

Implementation of the stimulating function in relief for the purchase of new technologies

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Abstract

The article presents issues related to the implementation of the stimulating function of tax reliefs, designed to support research and development in enterprises. The economic justification for such support and the importance in the process of rebuilding the economy are presented. The structural solutions that can be used in the tax system have been discussed, allowing enterprises to reduce the impact of negative factors when undertaking research. The solutions functioning in the Polish tax system were also presented and assessed. The article ends with recommendations for the reform of those elements of the tax system in Poland, which are responsible for increasing the activity of enterprises in the sphere of R&D.

Keywords: innovation, R+D, fiscal policy, entrepreneurship, tax system, tax reliefs

JEL Classification: H21, H25

1. Introduction

Fiscal policy understood as the selection of sources and methods for collecting public revenues, as well as the directions and ways of implementing public expenditure to achieve social and economic goals, set by competent public bodies is of fundamental importance in the process of creating long-lasting economic growth. Its effectiveness is influenced by the appropriate selection of fiscal tools. This one is determined by, among others, socio-economic specificity of a given country and current challenges flowing from the environment.

The change of the structure and directions of trade, the dynamics of technological progress with the simultaneous shrinking of natural resources, challenges related to climate change and a number of phenomena related to globalization force the need to modernize the state's economic policy in search of new sources of competitive advantages and sustainable foundations of long-term economic development time. These challenges lead to the search for the possibility of supplementing the adopted rules of the economy with additional mechanisms that will allow for a long-term preemptive action, taking into account the proper allocation of social and economic assets.

The Polish economy is going through a process of changes related to the transformation of the production structure and the increase in the share of modern services. The aim of this process is to increase the competitiveness of the economy and create the basis for sustainable and stable growth and economic development. However, a necessary condition for achieving the set goals is to increase the innovativeness of Polish enterprises, which cannot be achieved without increasing their expenditure on research and development. The task of the state is to support this process. From a range of tools that it has at its disposal, one of the most effective ones are those included in the tax system.

The use of the tax system in the implementation of economic and social goals is widely described in the literature and the preferences included in tax constructions played an important role, among others in structural changes in the economies of Central and Eastern Europe. The popularity of using elements of tax structures in supporting pro-development corporate policy is based, in addition to proven effectiveness, on a relatively easy procedure for implementing such solutions. The use of the existing tax system allows to reduce the costs of implemented solutions, both at the central level and at the level of enterprises. Another feature of such tools is freedom in choosing the direction of research and development activities of enterprises. In contrast to subsidies or preferential loans, entrepreneurs using tax preferences shape their development policy freely.

Reliefs related to R&D activity allow the enterprise to reduce tax burdens or other administrative and legal burdens. It should be emphasized, however, that these are preferences already available after the R&D expenditure. It can be assumed that, unlike direct support in the form of R&D subsidies, tax reliefs are indirect. Individual countries use indirect and direct tools to a different extent to increase the competitiveness of the economy by increasing its innovativeness. The importance of tax reliefs in this process is demonstrated by the level of their use in countries such as Australia, Austria, Belgium, Canada, Denmark, France, Ireland, Japan, Korea and the Netherlands, where support through the tax system exceeded direct support in the form of subsidies and subventions.

The purpose of the article is to demonstrate the reasons for the ineffectiveness of the state's activities in stimulating enterprises to increase R&D spending. The elements of the tax system were analyzed, which in their assumptions were to serve the support of pro-innovation activities in enterprises. The construction of a tax credit for the purchase of modern technologies, which functions in Polish legislation, was critically analyzed.

A critical analysis of the literature on the subject, analysis of legal acts and analysis of statistical data was carried out to achieve the goals set.

2. The justification for introducing tax preferences for enterprises making R&D expenditures

Studies based on statistical data prove that investing in R&D is an important factor of economic growth. Analyzes prepared by the Budget Committee of the American Congress have shown that investments in research and development are at least as efficient as investments in capital goods (Fleming, King, Juda, 2007, pp. 938–954). This is due to the increase in the total productivity of production factors. In the group of seven industrialized countries: USA, Japan, Germany, France, Great Britain, Italy and Canada in 1971–1990, every 100 dollars invested in R&D eventually led to GDP growth of \$123 (Congressional Budget Office, 2005). Research carried out on OECD member countries in the years 1980–1998 allow to state that every additional 100 dollars spent in enterprises on research and development increases the country's GDP by an average of 113 dollars (Coe, Helpman, 1995, pp. 859–887). Research and development investments also bring social benefits. These benefits, treated as externalities, are often larger than the return on investment obtained by enterprises themselves.

External effects can be of two types: as a transfer of knowledge or financial benefits. At the bases of knowledge transfer lies, among others, the inability to fully block the flow of knowledge and information through patent protection. As a result, the investment of one company may speed up the creation of knowledge by other companies. The use of knowledge gained from others allows to improve the competitiveness of a given company by increasing productivity and product or process modifications. Knowledge transfer thus contributes to the improvement of the market position of a much larger number of enterprises than those involved in research and development activities.

Empirical studies allow to identify several important features of the flow of knowledge. Knowledge transfer is particularly important in industries that base their development on R&D expenditures and highly qualified employees (Audretsch, Feldman, 1996, p. 630). The flows of knowledge are the stronger the smaller is the distance between the knowledge-generating entity and the recipient enterprises. Although it is also dependent on the forms of dissemination of knowledge, the physical distance is still fundamental (Guellec, van Pottelsberghe De La Potterie, 2001, pp. 103–126). This can be explained by the meaning of the ease of change of work by specialists in a given field and the meaning of interpersonal contacts. This thesis seems to be confirmed by the geographical location of many industrial clusters that usually developed near one or more universities (Fleming, King, Juda, 2007, pp. 938–954).

Indirect financial consequences occur when the knowledge generated in a given entity affects the financial results of the business operations of other enterprises. Statistically, such a phenomenon is often difficult to distinguish, although its impact on even entire industries is undeniable. You can talk about the financial side effects of R&D

when the consumer or business acquires products improved as a result of research and development expenditures. However, the valuation made on the basis of the increase in productivity or utility by the buyer is higher than the market price which the seller accepts (Bronwyn, Mairesse, Mohnen, 2015). Computers and mobile phones are examples of goods that have brought benefits at the level of societies and economies, and the benefits have been taken over to a limited extent by innovation companies. Observation of variable costs in enterprises using innovations developed by others indicates that it is often the basic source of development. Research carried out in the group of American companies shows that such savings can reach even 1000% (Coe, Helpman, 1995, pp. 859–887).

Social benefits are difficult to measure. As a sum of benefits resulting from the transfer of knowledge and external financial effects, however, they are definitely larger than the private effects of expenditures on research and development. Averaged estimates of researchers dealing with this problem, however, allow to determine the ratio of private benefits to the social benefits of R&D expenditures at 2 to 1 (Fleming, King, Juda, 2007, pp. 938–954). The existence of large social returns on investment directed at research and development is an important argument for running an active economic policy aimed at supporting this process. Lack of state support will lead to smaller interest of enterprises in investment in R&D. Their decisions in this direction will be dictated only by private returns, bypassing social benefits.

3. Use of relief for the purchase of new technologies in Poland

Tax preferences are designed to stimulate enterprises to increase their R&D expenditures. Consequently, it will bring benefits to them, by increasing competitiveness as well as the entire economy, through external effects. Expenditure of enterprises on R&D is complementary to public expenditure. It is the enterprises and the government that determine the level of spending on research and development of a given country.

The level of expenditures on research and development in relation to GDP in Poland is at the lowest level in the group of analyzed economies. At the EU-28 average in the range from 2.0 to 2.07, in Poland this indicator ranged from 0.88 to 1.03. At the same time, R&D spending in 2012 was the lowest of all indicators obtained. In turn, the highest expenditures in relation to GDP are recorded in Finland, where in 2012 an indicator of 3.42 was obtained.

Tax preferences in Poland were supposed to be one of the methods to increase the level of expenditure on R&D. The use of the tax system to support the activities of enterprises in their research and development activities takes place through the relief for the acquisition of new technologies. The relief is a deduction of expenses from the

tax base in income tax from natural persons or from legal persons, depending on the form of conducting business activity (Coe, Helpman, 1995, pp. 859–887).

Table 1. The level of expenditure of the country on research and development in relation to GDP

Countries	2012	2013	2014	2015	2016	2017
EU 28	2.00	2.02	2.03	2.04	2.04	2.07
Czech Republic	1.79	1.91	2.00	1.93	1.68	1.79
Germany	2.87	2.82	2.87	2.91	2.92	3.02
Estonia	2.12	1.72	1.43	1.47	1.25	1.31
France	2.23	2.24	2.23	2.27	2.25	2.24
Hungary	1.26	1.39	1.35	1.36	1.2	1.35
Poland	0.88	0.87	0.94	1.00	0.96	1.03
Slovenia	2.57	2.58	2.37	2.2	2.01	1.86
Finland	3.42	3.29	3.17	2.9	2.74	2.76

Source: Eurostat, n.d.

Technological knowledge in the form of intangible assets, in particular results of research and development works, which enables the creation of new or improved products or services, is regarded as new technologies. The condition for recognizing the expenditure for the acquisition of new technologies is the opinion of an independent scientific unit that it is innovative and is not used in the world for a period longer than the last 5 years.

The basis for determining the amount of deduction is the amount of expenditures incurred to acquire new technologies in the year in which the new technology was introduced into the register of fixed assets and intangible assets or in the year following that year. In a situation where a taxpayer obtains a loss or income from a non-agricultural activity of a taxpayer for a tax year, it is deducted in the entire amount or the remainder in the following three tax years, starting from the end of the year in which the new technology was entered into the register.

An important element of the construction of the relief for the acquisition of new technologies is the deduction limit of 50% of the amount spent. At the same time, the taxpayer loses the right to a discount if, before the lapse of three fiscal years from the purchase of a new technology, he grants the right to use it by other entities, the taxpayer will be declared bankrupt or he will receive reimbursement for the purchase of technology in any form.

When assessing the structure of tax relief related to expenditure on research and development compared to other solutions of this type operating in the world, one should distinguish several characteristic solutions. First of all, the relief is characterized by a narrow subject range. The purchase of modern technologies does not include the purchase of fixed assets or the current expenses related to research. Current expenditures, which

include, among others, employees' remuneration, costs of external services, consumption of materials or energy, constitute 69% of expenditures borne by enterprises for research and development. The remaining 31% are capital expenditure, which include expenditure on fixed assets or intangible assets (OECD, 2010). Another difficulty in using the discount is the opinion of the scientific unit regarding the innovation of the purchased technology. It is necessary to be aware of the limitations of enterprises, especially from the SME sector, in the possibilities of obtaining such an opinion and responsibility that the scientific unit must undertake by issuing a relevant certificate. Such a certificate must meet certain formal requirements, strictly controlled by the tax authorities (Ustawa z dnia 26.07.1991 r. o podatku dochodowym od osób fizycznych). On the other hand, the possibility of settling the allowance in three consecutive years should be assessed positively, in the case when the taxpayer bears a loss.

The ineffectiveness of the relief for the purchase of new technologies, as a tool to stimulate enterprises to increase R&D expenditure, manifests itself not only in the extremely low level of relief but also in the level of enterprises' involvement in development activities compared to other institutions dealing with R&D. Enterprises operating in Poland spend the least resources on R&D from among the economies presented. With the EU average of more than 50% of the resources employed in a given country for R&D, Polish enterprises reached the highest level at 34.3% in 2012. At the same time in 2013, this level was the lowest of all economies and amounted to 24.4%. The highest rate of enterprises' involvement in R&D in a given country was demonstrated in Europe by companies from Finland, in the world by Japanese enterprises, reaching the index of 78.2% in 2013.

Table 2. Share of enterprises' expenditures in total expenditures on research and development in %

Countries	2012	2013	2014	2015	2016	2017
EU 28	54.9	54.8	54.1	53.7	54.9	55.2
Czech Republic	47.2	45.0	39.8	40.8	37.7	38.1
Germany	68.1	67.3	66.1	65.6	65.6	65.9
Estonia	41.6	39.8	38.5	43.6	55.0	54.5
France	52.3	50.8	52.3	53.5	55.0	55.9
Hungary	43.9	48.3	46.4	47.4	47.5	48.3
Poland	34.3	30.5	27.1	24.4	28.1	29.2
Slovenia	58.3	62.8	58.0	58.4	61.2	63.1
Finland	68.2	70.3	68.1	66.1	67.0	68.6
USA	64.9	63.7	41.0	61.0	60.0	61.3
China	70.4	71.7	61.0	71.7	73.9	74.8
Japan	77.7	78.2	71.7	75.9	76.0	75.7

Source: Eurostat, n.d.

4. Conclusion

The Polish economy is undergoing a change process. From an economy based on traditionally understood production to an economy based on modern services, among which research and development play a key role. Due to the scale of change, this transformation is of great importance for sustained economic growth. Therefore, when designing further actions, it is necessary to take into account the need to create regulations stimulating enterprises to increase expenditure on R&D, which in comparison to government expenditure is currently one of the lowest in the European Union.

The regulations currently in force regarding tax preferences in the personal income tax and corporate income tax have not met the hopes placed in them. From among a number of possible structural elements of tax relief supporting the R&D expenditure of enterprises, the legislator used only a few. The reason for the residual use of the discount for the purchase of new technologies is the narrow subject scope. From the report “Research and development in Poland. The 2016 report” it results that 32% of the surveyed enterprises do not benefit from the discount due to the limitations of the catalog of expenses allowing the use of preferences (Ustawa z dnia 26.07.1991 r. o podatku dochodowym od osób fizycznych). The narrow subjective scope also affects the fear of different interpretation of tax regulations by tax authorities.

As a result, subsidies are the most popular tool supporting R&D spending in Poland. The report “R&D activity of enterprises in Poland” shows that 85% of the surveyed enterprises benefited from this form of support, with 8% benefiting from a discount for the purchase of technologies (OECD, 2011). This is despite the obvious limitations related to the use of subsidies such as: coercion of convergence of research with the criteria for awarding subsidies, or high formalization of the process of granting and using grants.

Basing the financial support for enterprises on subsidies, with the failure to use the discount for the purchase of technologies, is one of the reasons for the low involvement of enterprises in R&D. Without the activation of enterprises in this field, Poland will still be in the lowest positions in the level of R&D investments among EU and OECD countries. The rationale for such support, in addition to the benefits of the enterprises themselves, is, *inter alia*, the external benefits received by other enterprises and society. Negligence in this field will lead to a permanent reduction in the level of international competitiveness and may constitute a significant destimulant in long-term economic development.

The development of research and development activity is a key activity leading to the growth of innovation in the Polish economy. To achieve this goal, it is part of the structure of income tax payable by enterprises to introduce a new incentive that increases the physical catalog of R & D expenditure. Without such an extension and

simplification of regulations that would reduce the interpretation of tax institutions, it will be difficult to include enterprises in the process of increasing R&D expenditures in Poland and, consequently, in the process of rebuilding the economy.

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Realizacja funkcji stymulacyjnej w uldze na zakup nowych technologii

Artykuł przedstawia zagadnienia związane z realizacją stymulacyjnej funkcji ulg podatkowych, mających za zadanie wsparcie działalności badawczo-rozwojowej w przedsiębiorstwach. Przedstawiono w nim uzasadnienie ekonomiczne takiego wsparcia oraz znaczenie w procesie przebudowy gospodarki. Omówione zostały rozwiązania konstrukcyjne pozwalające przedsiębiorstwom zmniejszyć wpływ negatywnych czynników przy podejmowaniu badań. Przedstawiono i oceniono również rozwiązania funkcjonujące w polskim systemie podatkowym. Artykuł kończy się zaleceniami reformy tych elementów systemu podatkowego w Polsce, które odpowiadają za zwiększenie aktywności przedsiębiorstw w sferze B+R.

Słowa kluczowe: B+R, polityka fiskalna, przedsiębiorczość, system podatkowy

JEL: H21, H25