THE ORDERING AND CONSTRUCTION OF ALGORITHMS IN BANKING RISK MANAGEMENT AND DECISION-MAKING PROCESS

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This article covers the aspects of risk management systems with the help of special algorithms on practice. The author has developed recommendations to regulator in order to reconstruct the banking system by involving the internal financial resources which must replace the foreign capital.

All bank activity assumes occurrence of the whole spectrum of various risks which have property to collect and be transferred to elements of all the system. Every day risks are subject to changes and integrated into the international systems as the bank system develops constantly. The methodology of the risk management should take a paramount place in development of systems and decision-making mechanisms in commercial bank1. Thus, risk-management process in bank should be based on stage-by-stage and "penetrating" effect of management (P), since the beginning of reproduction of bank service through set of operations of services and products (fig. 1).

Let's look on a commercial bank as the manufacturer of a credit product. Plural risks ("P" on the scheme 1) are inherent in such production: the counterpart, market conditions, qualities, information, technological, the personnel etc. In the particular risk-management process "P" bank should have the standard documents and the basic requirements to the whole process and its participants, main principles of construction of this process and a technique of risks' regulation. So, for example, operating credit risk at realisation of a credit product for the physical person (further CPPP), we will mean risks of its insolvency and infringements of treaty provisions: non-return of percent, depreciation of its actives, pledge and so on. Main objective of CPPP risk-management process is maintenance of development of bank within the limits of the set strategy and trouble-free work realisation in maintenance of all interdependent systems of bank, including liquidity and sufficiency of the capital. At level of an estimation and identification CPPP it is necessary to work out all databases, with the

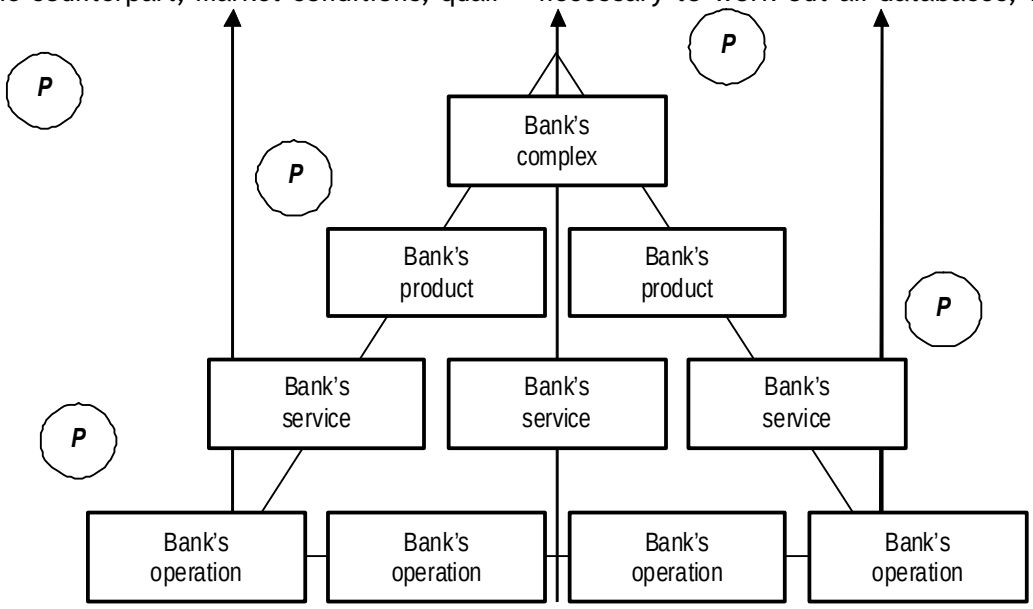

Fig. 1. **Penetrating effect of risk-management in the course of manufacture of bank service**

Source: it is made by the author

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information from the counterpart, with expert estimations and forecasts of experts and financial institutions. In methodology of CPPP estimation the model of non-return estimation and also definitions of the greatest possible risk of loss and division of risks on expected and unforeseen can be used. We will define the greatest possible risk of loss on the basis of an estimation of likelihood distribution of function in possible losses as a percentage point of distribution of the losses, corresponding to the set confidential level. The maximum risk will be defined by summation of the greatest possible risks on all actives of CPPP owner.

$$KP = \sum_{n=1}^{i} KP_i, \quad (1)$$

where n - quantity of all actives of the client CPPP subject; KP_i - the max. possible credit risk of losses at realisation of i-th active of the client connected with CPPP, defined as:

$$KP_i = \sum_{\kappa=1}^{L} \frac{V_{ik}}{Q_{ik}} \cdot QD_{ik}, \quad (2)$$

where V_{ik} - the size of i-th active (for example, the mortgage, the autocredit etc.) on k-th group of counterparts - CPPP owners (for example, the interconnected group of borrowers) for current date; L - quantity of groups of the interconnected borrowers; Q_{ik} - quantity of products subject CPPP in i-th active on k-th group of borrowers for current date; QD_{ik} - the max. possible quantity of cases of approach of risk of a non-return of the credit with the set confidential probability (Puasson's distribution with cutting of 99% of the confidential probability recommended by Basel) for current i-th portfolio of CPPP actives on k-th group of borrowers is used.

The expected size of credit risk losses (OKP) on a certain time interval is defined as the sum of sizes of expected risks on actives of CPPP clients:

$$OKP = \sum_{n=1}^{i} OKP_i, \quad (3)$$

where n - Quantity of all actives of the client subject to CPPP risk; OKP_i - Size of expected credit risk of losses at realisation of i-th active of the client connected with CPPP, defined as:

$$OKP_i = \sum_{J=1}^{m} V_{ij} \cdot PD_{ij} \cdot (1 - G_{ij}), \quad (4)$$

where V_{ij} - the size of a portfolio of the actives CPPP subject on i-th group of actives with j-th group of counterparts; PD_{ij} - probability

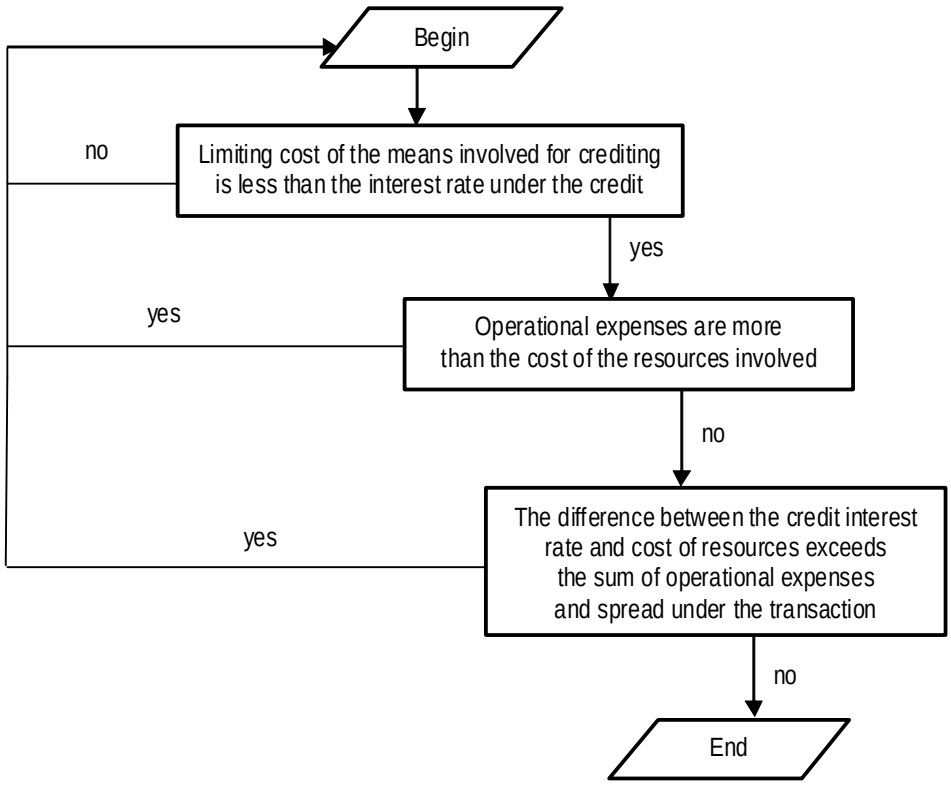

Fig. 2. **Algorithm of an establishment of the interest rate under the credit**

Source: it is made by the author

of CPPP realisation on *i*-th portfolio of actives with *j*-th group of counterparts on a certain time interval; *m* - quantity of groups of CPPP clients; G_{ij} - compensation factor on i-th portfolio of the actives CPPP subject, in case of risk approach on *j*-th category of quality of compensation. Here it is necessary to use classification of values and to define quality of the loan, according to standard values.

The size of unforeseen risks (HKP) will be defined as a difference between size of greatest possible risk KP and expected OKP. Using an example of one of banks, the size of which portfolio of actives for concrete date makes 10 981,55 million RUR. The quantity of the contracts subject to risk CPPP makes 4 281 pieces. To the fixed date the max. possible quantity of

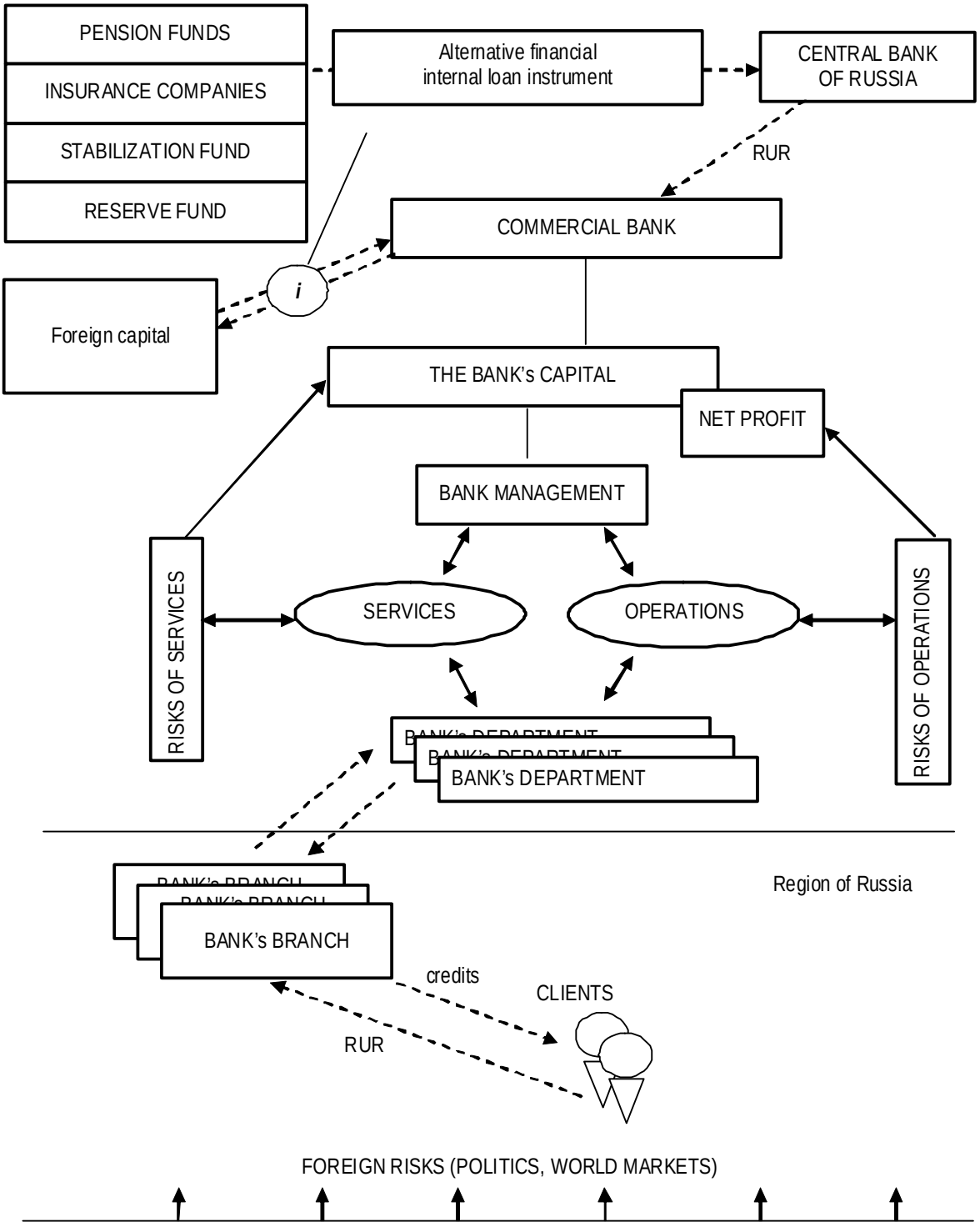

Fig. 3. **Bank system of the Russian Federation and its dependence on the foreign capital**

Source: it is made by the author

cases of approach of risks on which non-return cases (proceeding from actual quantity of contracts equal 173,5 are admitted and under the law of Puasson's distribution), with probability of 99% leaves 204 ($173,5 + \sqrt{173,5} \cdot 2,32 = 204,05$). Thus:

$$KP = 10\,981,55/4281 \cdot 204 = 523,3 \text{ million Rubles.} \quad (5)$$

OKP it is defined under formulas 3 and 4 and makes 445,1 million rbl. ($10\,981,55 \cdot 173,5/4281 = 445,06$). The size of unforeseen losses HKP makes: HKP = KP - OKP = 523,3 - 445,1 = = (6) Thus we have counted 78,2 million rbl. that at total amount of actives on CPPP 10 981,55 million rbl., expected credit risk of losses on CPPP has made 445,1 million rbl., and unforeseen losses of 78,2 million rbl.

Similar settlement control systems of risk always should be combined with expert estimations which should be spent on certain administrative algorithms. For example, the mini-algorithm of an establishment of the interest rate under the credit, from the point of view of management of risk (fig. 2), can be the following:

Well to summarize the possibility of managing risk processes in business and banking on the basis of formulas and construction of administrative algorithms is a universal method of decision-making ability. Efficient risk management in banking becomes one of mainstream approaches of Russian banks to the world standards. Resources are the important binding component and a building material of any bank system. They have the cost and the origin. All limits on all major banks' operations are connected with the size of its capital (fig. 3) which directly is connected with history of an origin and by creation of this capital.

Now, our Russian economy and bank system as a whole is under construction using foreign capital (fig. 3). It is necessary for risk decrease to be injected into the own Russian capital in the country to the economy and bank system of the Russian Federation. Credits' portfolios of consumers should be re-structured in Russia, by a gradual conclusion of foreign money and replacement with their new Russian Financial Tool of Loan (figure "i" on Fig. 3). Such toll must base on money from insurance companies, pension funds, stabilization and reserve funds of our country.

Such measures will help to lower the rate of credit products, to stop prices growing and to raise availability of housing construction to the people and to insure bank system from risks and crisis. It is necessary to mention that in fact we operate risks with purpose and certain effect. Perfectly the advantage of introduction of this or that technique should be economically notable both for banks and clients.

The competent approach to the banking risk management and understanding of the external economic processes gives to the bank the possibility to reduce the rate under credits for the clients.

Fundamentally, ideal balance between stable development of bank system and availability of the credit products to the people is the most concrete problem of upgrading the Russian bank system.

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