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Development and Effective Activity of Innovative Enterprises in the Russian Federation

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***Abstract*—The development of innovative activities of the enterprises in the Russian Federation is the main direction of successful economic development of the country and raising the living standard of the population. Innovative enterprises are at the center of all the changes needed to create, implement innovative processes and technologies in the production of competitive products. Under these conditions innovation policy is an important element in the development of the society and its economy as a whole. It is obvious that its successful implementation is possible only on a systematic basis, by introducing innovations in all spheres of the activity of society, first of all - in the production sphere.**

It requires innovative changes not only in the production process of enterprises directly, but also in the sphere of management, product quality, planning methods and other elements of production. Innovative changes should cover all stages of the enterprise activity, including the implementation of the results of activities (products, services) in the market. Thus, in the article we consider a method called "pricing by the marginal cost," which can be used to analyze innovative enterprises that have a social orientation.

Keywords—effective activity of innovative enterprises, pricing by marginal cost, innovative enterprises, innovative product, methods, "customer winnings".

I. INTRODUCTION

Support for the development of innovative enterprises by the state (or generally from other sources) can be channeled in three main directions:

- ✓growth of enterprises;
- ✓the development of new enterprises;
- ✓transfer subsidies to large enterprises to ensure sustainable growth rates of their demand for innovative products.

The mechanism for balancing costs and results for an individual producer will be discussed further in this article.

A. A Subsection Sample

In monopoly conditions, the profit for an individual product is defined as the difference between the proceeds from the sale of a certain amount of innovative products (sales) and the costs for the production of this innovative product:

$$П(q) = P(q) * q - C(q) \quad (1)$$

where q is the volume of innovative products (in physical terms), П- is the profit from sales, $P(q), C(q)$ -respectively, the demand function and the function of total production costs. In the future, we will proceed from the existence of a linear cost function and adopt the following designation

$$P(q) = P, C(q) = c * q + A \quad (2)$$

where c- marginal (variable) costs for the production of innovative products (per unit), A-permanent costs.

Profit maximization is as follows:

$$\frac{dП(q)}{dq} = P + \frac{dP}{dq} * q - \frac{dC(q)}{dq} = MC(q) = 0 \quad (3)$$

After obvious transformations, we get:

$$P * (1 - \frac{1}{E_p^q}) = c \quad (4)$$

where - $E_p^q = \frac{dq}{dP} * \frac{P}{q}$ - price elasticity of demand.

This indicator always has a negative sign (minus) (the first derivative of the demand function is negative).

This method is called "pricing by marginal cost", because establishes the relationship (4) between the price of an innovative product and the marginal costs for its production. Condition (4) also expresses the condition of economic equilibrium between supply and demand, specifically - the volume of innovation products, in which equilibrium is established. It is clear that under the conditions considered, the price of an innovative product is determined only by the magnitude of the marginal (variable) costs of production and the price elasticity of demand and does not depend on the magnitude of the fixed production costs.

However, in real conditions, the optimal equilibrium (it corresponds to the economically most effective volume of production of innovative products under the considered conditions) is

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not achievable due to the presence of a number of institutional constraints. As it is known from economic theory, under institutional constraints, the economic equilibrium does not coincide with the economic equilibrium in the ideal market (an ideal market means a market of perfect competition, in which risks are absent) which is established only under resource constraints. At the same time, the level of production volume optimal cannot be ensured from the point of view of compliance with the principle of marginal costs and the producer possibly will incur additional costs, and as a result - losses. At the same time, public institutions are forced to form funds to compensate for the losses of the producer in the form of additional costs. Consequently, cash inflows and outflows in the production of products and profits from their production are not identical. In modern terms of the theory of "public finance" it is determined that with an increase in public expenditure by 1. society "pays" $(1+\lambda)>0$.

The parameter "lambda" is defined as - "shadow costs of public funds". To determine the real costs of producing products, they must be multiplied by $(1+\lambda)$.

The optimal value of the price based on the principle of "pricing by marginal cost", taking into account the "shadow costs of public funds" can be determined from the following condition:

$$S(q)-P(q)*q-(1+\lambda)*(c*q+A-P(q)*q)\rightarrow \max \quad (5)$$

where S (q) is the social result of producing an innovative product - aggregate or gross "customer winnings". It is important to take into account that the aggregate "consumer gain" in a certain sense reflects the social effect of innovative production that was not quantified in the form of a financial result, as discussed above.

It should be noted that $S'(q)=P(q) \quad or \quad "p"$

Equating to zero, the first derivative (in q) can be determined by the amount of innovative product to which the market equilibrium price corresponds. After the transformation, we get the pricing condition:

$$P*(1-\frac{\lambda}{1-\lambda}*\frac{1}{E_p^q})=c$$

It is equivalent to another condition, which is subsequently used

$$\frac{p-c}{p}=\frac{\lambda}{1+\lambda}*\frac{1}{E_p^q} \quad (6)$$

The price which is connected with the marginal costs of production, depends on the price elasticity of demand as it follows from condition (6) If the economic conditions of production compel the enterprise to admit deviations from the volumes of output of innovative products corresponding to the rule (6) of "marginal cost pricing" (which should be considered optimal), then the enterprise needs to receive compensation for this deviation, otherwise it will not be able to ensure the financial balance of its costs (for the production of innovative products) and the results achieved (revenues from the sale of innovative products). This kind of compensation can be extracted from certain "public funds" formed for this purpose - compensation for the losses of the producer. Comparison (4) and (6) shows that the factor of formation of such funds "shifts" the economic equilibrium in the market and can, therefore, reduce the economic efficiency of public spending from public funds to support enterprises.

II. Key Results

Thus, when managing the economy of an enterprise, one should take into account the existence of a shadow price of using funds from public funds $\lambda > 0$. This provision is based on the fact that each monetary unit spent by the state can be obtained only through taxation (labor, capital, excises) and costs the company an amount equal to $(1+\lambda)$ Otherwise, this means that obtaining large amounts of taxes calculated on the basis of $\lambda=0$, an ideal condition is practically unattainable. At the same time, it is important that the shadow price of the use of funds of public funds is set for the economy as a whole and does not depend on the industry affiliation of the enterprises or their management level (provided that the production capacity of the enterprise is relatively small in relation to the scale of the economy). The numerical measurement of the shadow price of the use of funds of public funds is the task of such a branch of economic science as the "theory of public (public) finance," based on the study of the elasticity of supply and demand for the consumer sphere, labor and capital. According to available data for a number of countries with developed economies (the US, the EU countries) can be adopted $\lambda=0,3$. According to the view in the economic literature, the shadow price of using public funds is higher in those countries where the efficiency of the tax collection system is lower. From what has been said, it follows that the economic meaning of the control variable λ in the Lagrange function (the coincidence of notations) should be treated as the equivalent of the "shadow costs of public funds", as discussed above. To determine the real costs of using the funds of public funds in the production of products, they must be multiplied by $(1+\lambda)$.

III. Conclusion

It may appear that for innovative enterprises, which are just the first recipients of transfers to cover existing losses (if they arise), accounting for the shadow costs of using public funds is not necessary, since the state pays compensation by itself. However, it is not. If the state pursues an optimal financial policy, the enterprise's ability to resort the borrowings from external sources should be taken into account. In this case, borrowing by a state-owned enterprise is equivalent to state borrowing and will lead to an increase in public debt, the amount of which should remain unchanged. This means that the state should reduce its borrowing by the amount borrowed by enterprises. In this case, there may be a shortage of funds in the state budget, which in turn should be compensated by a corresponding increase in taxes from enterprises. The price of this increase will just be "shadow costs of using public funds."

REFERENCES

[1] Chesbrough, H. (2004). Managing open innovation. Research-Technology Management, 47(1), 23-26.

[2] Hobday, M. (1998). Product complexity, innovation and industrial organisation. Research policy, 26(6), 689-710.

[3] Chesbrough, H. W. (2006). The era of open innovation. Managing innovation and change, 127(3), 34-41.

[4] Freeman, C., & Soete, L. (1997). The economics of industrial innovation. Psychology Press.

[5] Asheim, B. T., Isaksen, A., Nauwelaers, C., & Tödtling, F. (Eds.). (2003). Regional Innovation Policy for Small+ Medium Enterprises. Edward Elgar Publishing.

[6] Demidenko, D. S., Gorovoy, A.A., & Malevskaya-Malevich, E. D. (2017). The new elements of risk classification. Proceedings of the 29th International Business Information Management Association Conference - Education Excellence and Innovation Management through Vision 2020: From Regional Development Sustainability to Global Economic Growth, p. 2217-2221

[7] Rodionov, D. G., Rudskaia, I. A., Degtereva, V.A., (2017). Assessment of the effectiveness of regional innovation systems in Russia. Proceedings of the 29th International Business Information Management Association Conference - Education Excellence and Innovation Management through Vision 2020: From Regional Development Sustainability to Global Economic Growth, p. 3437-3450

[8] Nikolova, L. V., Kuporov, J. J., & Rodionov, D. G. (2015). Risk management of innovation projects in the context of globalization. International Journal of Economics and Financial Issues, 5(3), p. 68-72.