RESEARCH PROPOSAL

LABOUR MARKET EFFECTS OF INDIVIDUAL PHYSICAL ACTIVITY IN UKRAINE

by

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SHORT DESCRIPTION

LABOUR MARKET EFFECTS OF INDIVIDUAL PHYSICAL ACTIVITY IN UKRAINE

The goal of this study is to investigate the causal-effect relationship between out-of-work physical activity of working-age population and labour market outcomes in Ukraine. Understanding the relation between physical activity patterns and labor market outcomes, potentially, is a great basement for improvements both in personal lives of people, and socially tangible economic outcomes. But, unfortunately, Ukraine has quite poor record of analyzing the data on physical activity and sports, and life-style related data overall.

Physical activity, further, is regarded as multi-dimensional variable that captures transportation, job-related physical activity, housework, recreation, sports and leisure-time physical activity. It is suggested that cause and effect relationships between physical activity of economic agents and labour market outcomes can be studied within the set of conventional theories – time allocation theory and it’s extension to SLOTH (Sleep Leisure Occupation Transportation Housework) framework, human capital theory. As for the empirical strategy, it is suggested, that instrumental variable approach is applied with sport infrastructure in the region of residence used as an instrument.

The Ukrainian longitudinal monitoring survey data (2003, 2004, 2007 waves), and data provided by The Ministry of Youth and Sports of Ukraine on the available sports infrastructure provide a good setting to answer the question stated.
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INTRODUCTION

The goal of this study is to investigate the causal-effect relationship between out-of-work physical activity of working-age population and labour market outcomes in Ukraine. Here we see physical activity as the practice which shapes human capital and social capital and, through these, affects labour market outcomes. However, physical activity is not a random event. Basically, after the choice of occupation, transportation and arranging private life - and taking into account that sleeping and provision of basic needs also takes time – person has a limited choice of her moving patterns. Moreover, occupational conditions and earnings greatly influence leisure-time choices. From the policy-maker perspective, it means that increasing physical fitness of population can not be done only with the efforts targeted at leisure-time activities. For the sake of the proposed study, it means that identification of the labour market effects caused by individual physical activity is complicated by the reverse link from working conditions and earnings to physical activity.

The framework explaining the links between labour market and individual’s physical activity can be seen in the following way. Individuals chose how to allocate time to sleeping, leisure-time devoted to physical activity, leisure time devoted to sedentary activity, work (which differs with respect to activeness), transportation (walking is considered as physically active transportation, other choices are passive), household production or unpaid work. Choices will be highly dependent on individual characteristics like age, gender, family status, health status, education, etc.; on features of built environment where person lives (available sports infrastructure, whether locality is suitable for people spending time outside: presence of natural and historical places, design, safety); on attributes
of social capital of the community; on culture and traditions in the region; on institutional arrangements and policies.

It is worth noting that choice of occupational physical activity is not basically a “choice” of moving patterns but is derived from the whole complex of choices related to individual’s occupation. However, transportation and housework, leisure-time physical activity have larger “degree of freedom” and can indeed be seen as “choices”. So, when we ask about “labour market outcomes of physical activity” we mean – “taking occupational choices for granted, what effects does out-of-work physical activity behavior make on person’s success on the labour market?”. Such formulation has several advantages in comparison to usual estimation of “sports participation” effects, because consequences for health depend on physiological and psychological processes related to bodily movements produced by skeletal muscles and accompanying energy expenditure. So ignorance of housework, or say, walking for transportation, contorts the real investment in health, and consequently, physical activity-productivity relation.

It is suggested that cause and effect relationships between physical activity of economic agents and labour market outcomes can be studied within the set of conventional theories – time allocation theory and it’s extension to SLOTH (Sleep Leisure Occupation Transportation Housework) framework, human capital theory. Specifically, theoretical model for this research will be taken from Economic Model of Participation and Time Spent in Physical Activity developed by Brad Humphreys and Jane Russeski (Humphreys and Russeski, 2007; Humphreys and Russeski, 2009).
Empirical strategy for this study will be based on the approach introduced by Lechner and Downward (2013) which combines probit analysis examining how participation varies in regards to exogenous (confounding) factors, and econometric matching method examining the relationship between out-of-work physical activity and labour market outcomes. For the first stage, instrumental variable approach can prove to be especially useful taking into account possible econometric problems described above. Available sport infrastructure in the region of residence can be used as an instrument. The Ukrainian longitudinal monitoring survey data (2003, 2004, 2007 waves), and data provided by The Ministry of Youth and Sports of Ukraine on the available sports infrastructure provide a good setting to answer the question stated.

In April and May 2008, specialists of Research & Branding Group conducted a sociological study of the project "Monitoring of Ukraine to attract people to the sport for all". Based on a sample of 1207 people representing the population of Ukraine in terms of age and sex structure, place of residence (urban rural), they conclude that nearly 13% of population can agree that there are necessary conditions for participation in sports. 52% said that there are no (or almost no) necessary conditions. 77% defined the high price of sports centers` services as the main obstacle to participate in sports. These finding justifies usage of sports infrastructure in the region of residence as an instrument, as it indicates potentially high correlation between out-of-work physical activity of individual and available facilities. On the other hand, such instrument can be considered independent, at least in the short run, from the conventional individual-level determinants of physical activity, and can impact labour market outcomes only through the link mentioned above.
LITERATURE REVIEW

Several branches of economic literature are relevant in studying the labour market outcomes stemming from moving patterns of individuals. The first strand (Ewing, 1998; Ewing, 2007; Long and Caudilli, 2001; Stevenson, 2006; for USA. Cornelissen and Pfeifer, 2007 for Germany) looks at sport participation in young years as a factor affecting current labour market outcomes. The early studies are frequently suspected in usage of underdeveloped econometric techniques leading to selection problem. But the general inference that former athletes indeed become more successful on the labour market in terms of earnings, fringe benefits and wages (Ewing, 1995; Ewing, 1998; Ewing, 2007) still goes with most recent studies of analogical questions. Using the natural experiment shock – legal change in US which banned gender discrimination in federally funded educational institutions1 - to analyze the consequent impact on female education and earnings, Stevenson (2010) ascertains higher college attendance, labour force participation and earnings.

Another cohort of authors, analyze the effects of sports participation for the wider population. Lechner (2009) shows that sport activities positively influence earnings, wages, health, subjective well-being. To refine the causal relation, Lechner applies matching procedure to the groups created on the basis of similar sport participation behavior. Alternative mechanism – randomized experiment - which also allows to tackle selection problem was applied by Rooth (2011). According to the results, signals about involvement in leisure sports, especially, soccer and golf, gives comparative

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1 The legal change involved Title IX of the Educational Amendments to the 1964 civil Rights Act.
advantage when applying for the job. This finding is explained rather by expectation of employer about the social skills of the candidate, but not health-productivity link. Jens and Rooth (2011) show that obesity, on the contrary, is likely to cause discrimination of the candidate due to automatic stereotypes of hiring agents. Overall, medical and epidemiological literature reveals that sedentary life-style, as failing to maintain sufficient level of physical activity (WHO, 2010) drastically increases the risks of major NCDs (Lee et al., 2012). Together with direct negative impact on productivity, and participation in the labor market, signals translated by the body weight negatively affect labour market outcomes (Cawley, 2000).

THEORETICAL APPROACH

Cause and effect relationships between physical activity of economic agents and labour market outcomes can be studied within the set of conventional theories – time allocation theory (Becker, 1965) and it’s extension to SLOTH framework (Cawley, 2004), health production model (Grossman, 1972), human capital theories.

So, how do economists see physical activity? - Basically, economist see how individuals allocate their time, and market goods and services into the production of some kind of “final goods”, consumption of which may contribute to their utility in the long- and/or short run. Becker (1965) would probably argue that investment of time and other resources in physical activity during the leisure time should crowd out investment in education, and consequently, in human capital. In this case, the one should expect negative effects on employability and incomes.
However, in contemporary understanding, human capital encompasses, together with cognitive - non-cognitive skills, like social adaptability and informal sources of learning - work experience and learning-by-doing (Heckman et al., 2006), complementary time management, task prioritisation, and pedagogical approaches to learning (Pfeifer and Cornelissen, 2010). These traits may certainly evolve via participation in individual and team sports. Furthermore, if Grossman theory (1972) comes into play, physical activity overall becomes a strong factor which shapes the stock of health, and the flow of healthy time, which, in turn, forms human capital. In our context, maintenance of sufficient level of physical activity and engagement in sports activities can be viewed as an investment in health (together with, or alternative to investment in conventional health care goods and services) that affects the productive quality of time.

Relation between social capital and sports participation within the extended Becker’s (1974) model is also relevant for potential outcomes on the labour market in the form of a teamwork ethic (Rees and Sabia, 2010), or access to networks of employment (Jackson, 2011), inclusive capacity of sports.

The grounds on which people make decisions to allocate time to active leisure can be explained in the setting of Economic Model Of Participation And Time Spent In Physical Activity developed by Brad Humphreys and Jane Russeski (Humphreys and Russeski, 2007; Humphreys and Russeski, 2009). Based on combination of SLOTH framework of time allocation and recreation demand model (McConnell, 1992), it can be used to analyze both time allocation decision and decision about the purchase of goods and services to active and passive leisure (see Humphreys and Russeski, 2009 for further details).
Bidirectional effect of income realized by income and substitution effects can be explained within this model. Specifically, characterization of the solution of consumer’s utility optimization problem provides basis to analyze effects of change in income and the opportunity cost of time (measured by wages) on the decision to participate in sports – which is called by the authors “extensive margin” - and the amount of time participating in sports - “intensive margin”.

EMPIRICAL APPROACH

Empirical strategy for this study is expected to use the approach introduced by Lechner and Downward (2013) and can be realized in two major steps. To study, how participation in sports during leisure affects earnings and employment of working-age population, Lechner and Downward (2013), as the first stage, undertake probit analysis examining, how participation varies in regards to exogenous (confounding) factors. As the second step they use non-parametric econometric matching method examining the relationship between out-of-work physical activity and labour market outcomes.

To identify causal-effect relation, instrumental variable approach should prove to be the most beneficial, taking into account the nature of ULMS data, and the data provided by The Ministry of Youth and Sports of Ukraine on the available sports infrastructure, as well as findings in the literature. Following Lechner and Downward (2013), at the first stage the following variables can be included to analyze variation in level of out-of-work physical activity: individual level socio-demographic characteristics, and data on available sport facilities in the region. Additionally, quite
rich ULMS data allows to control for occupational physical activity, and active transportation, which was not possible for Lechner and Downward (2013). The second stage will basically repeat econometric matching procedure, as suggested by the authors, achievable in Stata package. Reasoning to use matching approach is also connected to the nature of the data. To see the impact of discrete variable characterizing physical activity on labour market outcomes, but keeping the distribution of the exogenous variables described above constant, it is particularly useful to apply matching estimator (Lechner and Downward, 2013).

To identify exact form of the instrumental variable, it will be necessary to understand the final look of the Ukrainian data on sports facilities, as well as refer to the literature. At the infrastructure level, swimming pools, sport halls, sport fields, tennis courts, and parks in the suburb of the residents were found to be important determinants of participation in different sports (Hallmann et al., 2012), and so did the proximity of sport facilities (Pawlowski et al., 2009). Also, the availability of parks is especially important for residents’ sport activity (Hallmann et al., 2012).

DATA DESCRIPTION

It is suggested that Ukrainian Longitudinal Monitoring Survey (ULMS) is used for the study. ULMS was launched in 2003 and later included 2004 and 2007 waves. The survey was started in 2003 with 4,055 households and 8,641 individuals. Overall, 4,232 households and 9,902 individuals participated in the survey for 2003, 2004 and 2007. Of these, 2,705 households and 5,091 individuals appeared in all three waves, 2003, 2004, and 2007 (for further details see

ULMS is unique dataset for Ukraine which combines general questions to define socio-demographic characteristics of people, comprehensive history of employment and at the same time questions about life-style. Specifically, it asks about occupational and out-of-work physical activity (See also Tab. 1):

Which of the listed variants best characterize your physical exercise outside of work?

1. Light physical exercise for relaxation, less than three times a week;
2. Medium and intensive physical exercise less than three times a week;
3. Intensive physical exercise at least three times a week for 15 minutes or more;
4. Daily exercise not less than 30 minutes a day;
5. Does not engage in physical activities.

Which of the listed variants best characterize your physical activities at work?

1. Light physical efforts (for example, a professor, a cashier);
2. Medium physical efforts (for example, a nurse, metal worker, auto mechanic);
3. Heavy physical labor (for example, a docker, construction worker);
4. Does not work or does not engage in any physical activities at work.

Additionally, ULMS provides information on average time spent commuting to place of work in main job and back in a usual workweek, how far the main job is located from the place
of residence. It was also asked how the one usually goes to main job in a summer month and in the rest of the year. All the mentioned questions may reflect physical activity for transportation. Occupational physical activity is also characterized by industry, main activities of enterprise/organization/workplace for self-employment, position. People were also asked about engagement in growing food on farming plot.

Rich data on sports infrastructure is available on the web-site of The Ministry of Youth and Sports of Ukraine within The Electronic Register of Sports Facilities in Ukraine (http://www.sportsporudy.gov.ua/). In particular, it contains general information about the object (name of sports facility, management authority, category of sports facility, ownership type, address, name of the manager, year of commissioning, types of sports services delivered, land area, simultaneous capacity (number of people), accessibility for disabled, average number of visitors per day, readiness for international competitions and correspondence to international requirements, whether reconstruction is needed), technical characteristics, map, photo. Data on the relevant programs and policies is also available on The Ministry of Youth and Sports web-site (http://dsmsu.gov.ua/), as well as on The National Olympic Committee web-site (http://noc-ukr.org/) and other sources.
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<th>Frequency</th>
<th>Percent</th>
<th>Cumulative</th>
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<td>Light Physical Activity</td>
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WORKS CITED


