Strategic management of modern financial requirements in agriculture

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Abstract. The article addresses the efficient management of current financial needs of agricultural goods producers. The purpose is to review current financial needs of agricultural goods producers and develop tools to coordinate current assets and current liabilities management in agriculture at the regional level. Methods of financial management combined with tools of econometric and statistical analysis provide the basis for analytical review and modeling of current financial needs of agricultural goods producers in the Penza Oblast. The paper generalizes and systematizes financial methods of integrated operational management of current requirements in agriculture. The analysis shows a demand for transforming the elements of the integrated operational management policy. We developed an econometric model of dependence of the basic elements of policy on agrarian business entities. Its description enables to define and coordinate strategic decisions on operational management of current financial needs in the agrarian sector at the regional level. On the basis of obtained functional relations, it is possible to substantiate areas for improving the implemented agricultural policy aimed at additional financial resource mobilization in agriculture.

1. Introduction
Currently, practices of project and financial management are reaching new horizons in Russia. As the legislative and regulatory framework gets more refined and updated, these practices are implemented by governmental authorities charged with management and regulation of national economic sectors. Agriculture is of special importance in this case so as to observe and pursue the national food security. The robust legislative mechanism has been developed for the recent decade to move the agricultural business forward. It suffices to mention the priority national project, The Development of Agro-Industrial Complex, Federal Law, On Development of Agriculture, Food Security Doctrine, 2013–2020 National Program for Agricultural Development and Regulation of Markets of Agricultural Production, Resources and Food. The documents and other ones are intended to comfort the agricultural business. The above documents emphasize agricultural production should be technologically and technically upgraded. Relevant activities are conducted to support the construction of new farms, greenhouses, development and improvement of farmlands, renewal of vehicles, equipment and agricultural machinery. Such investment projects and capital expenditures cannot be overestimated. They become a stepping stone for the future income, and reasonable source of discounted cash flows in a five-to-seven year time. Unfortunately, sound investment policy in agricultural products overlooks the current operations of agricultural producers, which cannot but have certain difficulties. Current expenses are as important for production enterprises as capital expenditures.
The production cycle of production enterprises includes the funding of inventories, tangible costs, payroll and social security charges, trade and other payables. As the government neglects the policy for managing the current financial needs in agriculture, the debtload of agricultural businesses grows, thereby preventing them from raising loans or State funds for their innovative development since the main fundraising mechanisms depend on financial and credit institutions.

In modern conditions, one of the important tasks for the agrarian sector enterprises is an increase in effective management of the current financial requirements for the purpose of optimization of their financing [1]. The modern financial requirements have a direct impact on a financial condition of the agricultural enterprises [2]. It causes the need to carry out the analysis of a condition of the modern financial requirements, identify the definition of the major factors influencing them, justify the directions of improvement and development of financial strategy management of modern financial requirements [3]. The formation of such strategy has to reflect real strategic objectives of the development of agrarian enterprises [4]. The purpose of the research is to review modern financial needs of agricultural goods producers and develop tools in order to coordinate current assets and current liabilities management in agriculture at the regional level.

2. Materials and methods
As the analysis of agricultural entities in the Penza Oblast shows, the agricultural entity debtload exceeds its revenue, its fixed assets will be sufficient to satisfy only 30 percent of its modern needs, while the debtload below the revenue raises this indicator up to 50 percent (Table 1).

Table 1. Grouping of agricultural entities in the Penza Oblast by ratio of revenue and accounts payable

| Groups of entities by ratio of revenue to accounts payable | Percentage of entities in the group | Average ratio of revenue and accounts payable in the group | Percentage of current liabilities | Percentage of fixed assets in total assets | Percentage of equity |
|----------------------------------------------------------|------------------------------------|----------------------------------------------------------|----------------------------------|-------------------------------------|------------------|
| Ratio below 1                                            | 21                                 | 0.5                                                      | 58.9                             | 28                                   | −42.9            |
| Ratio above 1                                            | 79                                 | 5.94                                                    | 29.7                             | 47                                   | −19.5            |

Due to very scarce current assets, meager agricultural businesses have to take out short-term loans in order to construct current assets. That is the reason why their debtload with current liabilities accounts for almost 60 percent, while they are less than 30 percent in more financial ly sustainable entities. Under such circumstances, over 30 percent of agricultural businesses have a slim chance of securing long-term loans and improving their production capacities respectively. Major agricultural firms set up their own model for managing net current assets [5]. The other ones lack funds from time to time to purchase materials and resources, pay for fuel and lubricants, create inventories, etc. [6]. This brings business performance results to nothing, intensifies the issue of deficit and shortage of resources and desynchronizes the outgoing and incoming flows of liquid assets. Agricultural producers have to increase their debts, disinvest and seek various financial aids [7]. In such circumstances, there should be an agricultural strategy in place to manage the modern financial needs of agricultural producers. For this purposes, it is necessary to create a certain pool of available funds of agricultural producers in the regions, raise the standards of efficiency of financing and subsidizing sources [8]. Considering that the modern financial needs are virtually the difference between current assets and accounts payable, indicating the agricultural producers’ lack of credit resources [9], the agricultural policy is called to accelerate the turnover of circulating resources, choose the most appropriate approach to operational management of current assets and liabilities in the region [10] (Table 2).

The difference between readily available property and current sources of finance constitutes net working capital, which is measured using the technique depicted in Figure 1.
Table 2. Modern financial needs in agricultural entities of the Penza Oblast for operations in 2016–2017

| Metrics                                         | 2016         | 2017         | Deviation |
|-------------------------------------------------|--------------|--------------|-----------|
| Average revenue from sale, thousand RUB         | 73 010.7     | 107 221.3    | 34 210.6  |
| Stocks of resources and finished products, thousand RUB | 11 794 813   | 16 437 822   | 4 643 009 |
| Right to claim receivables, thousand RUB        | 10 648 877   | 17 264 582   | 6 615 705 |
| Trade payables, thousand RUB                    | 16 947 073   | 26 666 400   | 9 719 327 |
| Modern financial needs, thousand RUB            | 5 496 617    | 7 036 004    | 1 539 387 |
| Modern financial needs, days                    | 75.29        | 65.62        | -9.67     |
| Modern financial needs, percent                 | 20.91        | 18.23        | -2.68     |

Figure 1. Technique of assessment of the working capital.

In 2016, value of circulating resources owned by agricultural entities of the Penza Oblast equaled 25.67 percent of the annual turnover, or over RUB 10 billion. Only a portion of resources that the region’s agricultural businesses posses are spent on modern financial needs. The cash balance amounts to over RUB 3 billion. As the analysis shows, agricultural entities of the region hold a sufficient amount of circulating resources, with 63 percent of them being spent on current operational needs of agricultural producers and other 37 percent forming freely available cash. In 2017, there was a 70 to 30 percent proportion respectively. Such modern financial needs and resources give hope that the payment discipline will strengthen, expenses in the nearest future will be covered, minimum reserve stock and short-term financial investment will be formed. This highlights a most adequate balance of needs and financial sources. Such a balance shall persist and be stable for a number of years so that an agricultural producer could be considered financially sustainable [11]. The ratio of financial sources of mobile assets is a key factor influencing the amount of net working capital of agricultural entities [12]. In this respect, the theory of financial management suggests observing the fundamental principle of operational life of assets matching their financial sources [13]. The principle implies that equity is a reasonable source feeding the constant minimum need in mobile assets. Short-term loans sustain the other additional need in current assets, for example, those of seasonal nature [14]. It is necessary to compare the effectiveness of capital use and financial sustainability risk of agricultural businesses to reasonably choose sources for financing circulating resources of agricultural producers [15-17]. The factors underlie the policy for comprehensive operational management of financial needs. The policy pursues to maintain a certain level and composition of current assets, on one hand, and volume and effective structure of financial sources, on the other hand (Table 3).
Table 3. Determining types of policy for current assets and current liabilities management in agricultural entities of the Penza Oblast in 2016–2017

| Metric                        | 2016                  | 2017                  | Deviation |
|-------------------------------|-----------------------|-----------------------|-----------|
| Revenue from sales, thousand RUB | 26 283 866           | 38 599 667           | 12 315 801 |
| Net profit, thousand RUB       | 3 612 597             | 4 272 898             | 1 251 301  |
| Current assets, thousand RUB   | 25 723 156            | 36 714 440            | 10 991 284 |
| Fixed assets, thousand RUB     | 37 109 051            | 41 437 344            | 4 328 293  |
| Total assets, thousand RUB     | 62 832 207            | 78 151 784            | 15 319 577 |
| Equity, thousand RUB           | 20 309 499            | 23 447 656            | 3 138 157  |
| Short-term loan, thousand RUB  | 16 947 073            | 26 666 400            | 9 719 327  |
| Percentage of current assets in total assets | 40.94                 | 46.98                 | 6.04      |
| Return on Assets, percent      | 5.75                  | 6.95                  | 1.2       |
| Turnover period of circulating resources, round | 1.02                 | 1.05                  | 0.03      |
| Current equity, thousand RUB   | −16 799 552           | −17 989 688           | −1 190 136 |
| Percentage of short-term loans in total liabilities | 26.97                 | 34.12                 | 7.15      |
| Type of current assets management policy | Moderate      | Moderate              | –         |
| Type of current liabilities management policy | Aggressive   | Aggressive            | –         |

Having analyzed the 2016–2017 data (Return on Assets, turnover period of mobile assets, etc.), we found out that many agricultural entities in the Penza Oblast tend to a moderate policy in managing their current assets. In the mean time, having analyzed a percentage of short-term loans in the total liabilities, we can report on an aggressive policy for managing the current liabilities, which immediately raises the effect of financial leverage.

3. Results and Discussion

Fixed costs also include interests charged for utilizing loan resources, thereby intensifying operating leverage. As indicated in the matrix for determining a type of modern need management strategy, the combination of moderate policy for managing current assets and aggressive policy for managing current liabilities enables us to describe the comprehensive policy of operational management at agricultural entities of the Penza Oblast. To increase net working capital and financial sustainability, agricultural entities are advised to adopt a moderate policy for managing their current liabilities. This will curb the effect of financial leverage and boost a growth in the Weighted Average Cost of Capital (WACC). Based on combined financial statements of agricultural entities in the Penza Oblast for 2016 through 2017, we conducted the statistical analysis of the current policy for comprehensive operational management using the grouping technique (Table 4, 5).

Table 4. Grouping of agricultural entities by current assets management policy

| Group of entities | Percentage of entities in the group | Percentage of current assets in total assets | Profitability, percent | Turnover period of circulating resources, round |
|-------------------|-------------------------------------|----------------------------------------------|------------------------|-----------------------------------------------|
| Conservative      | 12.9                                | 21.5                                         | 0.75                   | 1.5                                           |
| Moderate          | 24.2                                | 37.7                                         | 4.9                    | 1.6                                           |
| Aggressive        | 62.9                                | 74.6                                         | 13.5                   | 0.7                                           |

Table 5. Grouping of agricultural entities by current liabilities management policy

| Group of entities | Percentage of entities in the group | Percentage of current liabilities in total assets | Current equity, thousand RUB | Profitability, percentage | Turnover period of circulating resources, round |
|-------------------|-------------------------------------|-----------------------------------------------|----------------------------|---------------------------|-----------------------------------------------|
| Conservative      | 64.3                                | 21.9                                         | −10 984 616                | 7.75                      | 0.86                                         |
| Moderate          | 8                                   | 42.2                                         | −1 661 924                 | 6                         | 0.9                                          |
| Aggressive        | 27.7                                | 64.1                                         | −5 276 282                 | 5.15                      | 1.71                                         |
As the research shows, many business entities in the region tend to an aggressive policy for managing their current assets (almost 63 percent). The current assets out of total assets approximates 75 percent. Profitability of such entities is over 13 percent as compared with less than 1 percent in those entities having a conservative policy, and around 5 percent in entities with a moderate policy for managing current assets. Strengthening the current assets management policy increases the profitability and vice versa. Over 64 percent of the region's agricultural entities are found to have a conservative policy for managing their current liabilities. Current liabilities account for 22 percent in such entities, while profitability is 8 percent. Entities with an aggressive policy (27.7 percent) have slightly lower profitability of 5.15 percent, but significantly higher turnover of circulating resources (1.71). To combine the current assets management strategy and current liabilities management strategy as much as effectively, we set up the model reflecting the dependency of modern financial needs policy on principal factors (Table 6).

Table 6. Functional dependence of profitability of agricultural producers in the Penza Oblast on aspects of the modern financial needs management policy

| Efficiency indicator Y | Aspects of modern financial needs management policy | Model | Fisher's exact test (F-test < 0.05) | Student's t test X1 / X2 (P-value < 0.05) |
|------------------------|-----------------------------------------------|-------|-----------------------------------|----------------------------------------|
| Profitability          | Percentage of current assets X1. Turnover period of circulating resources X2 | 0.24 X1 + 1.13 X2 – 7.22 | 0.92 | 0.002 | 0.0008 / 0.002 |
|                        | Percentage of current liabilities X1. Current equity X2 | 10.2 – 0.04 X1 + 0.0000024 X2 | 0.89 | 0.003 | 0.004 / 0.01 |

Profitability is deemed as the efficiency characteristic. Conducting an econometric study into the current financial needs management strategy in agriculture of the Penza Oblast, we traced the high dependency of profitability both on elements of the current assets management policy and (92 percent) and current liabilities management policy (89 percent). Characteristics of the resultant models are evaluated to be adequate and significant.

Having analyzed the current assets management model for elasticity, we determined that a 1-percent increase in the percentage of current assets raises profitability by 0.24 percent, while one additional turnover round adds 1.13 percent to profitability. Profitability grows only if equity rises. In the mean time, a percentage of current liabilities decreases the analyzable indicator by 0.04 percent.

4. Conclusion
The optimal combination of strategies for financing current needs is measured if profitability characteristics are given. The resultant values of indicators characterizing the policy for comprehensive operational management can be used to outline the uniform strategy for financial management of agricultural entities' current needs.
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