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THE IMPACT OF EDUCATIONAL QUALIFICATIONS ON TRENDS IN LEISURE ACTIVITIES

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The application of human capital theory has concentrated on the relationship between schooling and earnings or labour productivity. Ruuskanen (2004) suggests that human capital might also have an impact on one's ability to enjoy non-work activities. In a paper discussing the demand for variety using time-budget surveys from six countries, Gronau and Hamermesh (2001) conclude that education generates additional variety in the activities in which people engage during their spare time. In other words, better-educated individuals are more likely to increase the number of activities in non-work time than their less-educated counterparts. This study takes educational qualifications as the proxy measure of an individual's human capital to examine its impact on leisure participation in the UK and the Netherlands in the last third of the twentieth century using logistic regression analysis. The Netherlands is chosen based on its data comparability with the UK. The study ends by presenting a second line of analysis based on a zero-inflated negative binomial regression model.

Key findings from the study are as follows:

- Educational qualifications are, in general, significant in predicting the probability of participating in leisure activities for the UK. The impacts are weaker for the Netherlands.

- The UK is a more socially differentiated country, compared with the Netherlands, as far as leisure is concerned. This is because not only does education have an impact on leisure participation, but other socio-economic and demographic characteristics also play a part in predicting the probability of leisure participation in the UK.

- In the UK, the effect of educational qualifications is significant for participating in active sports after controlling for other explanatory variables; however, there is no difference among educational levels in terms of the amount of time spent.

- In the UK, apart from education, gender differences are found in active leisure. Men are more likely to participate than women. They also spend longer time doing leisure activities. Income influences both participation and the amount of time spent on active leisure. Days of the week are highly significant in predicting time spent on active leisure. More time is spent over the weekend on active leisure than during the week.

Data

The data used in the study are drawn from the time use surveys for the UK and the Netherlands in 1975 and 2000. The respondents recorded their activities in diaries on survey days. These diaries were divided into time intervals (e.g. 10 or 15 minutes slots). The UK 1975 survey has 30-minute slots while the UK 2000 survey has 10-minute slots. Both Dutch surveys have 15-minute slots. Additionally, the UK 1975 and the Netherlands 1975 and 2000 surveys collected data for one week while the UK 2000 survey collected data for two days, one weekday and one day at the weekend, from each respondent. The analysis takes account of these differences, along with other sampling issues (e.g. over-sampling of certain sub-group of people), by the method of weighting to ensure the samples are nationally representative.

The variables used in the analyses are harmonised for the purpose of comparison between surveys and the two countries following the guidelines from the Multinational Time Use Study (MTUS) (Gauthier et al., 2006). The study focuses on leisure activities for adults and therefore the analyses are restricted to the respondents aged 16 and over. The activities used in the study have been classified as: formal work, domestic work, personal care, outdoor leisure, out-of-home leisure, passive home leisure and other home leisure.

Formal work includes paid work in one or more work places or at home and travel to/from work.

Domestic work includes all the unpaid work such as cooking, washing and related housework, taking care of or accompanying others, doing odd jobs about the home, gardening, shopping, *et cetera*. Personal care refers to meals and snacks, sleeps and naps, dressing and toilet, medical or other personal services. Outdoor leisure includes activities such as travelling, excursions, sports, watching sports, religious practices or joining activities of civic organizations. Out-of-home activities include going to the cinema and theatre, dances and parties, clubs, pubs, restaurants and visiting friends. Passive leisure at home refers to listening to the radio, records and so on, or watching television, whilst other home leisure includes studying, reading books and magazines, relaxing, conversation, entertaining friends at home, knitting and sewing, pastimes and hobbies. Educational qualifications are categorised in three levels, incomplete secondary or less, complete secondary and above secondary education (Gauthier *et al.*, 2006; Gershuny, 2000).

Changing uses of time in the UK and the Netherlands: 1975 to 2000

Figure 1 shows the trends in work and personal care per day in these two countries. In the UK, the amount of time spent on formal work has reduced slightly since 1975, but time spent on domestic work has increased. Increasing time on domestic work is mainly due to the upward trend in domestic and unpaid work for men over this period (Gershuny, 2000). For the Netherlands, the amount of time spent on formal work has increased, but time spent on domestic work has remained stable since 1975. Time spent on personal care is similar for both countries and the amount of time spent has been stable since 1975, particularly in the Netherlands.
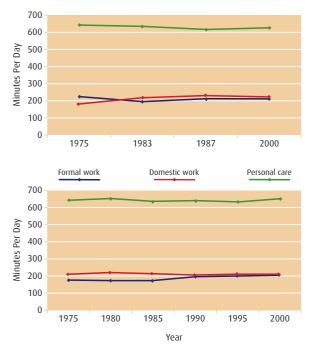
Figure 2 shows the trends for leisure activities. In the UK, time spent on outdoor leisure has increased, while time spent on other home leisure and out-of-home leisure has reduced. Time spent on passive leisure is similar between 1975 and 2000. In the Netherlands, there was a marked decline in time spent on other home leisure over the period. Time spent on out-of-home leisure also reduced. Passive and outdoor leisure activities experienced a slight increase.
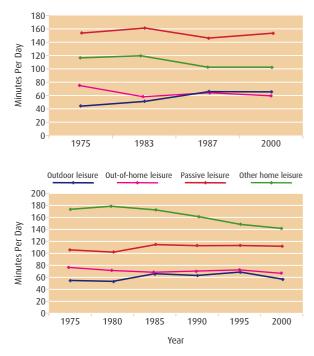

FIGURE 2. TRENDS IN LEISURE IN THE UK (TOP) AND THE NETHERLANDS (BOTTOM). 1975-2000

Associations between leisure activities and educational qualifications

The study first investigates whether there is an association between leisure activities and educational qualifications. The findings are summarised below.

Outdoor leisure

In both countries, the differences in participation rates among educational levels are small, although respondents with the highest level have higher participation rates than those with the lower levels of education. In general, the Netherlands has much higher participation rates than the UK.

The amount of time spent on outdoor leisure has increased at all levels of education over the period for the UK. There is a clear gradient across educational qualifications, with the most educated spending the most time on these activities. However, the least educated experienced the largest increase (of 24 minutes) over the period although this group spent only 35 minutes a day on outdoor leisure in 1975, which is 21 minutes less than the highest educated group.

FIGURE 1. TRENDS IN WORK AND PERSONAL CARE IN THE UK (TOP) AND THE NETHERLANDS (BOTTOM), 1975-2000

Compared with the British, the Dutch spent at least 10 more minutes for every level of education on outdoor leisure in 1975. However, by 2000, outdoor leisure declined slightly in the Netherlands for all educational levels. The participation rates for the Dutch are higher than for the British in both years regardless of educational levels. In the Netherlands, education seems to be associated with time spent on leisure activities, but not participation.

Out-of-home leisure
Participation in out-of-home leisure has declined in the UK between 1975 and 2000. The participation rates have dropped around 20% for all levels of education over the period. The participation rate in 2000 was around 50%. The Dutch participation rates remained stable over the period at around 90%. Both countries experienced a decline on the amount of time spent on out-of-home leisure. In 1975, the Dutch spent about 10 minutes more than the British on these activities for all levels of education.

Passive leisure at home
Most people in the UK and the Netherlands participated in some form of passive leisure activities in 1975 and 2000, although participation for the most educated is slightly lower than the others in both countries. The amount of time spent on passive leisure increased by around 20 minutes between 1975 and 2000. It is evident that the most educated spent the least amount of time on these activities in both countries in both years. Overall, the Dutch spent around 40 minutes less than the British in both years. In the UK 2000 survey, the data show that on average the least educated spend three hours a day, and the most educated two hours a day, on passive leisure.

Other home leisure
The UK experienced around 10% decline in participation in other home leisure at all educational levels between 1975 and 2000. Almost all the respondents in the Dutch surveys participated. In terms of the amount of time spent, the UK had a 10 minutes decline between 1975 and 2000. The time reduction in the Netherlands was dramatic, especially for the medium education group. The difference between 1975 and 2000 is more than an hour. However, the Dutch still spent half an hour more than the British in 2000, regardless of educational levels.

What is the impact of educational qualifications on leisure participation after taking account of potential demographic and socio-economic influences?
To fully understand the impact of education on leisure participation, we need to account for other potential demographic and socio-economic influences. Logistic regression analysis was carried out to estimate the probability of participating in the above leisure activities by specified explanatory variables. These are, in addition to educational qualifications, sex and age of the respondent, marital status, number of children, hours of paid work (not available for the Netherlands 1975), and income (only for 2000 surveys).

The results (not included here for space constraints) show that after controlling for the potential influences, the effect of qualifications is significant in predicting most leisure participation for the UK, especially in 2000. Medium and high levels of education increase the probability of participating in outdoor and other home leisure compared with the least educated respondents, but reduce the probability of participating in passive leisure at home. The effect of education for the Netherlands is not as significant as that for the UK. Education has an impact on outdoor and passive leisure. It increases the probability of outdoor leisure participation, but decreases that of passive leisure.

The effects of other socio-economic and demographic variables are significant in the UK, but not as much as in the Netherlands.

Data analysis with infrequent activities
The distribution of the amount of time spent on infrequent activities very often has a large proportion of zeros and is highly positively skewed. Such a distribution would not approximate to a normal distribution using logarithmic transformation for estimation purposes. This violates the assumptions of ordinary least squares regression analysis.

This section uses time spent on active sports in the UK 2000 survey as an example to show the utility of the zero-inflated negative binomial regression model. This variable contains almost 90% of zeros and is highly skewed to the right. Hence the variance is much bigger than the mean. The model estimates the probability of zero inflation, i.e. spending no time on active sports, (logit model) and the number of minutes spent a day (negative binomial model) according to the explanatory variables (as mentioned earlier).

This model differentiates two types of respondents who reported no time spent on active sports: non-participants and participants but who happened not to spend any time on the survey day. The zeros from the former are called structural zeros and from the latter are called sampling zeros (Ridout et al., 1998). The zero-inflated modelling approach assigns proportion p to those who would never participate and $(1 - p)$ to those who would normally participate but did not do so on the survey day.

Table 1 shows a gradient among educational levels for the likelihood of spending time on active sports; the most educated are most likely to spend time on active sports. Men are more likely to participate than women. The likelihood of participating in active sports decreases with age as well as hours doing paid work. Unmarried people are more likely to spend time than those that are married. Similar to the impact of education, the effect of income shows an upward gradient for the likelihood of participation. Disability has a negative impact on participating in active sports.

Education is not statistically significant in predicting time spent on active sports after controlling for other explanatory variables. Gender, hours of paid work, income and weekend are the significant variables.

The amount of time a man spends on active sports is 1.5 times longer than a woman. An additional hour of paid work reduces the time on active sports by about 0.3%. The amount of time spent by the lower income group is 84% of the middle income group. Time spent on active sports at the weekend is about 1.3 times longer than on a weekday.

	Logit		Negative binomial	
	Coefficient	z-value	IRR[1]	z-value
Secondary Above secondary (Incomplete secondary)	-0.230 -0.521	-2.49 -5.27	0.912 0.908	-1.36 -1.30
Man (Woman)	-0.436	-6.13	1.492	7.76
Age	0.007	2.52	0.998	-0.84
Unmarried (Married/ cohabiting)	-0.289	-3.31	1.021	0.30
No. child aged<18	0.045	1.13	0.986	-0.51
Hours paid work	0.010	4.99	0.997	-2.01
Income lowest 25% Income highest 25% (Income middle 50%)	0.493 -0.218	4.30 -2.30	0.844 0.935	-2.10 -0.97
Disability (No disability)	0.345	3.08	0.854	-1.74
Rural household (Urban/ suburban)	-0.021	-0.16	1.002	0.02
Weekend (Weekday)	-0.084	-1.49	1.318	5.74
Constant	2.326	20.16		

TABLE 1. PARAMETER ESTIMATES OF ZERO-INFLATED REGRESSION MODEL (CATEGORIES IN PARENTHESES ARE REFERENCE GROUPS)
Source: UK Time Use Survey 2000

[1] IRR reports estimated coefficients transformed to incidence rate ratios, i.e. e^b rather than b, and should be interpreted as how many times the referred category compared to the reference category.

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