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## **Competition Law and Sustainable Development of Economy**

### **Abstract:**

Since the beginning of economics as an independent scientific field, the market structure was one of its most important areas of interest. The first works looking for the regularities that govern the processes of the use of limited resources drew attention to the impact of the number and nature of economic entities on the economic effects of their activities. At the same time, a tragic conflict between the objectives of competition law appeared – on the one hand limiting the largest enterprises to create competition conditions on the internal market, on the other, supporting the most significant domestic entrepreneurs to enable them to compete successfully with foreign entities.

The widening area of interest of economic sciences creates a pretext to look at other interdependencies between the structure of markets and their economic results. Initially, attention was paid only to the relationship between the market power of a given entity and its impact on the general price level. Nowadays, one should look at the effects it has on more complex economic dependencies. Economics, which is a social science, in the twenty-first century should address issues that have the most significant impact on modern societies. The issue of sustainable development is likely to become its main research area.

This paper aims to present the links between the industrial organization (the degree of dominance of the largest companies) and the realization of Social Development Goals. Putting the most important market structure theories together with empirical data, I will try to answer the question of the effect that strong concentration has on sustainable development.

**Key words:** competition law, sustainable development, industrial organization, law & economics

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*Whoever could make two ears of corn, or two blades of grass,  
to grow upon a spot of ground where only one grew before,  
would deserve better of mankind, and do more essential  
service to his country, than the whole race of politicians  
put together*<sup>2</sup>

## 1. Introduction

The primary purpose of this work is to present the unobvious influence of the institutional system that is competition law on the sustainable development of the economy. Like all institutions, the provisions of this branch of law create incentives that influence the behavior of individuals and organizations<sup>3</sup>. The subject of the analysis are here those activities that have the most pronounced impact on spheres traditionally associated with the issue of sustainable development. To concretize the area of study, the most widespread agenda – the Sustainable Development Goals presented by the United Nations in 2015 – was used<sup>4</sup>. As will be noted in this work, sustainable development is defined here as economic progress that is achieved without abusing natural resources.

To determine the impact of the essential norms of competition law on the implementation of the Sustainable Development Goals the analytical apparatus of one of the most important social sciences – economics – will be used. The choice is not accidental here. As will be shown the effort of economic sciences from the very beginning of their existence was associated with solving the problems of sustainable development. Economics is also strongly connected with the analysis of institutions of competition law, which due to the focus on phenomena such as market structure, is finally forced to accept more economic approach<sup>5</sup>.

The analysis carried out with the use of economic tools allows to understand better the Janus-faced economic policy concerning competition. It was noticed at the beginning of competition protection law – the rulers were interested in benefiting from market relations on the one hand, and in having active industrial entities within their borders on the other hand<sup>6</sup>. As will be shown, the optimal implementation of the sustainable development goals cannot be guaranteed either by free competition or by increasing concentration. An effective competition policy aimed at achieving sustainable development as well as other socially desirable goals should exert a powerful influence on markets. This allows us to understand the dual nature of competition law provisions that „interfere and limit economic freedom on the one hand, and on the other, do so to protect the essence of this freedom”<sup>7</sup>.

<sup>2</sup> J. Swift, *Gulliver's travels*, Oxford 2005, p. 185.

<sup>3</sup> J.R. Commons, *Institutional Economics*, Pittsburgh 1931, p. 648.

<sup>4</sup> United Nations, *The 2030 Agenda for Sustainable Development*, 2015.

<sup>5</sup> D. Schmidtchen, M. Albert, S. Voigt, *The More Economic Approach to European Competition Law*, Tubingen 2007, p. 277.

<sup>6</sup> P. Chmielnicki, *Creating economic institutions and Polish legislation*, Warsaw 2015, p. 208.

<sup>7</sup> PUOKiK, 102/9/A/2014, Judgment of Constitutional Court, 16<sup>th</sup> October 2014, Ref. Act SK 20/12.

## 2. Economic analysis of law

Due to the purpose of this work, which is to examine the impact of competition law on the implementation of sustainable development goals, the analytical tools used here are of an economic nature. The relationship between the science of economics and the concept of sustainable development is stable and can be found in the commonly accepted definitions of these concepts. While the best description of economics is considered to be the science of limited resources and their alternative uses<sup>8</sup>, sustainable development is defined as economic progress that is achieved without abusing natural resources<sup>9</sup>.

At the beginning of its history, economics conducted research indicating the need to give sustainability to development. In one of the earliest treatises of classical economics, *An Essay on the Principle of Population* (1779), Thomas Robert Malthus drew attention to the geometric growth of population accompanying the linear increase in food production<sup>10</sup>. According to the eighteenth-century economist, these two tendencies should lead in the long run to food shortages on a large scale and thus – an unavoidable demographic disaster. The conclusions drawn by the first researchers of the economy have led Thomas Carlyle to designate economics as „dismal science”<sup>11</sup>. This name maintained for several decades. It was not until the nineteenth century when some of the most critical events in the history of the economy took away from economics its gloomy name.

The period during which economics gave up its fatalist research, which was part of its previous study, was the first industrial revolution. Significant changes that took place then in production efficiency solved the fundamental economic problems of earlier eras such as food shortages<sup>12</sup>. Since then, economists studying relation between progress and abuse of natural resources have stopped warning about the imminent catastrophe and began to investigate which of the social institutions can contribute the most to maintaining sustainable development. Thus, centuries of the emergence of interdisciplinary fields of economics, usually aimed at the application of the already educated conceptual apparatus to the analysis of phenomena which are the area of interest of other social sciences, began. One of the most important fields created in this way is the economic analysis of law. It aims to examine the social effects of individual legal institutions with the help of economic tools<sup>13</sup>. One of the areas where research is most often undertaken using economic law analysis tools is environmental protection and sustainable development.

The analysis of the provisions of competition law conducted in this work using the conceptual apparatus of economics allows us to understand their ambiguous impact

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<sup>8</sup> L. Robbins, *An Essay on the nature and significance of Economic Science*, London 1932, p. 15.

<sup>9</sup> *Oxford Dictionary*, Oxford Reference, Oxford 2019.

<sup>10</sup> T.R. Malthus, *An Essay on the Principle of Population*, London 2008, p. 36.

<sup>11</sup> R.L. Heilbroner, *The Worldly Philosophers*, New York 2002, p. 101.

<sup>12</sup> L.T. Wyatt, *The Industrial Revolution*, Greenwood 2008, p. 39.

<sup>13</sup> R. Cooter, T. Ulen, *Law and Economics*, Harlow 2014, p. 3.

on the implementation of the sustainable development goals most strongly associated with the economy. The first industrial revolution laying the foundations for today's economy has brought economists not only solutions to old problems but also new dilemmas. In the proper part of this work, an attempt will be made to determine to what extent these problems can be solved and how much should be expected from the return of dismal science.

### 3. Sustainable Development Goals

To conduct an economic analysis of the effectiveness of competition law norms in the implementation of Sustainable Development Goals, the scope of this work should be clarified first. Due to its limited volume, only two of the seventeen UN targets for sustainable development will be analyzed here. They were selected due to their unique, strong relationship with the issues described above regarding the functioning of the economy. These are **the Eighth Goal**: suitable employment and economic growth, and **the Ninth Goal**: innovation and infrastructure<sup>14</sup>.

The problem that led to the analysis of the impact of competition law institutions on the implementation of sustainable development objectives carried out in this work is the strategy adopted by the UN to achieve them. According to official UN documents, this Eighth Goal and the Ninth Goal are to be completed by „encouraging the formation and growth of micro, small, and medium-sized enterprises”<sup>15</sup>. Searching for the way to achieve the goals of sustainable development in the development of the sector of micro, small and medium enterprises is not a distinguishing feature of the UN from other international organizations. Also, the World Bank in its recent statements points to the strategy that „promotes small and medium-sized enterprises (SME) growth through both systemic and targeted interventions”<sup>16</sup>. Even in official documents of the European Union can be found a conviction of the need to support this part of economic entities in order to achieve the goals of sustainable development: „the expansion of the private sector, notably micro-, small- and medium-sized enterprises, is a powerful engine of economic growth and the primary source of job creation”<sup>17</sup>.

With the accession of Poland to the EU in 2004, this category also appeared in Polish legislation and the governing authorities began to favor this part of the economy<sup>18</sup>. In the following years, differences in the treatment of enterprises by the authorities due to their size were to deepen because of the Regional Operational Programs<sup>19</sup>.

<sup>14</sup> United Nations, *The 2030 Agenda for Sustainable Development*, 2015.

<sup>15</sup> Goal 8, UN Sustainable Development Knowledge Platform, 2015.

<sup>16</sup> World Bank, *The Big Business of Small Enterprises: Evaluation of the World Bank Group*, 2014.

<sup>17</sup> The European Commission, *Accountability Report 2012 on Financing for Development*, 2012.

<sup>18</sup> Commission Regulation (EC) No 364/2004 of 25<sup>th</sup> February 2004 amending Regulation (EC) No 70/2001 as regards the extension of its scope to include aid for research and development.

<sup>19</sup> For example: The Regional Operational Programme of the European Regional Development Fund (ERDF ROP) 2014–2020 (approved by Community decision on 12<sup>th</sup> February 2015).

The attitude of Polish government towards SMEs has not changed till nowadays. At the beginning of 2019, the SME Package came into force, containing about 50 additional facilities for the smallest enterprises – including help in tax, credit and debt collection<sup>20</sup>. The current legal definition of SMEs in force in Poland and EU is contained in Annex I to the Commission Regulation (EC) 800/2008<sup>21</sup>.

From such constructed strategies to achieve the Sustainable Development Goals emerges a problem that is the subject of the economic analysis of law undertaken in this work. The agendas presented by the most important international organizations striving to achieve the goals of sustainable development by supporting the smallest enterprises and self-employment seem to contradict the empirical material accumulated by the economists<sup>22</sup>. The studies carried out over the last decades show that the percentage of small businesses operating in the economy remains correlated not only with the poor overall state of the economy but also with the failure to achieve its Sustainable Development Goals. Countries with the smallest average size of enterprises are those located in the poorest regions of the world – having the lowest per capita GDP, the least favorable export structure and the highest economic inequalities. Numerous studies conducted by economists involved in sustainable development lead to conclusions that the economically active in the sphere of the smallest companies and self-employment negatively affect the implementation of the objectives of sustainable development. As will be explained, this is primarily due to the low level of economic efficiency accompanying the smallest enterprises leading to excessive consumption of scarce resources.

In the following chapters of this work, legal and economic arguments will be presented to prove that to achieve the goals of sustainable development, the states and international organizations should change the strategy chosen for enterprises due to their size. According to the perspective proposed here, this change could be reflected in the application of competition law which would pay more attention to the effectiveness of the company's functioning in the context of sustainable development goals than to its size. The effectiveness of such an approach and arguments for it in the form of collected empirical material will be presented in the next two subsections. The first one will concern the Eighth Goal: suitable employment and economic growth. As it will be presented, these goals are possible to achieve in the long run only thanks to the activities of the largest enterprises that meet economies of scale and are capable of creating jobs. In the second of these chapters, the question of the Ninth Goal: innovation and infrastructure creation will be discussed. It will be demonstrated how, along with the increase in the size of the enterprise, the number of innovations created

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<sup>20</sup> Journal of Laws 2018 item 2244, The Act of 9<sup>th</sup> November 2018 on the amendment of some acts to simplify entrepreneurs in tax and economic law.

<sup>21</sup> Commission Regulation (EC) No 800/2008 of 6<sup>th</sup> 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).

<sup>22</sup> Overview R.D. Atkinson, M. Lind, *Big is Beautiful. Debunking the Myth of Small Business*, Cambridge 2018, p. 63.

by them in the economy increases and the amount of infrastructure enabling the operation of other economic entities.

## 4. Scale effects as a result of concentration

### 4.1. Assumptions underlying the perfect competition

In this chapter, the main focus will be devoted to one of the major mistakes underlying the law supporting SMEs – the omission of scale effects. Polish laws favoring the smallest enterprises as justification often indicate their greater competitiveness<sup>23</sup>. In order to indicate the error of such a way of thinking, a more thorough analysis of the competition process itself should be made first. Perfect competition is the fundamental phenomenon by which the efficiency of market functioning is explained<sup>24</sup>. The allocation of resources achieved within the framework of competition is to be, according to the mainstream of economics, their optimal application. Other models of the functioning of markets are described in the context of this theory of economics as decreasing the total efficiency of the economy and thus – contrary to the Eighth Goal of sustainable development<sup>25</sup>.

The perfect market model has been at the heart of many state institutions influencing the functioning of economy – including competition law<sup>26</sup>. However, the use of this model as a signpost for the activities of state regulators has been criticized from the very beginning. As Kalecki pointed out: „Excellent competition is the most unrealistic assumption (...) Certainly the competition was always very imperfect. Perfect competition when you forget about its role as a comfortable model becomes a dangerous myth”<sup>27</sup>.

The tendency of a competitive system to transform itself into concentrated as well as unreachable maximum economic efficiency in the competition process results from the same reason. The reason for this is the underlying model of competition offered by the mainstream economics, that in an extreme way deviates from the market realities. Out of a dozen or so simplifying assumptions, there is no such indication of the possible advantage of other forms of the functioning of markets as it is of decreasing marginal revenues<sup>28</sup>. There are numerous theoretical proofs and empirical studies proving the occurrence (and indeed dominance) in the modern economy of growing marginal revenues. Achieving this type of income, also known as scale effects, is the main subject of this chapter.

We have a growing marginal revenue when the cost of production per unit grows slower than the productivity caused by the increase in the scale of production. This dependence, as will be demonstrated below, is common in the economy and, together

<sup>23</sup> K. Sobczak, *Competitiveness of the SME sector in Poland* [in:] *Forming Competitiveness and Competitive Advantage of Small and Medium Enterprises*, ed. A. Adamik, Warsaw 2011, p. 32.

<sup>24</sup> A.P. Jacquemin, H.W. Jong, *Markets, Corporate Behaviour and The State*, Hague 1976, p. 316.

<sup>25</sup> G. Mussati, *Mergers, Markets and Public Policy*, Dordrecht 1995, p. 33.

<sup>26</sup> J. Pelkmans, *Market Integration in the European Community*, Hague 1984, p. 143.

<sup>27</sup> M. Kalecki, *Selected Essays on the Dynamic of the Capitalist Economy*, Cambridge 1971, p. 158.

<sup>28</sup> S. Keen, *Debunking economics. The naked emperor dethroned?*, London 2001, p. 116.

with further technological innovations, enters the area of subsequent sectors. Its theoretical sources can be found already in the basics of planimetry – on the example of the relationship between the field of a regular figure and its circumference. This ratio is twice smaller in the case of a square with area of four, than a square with area of one. Such underlying mathematical dependencies have their reflection in the economic reality – the most straightforward example here can be the amount of raw material necessary for fencing fields.

#### 4.2. Division of labor inside the enterprise

Although the increase in the significance of the phenomenon of scale effects is closely related to the technological advancement initiated only by the first industrial revolution, the growing economies of scale have already been noted on the eve of these events. The marked attachment of mainstream economics to the efficiency of allocation guaranteed by perfect competition seems to be in contradiction with the underlying economic work. Mainstream economics often indicates *An Inquiry Into the Nature and Causes of the Wealth of Nations* published in 1776 by Adam Smith as the foundation of its field defining the subject and methods of its analysis.

Convincing the mainstream economy with the optimal allocation of goods as part of the competition process is to have its source in Smith's philosophical idiom, the „invisible hand of the market”. The problem here is the interpretation of this one-time metaphor used by Smith in isolation from the economic system he has constructed. In contrast to the accidentally used definition of the „invisible hand”, Smith devoted an entire chapter at the beginning of his *opus magnum* to metaphor crucial to understanding the functioning of the economics of scale<sup>29</sup>. This metaphor is explaining the benefits of the growing division of labor „pin factory”. The problem is that these two philosophical idioms in their modern meaning lead to contradictory conclusions: „The pin factory is used to describe the decreasing costs and growing revenues. Invisible hand refers to rising costs and declining revenues”<sup>30</sup>. The simplest way to explain this is by saying that an economy operating according to the principle of „pin factory” would be theoretically most effective if it had one large enterprise and the economy of an „invisible hand” when the number of enterprises would reach infinity.

In the economy acting under the principle of the „invisible hand” it is possible to operate in perfect competition and achieve maximum economic efficiency thanks to the free market. The industrial processes occurring as described in the „pin factory” must ultimately lead to a concentration on the market. Stigler noticed the problem and that this leads to: „Either the size of the market limits the division of labor and, as usual, branches of industry are monopolized, or industries are competitive, and the claim [about the pin factory] is untrue”<sup>31</sup>. What Smith saw at the beginning of the transformation of the global economic system (1776), later – thanks to technological progress – had

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<sup>29</sup> A. Smith, *An Inquiry Into the Nature and Causes of the Wealth of Nations*, Chicago 1990, p. 17–29.

<sup>30</sup> D. Warsh, *Knowledge and The Wealth of Nations*, New York 2007, p. 47.

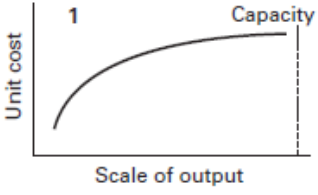
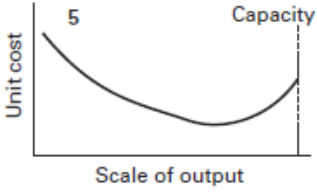
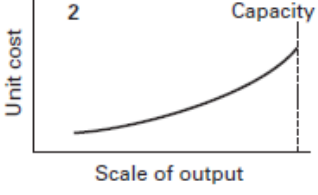
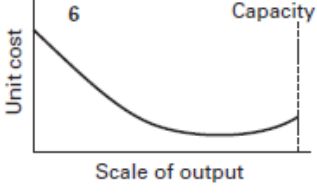
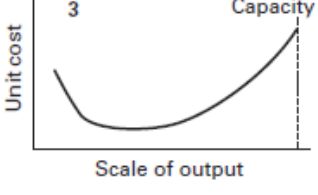
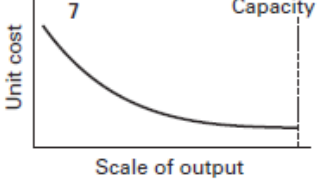
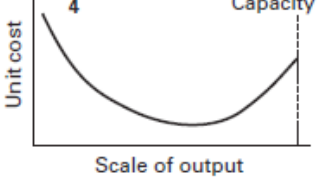
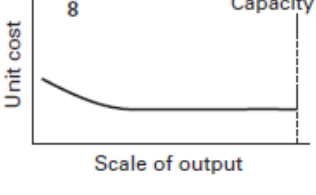
<sup>31</sup> G.J. Stigler, *The division of Labor is limited by the extent of the market*, Chicago 1951, p. 3.

become the norm of the functioning of developed economies in the following decades. It is time to move on to the critical part of this work, in which materials proving the dominance of enterprises achieving growing economies of scale in 20<sup>th</sup> and 21<sup>st</sup> century will be presented.

### 4.3. Scale effects in developed economies

Economic historians point out that the size of the company and production facilities began to increase at the beginning of the 19<sup>th</sup> century<sup>32</sup>. According to Ely's statement: „because of the discoveries and inventions, especially the use of steam in industry and transport, it became necessary to create large enterprises"<sup>33</sup>. This came about immediately after the first industrial revolution and at the same time during the creation of the early works in the field of economics.

FIGURE 1. COST CURVES DECLARED IN US COMPANIES (N=334)

Illustration	Chosen by	Illustration	Chosen by
 <p>1</p> <p>Unit cost</p> <p>Capacity</p> <p>Scale of output</p>	0	 <p>5</p> <p>Unit cost</p> <p>Capacity</p> <p>Scale of output</p>	14
 <p>2</p> <p>Unit cost</p> <p>Capacity</p> <p>Scale of output</p>	0	 <p>6</p> <p>Unit cost</p> <p>Capacity</p> <p>Scale of output</p>	113
 <p>3</p> <p>Unit cost</p> <p>Capacity</p> <p>Scale of output</p>	1	 <p>7</p> <p>Unit cost</p> <p>Capacity</p> <p>Scale of output</p>	203
 <p>4</p> <p>Unit cost</p> <p>Capacity</p> <p>Scale of output</p>	3	 <p>8</p> <p>Unit cost</p> <p>Capacity</p> <p>Scale of output</p>	0

Source: W.J. Eiteman, G.E. Guthrie, *The shape of the average cost curve*, Nashville 1952, p. 832–838.

<sup>32</sup> Z.J. Acs, D.B. Audretsch, *Innovation and Small Firms*, Cambridge 1991, p. 106.

<sup>33</sup> R.T. Ely, *The Nature and Significance of Corporations*, New York 1887, p. 75.



Since then, the pursuit of concentration has become the most characteristic feature of developed economies. The most critical studies confirm that the majority of American enterprises derive growing economies of scale. One of the most interesting studies on this subject was carried out in the mid-twentieth century by Eiteman and Guthrie<sup>34</sup>. The authors presented to the managers of production plants, eight graphs presenting cost curves, of which only three were similar to those placed in neoclassical economic textbooks. The cost curves are a graphic representation of the impact of increasing production on the average cost of unit production – their sloping shape is the most straightforward proof of the occurrence of economics of scale. Of the 334 managers asked to indicate the chart best reflecting the relationship between costs and efficiency in their factories, only one representative pointed to curve III. That looks exactly like those we will see in microeconomics textbooks<sup>35</sup>. Managers in 95% of cases pointed to graphs that were in contradiction with the mainstream models presented by the economics.

Similar research was carried out by Blinder, the vice-president of the American Association of Economists, at the end of the twentieth century<sup>36</sup>. He constructed a questionnaire covering two hundred companies of all sizes – from medium to large. In total, the turnover of these companies accounted for the moment to nearly 8% of the US GDP. Self-critical of the previously adopted assumptions of Blinder's tone makes his application worth quoting: „Depressingly bad news (for economic theory) is that only 11% of GDP is produced in the conditions of rising marginal costs”<sup>37</sup>.

The research conducted at the highest level of generality indicates that the assumptions underlying the dominant mainstream of economics are not met in developed economies. The situation is exacerbated by the fact that the same theories served as justification for numerous regulations affecting the functioning of developed economies directly. The next section will show how laws that do not take into account the scale's effectiveness may affect the condition of the entire economy. A list of numerous economic studies offering a broad perspective on the implementation of the Sustainable Development Goals is an essential argument for functioning in regulatory systems of rules that take into account the effectiveness of the largest enterprises.

#### 4.4. Economics of scale

Among contemporary researchers, the influence of the market structure on its effectiveness is confirmed by the fact that competition may be abused. This is best reflected in Heller's works<sup>38</sup>. He states that to achieve the maximum possible economic efficiency the state should implement the anti-trust policy – to avoid abuse of market position

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<sup>34</sup> W.J. Eiteman, G.E. Guthrie, *The shape of the average cost curve*, Nashville 1952, p. 832–838.

<sup>35</sup> H.R. Varian, *Microeconomic Analysis*, New York 1992, p. 8.

<sup>36</sup> A. Blinder, *Asking about Prices: A new approach to understanding price stickiness*, New York 1998, p. 102.

<sup>37</sup> *Ibidem*, p. 105.

<sup>38</sup> M. Heller, *The Gridlock Economy: How Too Much Ownership Wrecks Markets, Stops Innovation, and Costs Lives*, New York 2008, p. 185.

and simultaneously pro-trust policy – to help the economy achieve economies of scale. The combination of these two areas of activity should constitute a national „competition policy”, which is the equivalent of the concept functioning at the level of the European Union<sup>39</sup>. The competition policy understood rationally as supporting the strategic concentration does not require departing from its current objectives, since it has been established decades ago when „fragmentation of production among too many competitors transferred extremely high costs to consumers”<sup>40</sup>.

In the 21<sup>st</sup> century three economists from the Federal Trade Commission came to the same conclusion, stated that the monopoly position is usually achieved through the highest efficiency and the winners identified by the competition process should not be punished after they won the fight for the market<sup>41</sup>. As research shows, large companies not only do not block the growth of smaller enterprises but rather allow them to function. In an advanced industrial economy many small and large companies are mutually interdependent partners in joint activity<sup>42</sup>. For example, the business of 56% of small companies in Denmark is to cooperate with larger companies. In Norway, 55% of small businesses rely on such activities<sup>43</sup>.

These high correlations are the result of increasing economies of scale described in previous sub-chapters. One of the earliest studies carried out on this subject shows that production costs drop by an average of as much as 30% with each of its quantitative doubling<sup>44</sup>. In 2016, the report of the Council of Economic Advisers to the President of the United States expressed the opinion that the progressing concentration on many markets must be primarily to the observed increased efficiency of the most significant market players<sup>45</sup>. In one of the studies in which the effects caused by the strengthening of the market position were neutralized, it was estimated that the increase in market share by 1% is associated on average with 0,14% increase in profits measured by sales maneuverability<sup>46</sup>. The same conviction confirm the data collected by the US Bureau of Labor Statistics<sup>47</sup>. As it has already been pointed out, these studies excluded at the same time that the improved results were the effect of the dominant position being gained by growing enterprises. For example, Loecker and Eeckhout in their recent study showed that the growing economic difference between marginal costs and prices

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<sup>39</sup> C. Decker, *Economics and the Enforcement of European Competition Law*, Cheltenham 2009, p. 159.

<sup>40</sup> The Boston Consulting Group, *Perspectives on Experience*, Boston 1970, p. 49.

<sup>41</sup> W.F. Adkinson., K.L. Grimm, C.N. Bryan, *Enforcement of Section 2 of the Sherman Act: Theory and Practice*, Washington 2008, p. 13.

<sup>42</sup> S. Tracy, *Accelerating Job Creation in America: The Promise of High-Impact Companies*, Washington 2011, p. 28.

<sup>43</sup> Eurostat, *Statistics on Small- and Medium-Sized Enterprises: Dependent and Independent SMEs and Large Enterprises*, 2015.

<sup>44</sup> The Boston Consulting Group, *Perspectives on Experience*, Boston 1970, p. 12.

<sup>45</sup> Council of Economic Advisers Issue Brief, *Benefits of Competition and Indicators of Market Power*, 2016.

<sup>46</sup> D.M. Szymanski, S.G. Bharadwaj, P.R. Varadarajan, *An Analysis of the Market Share-Profitability Relationship*, Raleigh 1993, p. 1–18.

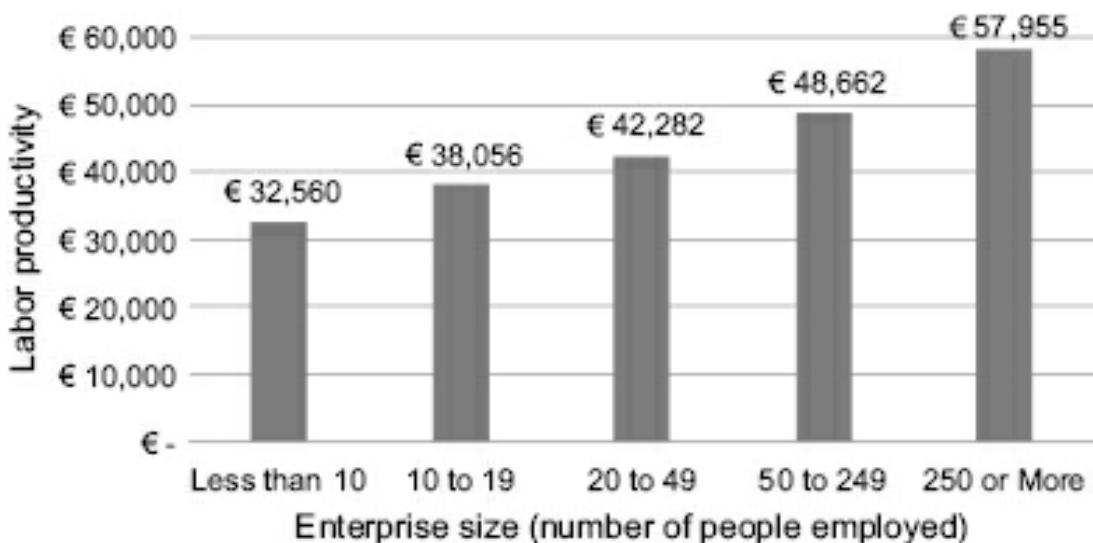
<sup>47</sup> M.D. Giandrea, *Industry Competition and Total Factor Productivity Growth*, Washington 2006, p. 399.

is caused primarily by the decisions of small enterprises, which by definition have less market power<sup>48</sup>.

#### 4.5. Impact of concentration on employees

The growing economies of scale resulting from the concentration of enterprises and the increase in productivity caused by them are easily perceived in the example of the primary factor of production – work. It is not without reason that competition policy demands that decision maker who uses it remember citizens not only as consumers but also as employees<sup>49</sup>. The data collected by the World Bank shows that large companies offer more stable employment, higher wages and more non-pay additions. The Eurostat research presented here shows a clear and distinct relationship between the size of enterprises and their effectiveness *sensu stricto*<sup>50</sup>.

FIGURE 2. PRODUCTIVITY OF LABOR IN EUROPEAN COMPANIES



Source: Eurostat, Structural Business Statistics Overview, Labor Productivity by Size of Enterprise, 2018.

The recapitalization should undoubtedly explain this dependence in large enterprises. In their exhaustive research Attack, Margo and Rhode pointed out that throughout the history of American industry the number of horsepower per employee in companies with over a thousand employees was almost ten times greater than the amount of horsepower per employee in companies with up to five employees<sup>51</sup>.

Wagner, who carried out the relevant research for the Federal Republic of Germany, comes to similar conclusions. He also draws attention to the much lower unionization ratios in smaller companies and the lack of institutionalized opportunities there

<sup>48</sup> J.D. Loecker, J. Eeckhout, *The Rise of Market Power and the Macroeconomic Implications*, Cambridge 2017, p. 687.

<sup>49</sup> H.W. Jong, *The Structure of European Industry*, Hague 1981, p. 163.

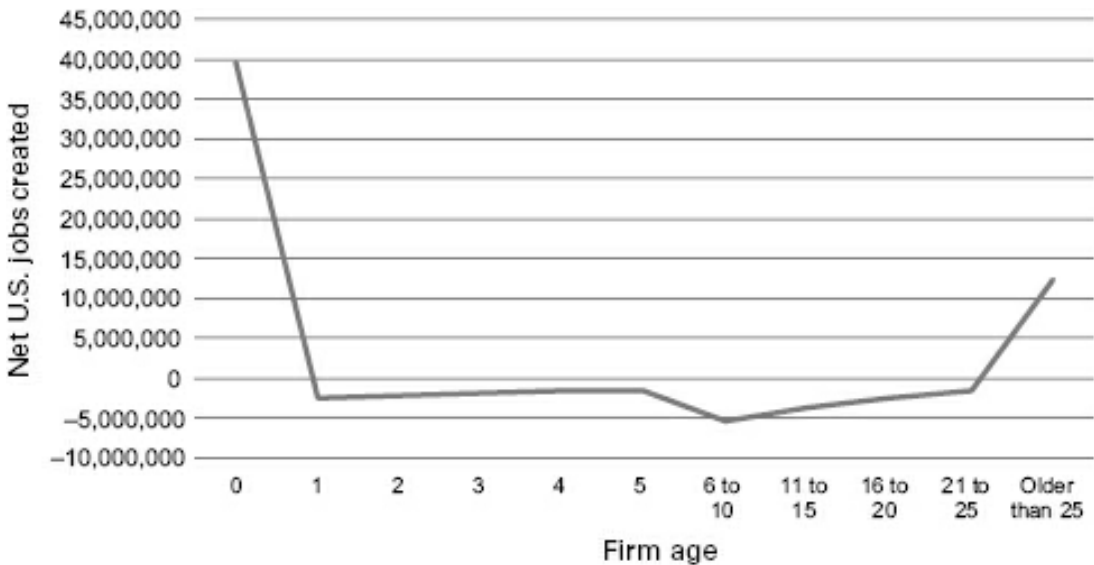
<sup>50</sup> Eurostat, *Structural Business Statistics Overview, Labor Productivity by Size of Enterprise*, 2018.

<sup>51</sup> J. Attack, R.A. Margo, P.W. Rhode, *The Division of Labor and Economies of Scale in Late Nineteenth Century American Manufacturing: New Evidence*, Chicago 2015, p. 215–244.

for employees to take part in grassroots management of the company<sup>52</sup>. The most egalitarian of the fifty-three countries examined at this stage is Denmark, with almost 25% of employees employed in the largest companies.

Small companies often present themselves as generating jobs. Research, however, finds confirmation for this thesis only in periods of the highest unemployment<sup>53</sup>. It is not the size of enterprises that answers the question of which companies are capable of creating jobs – it is their age<sup>54</sup>.

FIGURE 3. NUMBER OF JOBS CREATED BY COMPANIES OPERATING IN THE US



Source: US Census Bureau, Business Dynamics Statistics, Washington 2014.

The data presented in Figure 3 shows that over the years 2000–2013 only the youngest and oldest companies created jobs<sup>55</sup>. When analyzing the shape of this curve, it should be remembered that creation of jobs by the youngest enterprises is a kind of pleonasm – these jobs are created together with young companies and are, like in the first months, often removed from the economy. As it has already been marked, jobs generated by smaller companies are characterized by instability – their number increases during periods of high unemployment and falls in periods characterized by full employment<sup>56</sup>.

<sup>52</sup> J. Wagner, *Firm Size and Job Quality: A Survey of the Evidence from Germany Small Business Economics*, Berlin 1997, p. 411–425.

<sup>53</sup> G. Moscarini, F. Postel-Vinay, *The Contribution of Large and Small Employers to Job Creation in Times of High and Low Unemployment*, Nashville 2012, p. 2509–2539.

<sup>54</sup> J. Haltiwanger, R.S. Jarmin, J. Miranda, *Who Creates Jobs? Small versus Large versus Young*, Harvard 2013, p. 347–361.

<sup>55</sup> M. Ratcliffe, *A Century of Delineating a Changing Landscape: The Census Bureau’s Urban and Rural Classification, 1910 to 2010*, Washington 2012.

<sup>56</sup> B.W. Pugsley, E. Hurst, *What Do Small Businesses Do?*, Washington 2011.

In the US economy only 1% of the population works in companies less than two years old, while 60% of the population work in enterprises overage of over a decade<sup>57</sup>.

## 5. Impact of concentration on the innovativeness of the economy

### 5.1. Technological progress

The subject of the fifth, the penultimate of the chapters contained in this paper, is the relationship between competition protection law and Ninth Sustainable Development Goal – the acceleration of technological progress. Facilitation provided by the laws of numerous legal systems, including Polish, the smallest enterprises are often justified by their allegedly increased innovativeness<sup>58</sup>. In order to verify this justification, this chapter will review economic research on the relationship between the size of the enterprise and the amount of innovation they create. At the very beginning, it is worth mentioning that innovations have been the subject of economists' reflections for as long as the economies of scale analyzed in the previous chapter of this work. Smith, discussing both of these issues in the same part of his most significant work, states: „It is far more likely that people find easier and faster ways to achieve a goal when all their attention is directed to one particular subject rather than being dispersed into a great variety of things”<sup>59</sup>. And also in this case we see an absolute inability of mainstream economics to consider phenomena taking place in the real economy.

It foresees that there would be very little expenditure on research and development in a truly competitive market<sup>60</sup>. None of the companies investing in innovation would be sure whether it will cover the initial outlay before the rest of the market players copy its product. Unable to explain technological progress as a result of market players' activities, mainstream economics considers it a mere consequence of their actions<sup>61</sup>. This chapter will present arguments for the theory of growth, which not only explains the links between the operation of market entities and innovations but also explains how the increase in the size of companies may result in increased technological progress.

There is a relationship between the scale effects described in the previous chapter and innovation. The survey which covered more than one thousand European companies in its area indicates the existence of growing economies of scale, primarily in enterprises from the highly developed technology sector. As will be shown in the next subsections, they are in principle the largest enterprises in the economy<sup>62</sup>. Concen-

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<sup>57</sup> S.A. Shane, *The Illusions of Entrepreneurship. The Costly Myths That Entrepreneurs, Investors, and Policy Makers Live By*, New Heaven 2010, p. 25.

<sup>58</sup> PARP report, *Small and medium enterprises in Poland 2018*, p. 7.

<sup>59</sup> A. Smith, *op.cit.*, p. 23.

<sup>60</sup> R.D. Atkinson, M. Lind, *op.cit.*, p. 272.

<sup>61</sup> F.R. Crafts, *Exogenous or Endogenous Growth? The Industrial Revolution Reconsidered*, Cambridge 1995, p. 745–772.

<sup>62</sup> A. Vezzani, S. Montresor, *The Production Function of Top R&D Investors: Accounting for Size and Sector Heterogeneity with Quantile Estimations*, Seville 2013.

tration in the high technology sectors is above all a source of general social well-being. Most innovative companies need to reinvest profits from successful investments in subsequent projects to achieve technological progress to stay in the game for emerging technology markets<sup>63</sup>.

One of the studies focusing exclusively on European companies was crowned with the conclusion that „the ability of a high technology company to increase its knowledge base depends on its increasing size; the more significant the investor in research and development, the higher the rate of technological progress”<sup>64</sup>. This relationship is well-known among other things in the fast-growing pharmaceuticals sector. The Office of Congress Technology in one of its reports concluded that the riskiness of investment in research into pharmacy, stable market position and high profits are necessary for new companies to be involved in innovative activities<sup>65</sup>. OECD experts have come to the same conclusions on a larger scale: „there is a high correlation between the profits of pharmaceutical companies and their expenditure on research and development”<sup>66</sup>.

## 5.2. Sources of innovation in the economy

We slowly come to the most interesting theoretical justification of the technical development in the market system which is the concept of different types of competition or the bimodal economy – one of the greatest achievements of John Kenneth Galbraith<sup>67</sup>. To understand these phenomena, it should be remembered that numerous expert opinions point to an increase in research and development expenditures accompanying the growing scale of sales<sup>68</sup>.

In this way, the market structure is divided into peripheries and the center is based on economies of scale and a source of technological innovations<sup>69</sup>. Galbraith himself went even to calling the oligopolistic center a „planning sector” to indicate the strategic role that it played in the functioning of the economy as a whole<sup>70</sup>. This previously mentioned precursor statistical research of Chandler and Hikino<sup>71</sup> should be credited with proving that while in the center of the economy there are large companies characterized by growing economies of scale and long-term activities, the peripheries

<sup>63</sup> C. Shapiro, *Competition and Innovation: Did Arrow Hit the Bull's Eye?*, Chicago 2012.

<sup>64</sup> A. Vezzani, S. Montresor, *The Production Function of Top R&D Investors: Accounting for Size and Sector Heterogeneity with Quantile Estimations*, New York 2015.

<sup>65</sup> US Congress, Office of Technology Assessment, *Pharmaceutical R&D: Costs, Risks and Rewards*, Washington 1993, p. 2.

<sup>66</sup> Organisation for Economic Co-operation and Development, *Pharmaceutical Pricing Policies in a Global Market*. OECD Press, Paris 2008.

<sup>67</sup> J.K. Galbraith, *The New Industrial State*, Princeton 2007, p. 52.

<sup>68</sup> G. Symeonidis, *Innovation, Firm Size and Market Structure: Schumpeterian Hypotheses and Some New Theme*, Paris 1996.

<sup>69</sup> J.B. Foster, R.W. McChesney, R.J. Jonna, *Monopoly and Competition in Twenty-First Century Capitalism*, New York 2011, p. 1–39.

<sup>70</sup> J.K. Galbraith, *The New Industrial State*, Princeton 2007, p. 13–14.

<sup>71</sup> A.D. Chandler, T. Hikino, *The Large Industrial Enterprise and the Dynamics of Modern Economic Growth*, Cambridge 1997.

are composed mainly of small companies in which the size advantage does not offer them<sup>72</sup>. It is in the center of the economy that paths to be followed in the future should be seen.

According to a study carried out jointly by Nolan, Zhang and Liu, the increased pressure of the world's most economically significant countries at the center of the company's economies made it possible to increase the effectiveness of investments in research and development on a global scale, thanks to the achievement of economics of scale<sup>73</sup>. Summing up the review of contemporary economists' opinions on the multiplicity of levels of competition and the bimodality of the economy, Bowring's observation should be used<sup>74</sup>. He pointed out that, contrary to popular belief, the largest companies are not a factor that petrifies modern economic progress and on the contrary – thanks to their dynamic efficiency and competitive advantages, they give the entire economy a pace of development.

### 5.3. Investments in research and development

In previous subsections a long-standing argument has been presented, showing convincing examples of increased activity in the field of innovation accompanying the most significant market players. The purpose of this subsection is to check how the results of empirical market research are related to these theories. The positive relationship between the size of the enterprise and its impact on technological progress seems to be supported by several studies. In 1996 Cohen and Klepper published an article in which they point to a close relationship between part of the revenue invested in research and development, and the size of the enterprise. The authors of this study pay attention not only to higher expenditure on development in the case of large companies but also their increased efficiency<sup>75</sup>.

Scientific articles published in recent years by Knott and Vieregger confirm that the efficiency of one dollar invested in research and development is closely related to the increase in the size of the investor's enterprise<sup>76</sup>. The strength of this dependence should probably be explained in part by a larger recapitalization of companies of above-average sizes. Acs and Audretsch analytically derived a positive correlation between the saturation of capital resulting from the size of the company and its increased innovation<sup>77</sup>. Large enterprises representing 1,5% with the most significant number of company patents are responsible for 48% of all licenses issued in the United States between 1999 and 2008<sup>78</sup>.

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<sup>72</sup> T.K. McCraw, *Regulation in Perspective: Historical Essays*, Cambridge 1981.

<sup>73</sup> P. Nolan, J. Zhang, C. Liu, *The Global Business Revolution and the Cascade Effect: Systems Integration in the Global Aerospace, Beverage and Retail Industries*, New York 2007, p. 146.

<sup>74</sup> J. Bowring, *Competition in a Dual Economy*, Princeton 1986, p. 11.

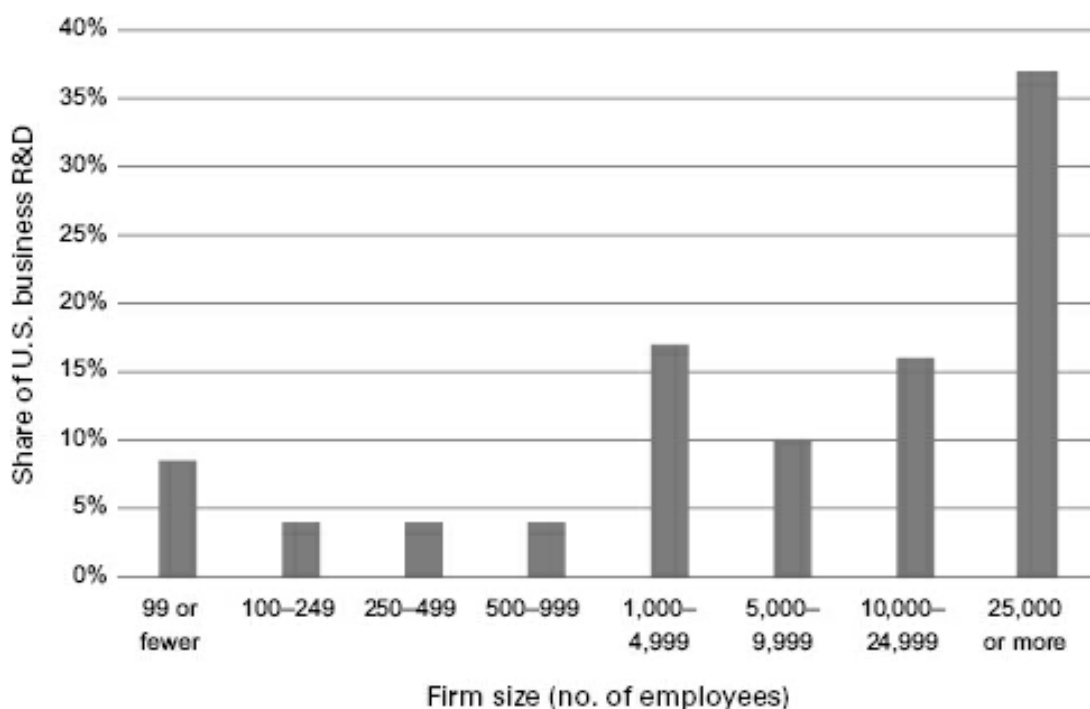
<sup>75</sup> W.M. Cohen, S. Klepper, *A Reprise of Size and R & D*, Oxford 1996, p. 948.

<sup>76</sup> A.M. Knott, C. Vieregger, *Reconciling the Firm Size and Innovation Puzzle*, Washington 2016.

<sup>77</sup> Z.J. Acs, D.B. Audretsch, *Innovation and Small Firms*, Cambridge 1991, p. 50.

<sup>78</sup> J. Hicks, *Knowledge Spillovers and International R&D Networks*, Washington 2012.

FIGURE 4. SHARES OF AMERICAN COMPANIES IN INNOVATIVE INVESTMENTS



Source: National Science Foundation, Business Research and Development and Innovation, Arlington 2015.

Figure 4 here shows how massive part of national innovation providers, despite their small number, are the largest companies. Nager, who with his colleagues surveyed more than 1 000 researchers involved in the implementation of patents in the United States, Europe and Japan, discovered that about 75% of patents are granted to companies employing over five hundred people<sup>79</sup>. In another study to uncover the distribution of sources of technological progress in the economy, it was found that a single IBM company received more patents than all five hundred and four small enterprises that were subject to this analysis summed together<sup>80</sup>.

The relationship between the size of the company and its tendency to promote innovative solutions in the economy is well visible in the European Union. Research conducted in this area shows that countries with smaller medium-sized enterprises, such as Italy or Spain, have lowest corporate spending on research and development in the EU area<sup>81</sup>. The OECD research conducted in thirty-three countries shows that the question should no longer be about the existence of a positive relationship between the size of the enterprise and the number of innovations implemented by them

<sup>79</sup> A. Nager, D. Hart, S. Ezell, R.D. Atkinson, *The Demographics of Innovation in the United States*, Washington 2016.

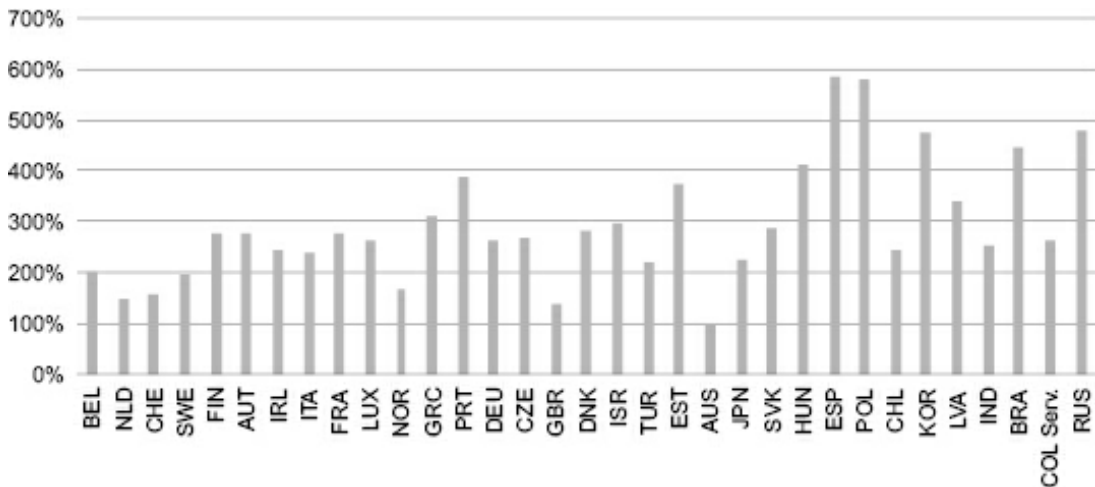
<sup>80</sup> A. Breitzman, D. Hicks, *An Analysis of Small Business Patents by Industry and Firm Size*, Glassboro 2008, p. iii.

<sup>81</sup> P. Pagano, F. Schivardi, *Firm Size Distribution and Growth*, Stockholm 2003, p. 272.



but about the strength of this dependence. The correlation coefficient varies in this case between countries, from two in Australia to six in countries such as Spain or Poland<sup>82</sup>.

FIGURE 5. CORRELATION BETWEEN THE SIZE AND INNOVATIVENESS OF COMPANIES



Source: OECD, OECD Science, Technology and Industry Scoreboard 2015, Paris 2015.

In the summary of this subsection, it should be stated that the accumulated empirical material and the consensus among the researchers of the subject speak for the innovativeness growing together with the size of the companies. Today, it is almost universally admitted that due to the possibility of applying technological achievements on a greater scale, large companies not only have a more significant initiative in the area of innovation implementation but also show greater efficiency in this respect<sup>83</sup>. In the present-day private sector, only those with a certain position in the market and stable profits of the company, convinced of the possibility of commercialization of achievements, will be ready to invest in research on innovations.

## 6. Conclusions

The theoretical arguments and accumulated empirical material presented in this paper were aimed at proving that the proper functioning of competition protection law can increase the chances of achieving the Sustainable Development Goals. The presented justifications of the legislations of Poland, the EU and global organizations favoring SMEs cannot withstand clashes with scientific research carried out in the framework of economic sciences<sup>84</sup>. The most important conclusion flowing

<sup>82</sup> Organisation for Economic Co-operation and Development, *OECD Science, Technology and Industry Scoreboard 2015: Innovation for Growth and Society*, Paris 2015.

<sup>83</sup> W.M. Cohen, S. Klepper, *A Reprise of Size and R & D*, Oxford 1996, p. 948.

<sup>84</sup> Polityka Insight, *Research: Small and medium-sized enterprises in Poland – barriers and development*, 2015, p. 13.

from the material presented in this work should be the possibility of raising general social well-being through the reevaluating of economic law policies, in particular – competition policy. The reading of the above arguments allows us to understand the scientific consensus that large-scale modern enterprises are responsible for the optimal use of limited resources of societies. Due to numerous controversies regarding the optimal size of enterprises in this work, the dependencies between the size of the enterprise and its economic efficiency were considered. The field on which these disputes usually take place is the application of competition law. For this reason, the subject of the analysis has been made here in situations where companies are allowed to function undisturbed despite the distortion of competition. The statement best summarizing the point of view presented in the paper is that the role of competition is to raise the current level of life in the economy and to improve the consumer's well-being in the long term. The way to do this is to increase the production achieved by the economy, which is why the new standard of competition policy should be the priority of productivity growth.

This work criticized the mainstream of economic thought which sees the goal of competition protection law as achieving some perfect market structure. Instead, a perspective that is presented here sets the regulating authorities the goal of establishing and applying rules that enable businesses to achieve „maximum possible efficiency”<sup>85</sup>. The description of numerous contemporary functioning forms of market was intended to show that the mainstream economics claim is that only sectors with competitive structures could behave in a competitive manner<sup>86</sup>. The description of numerous contemporary forms of market functioning was intended to show that the mainstream economics claim that only sectors with competitive structures could behave competitively is false. According to the perspective presented by here, the first test carried out in the application of competition policy should be the question: „does the behavior increase the efficiency of production or distribution and transfer some of the benefits to the general public?”<sup>87</sup>.

Summing up the material presented in this work, it should be stated that the achievements of the economic analysis of the law support the use of competition protection law as a useful tool to achieve the Sustainable Development Goals. Ensuring long-term economic growth, combined with maintaining the economy's innovativeness and consistent with the concept of sustainable development, is possible. However, bodies applying competition law must take into account the voice of economists who advocate size neutrality and evaluation of enterprises through the prism of their effectiveness.

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<sup>85</sup> D. Hart, *Antitrust and Technological Innovation in the U.S.*, Dallas 1999.

<sup>86</sup> G.J. Stigler, *The Case against Big Business*, New York 1952, p. 123–141.

<sup>87</sup> T.W. Arnold, *The Bottlenecks of Business*, New York 1940, p. 125.

## **Prawo ochrony konkurencji a zrównoważony rozwój gospodarki**

Już u początków ekonomii jako samodzielnej dziedziny naukowej struktura rynku stanowiła jeden z jej najważniejszych obszarów zainteresowań. Pierwsze dzieła doszukujące się prawidłowości rządzących procesami wykorzystywania przez ludzi ograniczonych zasobów zwracały uwagę na wpływ liczby i charakteru podmiotów gospodarczych na ekonomiczne efekty ich działalności. Od razu zarysował się również tragiczny konflikt pomiędzy celami prawa ochrony konkurencji – z jednej strony ograniczania największych przedsiębiorstw w celu stworzenia warunków konkurencji na rynku wewnętrznym, z drugiej wspierania największych krajowych przedsiębiorców, aby umożliwić im zwycięskie konkurowanie z podmiotami zagranicznymi.

Rozszerzanie się obszaru zainteresowań nauk ekonomicznych (obejmującego na dziś dzień już praktycznie całą sferę ludzkiej aktywności) stwarza pretekst do przyjrzenia się innym współzależnościom zachodzącym pomiędzy strukturą rynków a ich ekonomicznymi rezultatami. Tak jak początkowo zwracano uwagę jedynie na związek pomiędzy siłą rynkową danego podmiotu a jego wpływem na ogólny poziom cen, tak teraz należy przyjrzeć się efektom, jakie wywiera ona na bardziej skomplikowane ekonomiczne zależności. Ekonomia, będąca nauką społeczną, w XXI wieku podejmować powinna się zagadnień najmocniej wpływających na współczesne społeczeństwa. Jej głównym obszarem badawczym mają szansę stać się zagadnienia zrównoważonego rozwoju.

Niniejsza praca ma na celu przedstawienie powiązań pomiędzy strukturą różnych rynków i stopniem ich zdominowania przez największe przedsiębiorstwa a realizacją celów zrównoważonego rozwoju. Zestawiając z danymi empirycznymi najważniejsze teorie dotyczące wpływu struktury rynku na ekonomiczne rezultaty, postaram się odpowiedzieć na pytanie, jaki wpływ na zrównoważony rozwój ma występująca na poszczególnych rynkach silna koncentracja.

**Słowa kluczowe:** prawo ochrony konkurencji, zrównoważony rozwój, ekonomiczna analiza prawa