

## **Recent Changes and Developments in State Aid for Research, Development and Innovation in the European Union**

### **Introduction**

Competitiveness can be interpreted in many ways; however, mainstream economics highlights its links with international trade. Such approach is built upon the ability of enterprises – and of the economy – to compete also in international markets. Competitiveness involves a variety of factors: both quantitative (e.g., productivity) and qualitative (e.g., technology innovation ability, advancement of product specialisation, quality of products and finished goods and services or the value of after-sale services). Recently, special attention has been paid to innovative solutions that have become crucial for the development of firms and economies. Nevertheless, we need to stress that these operations are often accompanied by the so called market failures, which prevent from initiating or continuing innovation processes. Also to neoliberal economy, these failures provide good reasons why governments might choose to intervene in the market. However, any interference carried out by the government may distort competition and the distortion is the bigger the more open the economy. Let us take the EU internal market as an example where most barriers to the movement of goods, services, capital and people have been removed making the market susceptible to any form of government interference in the Member States. As a result, the EU state aid legislation has developed a complex system of definitions, admissibility criteria, prohibitions, and exemptions from prohibitions.

New European strategy for employment and growth (Europe 2020 Strategy) is the main document that has given the shape to the economic

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policy of the European Union and its Member States. Adopted by the European Council in 2010, the Strategy objective is to impact European economy so that it could operate in a smart and sustainable way conducive to social inclusion.<sup>1</sup> At the same time, the Commission proposed the approval of five goals of the 2020 Strategy by heads of States and governments of the EU Member States. The list includes social objectives (connected with employment, education, and standard of living), environmental objectives (connected with the reduction of greenhouse gas emissions, combating climate change) and objectives connected with future challenges. The latter include better conditions for research and development activities, in particular increase in public and private investment in the sector up to the level of 3% of GDP. However, it is worth noting that the indicator was invoked already much earlier. According to the Commission, this is a way to attract attention to the role public and private resources play in investment in research and development (R&D). Simultaneously, it was observed that it links more to the size of initial investment rather than to the impact. Nevertheless, as the Commission realised itself, R&D expenditure in Europe in 2010 was below 2%, while the United States of America (USA) reached 2.6%, and Japan 3.4%. It was also stressed that lower investment made by the private sector was the main reason for the difference in outlays. That is why, the European Commission assumed there is a serious market failure as a result of which private business is not interested in risky activities, such as R&D or innovation. It also went on to conclude that the uncertainty on the side of enterprises was high enough to propose R&D&I risk sharing between enterprises and the governments, i.e., *de facto* taxpayers – potential consumers. As a result, the Commission demonstrated that the accomplishment of strategy objectives may also be assisted by state aid provisions, e.g., by mobilising and supporting initiatives for the implementation of innovative, efficient and more environmentally-friendly technologies with simultaneous easier access to state aid for investment, high-risk capital and funding for research and development.<sup>2</sup>

European Commission is of the opinion that aid available in the financing period 2014–2020 should be used to identify market failures and objectives within the common interest, being at the same time the least distortive (the so called “good aid”). Aid shall be assessed mainly against

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<sup>1</sup> European Council Conclusions of the European Council, EUCO/13/10, Brussels, 17.06.2010.

<sup>2</sup> European Commission Europe 2020 Flagship Initiative. Innovation Union, Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, SEC(2010)1161.

the incentive effect, i.e., against its potential to encourage aid beneficiaries to carry out specific activities that they would not carry out in the absence of aid. The amount, intensity and potential recipients of aid should be defined in a way that leaves the internal market open and competitive. Importantly, in the context of aid for R&D, “good aid” should contribute to growth as long as it targets a specific market failure and supplements rather than substitutes private spending.<sup>3</sup> In this context, attention should be paid to the fact that neither the Committee of the Regions nor the European Parliament addressed research, development and innovation in their communications concerning state aid modernisation.<sup>4</sup>

In the flagship initiative „Innovation Union”, a constituent of the Europe 2020 Strategy, the Commission indicated that its goal is to improve framework conditions and enhance access to funding for research and innovation to ensure that innovative ideas will be translated into products and services that will generate growth and new jobs. However, although the Commission mentioned access to funding, it did not identify its sources. We need to bear in mind that the European Commission did not see state aid as the main tool to improve innovation in the EU. It often addressed problems in access to funding, especially those experienced by small and medium-sized enterprises (SME) but the question of government intervention was not considerably highlighted. Commission would mention its schemes that offer financial aid to innovative undertakings or the EU budget rather than refer to interventions exercised by Member States governments. As for state aid, the European Commission only listed changes planned in state aid rules for R&D with reference to forms and new formats of innovative undertakings.<sup>5</sup> Thus, the Commission focused much more on the free market model of the supply and demand side, leaving state aid issues outside of the mainstream discussions on EU innovation.

Scope-wise, state aid that is admissible in the EU can be divided into sectoral and horizontal aid. Like sectoral policies, which focus on specific

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<sup>3</sup> European Commission Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions: EU State Aid Modernisation (SAM), COM(2012).

<sup>4</sup> European Parliament European Parliament resolution of 17 January 2013 on state aid modernisation, 2012/2920(RSP), P7\_TA(2013)0026; Committee of the Regions Opinion of the Committee of the Regions on ‘EU State Aid Modernisation (SAM)’, OJ C 17/06.

<sup>5</sup> European Commission (2011) Europe 2020 Flagship Initiative. Innovation Union, Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, SEC(2010) 1161.

industries and services, sectoral aid targets specific sectors of industry (“picking winners”), while horizontal aid is interpreted as pro-development aid for all enterprises.<sup>6</sup> The second group includes categories, such as aid for employment, training, environment, small and medium-sized enterprises (SME), regional development, as well as research, development, and innovation. In the age of globalisation, digitalisation, servitization and in relation with the implementation of the Europe 2020 Strategy, aid for research, development and innovation has been considered critical for the growth of European industry. Hence a question arises whether, in the face of market failures, aid for R&D&I meets the necessity criteria and whether it may simultaneously contribute to the enhancement of innovation and, consequently, competitiveness of the EU economy. Research goal of this paper is to assess the focus of state aid policy on research, development and innovation in the light of theory and practice (based on the recent experience). To this end we will analyse theoretical arguments for interventions supporting R&D activities, legal bases and criteria of admissibility for state aid for R&D&I, as well as, importance of R&D&I public aid in the EU Member States.

### **Theoretical Arguments for Granting R&D&I Aid<sup>7</sup>**

In accordance with neoliberal concepts, government intervention that takes the form of state aid is admissible when we are dealing with the so called market failures. Markets may fail as a result of the absence or (a) asymmetry of information, (b) positive externalities, public goods, (c) imperfect competition, and (d) coordination problems. Exercised on these grounds government intervention in the economy is admissible if market mechanisms fail to eliminate them.<sup>8</sup> Some researchers explicitly recommend that interventions should be undertaken exclusively when we are faced with the major market failures, which concern research and development, innovation, as well as small and medium sized enter-

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<sup>6</sup> A.A. Ambroziak, *Ewolucja zasad udzielania pomocy publicznej po rozszerzeniu UE w 2004 roku. Konsekwencje dla Polski*, in: *Polska. 10 lat członkostwa w Unii Europejskiej*, eds. E. Małuszyńska, G. Mazur, I. Musiałkowska, Wydawnictwo Uniwersytetu Ekonomicznego w Poznaniu, Poznań 2015.

<sup>7</sup> Based on extended review of the literature on tools of industrial policy: A.A. Ambroziak, *Review of the Literature on the Theory of Industrial Policy*, in: *New Industrial Policy of the European Union*, ed. A.A. Ambroziak, Springer, Switzerland 2017.

<sup>8</sup> H. Pack, K. Saggi, *The case for industrial policy: a critical survey*, “World Bank Policy Research Working Paper” 2006, 3839, p. 3.

prises.<sup>9</sup> In the case of innovation, two externalities that accompany the process have been identified: (a) despite internal effects to companies, a lot depends on the external environment, while (b) fruits of innovation not always belong exclusively to the innovator.<sup>10</sup> Besides, from macroeconomic point of view, new growth theory is based on appropriate incentives, costs of innovation and the impact upon the enhancement of new technologies.<sup>11</sup> It is worth stressing, however, that where market failures become a reference point for perfect and complete markets with perfect competition, entrepreneurs and consumers who make informed decisions, adequate technical and technological support, standard assessment, in principle, can only lead us to conclude that the rest of the world is a market failure.<sup>12</sup>

As for imperfect or asymmetric information, for long time information has been treated as a basis of innovation. If there is no specific legislation that would protect the owners of knowledge or information, they will not be able to sell it easily in the market as the buyer could easily replicate it.<sup>13</sup> Consistently, it is assumed that the market suffers from undersupply of innovation, which is an argument for government intervention that would encourage innovative companies to invest in such products.<sup>14</sup>

With reference to the R&D and innovation European Commission has identified high uncertainty in these markets. There are situations when due to imperfect and asymmetric information private investors may be reluctant to finance high value projects.<sup>15</sup> Also small and medium-sized enterprises have problems with access to financial resources exactly due to

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<sup>9</sup> J. Gual, S. Jódar, *Vertical industrial policy in the EU: an empirical analysis of the effectiveness of state aid*, "EIB Papers", nr 11(2)/2006, p. 81.

<sup>10</sup> O. Toivanen, *Innovation and research policies: two case studies of R&D subsidies*, "EIB Papers", nr 11(2)/2006, p. 55; A. Riess, T. Väilä, *Industrial policy: a tale of innovators, champions, and B52s*, "EIB Papers", nr 11(1)/2006, p. 25.

<sup>11</sup> K. Aiginger, *Industrial Policy: A Dying Breed or A Re-emerging Phoenix*, "Journal on Industry, Competition and Trade", nr 7(3)/2007, p. 303.

<sup>12</sup> *Industrial Policy and Development: The Political Economy of Capabilities Accumulation*, eds. M. Cimoli, G. Dosi, J.E. Stiglitz, Oxford University Press, Oxford 2009, p. 20.

<sup>13</sup> K. Arrow, *Economic Welfare and the Allocation of Resources for Invention*, in: *The Rate and Direction of Inventive Activity, Economic and Social Factors*, The National Bureau of Economic Research, Princeton University Press 1962, pp. 614–615.

<sup>14</sup> J. Lin, H.J. Chang, *Should Industrial Policy in Developing Countries Conform to Comparative Advantage or Defy it? A Debate Between Justin Lin and Ha-joon Chang*, "Development Policy Review", nr 27(5)/2009, pp. 484–485; R. Hausmann, D. Rodrik, *Economic development as self-discovery*, "Journal of Development Economics", nr 72(2)/2003, p. 629.

<sup>15</sup> European Commission Framework For State Aid For Research And Development And Innovation, OJ C 198/1.

the asymmetry of information between them and banks as to their loan repayment capacity, risk, and potential benefits of implemented projects.<sup>16</sup>

Imperfect and asymmetric information is a very specific market failure experienced by the workforce in modern companies. On the one hand, highly skilled staff may be unaware of recruitment opportunities of innovative companies. However, on the other hand, government intervention may be necessary to finance training courses and internships for researchers so that they could get acquainted with innovative solutions and share their knowledge with domestic enterprises. If such funding were offered from private resources, researchers, having benefited from research stays financed from private funds, could start working for companies which are direct competitors of the providers of funds.<sup>17</sup>

Market failure consisting in positive externalities takes place when benefits – such as knowledge transfer or better capacity of other businesses to develop supplementing products – flow from research and industrial sectors to society.<sup>18</sup> Since in most cases free market cannot compensate the expenses, entrepreneurs are very cautious about such R&D outlays. Thus, government intervention is needed to implement projects that produce general social and economic benefits, which would not have been completed without aid being granted.<sup>19</sup> Other researchers argue that knowledge is a public good, i.e., it may be shared by an unlimited population of recipients and its generation is connected with positive externalities. Nevertheless, private companies may be disinterested in such innovation as they are usually driven by profit maximisation and ignore potential benefits to the economy as a whole.<sup>20</sup>

Coordination and networking problems, including problems within innovation clusters, are also considered market failure. Commission noticed that the ability of enterprises to coordinate their actions and cooperate in R&D&I may be undermined due, inter alia, to difficulties in coordinating the cooperation of many partners whose interests may diverge,

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<sup>16</sup> J. Gual, S. Jódar, op.cit., p. 81.

<sup>17</sup> T. Sonobe, K. Otsuka, *Cluster-Based Industrial Development. Kaizen Management for MSE Growth in Developing Countries*, Palgrave Macmillan, London 2014, p. 32.

<sup>18</sup> European Commission Framework For State Aid For Research And Development And Innovation, OJ C 198/1.

<sup>19</sup> European Commission Community Framework For State Aid For Research And Development And Innovation, OJ C 323/01; European Commission Framework For State Aid For Research And Development And Innovation, OJ C 198/1; E. Cohn, *Theoretical foundations of industrial policy*, “EIB Papers”, nr 11(1)/2006, p. 86.

<sup>20</sup> T. Väilä, *No policy is an island – on the interaction between industrial and other policies*, “EIB Papers”, nr 11(2)/2006, pp. 8–33.

as well as for legal and administrative reasons.<sup>21</sup> Some academics claim coordination at government level may be necessary as the profitability of investment made by some entrepreneurs may depend on investments made by other firms.<sup>22</sup> As a result, government intervention may in a way coordinate investment decisions made by the private sector to ensure the provision of infrastructure needed for other firms to develop.<sup>23</sup> There are also voices that highlight, especially in the field of R&D&I, the need for orchestrated efforts that go beyond standard state aid: better education, financial and legal institutions and infrastructure, because private companies are unable to incur all of these costs themselves and coordinate actions of other enterprises.<sup>24</sup>

### **Legal Bases for Granting R&D&I Aid**

As we have already mentioned, government intervention may potentially distort competition, in particular within the EU internal market where there are no barriers to the free movement of goods, services, people, and capital. Such complete liberalisation (as an idea rather than implementation) of the EU market has forced out limitations upon granting state aid. Article 107 para. 1 of the Treaty on the Functioning of the European Union (TFEU) stipulates that any aid granted by a Member State or through State resources in any form whatsoever by favouring certain undertakings or the production of certain goods is incompatible with the internal market if it in so far as it affects trade between Member States. Accordingly, governments of the Member States have become unable to easily support their domestic companies and improve their competitiveness by granting subsidies. Nevertheless, the EU primary law provides for the so called optional exemptions from this prohibition. They apply to, inter alia, aid granted to entrepreneurs to facilitate the development of certain economic activities, where such aid does not affect trade to an extent contrary to the common interest (Art. 107 para. 3. letter c) TFEU). Aid for research and development, as well as innovation activities are also exempted from the total prohibition on granting financial aid. At this

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<sup>21</sup> European Commission (2006) Community Framework For State Aid For Research And Development And Innovation, OJ C 323/01; European Commission (2014b) Framework For State Aid For Research And Development And Innovation, OJ C 198/1.

<sup>22</sup> J.E. Vestal, *Planning for Change: Industrial Policy and Japanese Economic Development, 1945–1990*, Oxford University Press, Oxford 1995, p. 5.

<sup>23</sup> D. Rodrik, *Coordination failures and government policy: A model with applications to East Asia and Eastern Europe*, “Journal of International Economics”, nr 40(1)/1996, pp. 2–3.

<sup>24</sup> J. Lin, H.J. Chang, op.cit., p. 485.

point, it is worth reminding the provisions of Art. 179 para. 1 of TFEU, pursuant to which the Union aim is to strengthen its scientific and technological bases by creating a European research area, in which researchers, scientific knowledge and technology circulate freely. On top of that, the EU should favour the improvement of its competitiveness, including in industry, and promote research that the Treaties consider necessary. To put legislation in order and to ensure transparency in decision making within the Commission, special guidelines have been adopted that enable Member States to *ex ante* review whether planned individual aid or a state aid scheme are consistent with principles applied by the Commission in a given area. The same principle applies also to aid granted for research, development and innovation activities.<sup>25</sup>

We should also stress that based on Art. 108 para. 3 TFEU the Commission should be notified about plans to grant or alter aid, including support to R&D&I. If it decides that aid is planned, which may be incompatible with the internal market, it must immediately instigate explanatory procedure. The number of such cases is increasing, especially when the number of Member States has almost doubled following the enlargements as of 2004. Thus, based on Art. 108 para. 4 TFEU, the Commission issued the so called General Block Exemption Regulation (GBER) that exempts from the duty to notify all of the state aid cases.<sup>26</sup> As a result of the set up of EU legislation, guidelines on aid for R&D&I (which stipulate that such aid is admissible) overlap with the provisions of regulations that exempt precisely identified (often in identical provisions) cases of financial aid granted from public resources from the duty to notify them to the Commission.

As for the period 2007–2013, provisions of the General Block Exemption Regulation (European Commission, 2008) in principle incorporated all of the guidelines on aid for R&D&I (European Commission, 2006). Consistently, only cases when aid was granted (a) above intensity ceilings provided for in the General Block Exemption Regulation, (b) *ad hoc*

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<sup>25</sup> European Commission Community Framework For State Aid For Research And Development And Innovation, OJ C 323/01; European Commission Framework For State Aid For Research And Development And Innovation, OJ C 198/1.

<sup>26</sup> European Commission Regulation (EC) No 800/2008 of 6 August 2008 Declaring Certain Categories Of Aid Compatible With The Common Market In Application Of Articles 87 and 88 of The Treaty (General Block Exemption Regulation), OJ L 214/3; European Commission Regulation (EU) No 651/2014 of 17 June 2014 Declaring Certain Categories Of Aid Compatible With The Internal Market In Application Of Articles 107 And 108 Of The Treaty, OJ L 187/1; A.A. Ambroziak, *Ewolucja zasad udzielania pomocy publicznej po rozszerzeniu...*, op.cit., pp. 371–373.



to large companies for RD&I, and (c) to SMEs for innovation had to be notified to the European Commission and await its authorisation before the aid has been actually granted. Although identical provisions of the guidelines overlapped with those of the GBER, the legal structure was considered unfriendly to either the donors or the recipients of aid. The catalogue of major problems included: a) relatively long time of waiting for the Commission's decision, b) interpretation problems faced in implementation in the 2006-2013 perspective, and c) the duty to notify the European Commission about selected cases of state aid.<sup>27</sup>

With respect to the new binding provisions on aid for R&D&I for the years 2014–2020 we need to stress that they seem to be more coherent since all categories of aid in these fields<sup>28</sup> have been covered by the GBER.<sup>29</sup> As a result, guidelines on aid granted to research, development and innovation activities will apply (together with the duty to notify) only if aid amount or intensity exceed the agreed thresholds. It is a significant facilitation for those who grant and receive aid. The absence of legal uncertainty should encourage the actors engaged in granting aid and its beneficiaries to use it more often than in the previous financial period. The threat of the obligation to repay the aid with interests prevented beneficiaries from seeking state resources while the provisions on the accountability of those who grant the aid and penalties for transferring resources in cases incompatible with the EU law were and still are missing.

### **Criteria of Admissibility for Granting Aid for R&D&I**

By specifying criteria of granting state aid for research, development and innovation, the European Commission has identified the framework for Member States policies in these fields. From the viewpoint of the Commission, government interventions in the RD&I sphere may be admissible if they meet the identified goal and are compatible with precisely specified conditions. Speaking of the goal, the Commission by invoking the reason for exemption laid down in the Treaties (Art. 107 para. 3 letter c) identified the reason for granting state aid: contributing to the ac-

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<sup>27</sup> B. Von Wendland, *New Rules for State Aid for Research, Development and Innovation: 'Not a Revolution but a Silent Reform'*, "European State Aid Law Quarterly", nr 1/2015, p. 26.

<sup>28</sup> European Commission Framework For State Aid For Research And Development And Innovation, OJ C 198/1.

<sup>29</sup> European Commission Regulation (EU) No 651/2014 of 17 June 2014 Declaring Certain Categories Of Aid Compatible With The Internal Market In Application Of Articles 107 And 108 Of The Treaty, OJ L 187/1.

complishment of a goal that serves the common interest. Considering the provisions of both the Europe 2020 Strategy,<sup>30</sup> as well as provisions included in related programme documents on Innovation Union<sup>31</sup> and the financial framework for the years 2007–2013<sup>32</sup> and 2014–2020<sup>33</sup> together with the new aid scheme for R&D&I sector, we may assume that the goal identified for the EU resources should be the same for government interventions exercised by the Member States. The goal of the Horizon 2020 Programme is to contribute to the building of knowledge- and innovation-based society and economy in the Union by mobilising additional resources for research, development and innovation and thus contributing to the achievement of goals in the R&D sector, including the goal of allocating and spending 3% of the GDP on R&D&I in the EU until 2020. Apparently, also aid granted by governments should attract private and public investment, generate new jobs and ensure long-term balance, growth, social inclusion and industrial competitiveness of the EU,<sup>34</sup> i.e., to the achievement of the assumptions of Europe 2020 Strategy.<sup>35</sup>

As mentioned above, besides being goal-oriented, government interventions in the R&D&I area must meet certain specific criteria: appropriateness of the aid measure, incentive effect, proportionality of the aid, avoidance of undue negative effect on competition and trade, and transparency. The Community Framework for state aid for research, development and innovation of 2006<sup>36</sup> uses the so called balancing test, which covers the same rules formulated as questions and guidelines, not necessarily treated as binding criteria to be met cumulatively. The Community Framework for state aid for research, development and innovation

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<sup>30</sup> European Council Conclusions of the European Council, EUCO/13/10, Brussels, 17.06.2010.

<sup>31</sup> European Commission Europe 2020 Flagship Initiative. Innovation Union, Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, SEC(2010) 1161.

<sup>32</sup> European Parliament and Council Decision No 1982/2006/EC of the European Parliament and the Council of 18 December 2006 concerning the Seventh Framework Programme of the European Community for research, technological development and demonstration activities (2007–2013), OJ L 412/1.

<sup>33</sup> European Parliament and Council Regulation (EU) No 1291/2013 of the European Parliament and the Council of 11 December 2013 establishing Horizon 2020 – the Framework Programme for Research and Innovation (2014–2020) and repealing Decision No 1982/2006/EC, OJ L 347/104.

<sup>34</sup> *Ibidem*.

<sup>35</sup> European Council Conclusions of the European Council, EUCO/13/10, Brussels, 17.06.2010.

<sup>36</sup> European Commission Community Framework For State Aid For Research And Development And Innovation, OJ C 323/01 (further: 2006 guidelines).

of 2014<sup>37</sup> expanded the scope of conditions with the need to guarantee transparency, that is information about granted aid, however, the main elements of the assessment of aid for research, development and innovation have not changed as to the substance.

### **Appropriateness of the Aid Measure**

By taking a decision on intervention, the government should first and foremost identify the scope and scale of the market failure and then specify an optimum set of tools that could mitigate or eliminate the failure. State aid is just one of financial instruments in the hands of public authorities. We should also remember all administrative, legal and political instruments, however, allocation of public resources often becomes the principal policy measure. According to the Commission, appropriate measures are those, for which a Member State has considered other strategic policy options and for which it decided that the use of a selective instrument such as state aid will be more advantageous.<sup>38</sup> However, we need to bear in mind that non-financial instruments often imply legal and organisational changes, which require a long preparatory period, followed by implementation stage and the outcomes can also be expected in a long-term perspective. Surely, these will last much longer than individual financial interventions but politically they are much less attractive to decision makers.

### **Incentive Effect**

Another very important condition for state aid admissibility should be the presence of the so called incentive effect. According to the Commission, the effect exists when the aid changes the behaviour of an undertaking in such a way that it engages in additional activities, which it would not carry out or would carry out in a restricted manner without the aid. Nevertheless, we need to highlight that the aid must not subsidise the costs of activity that an undertaking would anyhow incur and must not compensate for the normal business risk of an economic activity.<sup>39</sup> Thus, public resources should not substitute private funds. The requirement cannot be met easily based on only economic analyses as too many micro- and marcoeconomic variables impact the final costs and profits of

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<sup>37</sup> European Commission Framework For State Aid For Research And Development And Innovation, OJ C 198/1 (further: 2014 guidelines).

<sup>38</sup> *Ibidem*.

<sup>39</sup> European Commission Framework For State Aid For Research And Development And Innovation, OJ C 198/1.

a project implemented with and without public support. It is hard to assess market position of an undertaking that receives aid: it may improve, as a result of capital injection, but it may also deteriorate if aid is granted to rescue an undertaking.

From the point of view of aid for R&D&I, in 2014 guidelines the Commission specified that aid does not present an incentive for the beneficiary if the relevant R&D&I activity has already started prior to the aid application is submitted by the beneficiary to national authorities. Additionally, in case of aid granted to a large undertaking that is covered by the General Block Exemption Regulation, Member State must demonstrate that granting the aid shall: (a) substantially expand the scope of a project or an activity concerned, (b) substantially increase the total amount spent by the beneficiary, and (c) substantially shorten the completion of the project.

The idea of the incentive effect that has been introduced into the EU legislation raises, however, some doubts. In accordance with the EU legislation, the criterion for the incentive effect is already met, when aid application is submitted before the project has started. We need to consider the fact that an enterprise launches an investment project or starts research work based on planned costs and available capital (human and financial). These two factors are decisive for the scope and size of activities. Due to implementation assumptions adopted for the initial stage, especially in the area of research, development and innovation, it is often impossible to further expand a project. Hence, an entrepreneur when applying for the R&D&I aid may already assume the project will be implemented either using his own resources or, if he succeeds, with the support of the government budget. In such a case it is hard to discuss the additionality of the aid measure and we should rather put forward a thesis on private funds being replaced with government resources.

The above misgivings have been to a certain extent taken care of by the more stringent assessment procedure in the Commission when it comes to individual aid. When ceilings provided for in the GBER are exceeded<sup>40</sup> the aid must be notified to the European Commission. When investigating the compliance of an aid measure granted to a R&D&I project with the EU law, the Commission takes account of the type and scope of activities pursued by a particular undertaking, analysis of counterfactual scenario (i.e. when the aid is not granted), profitability, risk and the amount

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<sup>40</sup> European Commission Regulation (EU) No 651/2014 of 17 June 2014 Declaring Certain Categories Of Aid Compatible With The Internal Market In Application Of Articles 107 And 108 Of The Treaty, OJ L 187/1.

of investment and timeframe of cash flows. Under such circumstances, in relation with the binding procedure that suspends the provision of aid until the Commission makes a decision (Art. 108 para. 3 TFEU), we may really grasp the incentive effect and offset negative consequences with positive effects of aid granted to the entrepreneur.

### **Proportionality of the Aid**

Maximum intensity of aid granted for different categories of research is one of the main legal instruments in the area of state aid. Differences between categories result from the premise that aid should be proportional to market failures that it is intended to address. Thus, we have two relevant values: the already mentioned intensity and predefined eligible costs for each category of research.

For R&D&I aid the intensities have been specified based on the three criteria: (a) the closeness of the aid to the market, (b) the size of the beneficiary, and (c) the acuteness of the market failure. In the case of the closeness to the market, due to the fact that, in principle, research that receives aid should produce new technologies and innovative products, the closer the activity to the final product the lower the intensity. The reason is to avoid a too far-reaching market distortion generated by state aid that favours a particular undertaking or a group of undertakings. On the other hand, we need to remember that the argument of problems in commercialisation of the results of research is often invoked, hence too little aid intensity for, e.g., experimental development activities may be an insufficient incentive to undertake risk.

Also the size of a beneficiary is an important indicator of aid intensity. Larger companies usually have better access to information, financial resources, better possibilities to negotiate with business partners, including government agencies and research centres. SMEs are often unable not simply to compete but to enter the R&D&I market, which is why they should receive preferential treatment. On the other hand, however, large undertakings can accumulate the critical mass of human and financial capital that helps make a significant progress in research for innovation. And finally, market failure also impacts the admissible aid intensity as difference in its depth often derives from the closeness to the market and the size of a potential beneficiary.

### **Avoidance of Undue Negative Effect on Competition**

As asserted by the European Commission, granting state aid to R&B&I may distort competition within the EU at two levels: in the prod-

uct market and location-wise. In innovation process and in product markets state aid may exert negative impact by (a) distorting the competitive entry and exit process (because the aid is granted competitors who would otherwise be able to stay on are forced out of the market or never enter it or inefficient firms stay in the market at the expense of more efficient ones), (b) distorting dynamic investment incentives (as the position of aid beneficiary improves, investments of its competitors are reduced while the beneficiary may take risk seeking decisions), and (c) creating or maintaining market power (heading towards monopoly or abuses of its dominant position in the market). As for the location, R&D&I aid is either offered to specific locations or offered in higher amounts in specific areas of the country where it operates as regional aid. Consequently, it may attract firms to locations where the factors necessary for innovation are missing, which may reduce positive effects, as well as produce negative externalities.<sup>41</sup>

### **Changes in the Position of State Aid for R&D&I in the European Union**

When analysing the volume of aid allocated for research, development and innovation as a fraction of total aid allocated to enterprises from state resources, we notice three regularities. Firstly, from the adoption of the Lisbon Strategy of 2000, European Council has repeatedly pointed to the need to reduce the amount of granted state aid.<sup>42</sup> The level below 1% of GDP was attained by the EU already back in 1998 and in subsequent years it, in principle, developed along a downward tendency, recording, however, some increases in the periods: 2000–2002, 2006, and 2008–2009. At the same time, it is worth noting that the overall drop in amounts was accompanied by an important change in state aid structure: sectoral aid shrank in favour of horizontal aid (Fig. 1). Over the years 1995–1999, despite rather dramatic decrease in the share of total aid in the GDP, horizontal aid, which encompasses aid for R&D&I, continued to increase. Special attention should be paid to the period 2007–2010 when in spite of economic crisis horizontal (not sectoral) aid played the major role. It was

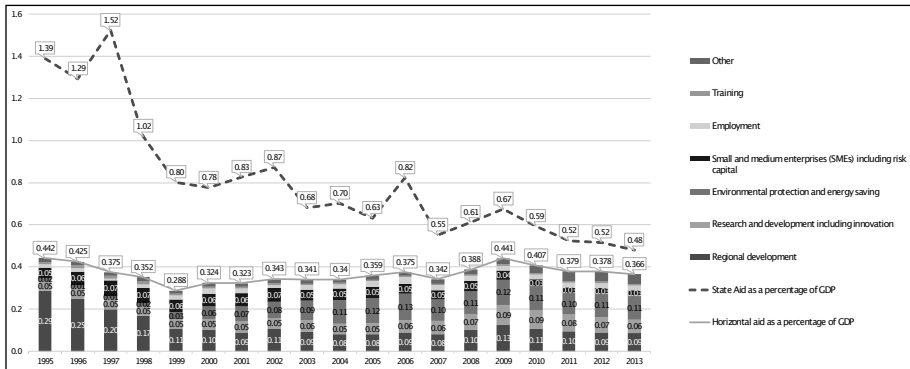
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<sup>41</sup> A.A. Ambroziak, *Theoretical Aspects of Regional Intervention*, in: *Regional Dimension of the EU Economic Policy in Poland*, ed. A.A. Ambroziak, Warsaw School of Economics Press, Warsaw 2015.

<sup>42</sup> European Council Presidency Conclusions, Lisbon, 23–24.03.2000; European Council Presidency Conclusions, Stockholm, 23–24.03.2001; European Council Presidency Conclusions, Brussels, 22–23.03.2005; A.A. Ambroziak, *Ewolucja zasad udzielania pomocy publicznej...*, op.cit.

due to two phenomena: (a) substantially higher share of regional aid in horizontal aid after operational programmes addressed to enterprises in the period 2007–2013 have been put in place, and (b) higher proportion of aid for research, development and the environment, which were among few categories of aid still admissible in the times of economic crisis.<sup>43</sup> Analysing all of the period 1995–2013 we may conclude that the share of horizontal aid in the GDP remains relatively stable with peaks recorded in 1995 (0.442%) and in the years of economic crisis (0.441%) and the lowest share in 1999 (0.288%). Finally, over the period 1995–2013 horizontal aid changed by as little as ca. 0.1 percentage point in relation to the GDP. It means total state aid was reduced at the cost of sectoral rather than horizontal aid.

**Figure 1. Horizontal aid structure in EU Member States (as a percentage of GDP) in the years 1995–2013**



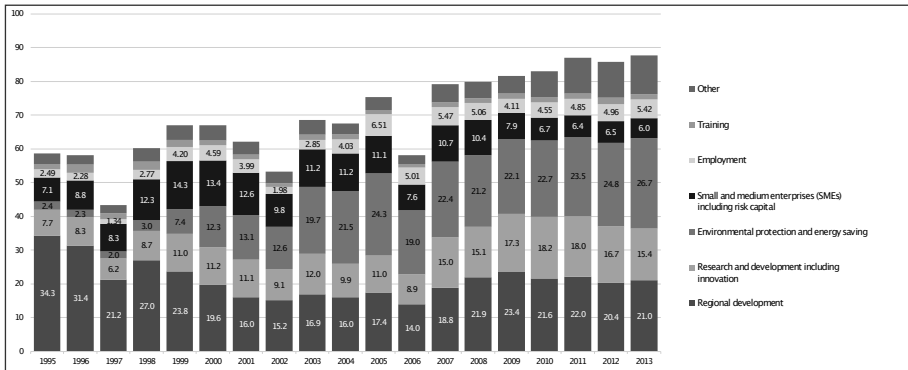
Source: Author’s own calculations based on Eurostat data.

Secondly, the proportion of aid for research, development and innovation in total state aid doubled over the years 1995–2013 (from 7.7% to 15.4%). The highest share of 18.2% for aid to R&D&I was recorded in the midst of economic crisis in 2010. However, we need to remember that the indicator increased substantially already in 2007 compared against the preceding year (from 8.9% to 15.0%) (Fig. 2). That could be due to the adoption of new guidelines on aid for R&D&I back in 2006 or to using EU funds within the financial perspective 2007–2013. Nevertheless, despite the importance of these interventions for the accomplishment of EU objectives to enhance innovation and improve competitiveness, the aid was not the

<sup>43</sup> A.A. Ambroziak, *Pomoc publiczna państw członkowskich UE w okresie kryzysu gospodarczego w latach 2008–2010*, „Unia Europejska.pl”, nr 3(214)/2012, pp. 24–36.

most important support granted within the framework of horizontal interventions. The highest share in total aid and the highest growth dynamics among horizontal categories was reported for environmental aid and aid to energy sector (from 2.5% in 1995 to 21.0% in 2013). It can be attributed mainly to ambitious goals of EU environmental and climate policies. One should not overlook regional aid granted predominantly to support investment projects (not necessarily innovative) in the least developed regions. In 1995 it was the major item of horizontal aid (34.3% of total aid), but its share dropped to 14% in 2006 to increase again to 23.4% in 2009 and to reach 21% of total aid in 2013 after operational programmes co-funded from the EU funds have been put in place. Hence, we may conclude that aid for R&D&I, in spite of considerable changes introduced in 2006 guidelines combined with repeated declarations on priority importance of innovation and competitiveness for the EU economy, has not become the principal tool of government interventions in the EU.

**Figure 2. Horizontal aid: structure in the EU Member States (as a percentage of state aid) in the years 1995–2013**



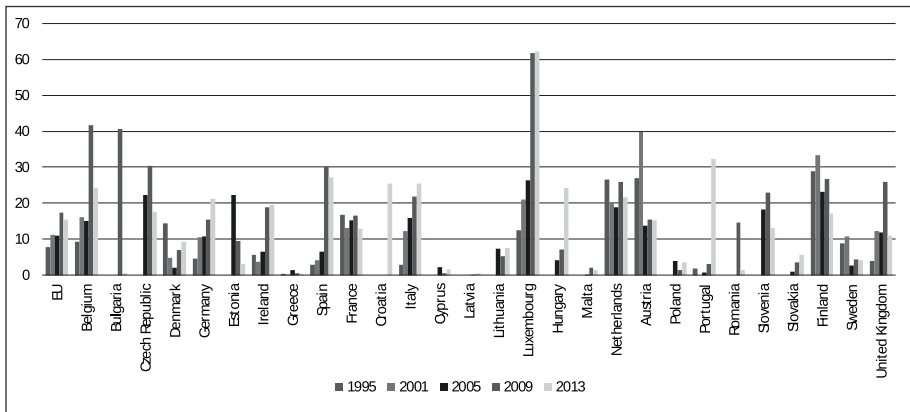
Source: Author's own calculations based on Eurostat data.

Thirdly, when studying changes in the proportion of aid for research, development and innovation in total state aid in individual Member States one may easily notice that in most of them the role of R&D&I aid substantially increased in the years of crisis (Figs. 3 and 4). However, taking account of years covered by the study 1995–2013 we may conclude that the highest and growing share over the period in question was reported for Luxembourg (over 60%), where the aid represented ca. 0.17% of GDP in 2013. Further increasing shares of aid in total state aid against the GDP were recorded for Belgium, Germany, Spain, the Netherlands, Portugal, Lithuania, and Hungary. Despite decreasing share of aid for R&D&I in govern-



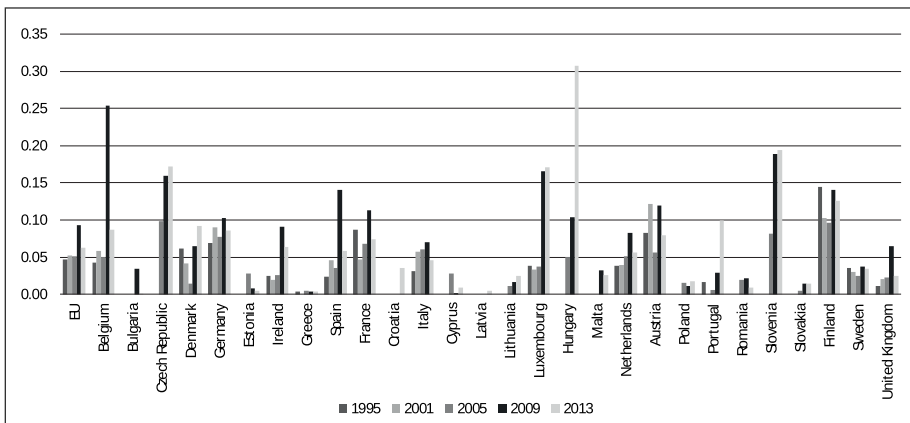
ment interventions, its proportion to GDP increased or did not change in states like: the Czech Republic, France, Finland, Sweden, and the United Kingdom. Italy is an interesting case where the share of R&D&I aid in total state aid was clearly increasing but recently it started to drop in relation to GDP. Compared to the above mentioned countries, other Member States, which joined the EU at a later stage, e.g., Poland, reported clearly lower shares ranging between 0.011–0.018% of GDP. It means the gap between old and new Member States in the levels of public financing in the area of research, development and innovation is constantly growing despite the access of new Member States to substantial resources from the EU funds.

**Figure 3. Share of aid to R&D&I in state aid value in the EU Member States in the years 1995–2013 (in %)**



Source: Author’s own calculations based on Eurostat data.

**Figure 4. R&D&I aid share in GDP in the EU Member States over the period 1995–2013 (in %)**



Source: Author’s own calculations based on Eurostat data.

## Conclusion

The analysis of legal changes in conditions of admissibility of aid granted for research, development and innovation confirms that such aid belongs to the concept of improved economic competitiveness, also of the EU industry. However, like any government intervention, the aid should target only enterprises with real development potential and only when they are faced with market failures. Legal framework of aid for R&D&I rather precisely considers failures, such as: imperfect and asymmetric information, coordination problems or positive externalities, vis-à-vis which free market is usually unable to compensate the cost of research.

However, detailed legal solutions may raise some doubts. Firstly, the construct of incentive effect is one of such examples. Surely, its idea to *ex ante* review the need for aid is correct but doubts arise over its application. EU legislation recognises the incentive effect already when aid application is submitted before the project has been launched. From administrative point of view, such an approach makes it easier to decide if the criterion has been met but one may still doubt whether aid that has been granted was really needed. Secondly, as regards callings of maximum state aid intensity, they are lower, as the assisted activity is closer to the final product. On the one hand, the Commission wanted to avoid a too far-reaching market distortion generated by state aid, however, on the other hand, there is a widely discussed problems in commercialisation of the results of research.

As regards a position of state aid to R&D&I in public spending, remarkably, in the times of economic crisis more developed countries with higher GDP engaged more public budget resources into R&D&I activities. As a result, despite largely limited aid targeting individual enterprises, they took advantage of the possibility to allocate aid to actions that will produce long-term effects, such as innovative solutions capable of improving the competitiveness of the entire economy instead of assisting enterprises faced with financial hardships to help them maintain the production or economic status quo.

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**Key words:** State Aid, R&D&I, Research, Development, Innovation, Public Intervention

### Abstract

Competitiveness involves a variety of factors, however recently special attention has been paid to innovative solutions that have become crucial for the development of firms and economies. Due to the fact that there are many market failures identified within research and development activities, many theorists, entrepreneurs and politicians accept granting R&D&I state aid to companies assuming that it should simultaneously contribute to the enhancement of innovation and, consequently, competitiveness of the EU economy. The paper is aimed at assessing the focus of state aid policy on research, development and innovation in the light of theory and practice (based on the recent experience). To this end we will analyse theoretical arguments for interventions supporting R&D activities, legal bases and criteria of admissibility for state aid for R&D&I, as well as, importance of R&D&I public aid in the EU Member States.

The analysis of legal changes in conditions of admissibility of aid granted for research, development and innovation confirms that such aid belongs to the concept of improved economic competitiveness, also of the EU industry. However, like any government intervention, the aid should target only enterprises with real development potential and only when they are faced with market failures. As regards a position of state aid to R&D&I in public spending, remarkably, in the times of economic crisis more developed countries with higher GDP engaged more public budget resources into R&D&I activities.