Determinants of the housing engineering entrepreneurship

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Abstract. Current specifics of entrepreneurship in the field of apartment buildings construction (AB) and the impact of modern financing rules set on it, written in the relevant Federal Law are highlighted in the article. The purpose of the discussion is to develop the method foundations for analyzing the financial boundaries of housing (MFAFBH). The author’s opinion is based on the results of monitoring facts and expert opinions, texts’ analysis of normative acts, averaged requirements of banks for AB projects, methods of equivalent mathematical transformations, calculations according to special dynamic financial models of AB projects (MFPAB), principles of financial decision-making, laws of the primary market real estate (PRMRE), conjuncture of the Novosibirsk PRMRE. The fundamentals of MFAFBH were developed, the MFPAB was compiled for one of the typical apartment buildings in Novosibirsk, the boundary price of housing under construction was calculated, below this prize any AB project could not receive funding, i.e. construction would be impossible. The MFAFBH proposed by the author, can be applied to any region of the country, to forecast housing construction volumes on its basis, to develop and take measures, to manage this field of activity.

1. Introduction

Traditionally, there are planning volumes of Housing Engineering in Russia. Therefore, by the Presidium decision of the Presidential Council on Strategic Development and National Projects the National Project “Housing and Urban Environment” was approved, including the Federal Project “Housing” (dated by December 24, 2018). This document establishes (among other things) plans for the construction (commissioning) of housing in Russia in the period of 2019-2024. In general, it is planned to increase the commissioning of housing to 120 million square meters in 2024 (per year) from 79.2 million sq.m. in 2017 [3]. So, this market growth is planned at a rate of 6% per year (compared to the previous year).

From the standpoint of classical economic theory, such plans are somewhat paradoxical with the task, which is posed by the Regional Authorities that do not have leverage to influence the macroeconomic situation. Meanwhile, there may be a limitation of the residential real estate market development at the macro level. However, any plan is rather debatable. Nevertheless, this national project plays a role, influencing entrepreneurship in the investment and construction sector. Further, we will consider the modern determinants of entrepreneurship (factors that have a positive or negative impact on).
First, we should describe the terms and the dominant business model in the field of residential real estate development. The bulk of housing is created according to the tenement houses construction. In clause 6 of the provision “On recognition of premises as residential premises, residential premises of those, that are unsuitable for living, an apartment building, which are emergency and subject to demolition or reconstruction, a garden house of a residential one and a residential house of a garden” (approved by the Decree of the Government of the Russian Federation (dated by January 28, 2006 N 47) contains the following definition. “An apartment building is a combination of two or more apartments having independent exits either an adjoining territory to a residential building or to common premises in such a house.” However, the majority of apartment buildings (AB), created in Russia, are multi-storey buildings consisting of tens of apartments and thousands of square meters.

Shared housing construction is practiced in Russia unlike many countries. It means that developers can sell an unbuilt property to the end customer. We have to clarify the terminology. "Developer" is an entity that owns a land plot for AB construction. At the construction stage, he can sign an agreement on participation in shared construction (SCC). The second side of such agreements is participants in shared construction (persons entering into agreements in order to obtain an apartment or other real estate after AB readiness). We emphasize: at the construction stage only the developer is entitled to conclude SCC, and there can be no other agreements. This is regulated by the basic norm in the field of apartment buildings creating, it’s the Federal Law "On participation in shared construction of apartment buildings and other real estate" dated 12.30.2004 No. 214-FZ. The shared construction rules are established at the Federal level and can be periodically changed. Normative innovations are mainly aimed at reducing risks for share holders. This is largely accomplished by tightening the regulation of a developer’s activities, which entails his spends increase for the AB projects implementation. The first proposal, in such situation, is rising costs will push developers to increase prices. If this really happens, share holders will suffer losses. This leads to a dilemma: in order to increase the attractiveness of housing under construction, additional functions and guarantees (as a result of spending) of the developer are necessary, which entails a negative economic effect (price increase), reduces the attractiveness of housing under construction. For this reason, all legislative changes are faced with business objections.

2. Materials and Methods

Please follow these instructions as carefully as possible so all articles within a conference have the same style to the title page. This paragraph follows a section title so it should not be indented. Shared housing construction did not always give the desired result. There are quite a few unfinished AB constructions in Russia. As the result, there are "deceived share holders" - people who signed SCC, but did not receive either an apartment or money paid for it. The 214-FL included various mechanisms for protecting the investments of participants in shared construction. Initially, it was a bank guarantee, then an agreement with an insurance company. However, these tools did not exclude the appearance of problematic objects.

In order to eliminate this acute social problem, the amendments were made to the 214-FL and the Federal Law, dated July 29, 2017 N 218-FL “On a public law company which protects the rights of citizens, participating in shared construction in case of insolvency (bankruptcy) of developers and on making amendments was adopted into separate legislative acts of the Russian Federation.” The law determined the procedure for the creation and operation of the “Fund for the Rights Protection of Citizens-Participants in Shared Construction”, which completes 174 “problematic” AB, but there are significantly more such constructions in Russia (see table).

The Unified Housing Information System (UHIS) was created in Russia (source) in order to increase the transparency of this economy sector. In this work’s author opinion, UHIS is a really useful resource. It includes, in particular, registers of the following objects and entities: distressed objects, housing under construction, developers, housing and construction cooperatives. Along with, there is a service for checking housing under construction (for compliance with 214-FL) and information on a programs
number for housing preferential lending. This allows you to get market information to participants in shared construction and other entities involved in AB construction.

Table 1. Summary data of problem projects for AB creation

| Status of the AB projects                                      | Developers | Houses | Housing area, thousand square meters |
|---------------------------------------------------------------|------------|--------|-------------------------------------|
| Bankruptcy proceedings was started in accordance with Federal Law No. 127-FL | 486        | 1 699  | 10 141                              |
| Another bankruptcy procedure was introduced in accordance with Federal Law No. 127-FL | 84         | 377    | 1 537                               |
| Deadlines for construction completion exceeded for more than 6 months | 145        | 258    | 1 546                               |
| Deadlines for shared construction commissioning exceeded for more than 6 months | 360        | 647    | 4 428                               |
| Total                                                         | 1 053      | 2 981  | 17 651                              |

Note. Data were taken from a single registry of problematic objects, dated February 2020 [13].

In order to exclude the problem of “deceived share holders” it was proposed to carry out “a transition from housing construction using citizens’ funds attracted to create apartment buildings and other real estate to bank lending and other forms of financing that minimize risk to citizens” in the National project “Housing and Urban Environment”. Revisions were again made in 214-FL, which made it mandatory (from July 1, 2019) to open escrow accounts to store money from participants in shared construction paid on SCC. This national project contains the following target characteristics of the number and type of contracts (without escrow accounts and with escrow accounts, respectively): in 2019, 653,000 and 34,000; in 2021, 71,000 and 635,000; in 2024, 0 and 1 014 000. [3]

The current norms of 214-FL include the mandatory participation of a bank in a project in the event that the developer intends to sign SCC share holders. It should be noted that SCC are signed at the construction stage, other agreements of real estate purchase and sale (REPSA) will be signed after getting permission for AB commissioning. Now three entities are interacting: a participant in shared construction transfers funds according to REPSA, they come to the escrow account, but not to the developer. The developer will be able to receive this money only after presenting the bank with confirmation of the AB commissioning.

The Bank also performs another function. It carries out compulsory project lending to the developer. A loan is issued in the amount of the work cost, performed to build AB, based on certain accounting documents. It’s rather important to note, that the money is transferred not to the developer account, but to the accounts of his contractors, who performed these works. At the same time, neither the bank nor the developer can refuse to participate in the project. In the case of a delay in AB commissioning and in a number of other cases, the bank returns the amount of money to the participant in the shared construction, he paid according to SCC. Escrow accounts are insured by the State Corporation “Deposit Insurance Agency” (DIA) in the amount of 10 million rubles. This means that in case of bankruptcy, the DIA will return the funds from escrow accounts within 10 million rubles to the participant in the shared construction.

The risks financing of the share holder is close to zero in this scheme. This is a way to earn 20-40 million rubles for the bank on each AB project with its specific risks. In this case, the bank must take part in a new building construction. The introduction of escrow accounts was led banks to play a role in the housing process. In this sense, it is quite reasonable to call "financial permission for construction.”

Therefore, it turns out to be a big problem for developers not only to obtain a loan, but also to apply for it. One of the reasons is that the application includes a financial model of the project, which must be formed according to the requirements of the bank. The developer’s employees simply do not have such
knowledge, and banks do not provide training. The big question is what will happen to those facilities which are refused to grant loans for? The concerns about a massive stoppage of housing construction are being expressed. This problem is described by the Heads of the Ministry of Construction of the Novosibirsk Region, developers and representatives of their associations [11].

Certainly, here is a discussion in scientific circles about the specifics of escrow accounts, as well as whether it makes sense to use escrow accounts in development or not. An analysis of this problem is proposed by T.I. Kubasova, N.G. Novikova, A.P. Sukhodolov [10] A.R. Kirsanov [4], N.Ya. Konyakhin [9], and in a number of other author’s works. We should note that publications on escrow accounts appeared long before the described changes in 214-FL. The first article about this tool, contained in the National E- Library is the work of R.S. Churakov [1].

3. Results

The transition to escrow financing seems irreversible. It has positive aspects that will manifest themselves in the medium and long term. The fact is that some of the projects for AB construction were “torn” from the market and were implemented mainly through barter transactions. The problem of "deceived share holders" arose in many respects precisely on such objects. Escrow financing will eliminate this phenomenon and bring development to a higher business level.

Now, the developer has two ways to attract citizens’ finances:

1) sell apartments after commissioning the building (concluding real estate purchase and sale agreements);

2) sign an arrangement at the stage of the building construction (participation contracts in shared construction using escrow accounts).

The first method requires the developer to make large investments of his own funds. The second method allows him to make less investment, but the developer has the above-described dependence on the bank. The first method of financing has never dominated in modern Russia. It is on the specifics of the second financing method, the volumes of commissioning housing and the investment and construction business depend. For brevity, we will call the second method “escrow financing”.

Most developers implement projects using SCC. We describe an important property of prices and the sale dynamics of real estate under construction. As a rule, participants in shared construction are ready to sign SCC no earlier than the underground work completion of AB. The farther the sign SCC moment is from the expected moment of AB commissioning, the greater the discount, i.e. unit price of real estate is lower (price of one square meter of real estate sold). AB is weakening the negative impact of a long period of waiting for paid housing with an increase in the degree of preparedness, and unit prices of real estate increase.

Another factor contributing to the growth of real estate prices with the AB readiness is the reduction in the cost of shared construction participant to the transaction financing. We should clarify this situation. A shared construction participant can use either only his own funds, or combine them with credit funds. Consider the first case, the sooner a share holder signs SCC, the longer it will freeze funds. If he had the opportunity to complete a deal for the same apartment after AB commissioning, then this money could be put into the bank to receive interest. Hence the early execution of the transaction leads to this kind of lost profit; it is one of the reasons for reducing the unit price of real estate. In the second case, when a loan is used, the early SCC will be signed (as compared to the transaction close to AB commissioning) it leads to an increase in the interest paid by the share holder, which also influences on prices.

These price properties and transaction dynamics are the law of the primary real estate market, which can be formulated as follows. The unit price of real estate and the number of transactions are growing with an increase in AB readiness. Moreover, the typical dynamics of transactions is as follows: the most transactions (90%) occur before AB commissioning; apartments with the smallest area are sold earlier than others. Here, of course, there is a connection between prices and dynamics: if prices are too high, the number of transactions will decrease. The appropriate price level can be determined by the average discount for the market (in relation to the various stages of construction) in relation to the above
financing costs. In this case, we are taking under consideration prices, cleared of inflation. The manifestation of this law in some cases can be veiled by random factors that will lead to one or another change in the ratio of prices and transaction dynamics.

The development business is also specific to its tax liabilities arising. Developers can use one of two taxation systems: general or simplified. At the same time, the company can choose one of two objects of taxation on a simplified system: “income” or “income, reduced by the amount of expenses”. Often, a second taxable item is chosen because it provides lower tax payments.

The moment of tax liabilities occurrence depends on the type of contracts transactions are carried out. If SCC is used, then their revenues are targeted financing, i.e. do not fall under the tax in accordance with the Tax Code of the Russian Federation (on profit). Only after AB has been commissioned, so-called developer savings will be obtained (difference between the income from the SCC and the costs of AB Construction), which the tax obligations of the developer will be calculated from. For this reason, developers allocate payment to the developer’s services in SCC. These amounts are subject to taxation upon receipt, and the availability of this money allows the developer to spend on promising tasks.

Now, we should consider the concerns of escrow financing will impede the implementation of the National Project “Housing and a Comfortable Urban Environment”. Implementation of development plans is possible only with the simultaneous presence of the following conditions:

1) the urban planning situation allows developers to obtain permits for the planned volume of construction;
2) the characteristics of the projects allow them to obtain the consent of banks to escrow financing;
3) the characteristics of developers allow them to obtain the consent of banks to escrow financing or there are developers who can construct AB without escrow financing;
4) there is solvent demand (the population has income sufficient to buy an apartment without a loan or with a loan).

Developers are private companies that act at their own risk in order to make a profit. This means they are implementing projects that “promise” to be effective. The principles and problems of project evaluation are described by Vlasova O.N., Vorbochuk V.A., Doroshenko T.G., Dymchenko V.A., Kazimirov I.A., Kudryavtseva V.A., Matveeva M.V., Naumov I. V., Nikishina O.V., Peshkov A.V., Peshkov V.V., Pinchuk T.O., Polyakova V.N., Ryutin V.S., Semeykina N.M., Yamshikova I.V. [2].

There is a well-known claim that the price of real estate is determined mainly by three factors: location, location, location. Any city has price zones. The market price is set and cannot be changed administratively. On the other hand, the costs of AB construction are also given. The costs are minimal and cannot be changed for economy class housing. Hence, if projects “promise” the profitability required by developers, then they can be implemented.

In the current situation the cost of AB construction increases by several percent due to the need to pay interest on this loan when a home loan is required during the housing sale at the construction stage. However, this is where the difficulty arises. The fact is the loan rate varies depending on the ratio of the loan amount to the escrow accounts amounts. The second difficulty is that projects are described by dynamic financial models [5-8, 12], i.e. (in the end) cash flows that change over time.

4. Conclusions

Obviously, concerning the impact of escrow financing on construction volumes, we can not calculate financial models for all projects, and even for the sample ones. We must have a formula that would allow us to draw a conclusion (on the minimum data set), the minimum prices should be (for a given cost and financial requirements of the bank) so that the implementation of AB project was possible. So, we can draw the opposite conclusions on maximum cost of construction should be in order to make AB project be possible.

In order to turn a dynamic financial model into a function, we must, firstly, set two dynamic parameters: the price index of the sold space and the schedule for the space’s sale. Secondly, we must describe the rules of lending. Banks have established similar rules for making decisions on financing or on refusal to finance development projects. In general, two rules have the greatest impact: investing at
least 15% of the OPR by the developer and the compliance of the project with the Loan Life Coverage Ratio (LLCR) requirement for debt coverage ratio.

\[ \text{LLCR} = \frac{\text{SCC}}{\ell + BI} \]

where SCC is income according to participation contracts in shared housing construction, rubles;  
L is loan amount is issued by the bank to the developer, rub.;  
BI is bank interest accrued on a loan to a developer, rub.

The author of this work performed relevant studies. A formula is derived for determining the threshold value of the price (for a given cost, price indices for the sold space, schedule for the sale of space, the share of the minimum contribution of the builder’s own funds to AB construction, loan rates, LLCR) from the LLCR formula, by a series of equivalent mathematical transformations. Calculations for Novosibirsk show that, the threshold price is 53.3 thousand rubles. per sq.m. at a cost of 41.6 thousand rubles per sq.m, the developer does not make sense to implement the project, and the bank does not make sense to finance projects if the prize is lower. This means that, AB cannot be constructed in Novosibirsk in those areas where prices are lower than the specified value. An exception is the AB with the construction cost which is less than that one above. So, it is possible to forecast the volume of AB commissioning in any city by combining these financial restrictions with a map of land plots, according which building permits have been issued.

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