Formation of Financial Capital in the Russian Society in the Context of Socio-Structural Changes

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Abstract

The article deals with the formation of financial capital in the context of socio-structural changes, focusing attention on the social consequences and the results of this process. The analyzed article considers the problem of formation of financial capital in the Russian society in the circumstances of socio-structural shifts. Based on the results of sociological research, the author concludes that the social structure of the Russian society "forces" financial capital to behave according to the "accumulation" logic. This behavior is determined, on the one hand, by the lack of financial resources of the population for the development of social and investment practices, and on the other hand, by the financial community emergence on the basis of vertically integrated social ties, which is affected by the socio-stratifying role of finance. In the current circumstances, the formation of the financial capital in the Russian society. The authors show that the impact of financial capital in the social structure of the Russian society manifests itself in two forms. Firstly, in the fact that the financial component of the social property division becomes a priority in the circumstances of monetization of public relations and consumer code of conduct. Secondly, finance is associated with exemption from financial dependence, from the need, which is a powerful incentive for the lending system.

Keywords: financial capital, subjectivity, socio-structural changes, social stratification, social dependence

1. Introduction

1.1 Statement of the Problem

The Russian society in the long term is not a society of social unity, as there are fundamental differences between various groups.

Studying the social structure requires identifying the trends of social structuring. In addition, it is necessary to determine the regular nature of relations between different social actors in the social space. Social inequality has an ambiguous effect on the subjectivity of financial capital in the Russian society. The ability of financial capital holders to join the social investment practices is aimed at reducing social disparities.

It is important to determine the structures of domination, influence, dependence, and independence. Taking up a particular social position is possible, firstly, at the level of objectification, and secondly, at the level of distribution of social resources between agents. It is therefore important for an analysis of the conditions determining the logic of the formation and development of finance capital to consider the parallelism of the process of professional differentiation social as well, which enables formation of practical groups. Objectification of positions is impossible without engagement of a number of social institutions.

1.2 Publications Review

Significant contribution to the study of financial performance was made by Austrian economist J. Schumpeter (Schumpeter, 1995), whose position helped understand finance capital as a tool to solve not only economic, but also social problems associated with forms and methods of economic relations. J. Schumpeter formulated the evolutionary nature of financial capital, which is due to the fact that economic life takes place in a social

environment.

M. Weber understood financial capital as evidence, along with the bureaucracy of the rational relations domination in the modern society. Denying the collectivity and substantiality of financial capital, Weber formulated the growing influence of financiers based on the increasing complexity of the social structure, the definition of social and economic life in impersonal categories of profitability. Just as the bureaucracy is guided by the criterion of efficiency, a financier in the same way sees his objectives in building profitability (Weber, 1994).

In the works by G. Simmel, it is emphasized that for historical reasons, financial capital is associated with the logic of accumulation as opposed to the opportunistic capital, and this requires organization, rationality, and formation of joint interests and practices of the financial capital representatives. Financial capital is concentrated in the field of economy and market relations, setting vectors of social and cultural life so as to create a personality corresponding to the capitalist spirit of the era (Simmel, 1996). Sombart, in contrast to the position of G. Simmel argued that financial capital was associated with the formation of economic life and that civilian traits of finance capital representatives are determined by the monopoly position of financial resources in the development of the economy (Sombart, 2005).

T. Parsons in his works typically included financial capital in the overall process of modernization (Parsons, 1971). If his predecessor, K. Mannheim, criticized capitalism for its social imbalances and saw an opportunity to introduce the planning ideology (Mannheim, 1994), Parsons believed that financial capital was associated with the processes of industrialization and urbanization, and that the activity of financial groups is "super-determined" in relation to the state and the market, i.e. it is aimed at identifying the functions of finance as a guarantor of modern social institutions.

Criticism of functionalism in the works of such representatives of the Conflictological School as R. Dahrendorf (Dahrendorf, 2002) and L. Coser (Coser, 2000) deduces that finance without having independent meaning can act as a catalyst of social contradictions, because financial capitalization serves to reproduce relations of social domination / subordination. This is associated with the fact that possession of finances becomes the most important indicator of the real political and social participation. The conflictological line is based on the fact that the theory of equilibrium, which includes finance by the attributed criteria, the theory of social equilibrium are ideology-driven, and that the analytics of financial capital resides in considering the conflict potential of financial capital.

The works by L. Thurow, A. Etzioni, T. Stewart, C. Hand (Inozemtsev, 1999) who were representatives of the new post-industrial wave deny the immunity of financial regulators: they maintain the position that despite being a system ensuring satisfaction of individual human needs, it is necessary to inculcate proper social values. Financial performance is illustrated by the conflict between rational thought and social expectations.

2. Methodology

It should be emphasized that social structuring manifests itself in what is associated with the transformation of the institutional framework, changes in the system of knowledge, and the emergence of new market trades. Since the institutional framework of financial activity was actually formed not in the early 1990s, but only after the 1998 crisis, we have grounds to state that there is a proto-class of financiers—those who were engaged in financial activities and did not define themselves as professional financiers, and either associated themselves with former Soviet cooperators or performed the "libero" scheme, treating finances as just one of many ways to improve the material status.

Despite the fact that the structure of the modern Russian society is described with the emergence of new types of social dependence of domination, the main trend is that financiers appeared due to the pluralization of forms of ownership and the emergence of private property. The fact that until the end of the 1990s, this property had been intertwined with the power only evidences that the development of this social group was delayed compared with other social strata. The claims of "seven bankers" for power only emphasize the fact that the really independent interests of financiers were not represented, and there was no mobilization as in case of joint practices. It is the absence of these practices that had resulted in the situation when the shortest and most economical path was direct impact on the authorities.

Modern studies of social structures, in which multi-dimensional stratification models dominate, allow identifying the criteria associated both with income, and with self-esteem of the social status and well-being. In the circumstances of social polarization, the financial sector automatically fell under suspicion of the rich, i.e. of that layer, which allows not only to satisfy its own social needs, but also to organize independent economic activity. This is a very important point, which we, however, cannot consider completely valid, since there have been virtually no layers that could be potential investors, and financial capital had basically "evil" things: borrowing from the state budget and speculation on financial markets.

The class of financiers remained and remains quite difficult for identification of its so-called objective parameters, often forming part of a trade secret. In this case, it is important to monitor social well-being, as for this group, the level of financial satisfaction is less important than the possibility of economic initiative.

Analyzing the socio-structural conditions of formation of financial capital, we can say that the subjectivity declared in the 1990s can be described as a simulation for the simple reason that no practical group was formed, which could express themselves as the actors of independent financial practices and influence on the political and social life in order to fulfill their own interests.

The transition to effective social subjectivity was associated with the fact that in the process of formation of a new social structure in the society, the criteria of prestige and attractiveness of the work were adopted. It is obvious that, although the problem of excessive social inequalities is perceived badly, a quarter of the Russians considers a prestigious and interesting work one of the priorities. Therefore, owners of financial capital who were perceived as having certain autonomy in the private sphere and independence from the state began to be evaluated also as a group of socially prestigious profession.

Unlike entrepreneurs who can be "accused" of exploiting and deceiving their workers, the financial sector, although it deals with the effect of white-collar crime, is less open to social and property stratification against the background of the decline of real incomes of the older professional groups. It is noteworthy that in this area, the principle of a career lift is largely endorsed despite the glass ceiling associated with gender inequality.

It can be stated that while Russian citizens associated the 1990s with certain increase in opportunities to engage in entrepreneurship, the 2000s heralded an era of complex professions requiring professional work. To be more precise, the understanding of entrepreneurship disappeared, and it became to be seen as a field of low-skilled activities and gaining trade revenues. It is not surprising in this context that financial capital has become an indicator of the exemption from business routine and transition to a new prestigious social state.

The abrupt changes in the social structure opened up new opportunities for social mobility, and with the increasing complexity of the economic structure resulted in new effects on the formation of the middle class. Also, the transition of financial capital to the model of "democratic" practices is associated with the middle class: we mean the actual occurrence of the layers of creditors when the services began to be provided for mass consumption.

The decisive role of socio-structural changes resided and resides in the fact that without the formation of new social strata, it would be impossible to remove the status of financial capital as an elite activity. Actually, the need for social subjectivity arose during the transition of competition for the monopoly of powerful resources to a strategy of soft compulsion (Volkov, 2013).

The idea is that objectification of social relations was expressed in improving self-esteem, in the fact that employment growth in the financial sector made it possible to identify the trend of professionalization. Thus, the priority of the financial sector along with insurance, transport, industry, science, and scientific services, and construction showed that at least the financial capital owners legitimized in the public mind as employees performing a certain useful function.

Since the financial sector is private, it has seen a dramatic rejuvenation of the professional staff, although most of the workers were and are middle-aged. Against the background of reduction in demand for the educational status in other areas of economic activity, it was possible to trace the increasing demands for specialized education, which also gave grounds to state the rising importance of the educational and professional status and, thus, expanded the conversion opportunities, when both financial and cultural (educational) capitals were used to influence on the society.

This manifested itself in the fact that owners and users, managers of financial capital (employees in the banking and financial sector) had both social and cultural differences. Here with, an important circumstance is that poverty and education disconnected in the Russian society. It is important that an educated person is not perceived a poor man, and this circumstance, apparently associated with the intensification of social stratification, has led to the fact that for this group the circle of relatives and friends turned out to be the least significant, and the impact of the relative model dramatically reduced.

The corrupted and criminal circumstances that characterize the appearance of the layer of rich people in the Russian society hold the first and second places in the evaluation of the wealth origin, but financial capital is

based on the high-resource model, personalized and determined by the abilities of the individual himself. We can say that the individual and personal potential has become a weighty indicator of wealth. In this respect, owners of financial capital, as experts, have become most determined. At the same time, this group can be characterized as having high social ambitions, a desire for success and promotion.

Thus, social positioning in a certain way is influenced by the mass poverty in the Russian society, which is increasingly (48.9% of respondents) perceived as a consequence of individual personality traits. This situation leads to the fact that, although wealth is not evaluated as a decisive condition of subjectivity, it is associated with individuality and personality assessment. Being successful in the financial sector as an important point of social well-being, means to act outside the influence of the policy of power and to have productive values of economic behavior.

Compared with the period of the 1990s, the process of gradual exodus of the power from financial activity is observed. The influence of family ties in the management of banking institutions is neutralized by the fact that the mass layer confirms the influence and the high-resource model. It is extremely important that in the circumstances of social anarchy blooming among certain groups of the Russian population, as a legacy of the 1990s, financial capital needed objectively certain legal and social legitimation that in a certain way brings to the position of detachment from the social anarchism position and to finding new ways to influence on the authorities.

Given that for financial activity, there is a very high risk of state intervention and it is impossible to formulate a formula of waiver, the subjectivity of financial capital was determined by its effect on the activation of those population strata, which orient at extending their consumption capacity through affordable borrowing.

Thus, in the socio-structural measurement, financial capital has a differentiating meaning, but it appears in the mass consciousness of the group of financial capital representatives not as a factor of social and property stratification. It is rather associated with prestige, reputation, professionalism, that is it has cultural and symbolic meaning. This hypothesis is supported by the fact that "financiers" in the Russian society equally possess negative characteristics as well, especially concerning assessment of citizens who have taken out loans.

In general, the Russians who do not face the negative effects of debt repayment, as a rule, have a neutral attitude towards them. The garland in assigning negative qualities belongs to the Russian bureaucracy. Public officials are treated by people as using public resources for their own purposes. There are grounds to say that since the elite's corruption acts like the most inhibiting factor (49.9%), the impact of social and property differences reduces.

As the scale of the presented data shows, social and property stratification does not define the disbelief in the possibility of rapid economic growth of Russia. Arguably, the representatives of financial capital are treated by default as similarly suffering, as other segments of the population, which is evidenced by the attitude to the low professionalism of managers (Posukhova & Zayats, 2014). At the same time, the policy of market reforms, to which the emergence of financial capital is associated, is less negative, as it influences on the perception of the processes of "impoverishment" of the population.

Financial capital is understood as a tool to achieve targets of a narrow group based on the use of the market, and impersonal values contra-indicated to social virtues. At the same time, negative attitude toward the bureaucracy is determined by the fact that in contrast to financial capital, the government that is represented by officials is expected to pay more attention to people's daily lives, and that officials, according to respondents, have more influence and power than financiers. In this sense, the financial community is not considered to be holding the true power in the society.

Socio-stratification, although it has created the poor, is not projected on the attitude to financial capital as the only source of evil and misery in the Russian society. It is characteristic that the population perceives the financial capital just in the form of wealth, without trying to reveal and evaluate its other effects associated with the development of the economy. The low investment activity of the Russians is partly a consequence of poverty, especially when respondents are concerned about commodities.

Since 18% dream of acquiring audio, video, and other household appliances (Ownership in Russian life, 2005), it indicates the trends in consumer consciousness, the formation of the mass of consumers in the Russian society, which is generally characteristic of a market economy. However, it shows that the population lacks money and has unassuaged consumer hunger and desire to possess and use external attributes of well-being due to the inaccessibility of accumulation of financial capital as a tool for economic initiative.

Despite the fact that 41% of people want to use these funds for business development and investment in the

financial and physical assets, the lack of prevalence of investment behavior has a reason in the socio-structural changes. Firstly, for the majority of the Russians, finances are understood as everyday money, that is, something that can be spent to buy a certain product or used in other purposes relevant for an individual, which are not related to investments.

Secondly, the group of representatives of financial capital is undifferentiated, diffused into the layer of rich people, which is due to the fact that the Russian society is too strongly affected by poverty. The report "Poverty and Inequality in Modern Russia: Ten Years Later" expressly states that the Russian society has become used to the phenomenon of poverty. 35% of the Russians treat the poor no better and no worse than others.

It can be assumed that the lack of financial capital does not act the most effective cause of poverty. It is noteworthy that the leading long-term unemployment has socio-structural meaning and is associated with the formation of the market economy. What is the financiers' role in this negatively perceived process is hard to say. Except that the Russians can blame representatives of financial institutions for reluctance, the lack of interest in investing in the efficient economy, or for creating severe and unaffordable terms of production lending.

Thus, socio-structural changes have led to the situation when, firstly, financial capital comprises cultural and symbolic meaning for legitimation of social inequalities; secondly, financial capital is not associated with the importance of the social differentiation factors, since poverty in Russia is perceived heterogeneously, that is, does not have different causes. Nevertheless, despite these estimates, it would be unreasonable to assume that the social structure of the Russian society has a favorable environment for development and strengthening of the positions of the financial capital owners.

The main point is that there is no demand in the subjectivity of financial capital in the sense that capital is not perceived differentially, as a function of certain professional groups, and is often associated with illegal gains, corrupt activity, or suspicious financial transactions. Therefore, if you look at the situation with the dynamics of the financial capital subjectivity, first of all, you can note that there is a steady representation that real use and possession of financial capital is a status attribute and has little relevance to the mechanisms of social mobility (in particular, engagement in business activity). The fact that 25% out of 41% of the investment behavior representatives would like to invest financial or other land assets shows the focus on gaining profit without any personal efforts. This position is largely associated with the dream of wealth than the real motivation to "get out" of a difficult situation.

Thus, the subjectivity of financial capital in conditions of excessive social inequalities in the development of parallel social worlds becomes a tool to perpetuate inequality and reiterate the existing situation. Despite the experience of the late 1990s, the representatives of financial capital work only if they have legal support from the government. This support often has a negative sense, as judicial structures mostly take decisions in the situation with bad loans in favor of banks. So much for the everyday practices.

At the socioeconomic macro-financial level, financial activity is virtually non-transparent for the majority of the population. Accordingly, financial capital is perceived as a field of professional activity of a narrow group of people isolated from the society. Despite some positive progress in the acknowledgment of legitimation of financial capital, yet altruistic motivation, ability and opportunity to help people is out of the question.

As for the earnings, it looks a more attractive factor with respect to the financiers. It is unlikely that these conditions can actually ensure a turn to social subjectivity, which is understood as responsibility for the effective development of the country. Moreover, the positive attitude is focused on the fact that possession of financial capital creates the opportunity to be "above" the law (albeit to a lesser extent than the officials) or use informal ties to settle personal and group conflicts.

Financial capital is thus removed from the sphere of legal regulation, as a sphere of social regulation. And the way, in which the procedures of payment and return of loans are arranged, convinces the mass of the Russians that one should better avoid conflicts with financial organizations. The advantages and disadvantages of financial capital thus reside in what may be an extenuating estimate for the stratum of entrepreneurs in general. This "closeness" is felt in the fact that, unlike officials, representatives of financial capital are not considered possessors of power functions and are not perceived as using the power resource, the public function for enrichment.

3. Results and Discussion

The impact of financial capital on the social structure of the Russian society manifests itself in two forms. Firstly, in the fact that the financial component of the social property division becomes a priority in the circumstances of monetization of public relations and consumer code of conduct. Secondly, finances are associated with

exemption from financial dependence, from the need, which is a powerful incentive for the credit system.

Considering the ratio of these forms, we can note that financiers, as a group, have not arisen independently in the structure of the society, and that financial activity was a kind of back-up earning, and, probably, the way of thinking of a late Soviet period cooperator has played a role in the orientation of the financial system to demonetization, withdrawal of funds from the state control. It was perceived primarily as liberation from the oppressive effect of the system of Soviet planning and regulation.

But with the emergence of market relations, a significant disadvantage manifested itself, which consisted in the fact that the owners of financial capital did not have any adequate market behavior to avoid non-investment risks. Those risks manifested themselves in the instability of the financial system regardless of the desire of the finance owners, and in the poor professionalism shown at managing the emerging risks, whereas the focus on the withdrawal of funds abroad resulted in the increasing dependence on global factors.

In these circumstances, the financial system and the owners of financial capital were not focused on rebuilding the state according to the market model. On the contrary, they tried to use the defects of a post-Soviet state. The bulk of the population was out of the interests of financiers, and it is important that by the comparison parameters, the group of financiers was seen as the most aggressive, expansionist part of entrepreneurs, as it was forced to compensate the lack of institutionalization with the desire to expand its influence on the state system.

The suggestion to treat socio-structural changes as a consequence of the market organization of production based on private property with their ideological, political, and legal support cannot designate the significant social backlog of the finance sector. The understanding of financial capital in the context of socio-structural changes is based on the fact that the social transformation mechanisms are outside the financial sector. This eliminates the grounds to believe that financial capital has played a crucial role in the development of the social structure of the Russian society.

Property and power, as a key formula, explain much of the Russian changes, and most importantly, financial capital did not come as a side product, but more as a non-priority product of transformations. It is indicative that in the 1990s, financial capital was directed mainly at non-productive and prestigious consumption. The unlimited nature of natural resources softened social inequality and, by virtue of this fact, finance capital representatives did not have to take responsibility for the property redistribution that had taken place.

The most difficult point in the formation of financial capital was the limited nature, the chilling impact of social inequalities, which consisted in the fact that financial revenues made it possible not to keep to the professionalism bar; various forms of bribery were encouraged, as well as informal influence and the use of financial capital for converting into the informal capital. Therefore, the changes associated with the emergence of new socio-professional groups, the modification of the old socio-professional groups, and the excessive social inequality determined the practices of compromising with regard to postponing the business' entering into the period of social responsibility till a future civilized time.

If we assume that for financial capital representatives, the broad interpretation of financial responsibility is complicated by the fact that it does not set itself ambitious goals that would go beyond their business activities, it is no exception that these projects can be *excessively promoted*, aimed at the government's approval, and, to a lesser extent, determined by the logic of social inequality. Since so far financial capital representatives adhere to the formula of acting according to the possibility rather than obligatoriness, this position is formed under the influence of subjectivity interpreted as freedom from obligations, which is typical of limited market interpretation. On the other hand, given that there is a high level of the class of bureaucrats in the society who appropriate public goods, the financial capital representatives are able to reject claims for social security tax asserting that they cannot be and are not aware of the order of using the seized or invested financial resources.

The socio-controlling function of financial capital prompted to form adequate subjectivity, is not present in the conditions of formation of corporate altruism as the most mature indicator of financiers' actions. Noting that socio-structural changes have led to the fact that the society has lost the groups that would be able to be associated with the financial capital representatives in implementation of social projects and, at the same time, to force them to increase the level of social subjectivity, we mean that the excessive social inequalities have virtually resulted in disintegration of the society into two macro-communities: of modernists who are relatively independent from the state and, therefore, determining their attitude to financial capital by the formula of alienated solidarity, and of traditionalists, i.e. the supporters of social control over financial capital, and the similarity of their positions resides in minimization of the government's influence and its refutation based on the recognition of inefficiency, the latter group cannot affect the financial capital either positive or

negative, as it does not represent a sufficiently consolidated mass, and is obsessed and suffers from non-market syndromes.

In this context, owners of financial capital have hardly worked out a definite position on the social structure stabilization based on, at least, the pragmatic circumstance of the investment activity expansion. Consumer revolt, which took place in the middle of the 2000s, was encouraged by the state, which thus reduced the effects of inequality, but financial capital acted and acts according to the formula of rational planning. During this period, no habit to focus on unassisted elimination of lending risks using the formula of corporate altruism was developed.

The involvement in the social life is determined by the extent, to which it helps to maintain high profitability of the supported economic structures. But since the majority of the Russian population is "unattractive" for financial capital in terms of responsible, partner relations, firstly, financial capital "guarantees" the growth in unjust social inequalities; secondly, the subjectivity of financial capital "gains" a forced nature, i.e. it is not perceived as a formula for action under obligations in the circumstances when the loss of social cohesion allows adhering to a position as far as possible.

References

Coser, L. (2000). Functions of Social Conflict (pp. 60-71, pp. 85-91). Moscow: Idea-Press.

Dahrendorf, R. (2002). Contemporary Social Conflict (pp. 10-18, pp. 40-52). Moscow: ROSSPEN Publishers.

Gorshkov, M. K. (Ed.). (2003). Social Stratification of the Russian Society. Moscow: Institute of sociology RAS.

Gorshkov, M. K. (Ed.). (2004). Russia Reformed. Moscow: Institute of sociology RAS.

- Gorshkov, M. K. et al. (2005). Bureaucracy and Power in New Russia: The Position of the Population and Assessment Experts. Moscow: Institute of Sociology RAS.
- Gorshkov, M. K. et al. (2005). Ownership in Russian Life: Speculation and Reality. Moscow: Institute of sociology RAS.
- Gorshkov, M. K. et al. (2012). What do the Russians Dream of? Moscow: Institute of sociology RAS.
- Gorshkov, M. K. et al. (2013). Poverty and inequality in contemporary Russia: Ten years later. Moscow: Institute of sociology RAS.
- Inozemtsev, V. L. (Ed.). (1999). The New Post-Industrial Wave in the West. Moscow: Academia.
- Mannheim, K. (1994). Diagnosis of Modern Times (pp. 284-311). Moscow: Jurist.
- Parsons, T. (1971). The System of Modern Societies (pp. 60-66). Englewood Cliffs, NJ: Prentice-Hall.
- Posukhova, O., & Zayats, P. (2014). Social Engineering as a Mechanism of Optimization of Human Resources Management in Rostov Region. *Middle-East Journal of Scientific Research*, 19(3), 424-428. Retrieved from http://www.idosi.org/mejsr19%283%2914.html
- Schumpeter, J. A. (1942). *Capitalism, socialism, and democracy* (pp. 114-124, pp. 158-170, pp. 194-197). New York: Harper Perennial.
- Simmel, G. (1996). Selected Works (Vol. 2, pp. 349-376, 429-496). Moscow: Jurist.
- Sombart, B. (2005). Selected Works (pp. 90-118). Moscow: Territory of the future.
- Volkov, Y. (2013). Creative Tendencies in Regional Elites' Activity. *World Applied Sciences Journal*, 28(2), 180-184. Retrieved from http://www.idosi.org/wasj/wasj28(2)13/6.pdf

Weber, M. (1994). Selected Works. In Image of the Society (pp. 231-260, pp. 330-354). Moscow: Jurist.

Yadov, V. A. (Ed). (2001). Russia—A Transforming Society. Moscow: CANON-press-C.

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