposits and a low level – in government debt securities.

During the financial and economic crises the decrease of production volume of main kinds of industrial goods and services significantly worsened the conditions for investment activity, including non-governmental pension funds which negatively affected the rate of return of pension assets. Thus, the level of integration in 2007-2009 was maintained at the level of 17-18%.

Subsequent to the results of 2010, preferred investment patterns for pension assets are the following: bank deposits (34.7 % of invested assets), shares of Ukrainian emitters (18.1%), obligations, where the emitters are the residents of Ukraine (15.4%), capital issues, where the income is

guaranteed by the Cabinet of Ministers of Ukraine (14.9%). The tendency of asset managers to allocate assets on bank deposits is connected, firstly, with the position of the company managing the NPF's assets to minimize risks, and secondly – with instability in the stock market and government securities market. The level of integration between these intermediaries was 27% (Table 5).

As on the end of 2013 the NGPF's shares on the bank deposits composed 42%. Obviously, with the growth of alternate investment activity of NGPF and banks, the level of their integration is also increasing. As of 2014, the level of integration between analyzed sectors was about 33%.

Table 5. Calculated level of integration of banking and investment sectors of the financial market

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
The absolute level of integration	1.40	1.82	2.87	3.44	3.71	4.95	5.14	5.17	5.14	6.22
The level of integration, %	7.00	9.00	15.00	18.00	19.00	26.00	27.00	27.00	27.00	33.00

At the final stage of investigation we calculate the general level of integration between the banking, insurance and investment sectors of the financial market.

Graphically, the integration of three sectors can be presented in the form of rings which mutual intersection shows the existing close relationship

that generates innovative goods and services between major participants of the financial market (Figure 2). A new form of cooperation called financial conglomerate is emerging at the intersection of these sectors, which dynamic development reflects the growing level of integration on the financial market.

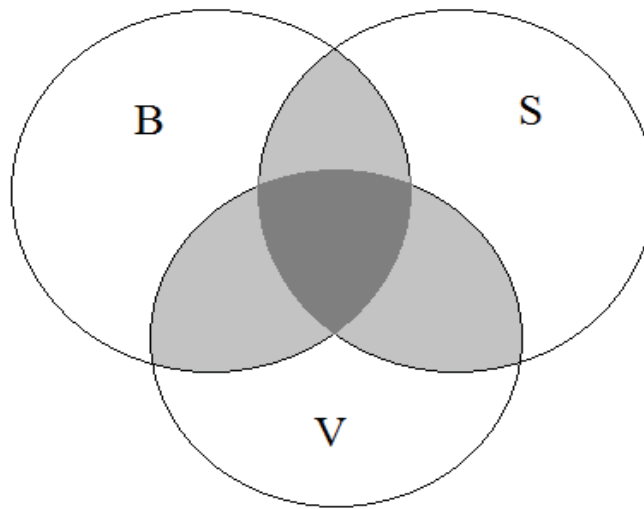


Fig. 2. Graphical interpretation of integration of studied sectors on the financial market

The absolute and relative levels of integration between investigated sectors of the financial market are figured out by such algorithm with regard to normalization of basic data (Table 6):

$$I_{BSVt} = \tilde{b}_{it} (IB_i + IS_i + IV_i).$$

$$I_{BSVjt} = \tilde{s}_{jt} (IB_{m+j} + IS_{m+j} + IV_{m+j}).$$

$$I_{BSVgt} = \tilde{v}_{gt} (IB_{m+k+g} + IS_{m+k+g} + IV_{m+j+g}).$$

$$I_{BVt} = \frac{\sum_{i=1}^m I_{BSVit}^{+} + \sum_{j=1}^k I_{BSVjt}^{+} + \sum_{g=1}^n I_{BSVgt}^{+}}{\sum_{i=1}^m I_{BSVit}^{-} + \sum_{j=1}^k I_{BSVjt}^{-} + \sum_{g=1}^n I_{BSVgt}^{-}}.$$



$$\max I_{BSVt} = \frac{2p}{\sum_{i=1}^m \min_i \{I_{BSV_{it}}\} + \sum_{j=1}^k \min_j \{I_{BSV_{jt}}\} + \sum_{g=1}^n \min_g \{I_{BSV_{gt}}\}}.$$

$$RI_{BSVt} = \frac{I_{BSVt}}{\max I_{BSVt}}.$$

The results of calculation of the general level of integration between analyzed sectors are given in Table 6. Beginning from 2006, the level of integration between banking, insurance and investment sectors of the financial markets is constantly growing. In 2006-2007, there was a rapid development of the financial market of Ukraine, accompanied by a rising growth of transactions between financial intermediaries. The basic catalyst of these operations was the banking sector. The need for sprawling of the customer base and financial risk hedging moves the relations between banks and insurance companies to a new level. Collaboration and cooperation develop into consolidation and raise the level of integration

between above mentioned financial intermediaries. In the period of general financial crisis the level of integration on the financial market slows down the rates of growth but still reaches the level of 28-30%. Foreign financial conglomerates get access to domestic financial market and, in the majority, gain control over domestic financial establishments and extend their activity to the most developed sectors of the financial market. The post-crisis period is characterized by the continuation of tendency of increasing in the general level of integration on the financial market. In 2010 the rate of growth of the general level of integration turned to the pre-crisis level. As of the end of 2014, the estimated value of the general level of integration of banking, insurance and investment sectors on the financial market was 46.26%.

Table 6. The calculation of the general level of integration of banking, insurance and investment sectors of the financial market, %

The sector of the financial market			Year									
			2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
BANK	INS		8.92	12.49	18.57	22.59	24.69	29.50	28.68	28.90	28.79	35.00
	INS	INV	1.74	2.29	5.72	10.78	10.85	16.94	14.91	15.98	17.34	26.23
BANK		INV	7.45	9.66	15.28	18.27	19.66	26.31	27.31	27.45	27.27	33.01
BANK	INS	INV	9.38	12.63	20.81	26.13	28.90	36.53	36.12	36.31	36.53	46.26

Although steady tendency of increasing of the general level of integration between analyzed sectors a substantial reduction of rates of growth

during the crisis of 2008-2010 and within the period of overall uncertainty on the financial market in 2011-2013 should be pointed out (Table 7).

Table 7. The calculation of the rate of growth and the rate of increase for the general level of integration

	2006	2007	2008	2009	2010	2011	2012	2013	2014
The rate of growth, %	134.59	164.77	125.56	110.60	126.41	98.88	100.52	100.61	126.64
The rate of increase, %	34.59	64.77	25.56	10.60	26.41	-1.12	0.52	0.61	26.64

It is evident that at the initial stages of the crisis an essential weakening of the level of integration between the sectors, banking and insurance in particular, is traced. At the same time the bankruptcy of financial institutions and reduction of the total level of capitalization in financial system establish the basis for the entrance of foreign banks and insurance companies to the domestic financial market and strengthen convergent ties between individual companies within the newly formed financial conglomerates. The last step is to determine the minimal and maximum limits of

integration. Note that the examination of the limits of integration is a method of interval estimation. The calculation is performed by the following formulas:

The minimal limit of integration:

$$\min RI_{BSVt} = \frac{RI_{BSVt}}{RI_{BS} + RI_{BV} + RI_{SV}} \times 100\%.$$

The maximum limit of integration:

$$\max RI_{BSVt} = \frac{\frac{1}{3}(RI_{BS} + RI_{BV} + RI_{SV})}{RI_{BSVt}} \times 100\%.$$

From an economic point of view, the limits of integration point to the possibility of convergent processes on the financial market. During analyzed

period, the minimum limit of integration was on the level of 49-52%, and the maximum limit of integration – 63-67% (Table 8).

Table 8. The calculation of minimum and maximum limits of the general level of integration, %

Limit	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
min	51.780	51.664	52.592	50.587	52.347	50.209	50.941	50.199	49.756	49.087
max	64.375	64.519	63.380	65.893	63.678	66.389	65.436	66.402	66.994	67.906

Arguably, structural and functional synergies are developed. The synergistic effect in this case is that in the process of synergy of more than one sector on the financial market their operation is essentially exceeds the effect of each particular sector in the form of their sum.

The limits of integration point out that in consequence of simultaneous generic integration of studied sectors a greater economic effect will be achieved, than due to integration between each particular sector.

Therefore, financial institutions have in their possession substantial resources and capabilities for further development of partnership relations to the simultaneous benefit of all sides.

## Conclusions

The strengthening of the processes of financial integration and financial convergence have resulted in a situation where different market entities, being heterogeneous on development and management

strategies and peculiarities of financial products joined forces on the market of finance services as well as on the financial market. In practice, the aforementioned processes are showed as horizontal capital integration – the formation of intra-account relations and vertical capital integration – the association of different types of financial intermediaries.

The emergence of highly converged integrated financial intermediaries being a fundamentally new type of a business financial market is the result of the simultaneous convergence and activation of integration processes. The closest cooperation in the process of convergence and integration interaction is observed between banking, insurance and investment establishments.

The studied level of integration is a clearly-defined indicator denoting the dynamic development of financial conglomerates on the domestic financial market.

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## Appendix

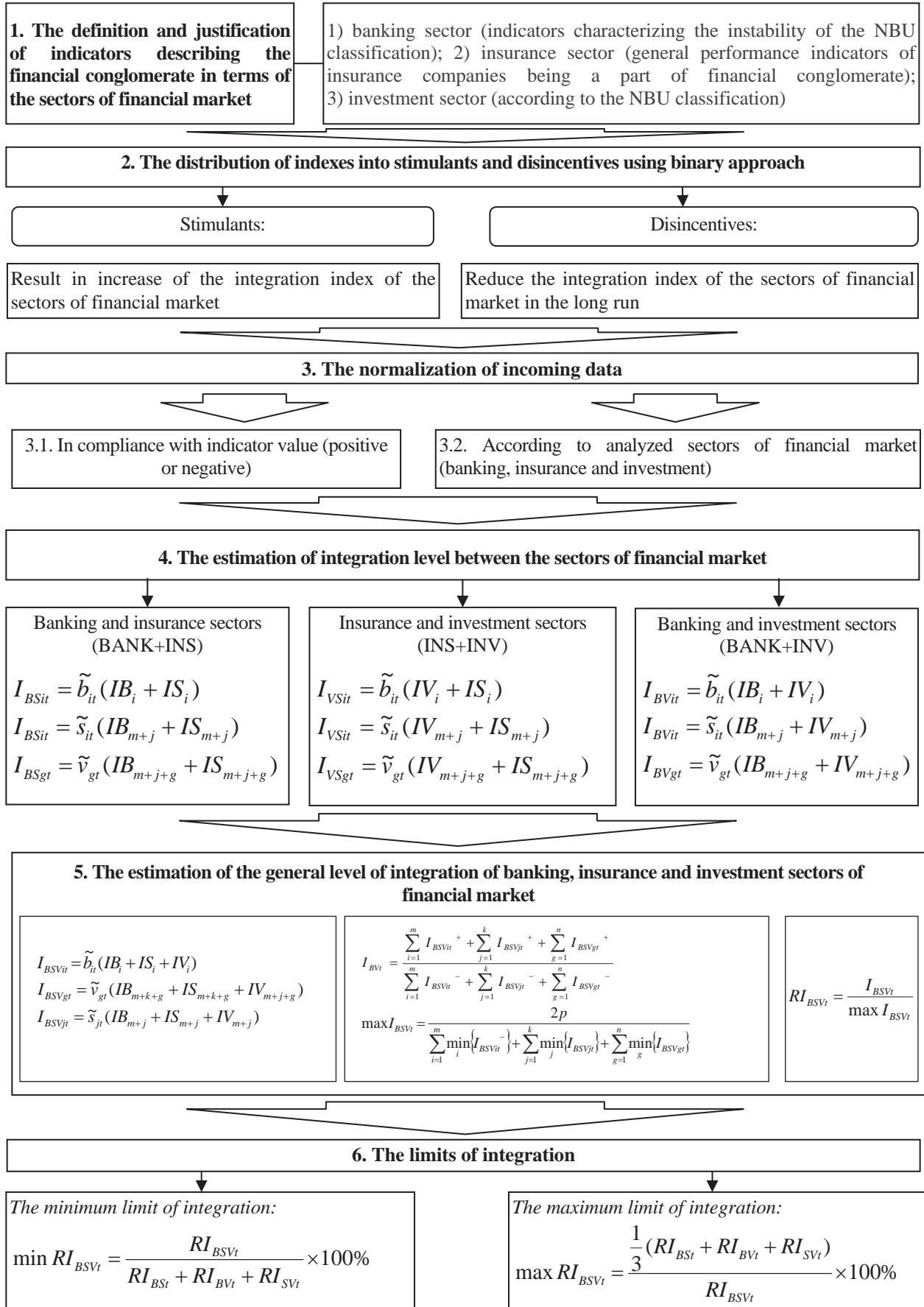


Fig. 1. The general view of the assessment model of integration level of the participants in financial conglomerate