ARE LEISURE AND WORK PRODUCTIVITY CORRELATED? A MACROECONOMIC INVESTIGATION

ANA-MARIA SAVA

PH.D. CANDIDATE AT THE BUCHAREST UNIVERSITY OF ECONOMIC STUDIES,
e-mail: anamaria.sava89@yahoo.com

Abstract

It is common sense to state that working without being mentally fatigued leads to increased labor productivity. Extensive overtime and putting in long hours on a regular basis without using proper de-stressing methods inhibit work productivity. Recently, several countries have manifested an interest towards reducing the daily work quantum (in 2015 Sweden started the shift to a 6 hours workday, France regulated in 2000 the 35 hours workweek) with the aim of improving the quality of life as well as increasing companies' economic performance. But does disposing of more free time automatically lead to having a better life or superior business returns? Of course not – spare time also needs to be used effectively in order to achieve these goals. Every person is unique and therefore each individual will opt for different pass time activities to attain mental tension relief. But, there is evidence which sustains that allocating more time to leisure is directly correlated with increased work productivity, as will be shown in the present paper. Moreover, the investigation shows that not all ways of spending leisure time are effective in achieving the desired objective, some displaying an inversely proportional relation with labor productivity.

Keywords: *Spare time; leisure; labor productivity; macroeconomic analysis; correlation.*

JEL Classification : *L83, O11, O49, O50*

1. Introduction

Peoples' need for recreation has been acknowledged for a long time now, this fact being also formally recognized over a century ago, Greenwood (1905) claiming that education's greatest benefit would be teaching people how to spend their leisure time in a more gainful way. A recent study on Romanians' perception of quality of life (Constantinescu, 2012) shows that recreation and leisure are classified among the five dimensions of quality of life, after health, material wealth, education and employment.

The fact is, the use of free time for recreational purposes directly brings benefits to individuals, which may indirectly create benefits for organizations and by extension to the whole economy.

By recreation, population gains in several areas of life leading ultimately to improving the overall quality of life. Sports help maintaining a healthy body, arts and culture have a substantial contribution on education, while entertainment activities lead to relaxation and reducing daily stress.

All these elements have the cumulative effect of increasing efficiency in the workplace, having an indirect influence on the welfare of organizations. This empirical inference is confirmed by an analysis on the correlation between time spent for leisure purposes and labor productivity.

2. Research methodology

To test this hypothesis were used two series of macroeconomic data provided by OECD for 26 countries:
* *time spent for leisure activities* (measured as ratio of the duration of one day) (OECD, n.d. a);
* *labor productivity* (measured as GDP per hour of work) (OECD, n.d. b).

In a first step, there has been checked whether a significant difference between the observed and expected frequencies exists for the two data series (by using the Chi-square test of association/independence χ^2). Subsequently, the strength and direction of the association between them was calculated (through the Pearson correlation coefficient, R) along with the extent in which first variable explains the variation of the second one (through the coefficient of determination, R^2). Last, the results were tested for statistical significance (by computing the p-value).

The fact that OECD divides leisure time in several subgroups of recreational activities, enabled not only testing whether leisure time and labor productivity are correlated, but also zooming in on these activities in order to see their individual impact on work productivity.

The subcategories of leisure included in the OECD report are:
* sports and physical exercise;
* attending events;
* spending time with friends;
* watching TV or listening to radio;
* other recreational activities.

The above described steps were carried out for each of the subcategories and also for some clustered activities (e.g.: all leisure activities excluding watching TV or listening to radio).

3. Research findings

The first analysis conducted tested whether there is a correlation between leisure time (all subgroups considered) and labor productivity. Chi-square test confirms the validity of using the two data series as basis for studying the phenomenon. Pearson correlation coefficient shows that the two data sets are linked by a strong positive relationship, the value obtained (R = 0.54) being indicative of a strong, substantial association according to De Vaus (2004). The coefficient of determination indicates that the time devoted to recreation explains 29% of the labor productivity evolution. Moreover, the results prove to be statistically significant as p-value is lower than 0.005. (p = 0.004). Figure 1 presents the graphical representation of the regression line fitted for the two data series.
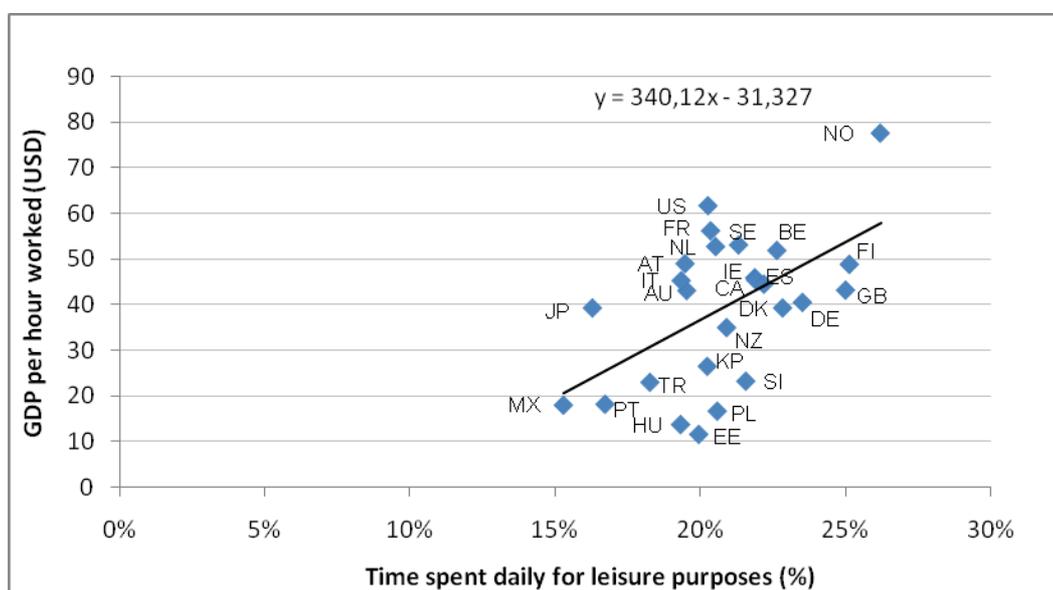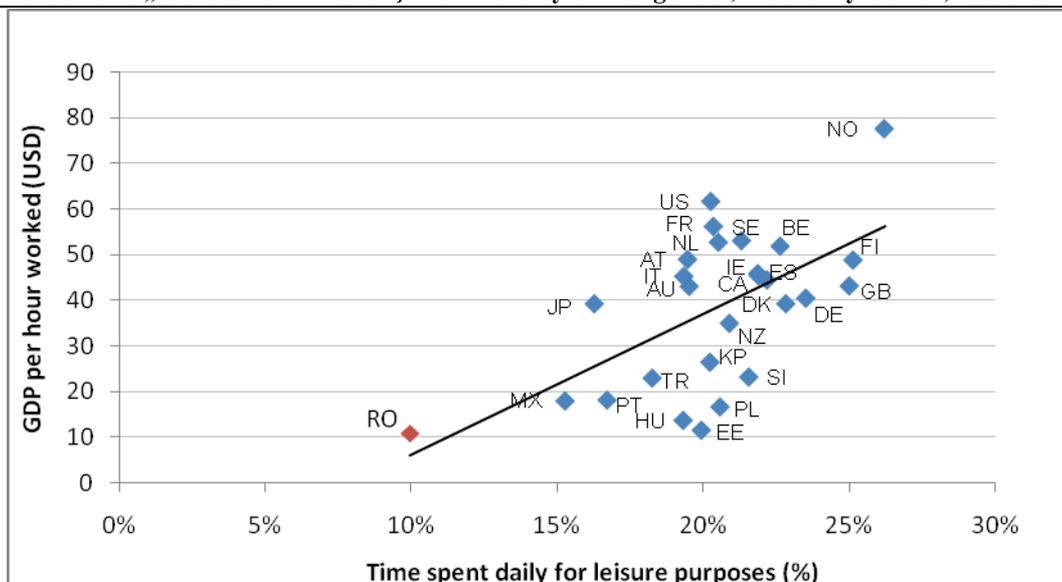

Source: Author
Figure 1. Regression line fitted between work productivity and leisure time

For analysis robustness data used for the regression was collected from a single source, so that the analysis shall not be influenced by the lack of data homogeneity. However, in this choice also reside the main limitations of the research – the results can be influenced by the similarity of sample components, as well as running the analysis on a rather small sample. Moreover, since Romania is not a member state of the OECD, its coordinates were not used to running the regression analysis presented in Figure 1.

A study conducted in 2013 indicates that Romanians spend an average of 2 hours and a half every day for recreation – equivalent to 10% of the day (Sava, 2014). Data from the National Institute of Statistics Romania (INS, n.d.) shows that hourly labor productivity in Romania for the year 2013 it was 36.3 RON. Transforming this value at the average RON-USD exchange rate (Efin, 2016), it can be concluded that the hourly labor productivity in Romania in 2013 was 10.9 USD. This indicates an excellent fit of Romania with the regression equation, as shown in Figure 2. Additionally, this further validates the hypothesis advanced – that leisure time and work productivity are correlated.

Source: Author

Figure 2. Regression line fit with Romania's coordinates

Testing the association between various components of the leisure time and labor productivity has mostly lead to inconclusive results (as demonstrated by the significance levels obtained – marked with red in Table 1). However, when zooming in on the association between watching TV or listening to radio and work productivity, there emerges an interesting finding.

Table 1. Output of testing for correlations between work productivity and
various components of leisure time

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Correlation between work productivity and time spent for...	*Leisure purposes (overall)*	*Sports and physical exercise*	*Attending events*	*Spending time with friends*	*Watching TV or listening to radio*	*Leisure purposes except watching TV or listening to radio*
Chi-square test of association (χ^2)	0.00	0.00	0.00	0.00	0.00	0.00
Correlation coefficient (R)	**0.54**	0.26	0.24	0.10	-.029	**0.63**
Coefficient of determination (R^2)	**0.29**	0.07	0.06	0.01	0.09	**0.40**
Significance level (p)	**0.004**	0.201	0.230	0.624	0.144	**0.001**

Source: Author

The output from Table 1 indicates that prolonged periods of spending time watching TV or listening to radio, instead of being associated with increased levels of work productivity, rather seems to adversely affect it. Firstly, between the period of time spent watching TV or listening to radio and labor productivity there appears to be a negative association (R = -0.29), as show results in column 6. However, the association is only moderate in strength, and cannot be considered statistically significant given the analyzed set of data.

Moreover, taking into consideration all the recreational activities but excluding watching TV and listening to radio, and measuring its correlation with work productivity, the Pearson correlation coefficient increases significantly (from R=0.54 to R=0.63 as shown in columns 2 and 7). Also, the significance level of the correlation is more robust, thus indicating a tighter association between labor productivity and leisure time if the latter were not to include watching TV and listening to radio.

4. Conclusions

Results indicate that there is a quite strong connection between spending time engaging in leisure activities and work productivity. While dedicating more spare time for leisure appears to be indicative of increased labor productivity, there is a fairly large component of people's leisure time (watching TV or listening to radio) that seems

to negatively impact it.

The main limitation of the study consists in conducting the analysis on a small number of records, while also facing the bias caused by the similarity of items in the sample as all of them are OECD member states.

Extrapolating to macroeconomic level, the increase in organizations' efficiency on the basis of productivity improvements (which may come as a result of people engaging in more mentally revigorating recreational practices) may generate prosperity for the entire economy as well as increased living standards for individuals.

5. Bibliography

[1] **Constantinescu, M.**, Romanian Consumer's Perception on Quality of Life – Sport Relationship, Management&Marketing - Challenges for the Knowledge Society, Vol. 7, No. 4, pp. 731-748, 2012
[2] **De Vaus, D.**, Analyzing Social Science Data: 50 Key Problems in Data Analysis, Sage Publications, London, 2004
[3] **Greenwood, J.M.**, Spending one's leisure time, The Journal of Education, Vol. 62, No. 20 (1554), (NOVEMBER 16, 1905), pp. 549-550, 1905
[4] **Sava, A.M.**, Consumers' choice regarding local recreation services, Proceedings of the 9th International Conference on Business Excellence, pp. 161-169, Ed. Economică, 2014
[5] *** http://curs-valutar.efin.ro/curs-mediu-bnr, **Efin**, Curs mediu BNR - Curs lunar mediu si curs anual mediu,2016
[6] *** http://statistici.insse.ro/shop/?lang=en, **INS**, CON110F - Labour productivity per hour worked by activity of national economy CANE Rev.2 - ESA 2010, n.d.
[6] *** http://www.oecd.org/gender/data/OECD_1564_TUSupdatePortal.xls, **OECD**, OECD data on time use, n.d. a
[7] *** http://stats.oecd.org/Index.aspx?DataSetCode=PDB_LV **OECD**, Level of GDP per capita&productivity, n.d. b

Annexes

Annex 1. Time spent for recreational purposes and hourly labor productivity in OECD member states

Country	Abr	Year	% of day spent for recreational purposes						Hourly labor productivity (USD/person)
			Leisure purposes (overall)	Sports and physical exercise	Attending events	Spending time with friends	Watching TV or listening to radio	Leisure purposes except watching TV or listening to radio	
Australia	AU	2006	20%	1%	0%	1%	10%	10%	43
Austria	AT	2008-09	19%	2%	1%	5%	8%	12%	49
Belgium	BE	2005	23%	2%	1%	4%	9%	13%	52
Canada	CA	2010	22%	2%	1%	5%	8%	14%	46
Denmark	DK	2001	23%	2%	1%	6%	9%	14%	39
Estonia	EE	1999-2000	20%	2%	0%	2%	10%	10%	12
Finland	FI	2009-10	25%	2%	0%	3%	9%	16%	49
France	FR	2009	20%	2%	0%	4%	8%	13%	56
Germany	DE	2001-02	24%	2%	1%	5%	8%	16%	41
Hungary	HU	1999-2000	19%	1%	0%	4%	12%	8%	14
Ireland	IE	2005	22%	1%	3%	3%	6%	16%	46
Italy	IT	2008-9	19%	2%	0%	5%	7%	12%	45
Japan	JP	2011	16%	1%	1%	1%	9%	8%	39
Korea	KP	2009	20%	2%	0%	3%	9%	12%	27
Mexico	MX	2009	15%	1%	0%	6%	5%	10%	18
Netherlands	NL	2005-06	21%	1%	2%	6%	6%	14%	53
New Zeeland	NZ	2009-10	21%	1%	0%	5%	9%	12%	35
Norway	NO	2010	26%	1%	0%	5%	6%	20%	78
Poland	PL	2003-04	21%	2%	0%	4%	10%	11%	17
Portugal	PT	1999	17%	1%	1%	3%	8%	9%	18
Slovenia	SI	2000-01	22%	2%	0%	4%	8%	13%	23
Spain	ES	2009-10	22%	3%	1%	4%	9%	13%	45
Sweden	SE	2010	21%	1%	0%	2%	6%	15%	53
Turkey	TR	2006	18%	0%	0%	5%	8%	10%	23
United Kingdom	GB	2005	25%	1%	2%	6%	10%	15%	43
United States	US	2010	20%	1%	0%	3%	10%	10%	62

Source: OECD (n.d. a), OECD (n.d. b)