

The influence of the combination of physical and financial capital on the profitability of agricultural formations

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Abstract. The study provides definitions of "capital", "profitability", "agrarian formation", an analysis of the influence of the combination of physical and financial capital of agricultural enterprises on the efficiency of their activities. The study was based on dialectical, static, comparative and logical methods of cognition, and also used the methods of formalization, modeling, analysis, synthesis, induction, deduction, observation, grouping, absolute, relative and average values. The study examined the history of the development of the definition of "capital" and its components. The article defined the components of physical and financial capital of agricultural enterprises that have a major impact on the level of profitability, and therefore on the efficiency of economic entities and their relationship, analyzed the influence of the totality of physical and financial capital on the efficiency of agricultural formations, identified the main factor of the combination of physical and financial capital, which has a direct impact on the efficiency of economic entities operating in the agro-industrial complex. The study formulated the main problems in the formation of a combination of physical and financial capital that have a negative impact on the level of profitability of agricultural formations, and proposed directions for optimizing the interaction of physical and financial capital of agricultural formations and increasing the efficiency of their activities.

1 Introduction

Modern realities in the economics and politics could not but affect the activities of economic entities of the country. Numerous packages of economic sanctions from a number of unfriendly countries have led to a disparity in prices for the products of agricultural and industrial enterprises as well as to increasing in inflation processes. As a result the efficiency of enterprises was threatened. In the current economic conditions characterized by a high level of instability [1] and uncertainty [2], agrarian formations are in a special position. It is on their activity that the food security of the state depends on. The emerging

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changes, taking into account modern target settings for the positive evolution of agribusiness [3], lead to the fact that it is especially significant for agricultural enterprises to focus on the most rational methods of organizing production to increase the efficiency of their activity characterized by the level of its profitability.

The definition of Çagrarian formation, based on the morphological and syntactic properties of the definitions Çagrarian, relates in meaning to the term Çagricultural, and Çformation as well as to the term Çorganization which is an independent, organizationally separate economic entity that owns or manages land, which produces crop or livestock products. Synonyms for this definition can be: Çagricultural enterprise, Çagro-industrial complex enterprises, Çeconomic entity.

The categorical definition of the definition "profitability" belongs mainly to Soviet economic literature. Whereas Western countries usually use the following concepts simultaneously: "return", "profitability", "efficiency", which are often identified.

According to the study, most authors interpret profitability as a general factor pointing to the quality of the economic entity. This economic category is calculated as the ratio of profit to various components of both physical and financial capital, which is why all types of profitability are considered relative characteristics of the efficiency of an enterprise.

Profitability factors are important characteristics of the factor environment for the formation of profit and income of an enterprise.

The problem of increasing the level of profitability has recently become quite acute for most agricultural formations, since the adoption of effective management decisions requires the management of the latter to clearly understand the degree of influence of the main factors on its value [4].

Any economic entity that separately carries out its statutory activities must have both physical and financial capital, and also clearly understand how to manage it to obtain the maximum economic effect [5].

The level of profitability depends on the composition and structure, on the relationship and interdependence of physical and financial capital, since each of the named components of capital has a certain function [6] in the implementation of production activities of agricultural formations.

Analysis of the works of outstanding scientists who have made a significant contribution to the study of profitability allowed us to conclude that this definition is complex and ambiguous. But the increase in its level at agricultural enterprises requires further scientific developments based on a systematic approach to the combination of physical and financial capital, taking into account the specifics of agricultural production.

2 Research methodology (methods)

The conducted research was based on dialectical, static, comparative and logical methods of cognition, and also used the methods of formalization, modeling, analysis, synthesis, induction, deduction, observation, grouping, absolute, relative and average values.

The forms of annual reporting of economic entities of the southern regions of the Don region as well as official statistical data constituted the empirical basis of the conducted research.

The scientific and methodological basis of the study was the current principles, rules and methodological provisions in the field of accounting, reporting and profitability analysis arising from legislative and regulatory documents of the Russian Federation, as well as articles in periodicals, theoretical developments of domestic and foreign scientists on the topic under study, materials of scientific conferences, monographic literature.

The methodology for calculating profitability in domestic practice differs from its foreign counterparts.

Foreign economic entities as a rule calculate profitability by calculating the difference between the value of net assets at the beginning and end of the period. In this case, net assets are calculated by subtracting the value of debts to third parties, the amount of

medium-term, long-term and short-term debt to suppliers and other creditors from the total value of the enterprise's assets. Additional contributions made by the company's owners are excluded from the remaining amount or the amount of compensation paid by them is added to it.

In Russia, profitability characterizes the profitability of the statutory activities of an economic entity. It is determined by calculating a number of relative factors.

In domestic science, the system of profitability coefficients consists of three interrelated groups of factors calculated on the basis of:

- 1. product profitability;
- 2. return on assets;
- 3. cash flows.

At the same time, a large number of various methods, techniques and analytical factors used to analyze the efficiency of economic entities [7] have a negative impact on the quality of their analytical work and, as a consequence, on the development of management decisions aimed at increasing the efficiency of the economic entity [8]. Therefore, a sample of profitability factors was conducted to determine the efficiency of agricultural formations (Table 1).

Table 1. The system of profitability coefficients of agricultural enterprises used in the study*

Factors	Components	
	numerator	denominator
Return on physical capital	Balance sheet profit	Average annual cost of physical capital
Return on financial capital		Average annual cost of financial capital
Return on own capital		Average annual cost of own capital
Return on loan capital		Average annual amount of loan capital
Return on fixed capital		Average annual value of non-current assets
Return on working capital		Average annual value of current assets

*compiled by the authors

The team and management personnel of the enterprise consider the growth of the level of profitability as strengthening its financial position, increasing the funds allocated for material incentives for their work, the results of the tactics and strategy used, as well as the feasibility of its possible adjustment with an emphasis on future results.

3 Research results

The optimal interaction of physical and financial capital, ensuring the management of an agricultural formation in modern economic conditions, directly depends on the evolution of these definitions.

Interest in the category of "capital" and its components appears in the 15th century. But this definition is so complex and multifaceted that even today discussions continue about its conceptual apparatus, as well as the degree of its influence on the efficiency of enterprises [9, 10].

Capital was previously understood as certain types of wealth depending on the degree of development of commodity-market relations: slaves, spices, and then a set of precious metals, stones, goods and, finally, money.

Analyzing the works of outstanding economists, one can note that in the second half of the 18th century, a certain difference in the terminology of both financial and physical capital emerged. At the same time, it should be noted that the correlation of capital with the financial component has not been appreciated yet. Nevertheless, despite the apparent differences in the interpretation of capital, all researchers associate capital with any resources (physical capital) capable of generating income (financial capital).

Today, within the framework of the existing accounting and analytical system that has developed at Russian agro-industrial complex enterprises, through which capital is managed as a whole [11]. In this case physical capital is interpreted as a set of enterprise assets with the help of which the production process of an economic entity is carried out, and financial capital is considered as a source of formation of the property of an economic entity.

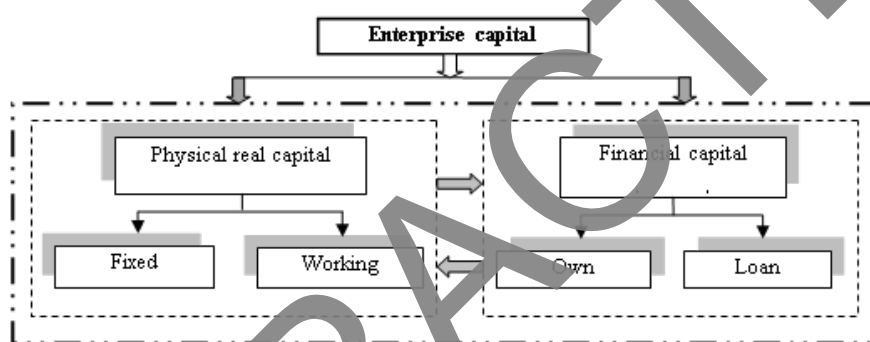


Fig. 1. Interrelation of physical and financial capital of economic entities

The definition of "capital" can currently be understood as a combination of physical and financial capital in their interrelation and interdependence.

In the accounting and analytical system used by most agricultural enterprises in the country, physical capital is a combination of fixed and working capital. Fixed capital which has a direct impact on the production process includes non-current assets of the enterprise. The working capital of agricultural enterprises is a combination of seeds, fertilizers, plant and animal protection products, finished products, fuel, spare parts, etc.

Financial capital is a combination of sources of formation of the enterprise's property, consisting of own and loan funds of the economic entity. Own sources of forming property include: authorized capital (authorized fund, mutual fund), additional capital, reserve capital, profit, depreciation, other funds and reserves. Borrowed sources are a combination of loans. Loans and accounts payable of enterprises.

The composition and structure of physical and financial capital of economic entities, as well as their interrelationship, have a direct impact on the efficiency of economic entities [12, 13] expressed by the level of profitability.

The analysis and assessment of the impact of the interrelationship of physical and financial capital on the level of profitability were carried out on the basis of data from a number of agricultural formations in the south of the Rostov region, independently functioning in different administrative entities with different organizational and legal forms,

sizes, composition and structure of physical and financial capital but having a similar specialization (Table 2).

Table 2. Criteria for selecting enterprises for the study*

Criterion	Agrarian formations of the Rostov region				
	1	2	3	4	5
Administrative unit of the Rostov region	Zernograd	Salsk	Kagalnik	Egorlyk	Kagalnik
Organizational and legal form	Joint-stock company	Limited Liability Company	Limited Liability Company	Limited Liability Company	Agricultural production cooperative
Size of an enterprise	Large	Medium	Large	Medium	Large
Size of production	Growing	Decreasing	Growing	Growing	Decreasing
Specialization	Crop production	Crop production	Crop production	Crop production	Crop production
Ratio of fixed and working capital	40,6/59,4	71,5/28,5	51,5/48,5	43,9/56,1	38,6/61,4
Ratio of fixed and loan capital	83,7/16,3	7,3/92,7	69,4/30,6	95,6/4,4	96,5/3,5
Profitability of main activity, %	24,9	-3,1	174,9	73,7	25,4

*compiled by the authors based on the accounting and financial reporting data of the enterprises selected for the study

Processing the statistical and accounting (financial) reporting data within the framework of the existing accounting and analytical systems of each enterprise under study made it possible to create a database for further analysis (Table 3).

The analysis of the data in Table 3 allowed us to conclude that in the structure of physical capital in 2021 and 2022, current assets accounted for a larger share at all enterprises. In 2023, Enterprises 2 and 3 dramatically changed the structure of physical capital in favor of the predominance of non-current assets. During the study period the largest share is occupied by own sources of financing in the structure of financial capital at Enterprises 1, 3, 4, 5, while Enterprise 2 carries out its activities at the expense of borrowed sources. At the same time, it was Enterprise 2 that incurred a loss in 2021 and 2023 based on the results of its activity.

Thus, the composition and structure of the financial capital of economic entities has the main influence on the amount of profit of agricultural formations specializing in the production of crop products. The use of a system of relative profitability factors allows us to determine the impact of each factor on the level of profitability to optimize the interaction of physical and financial capital of an agricultural enterprise in order to develop

a further strategy and tactics for conducting agricultural production aimed at increasing the efficiency of statutory activities.

Table 3. Database for analyzing the impact of the totality of physical and financial capital on the efficiency of agricultural formations*

Factor	Symbol	Year	Agrarian formations of the Rostov region				
			1	2	3	4	5
Fixed capital	Va, thousand rubles	2021	248784	132410	596147	1204190	751089
		2022	268669	122388	893896	1263650	897763
		2023	280389	639492	1011600	1419500	904681
Working capital	Oa, thousand rubles	2021	261449	139220	908562	1000600	245860
		2022	362091	226098	945716	813665	1372660
		2023	409737	245489	954462	1169970	1436770
Own capital	Sc, thousand rubles.	2021	374089	43535	968522	1641380	191720
		2022	531534	86128	1123280	1970530	2200130
		2023	577415	65605	1364530	2370720	259440
Loan capital	Zc, thousand rubles	2021	75631	228095	591885	563411	79226
		2022	59035	262358	716330	706780	70253
		2023	83745	828376	601540	160051	82111
Profit	D, thousand rubles	2021	78903	29071	391635	151792	180767
		2022	175890	22593	363153	330370	165580
		2023	90873	27105	614657	402150	68966
Share of the cost in revenue	Ys, %	2021	56,4	39,0	42,7	37,4	81,2
		2022	76,2	60,6	33,4	41,7	74,7
		2023	78,1	76,8	53,6	57,0	88,7
Share of material costs in the cost structure	Ym, %	2021	58,0	59,2	51,0	54,4	50,7
		2022	58,3	65,1	53,2	60,1	54,2
		2023	63,6	70,8	60,3	61,5	62,6

* compiled by the authors based on the accounting and financial statements of the enterprises selected for the study

Further analysis was carried out using analytical methods, deterministic factor models of profitability factors (Table 1). The results of the analysis are presented in Table 4.

Analysis of the data in Table 4 allows us to draw the following conclusions:

1. In all enterprises, the amount of profit received from implementing statutory activities directly depends on the level of interaction between physical and financial capital. All enterprises (except for Enterprise 2) made a profit during the study period.
2. In almost all enterprises (except for Enterprise 2), profitability factors have a positive value.
3. The main factor that had a negative impact on the profitability of Enterprise 2 is the amount of loss it received from implementing statutory activities.
4. One of the main factors that have a negative impact on the efficiency of agricultural enterprises is the growth in the cost of production, in particular the growth in material costs.

Some of the main costs at agricultural enterprises are the costs of seeds and planting material, organic and mineral fertilizers, plant protection products, since the yield of agricultural crops and subsequently the volume of manufactured products as well as the amount of profit depend on their quality, and sometimes on the amount of their application [14], which has a direct impact on the efficiency of the enterprise.

Table 4. Profitability factors of agricultural formations with the existing interaction of their physical and financial capital*

Factor	Symb ol	Year	Agrarian formations of the Rostov region				
			1	2	3	4	5
Return on physical capital	R _e , %	2021	15,5	-7,0	26,0	6,9	9,1
		2022	27,9	35,2	19,7	15,9	7,3
		2023	13,2	-0,8	31,3	15,9	2,9
Return on own capital	R _v , %	2021	31,7	-14,4	65,7	12,6	24,1
		2022	65,5	100,2	40,6	26,1	18,4
		2023	32,4	-1,1	60,8	28,3	7,6
Return on working capital	R _o , %	2021	30,2	-13,7	43,1	15,2	14,5
		2022	48,6	54,2	38,4	40,6	12,1
		2023	22,2	-2,9	64,4	36,2	4,8
Return on financial capital	R _f , %	2021	17,5	-7,0	26,0	6,9	9,1
		2022	29,8	35,2	19,7	15,9	7,3
		2023	13,7	-0,8	31,3	16,2	2,9
Return on own capital	R _s , %	2021	21,1	-43,8	40,4	9,2	9,4
		2022	33,1	12,3	32,3	16,8	7,5
		2023	15,7	10,8	45,0	17,0	3,1
Return on loan capital	R _z , %	2021	104,3	8,4	73,0	26,9	228,2
		2022	297,9	46,7	50,7	309,4	235,7
		2023	108,5	-0,9	102,2	366,8	84,0

* compiled by the authors based on the accounting and financial statements of the enterprises selected for the study

Also, the efficiency of agricultural enterprises specializing in the production of crop products is directly affected by an increase in the volume of manufactured products due to compliance with the timing of agrotechnical measures, seeding rates of agricultural crops, the use of the latest land cultivation technologies and scientifically based crop rotations. The results of the study are presented in Table 5.

Table 5. Reserves for increasing the amount of profit of enterprises in 2023, thousand rubles.*

Reserve for increasing in the amount of profit	Agrarian formations of the Rostov region				
	1	2	3	4	5
By increasing in the volume of product sales	+21547,1	+24773,4	+19812,5	+8622,0	+29894,2
By reducing the cost of production	+645,2	+22,5	+542,1	+48,6	+896,9
Total	+22192,3	+24795,9	+20354,6	+8670,6	+30791,1

* compiled by the authors based on data provided by the enterprises selected for the study

According to the data in Table 5, all the enterprises under study have a reserve for increasing the amount of profit which consequently forms a reserve for increasing profitability (Table 6).

Table 6. Reserves for increasing the efficiency of the enterprises under study, %.*

Factor	Symb ol	Value	Agrarian formations of the Rostov region				
			1	2	3	4	5
Return on physical capital	R _e , %	actual	13,2	-0,8	31,3	15,9	2,9
		including reserves	16,4	2,0	32,3	16,2	4,3
Return on fixed capital	R _v , %	actual	32,4	-1,1	60,8	28,3	7,6
		including reserves	40,3	2,8	62,8	28,9	11,0
Return on working capital	R _o , %	actual	22,2	-2,9	64,4	36,2	4,8
		including reserves	27,6	7,2	66,5	37,0	6,9
Return on financial capital	R _f , %	actual	13,7	-0,8	31,3	16,2	2,9
		including reserves	17,1	2,0	32,3	16,6	4,3
Return on own capital	R _s , %	actual	15,7	-10,8	45,0	17,0	3,1
		including reserves	19,6	27,0	46,5	17,3	4,4
Return on loan capital	R _z , %	actual	108,5	-0,9	102,2	366,8	84,0
		including reserves	135,0	2,1	105,6	374,7	121,5

* compiled by the authors based on the conducted research

Further study of the influence of the totality of physical and financial capital on the efficiency of agricultural formations allowed us to formulate its main problems which can be solved by optimizing the nature of the interaction of physical and financial capital of agricultural formations.

4 Conclusion

Despite the different forms of ownership and sizes, all the studied enterprises have similar problems in the composition and structure of physical and financial capital leading to a decrease in the efficiency of their activities.

The conducted research showed that the enterprises operating in the agro-industrial complex have revealed a close relationship between the existing totality of physical and financial capital and the level of their profitability factors [15]. At the same time, the main factor influencing the level of profitability is financial capital which pays special attention to the amount of profit received.

The absence of regular analytical work at enterprises aimed at forecasting their activities has a significant impact on the volume of crop production. The main problems in the formation of physical and financial capital that have a negative impact on the level of profitability of agricultural formations, and therefore on the efficiency of the latter, are:

- the absence of high-quality analytical, planning and marketing systems of activity at enterprises both for the short and long terms;

- the presence of significant amounts of loan capital in the composition and structure of financial capital;
- uncontrolled growth in the cost of grown agricultural products;
- refusal to use scientifically based crop rotations in the economic activities of enterprises;
- changes in the timing of agrotechnical measures leading to loss of crop yields, as well as to the death of crops;
- negative balance of other income and expenses;
- lack of periodic high-quality analysis of the level of profitability, modeling of various situations and scenario analysis;
- loss of balance of cash flows.

In order to optimize the interaction of physical and financial capital of agricultural formations and increase the efficiency of their activities, one should:

1. Form a planning system in stages: draw up an enterprise budget, develop a system of factors of the efficiency of an enterprise depending on the goals of the latter, carry out financial planning, develop a marketing strategy aimed at increasing the competitiveness of enterprises operating in the field of agribusiness [16], organize a financial management service, model various situations and conduct scenario analysis.
2. Optimize the composition and structure of capital, both physical and financial as well as paying special attention to the ratio of own and borrowed sources of financing.
3. Achieve an increase in the yield of agricultural crops: apply alternative methods of soil cultivation, develop and use optimal crop rotations, draw up technological maps of agrotechnical measures and strictly adhere to them. This will increase the profits of enterprises.
4. Develop a mechanism for profit distribution, thereby optimizing the ratio of own and foreign sources of financing, thereby improving both the structure of financial capital and the structure of physical capital by acquiring current and non-current assets. The proposed enterprises will allow agricultural enterprises to obtain additional profit, adjust the existing structure of their physical and financial capital and improve the efficiency of their activities, financial condition, stability and solvency.

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