

Effect of shooting sports on the vis à vis a level of economic growth

PIOTR SIEMIĄTKOWSKI¹, PATRYK TOMASZEWSKI²

^{1,2}Nicolaus Copernicus University in Toruń, Faculty of Political Science and Security Studies, POLAND

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Abstract

In Poland, there has been a growing interest in sport firearms for some time. The acquisition of a permit therefor in accordance with legal regulations presupposes the membership in shooting clubs as well as the mandatory cyclical participation in relevant contests. The purpose of the present paper is to study the relations between a level of economic growth and the interest taken in shooting sports, with the interest being manifested by the growing number of issued permits for sport firearms in Poland. It was assumed here that shooting sports as a form of competition calling for rather substantial financial investments develop in parallel to economic growth. What was applied herein are statistical methods in the form of correlation analysis, with the use of Pearson's correlation coefficient. What was demonstrated is a strong statistical correlation between the number of issued permits for collectible weapon and sport firearms. This may point to a fact that along with increased quality of life – due to economic growth – Poles still more and more frequently take up sports activities, including shooting sports, which require considerable financial resources. This is the effect of the increase in the affluence of society. Better cars are bought; we travel abroad for holiday more often and still more and more Poles can afford to indulge themselves in a relatively expensive hobby such as collecting weapon for sports purposes. Shooting sports might be an interesting alternative for the youth. It is indeed these sports that might make young people leave their computer or smart phone screens.

Key Words: shooting sports, firearms

Introduction

Shooting sport is a discipline wherein contestants use firearms and pneumatic weapon (Basiaga, 2008). Shooting sport involves competition wherein each contestant shoots at the target or at moving targets. There are three shooting disciplines: rifle, pistol and shotgun. In each of them, there are held shooting contests with distinguished age groups. Younglings (up to 15 years old), juniors (16-20) and seniors (over 20 years old) compete separately. However, it must be added that shooting regulations are subject to the provisions laid down by ISSFF (International Shooting Sport Federation). It is this very organization that deals with specifying the regulations of contests. In shooting sports, what is important is – among other things – specifying the requirements pertaining to contestants, the course of contests, weapon and the course of successive events.

Shooting sports can be divided into different categories, including sports, western, black powder and historical, dynamic, cock shooting and long-distance shooting. Each of these disciplines is further subdivided into various events. In Poland, what is of ever-growing interest is the contests in dynamic events (International Practical Shooting Confederation).

Practising shooting sports requires a contestant to be able to use weapon, with the skill being acquired at the shooting range. In reality, the majority of contestants own their respective weapon, for which one needs a permit. In Poland, the rules related to issuing such permits are rather restrictive. The issuance of these permits are regulated by the Act on Weapon and Ammunition (Act, 1999). This act was amended in 2014, while relaxing the access to weapon in some categories, thus giving an incentive for the development of shooting sports. Despite the fact Poland records relatively the smallest number of issued permits for weapon among all European states, what is noticeable, however, is the growth of their number, especially for sports and collector's purposes. The occurrent phenomenon might testify to the fact that the interest in shooting sports is on the increase in Poland.

Table. 1: The number of people who were issued permits for weapon in 2014-2019

The purpose for which the permit for weapon was issued	2014		2015		2016		2017		2018		2019	
	A	B	A	B	A	B	A	B	A	B	A	B
personalsecurity	116	152	31,0	244	60,5	323	32,4	121	-62,5	144	19,0	
hunting	481	5	5,7	5007	-1,5	4801	-4,1	4296	-10,5	3901	-9,2	

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sports	148 8	2 824	89,8	4835	71,2	4910	1,5	5172	5,3	4822	-6,8
historicalreenactments	12	11	-8,3	8	-27,3	8	0,0	3	-62,5	4	33,3
collecting	628	1 619	157, 8	3605	122, 7	5045	39,9	6522	29,3	6181	-5,2
commemorative	13	22	69,2	21	-4,5	10	- 52,4	16	60,0	14	- 12,5
instructional	33	65	96,7	104	60,0	132	26,9	162	22,7	151	-6,8
otherpurposes	8	6	-25,0	6	0,0	4	- 33,3	10	150,0	5	- 50,0
in total	711 0	9783	37,5 9	1383 2	41,4	15233	10,1	16302	7,0	15222	-6,6

A – the number of items of weapon

B – the dynamics as compared to the previous year

Source: (*Statystyka*, 2020).

As the data in the table 1 indicates, among the first three most numerous groups of permits for waepon the highest dynamics is manifested by the permits for sports and collecting purposes. Actually, in prattice, these are licenses issued in accordance with similar rules. And in the majority of cases, weapon acquired within the collecting-oriented permit is also exploited for sports-related purposes; that is, while competing at the shooting range. The period presented in table 1 is fairly short. Unfortunately, the prior data is incomplete and also incommensurate (the amendment to the act).

The authors in their research search for key determinants of the development of shooting sports. The present paper poses the following research problem:

P.1: What influence on the growing interest in possessing sports firearms does the level of economic development exert?

While seeking for an answer thereto, the following hypothesis was stated:

H.1.: The growing interest in shooting sports is positively correlated with the level of economic development. While justifying the above hypothesis, the authors adopted the assumption that the economic growth translates into greater purchasing power of society at large and into a shift of interests in the domain of sports towards the disciplines characterized by a high financial entry threshold. One of such disciplines is shooting sports. The purpose of the present paper is to investigate the relation between the level of economic development and an interest taken in shooting sports, with the interest being manifested in the increasing number of issued permits for sports firearms.

The analysis of literature

People either apply for the issuance of a permit for the legal possession of weapon or acquire them illegally, thus committing a crime. There are different reasons why people apply for a permit for weapon. One of the reasons – among others – is the fact that weapon performs various psychological roles; say, it guarantees to its owner and his loved ones a greater sense of security. Moreover, it diminishes the sense of impunity on the part of the aggressor and it serves to highlight its owner's power, value and significance (Siemiątkowski et al., 2019). Weapon might also help a person commit a crime. It is used for hunting purposes. It might be also acquired for collecting and commemorative reasons. Shooting sport – scrutinized in the present paper – is a peculiar discipline wherein sport firearms are used. The largest amount of weapon serves as an equipment for police or the army, with both of them being supposed to ensure security and compliance with a legal order. Weapon is also used for instructional purposes (Poznaniak, 2003).

Due to modern technology and a quick access to information, one may achieve the sense of security not only by possessing or carrying firearms (Szyszka & Polko, 2020). On the other hand, there are situation in which the growing sense of danger, additionally augmented by the media, makes people increase their demand for weapon (Luke, 2020; Polko, 2020). Shooting as a sport discipline is not a very popular field of study, especially in social science (Lis & Tomanek, 2020). That is why searching for the determinants of the development of this sort of sport is also tied to the analysis of subject-matter literature pertinent to the development of sport as such or to the development of adventure or elitist sports.

First and foremost, it should be underlined that doing such a sport as shooting requires rather substantial financial investments. Taking a course, passing an exam, obtaining a license and then acquiring or borrowing weapon, ammunition and shooting range makes it the case that there is a high financial entry threshold to this sport. As a result, the above-mentioned financial barrier may prove to be insuperable for a statistical Pole. On the other hand, the fact that the society is getting more and more affluent impacts the forms of recreation and sorts of sports practised by its members. Consequently, more cost-generating activities, involving expensive equipment, courses and trainings, are becoming increasingly popular. In line with the assumptions of Veblen's paradox, the demand for luxury goods increases despite the increase in their prices (Veblen, 1971). Assuming

that firearms constitute a sort of “manifestation”, one may jump to a conclusion that the demand therefor is going to increase.

Shooting is an elitist and niche sport. Furthermore, it is a relatively expensive sport in which one may regularly participate, thus steadily improving one’s skills(Hillyard, 2016). These skills might be also be taken advantage of in emergency situation; for example, in self-defence. This might be an additional asset for contestants.

Since the seventies, there has been the growing interest in all sorts of adventure sports. The concept of *adventure sport* is broadly understood and it encompasses the sports referred to as “alternative”, “extreme”, “X”, “gravitation”, “lifestyle” sports as well as “competitive sports”. Shooting sports can be also subsumed under this sort of sports. The development of extreme sports should be considered both against the background of the development of sport at large as well from the angle of the changes in society. Adventure sports offer such emotions that are difficult to experience in other sports, with the emotions being – among others – thrills and risk. Doing them is indicative of a sort of protest against certain features of contemporary societies. On the other hand, they express key ideas of contemporary and post-modern society such as individualism, technology, self-fulfillment and transcendence (Breivik, 2010). It is one of the ways of expressing one’s identity of distinctness (Wheaton, 2004). Sportsmen engaged in competitive and adventure sports more and more often cooperate with trainers, agents, managers and personal trainers in order to improve their result (Ojala & Thorpe, 2015). The above holds true even in the case of an amateurish way of doing sport.

There are numerous research results pertaining to doing sport as such. The results can in fact apply also to shooting sports. For example, it transpires that what is most important to the development of organized physical activities of Polish society is the tendency on the part of a society of a voivodeship to exercise physically in sport clubs coupled with the operativeness of local authorities in regard to the acquisition of financial means necessary for funding the operations of clubs and for developing sports infrastructure(Huterska et al., 2020).If the state is more engaged in funding facilities in which one can do sport and recreation activities, then people have a less restrained and easier access to sports activities. Given that, they will do the said sport activities more willingly (Osińska, 2020; Szczepaniak, 2020).What was also sought for was an answer to the question of whether there exists a relation between the level of the affluence of society and the development of sport in Polish regions. Statistical analysis did not uncover any relevant relation between the level of affluence and the development of sport as such. Neither did it demonstrate any relations between the level of affluence and any of the scrutinized dimensions of the development of sport (Müller-Frączek, 2020).

The growing interest in firearms also stems from the fact that in many states special majors were distinguished at universities. These majors are becoming increasingly popular. Such a course includes – among other things –combat training. After graduating from the studies or while still studying, the participants apply for the issuance of a permit for sports firearms(Kamaiev et al., 2018).

Methods

The materials/datas for the calculations were obtained from various sources. As for the gross domestic product per capita, its values were obtained from EUROSTAT. Data on firearms permits, including sports and collector’s weapons issued in Poland, and the number of weapons held by Poles come from the annual reports of the Police. International (comparative) data showing the saturation of the society with firearms was obtained from the Polish, industry website strzal.pl and reports contained on the website of the Swiss research project Small Arms Survey, devoted to collecting statistical data on the firearms industry around the world.

To achieve the purpose of the paper stated in the introductory part thereof, standard statistical methods were applied. Among statistical methods in general, one needs to point to the analysis of correlation with the application of Pearson’s correlation coefficient as well as to regression analysis. Depending on the coefficient of determination, what was presented was a trend function, a linear one and a polynomial function. A standard Excel spreadsheet was used as a calculation tool, in which, based on the numerical data summarized in tables, appropriate charts were developed, with the appropriate trend line marked.For the lack of space, only the selected elements of a broader statistical analysis were presented.

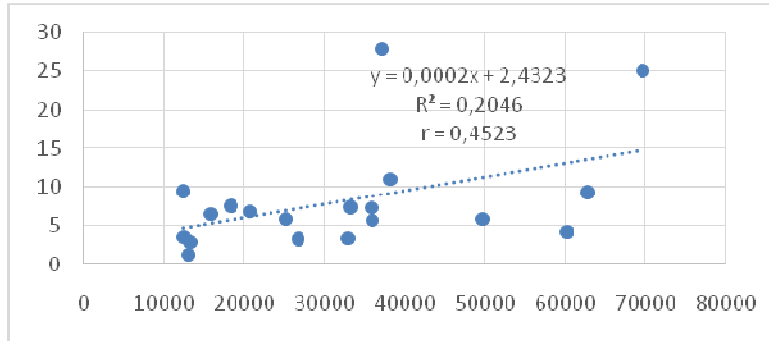
Results

While preliminarily trying to verify the above-stated hypothesis in the area of Europe, what was analyzed were coefficients of the correlation between the number of issued permits for weapon per 1000 residents, the number of items of weapon per 1000 residents as well as the number of items of weapon for one permit *and* numerous factors which may determine the possession of weapon and thus impact the popularity of shooting sports (e.g. GDP per capita measured at purchasing power parity, real GDP per capita, human development index [HDI], premeditatedhomicide, thefts, rapes, cases of physicalassaults etc.).

The results of this analysis were rather surprising because despite the presumed causal relation no statistically significant relation between the pairs of variables in question was concluded. The strongest correlation was recorded in the case of the relation between the number of items of weapon for 1000 residents and the level of real GDP per capita. In this case, Pearson’s correlation coefficient amounted to 0,4523. Hence, it

was not a strong correlation. Additionally, what could be observed was the growing linear trend; however, the coefficient R^2 amounts only to 0,2046; and so, the model is rather not a good fit (see: fig.1).

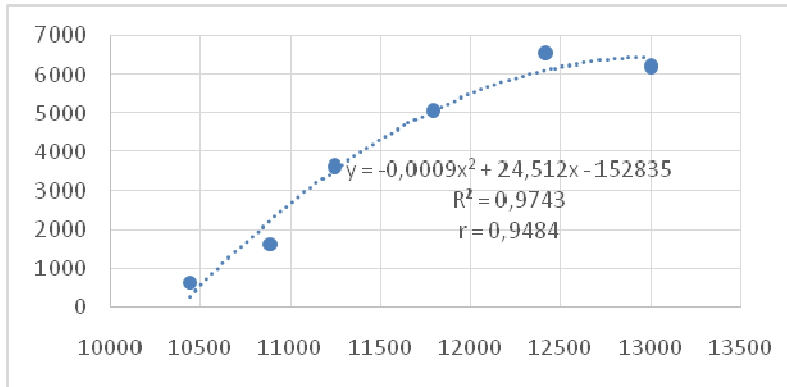
Fig. 1. The number of items of weapon per 1000 residents in relations to the level of real GDP per capita in the selected European states



Source: own elaboration on the basis of: (Eurostat; Lewandowski & Zdzitowiecki, 2020).

Similar research was conducted in Poland. What was taken into consideration were similar pairs of parameters to the ones mentioned above. The analysis of the relations holding between the number of permits for collectible weapon (acquired also for sports and recreational purposes, with this weapon serving as the basis for organizing contests, competitions, with the latter not being classified within Polski Związek Strzelectwa Sportowego [Polish Association for Sport Shooting]) and real GDP per capita in Poland in the period of 2014-2019 demonstrated that in this realm there exists the strongest statistical correlation among all the scrutinized pairs of parameters. The number of observations (limited by the availability of comparable police statistics) is not significant; however, it enables us to draw certain conclusions.

Fig.1. The relation holding between the number of permits for collectible weapon in Poland and real GDP per capita in the period of 2014-2019

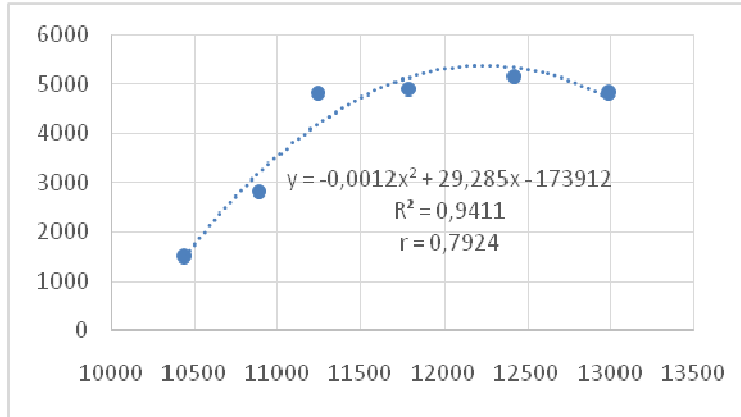


Source: own work on the basis of Eurostat’s data and police statistics.

It transpires that there is a statistically significant correlation between the number of permits for collectible weapon and the value of GDP per capita (with Pearson’s correlation coefficient being in this case 0,9484). Furthermore, what was observed was a clear increasing, polynomial trend, with the coefficient R^2 therefor amounting to as much as 0,9743. This in turn means an exceptionally well-adjusted model. At the same time, this *sort* of permits for weapon in Poland is the one that is most strongly correlated with the real GDP per capita. In case of permits for sports firearms, one can also note a considerable increase in the number of issued permits in the period of 2015-2019, as compared to 2014. One may validly conjecture that – similarly to the previous case – it has at least to some extent something to do with the economic growth and the increasing affluence of society stemming therefrom.

Shooting sport is not cheap (Otto & Klinger, 2017). It not only requires relatively high preliminary investments but also relatively high recurrent spendings pertaining to, say, trainings at the shooting range or to the participation in shooting contests. A high entry threshold may encourage only those contestants with higher financial endowments and these start appearing in greater numbers once the real GDP starts growing. This is the effect of the increase in the affluence of society. Better cars are bought; we travel abroad for holiday more often and still more and more Poles can afford to indulge themselves in a relatively expensive hobby such as collecting weapon for sports purposes (Ferfecki, 2019).

Fig. 3. Relation holding between the number of permits for sport firearms in Poland and the value of real GDP per capita in the period of 2014-2019



Source: own work on the basis of Eurostat's data and police statistics

The analysis conducted herein leads up to the conclusions that the causal relations scrutinized above is confirmed by the statistical correlation ($r = 0,7924$). What can be also observed is an increasing, polynomial trend with a conspicuous slow-down in the recent years. The high value of the coefficient R^2 testifies to the fact that the model is well adjusted.

Conclusion

Shooting sport does not appear to be an exclusive sport when compared to such disciplines as golf, horse-riding or sailing. Still, shooting sport is still subsumable under the category of relatively expensive sports and possessing weapon, all the necessary equipment, club membership fees coupled with trainings at the shooting range under the supervision of qualified instructors generate substantial cost.

The analysis presented herein constitutes a mere introduction to a broader debate over the prospects of the development of shooting sports in Poland, and later on, in other states of Central Europe. Still, it must be granted that some vital information has already been acquired. On the European scale, there is no statistically significant correlation between the number of items of weapon per 1000 residents and the level of real GDP per capita. The situation in Poland is diametrically different. What was demonstrated was a strong statistical correlation between the number of issued permits for collectible weapon and the weapon for sport purposes. As mentioned earlier, the weapon issued on the basis of both of the above kinds of permits is usually used for sport purposes. However, in the latter case, it is connected with a formal membership in a shooting club. It is precisely these organizations that are a driving force of the development of shooting sports. They stimulate it by spreading the knowledge on the subject, by caring about training of their members as well as by sharing the resources in the form of sport shooting ranges, weapon samples or by offering the possibly of purchasing ammunition (Hurynak & Kordonska, 2018; Stosik & Leśniewska, 2018).

Thus, shooting sports are in line with the process of education related to the abilities, knowledge, attitudes and behaviors which increase the social responsibility for the engagement in an active way of life throughout one's life (Metelski, 2019; Yi et al., 2020). Most certainly, they might be an interesting alternative for the youth. It is indeed these sports that might make young people leave their computer or smart phone screens, which could in the end contribute to the promotion of healthy lifestyle. On the one hand, the economic growth and the development of technologies assisting it make expensive forms of entertainment much more available. On the other hand, the economic growth causes the transfer of human activity into virtual reality. This in turn gives rise to novel and hitherto unknown problems for the development of our entire civilization.

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