

The Impact of Smoke-free Workplace Policies on Smoking Behaviour in Japan

Ryoko Morozumi

Research Fellow, Japan Society for the Promotion of Science

Graduate School of Economics, The University of Tokyo

7-3-1 Hongo, Bunkyo-ku, Tokyo 113-0033, Japan

Email: rmoro@dc4.so-net.ne.jp

Masako Ii

Professor, Graduate School of International Corporate Strategy

Asian Public Policy Program, Hitotsubashi University

2-1-2 Hitotsubashi, Chiyoda-ku, Tokyo 101-8439, Japan

Email: masako-ii@ics.hit-u.ac.jp

ABSTRACT

The purpose of this paper is to quantify the effect of a smoke-free workplace policy on the smoking behaviour. Based on the data of the Japanese household survey conducted in 2001, two-part model, probit model and difference-in-differences (DID) models were used to investigate whether the smoke-free policy reduces the number of smokers and the consumption of tobacco products.

The two-part model estimation for all the workers in the sample showed that the total smoking prohibition reduced smoking prevalence by 10 percentage points and the daily tobacco consumption by 4 cigarettes per smoker.

The probit and DID models were also estimated to isolate the effect of the policy for those who were smokers and without the smoke-free policy at work upon hiring. The results suggest that the total smoking prohibition or the separation of smoking areas caused the smokers to quit smoking by approximately 10 percentage points and reduced their daily consumption by approximately 2 to 3 cigarettes.

1. INTRODUCTION

Smoking and passive smoking at the workplace affect health capital, medical expenditure, labour productivity and maintenance costs in offices.

The purpose of this paper is to estimate the effect of a smoke-free workplace policy on smoking prevalence and daily cigarette consumption. Based on the data of a Japanese household survey conducted in 2001, we investigated the smoke-free policy and the smoking behaviour of the workers upon hiring and during the survey period. The previous studies compared the smoking behaviour of all workers with or without the smoke-free policy. However, this study employed two types of estimations: the first being the same as the previous literatures while the second investigated the effect of the policy with a particular emphasis on smokers without the smoke-free policy upon hiring and how the smoke-free policy changed the behaviour of this cohort.

This paper hopes to contribute to the literatures by controlling the economic factors during the estimation and employing a multitude of observations. In most studies that Fichtenberg and Glantz (2002) refer to, the number of observations is much lower and the economic factors are not considered.

First, we estimated a two-part model for all the workers in the sample to quantify the effect of

the smoke-free policy on the smoking decision and the daily cigarette consumption during survey period. In the two-part model, smoking decision is estimated by the logit or probit model, and the daily cigarette consumption is estimated by ordinary least squares (OLS). Studies of Wasserman *et al.* (1991), Chaloupka and Grossman (1996), Chaloupka and Wechsler (1997) and Farrelly, Evans and Sfekas (1999) estimated the smoking behaviour using the two-part model. Evans, Farrelly and Montgomery (1999) strictly estimated the causality between the smoke-free policy at work and the level of cigarette consumption using proper instrumental variables in a cross section data.

We then estimated the probit and difference-in-differences (DID) for those who were smokers and without the smoke-free policy at work upon hiring in order to investigate the change in smoking behaviour caused by the smoke-free policy. During the estimation of the probit model, the dummy variable representing quitting of smoking is the dependent variable and the dummy variable representing the smoke-free policy is one of the explanatory variables. In the DID model, workers who experience the smoke-free policy are regarded as the treatment group and workers without the policy until the survey period are regarded as the control group.

This paper is organized as follows: Section 2 explains the obtained data, Section 3 provides empirical specifications and results and Section 4 summarizes the conclusions.

2. DATA

The data were obtained from the original household survey conducted in May 2001 in the Kanto (Tokyo, Kanagawa, Chiba and Saitama) and the Kansai (Osaka, Kyoto, Nara, Hyogo, Wakayama and Shiga) areas of Japan. A two-stage stratified sampling and quota sampling were used as the survey designs. Target number of respondents were 1,301 households and the number of actual respondents were 1,237 households, of which, 2,716 were individuals and 1,687 were workers. This survey included some questions regarding the characteristics of the household and the individual.

The data include the conditions of the smoke-free policy upon hiring and during the survey period, the age at which the respondents began and quit smoking and their employment period. Thus, the smoking behaviour and the conditions of the smoke-free policy upon hiring and during the survey period are observed for each individual. Table 1 lists the definitions of variables and the descriptive statistics.

3. ESTIMATION RESULTS

3.1 Two-part model

First, the study focused on all the workers in the sample. Table 2 lists the results of the two-part model.¹ In the probit model, the introduction of total smoking prohibition has a significant negative effect on the smoking decision and the consumption function among smokers. We obtain the result that the total smoking prohibition reduces smoking prevalence by 10 percentage points and daily cigarette consumption among smokers by 4 cigarettes.

3.2 Probit model

Next, we estimated the probit and DID models for workers who were smokers and without the smoke-free policy at work upon hiring.

We have to consider the simultaneity bias because the smoke-free policy can be easily introduced in a workplace where heavy smokers do not work. It is highly possible that the self-employed decide to introduce a smoke-free policy for themselves. Therefore, we estimated both cases, i.e. with and without the self-employees.

In the probit model, the probability of quitting smoking was estimated. If an individual quits smoking during the survey period, the dummy of quitting smoking equals 1. If they did not quit, the dummy equals 0.

Table 3 shows that the total smoking prohibition caused a significant percentage, i.e. approximately 25 percentage points, of the smokers in the self-employed cases to quit smoking, and this percentage was considerably lower, i.e. approximately 15 percentage points, in the non self employed cases. The total smoking prohibition or the separation of smoking areas caused the smokers to quit by approximately 10 percentage points in both cases.

3.3 DID model

In the estimation of DID, the treatment group comprised workers having the total smoking prohibition or the separation of smoking areas during the survey period. The control group comprised workers without the smoke-free policy during the survey period.

The change in the cigarette consumption in the treatment group depended on the introduction of the smoke-free policy and other exogenous factors. The change in the control group depended on the other exogenous factors alone. The effect of the smoke-free policy is evaluated on the basis of the differences in both changes.²

The estimated equation for the i^{th} individual at time t is given by

$$y_{it} = \alpha + \gamma_1 z_{it1} + \gamma_2 z_{it2} + \gamma_3 z_{it1} z_{it2} + \mathbf{x}_i' \boldsymbol{\beta} + \varepsilon_{it}, \quad t = 0,1, \quad i = 1,2,\dots,n.$$

Here, $\mathbf{x}_i' = (x_{i1}, x_{i2}, \dots, x_{iK})$ and $\boldsymbol{\beta}' = (\beta_1, \beta_2, \dots, \beta_K)$. The variable y_{it} represents the daily cigarette consumption number, z_{it1} is a time dummy and z_{it2} is a dummy of the smoke-free

policy. The time dummy is equal to 1 during the survey period and equals 0 upon hiring. If the total smoking prohibition or the separation of smoking areas is introduced, the dummy of smoke-free policy is equal to 1 and it equals 0 when they are not introduced. The vector of the characteristic variables during the survey period is represented by \mathbf{x}_i .

The survey questioned an individual on the number of cigarettes consumed daily during the smoking period. If the worker quits smoking during the survey period, he or she provides the number of cigarettes consumed daily prior to quitting. If the worker did not quit smoking, he or she provides the number of cigarettes consumed daily during the survey period. This analysis requires the number of cigarettes consumed daily upon hiring and during the survey period. Therefore, for workers who smoked during the survey period, we use two types of data regarding the daily cigarette consumption upon hiring. First, we use the number of cigarettes consumed during the survey period as the number of cigarettes consumed in the past, assuming that the amount of consumption is not different upon hiring and during the survey period. Second, we use the fitted value of the estimation using the data of workers who smoked during the survey period in the previous two-part model.³ As regards the smoker who quits smoking during the survey period, his or her cigarette consumption during the survey period is 0.

The cigarette consumption of the treatment group and the control group during the survey period and upon hiring are represented by $y_{treatment}^{now}$ and $y_{treatment}^{old}$, and $y_{control}^{now}$ and $y_{control}^{old}$,

respectively. The difference of the two periods in the treatment group is caused by the smoke-free policy and other factors and given by $(y_{treatment}^{now} - y_{treatment}^{old})$, while $(y_{control}^{now} - y_{control}^{old})$ is the difference of the two periods in the control group and is caused by the other factors alone. The effect induced by the smoke-free policy equals the difference in these differences.

The difference is described by $\Delta^{policy} = (y_{treatment}^{now} - y_{treatment}^{old}) - (y_{control}^{now} - y_{control}^{old})$ and $\Delta^{policy} = [(\gamma_1 + \gamma_2 + \gamma_3) - \gamma_2] - [\gamma_1 - 0] = \gamma_3$. The effect of the smoke-free policy equals γ_3 , which is the coefficient representing the product of the time dummy and the dummy of the smoke-free policy. Equation (1) is estimated by OLS.

Table 4 lists the results with and without self-employees. Considering the self-employed cases, using the number of cigarette consumed during the survey period, the effect of the total smoking prohibition or the separation of smoking areas is calculated as $(12.8232 - 20.2439) - (17.3478 - 20.9275) = -7.4207 + 3.5797 = -3.841$.⁴ This value is equal to the coefficient that represents the product using the time dummy and the dummy of the smoke-free policy. This value implies that the introduction of the smoke-free policy reduces consumption by approximately 4 cigarettes per day. The weight of the exogenous factors, except for the smoke-free policy in the treatment group, is approximately 0.5. Similarly, in the sample without self-employees, the effect of smoke-free policy is the reduction by 3.1 cigarettes.

In the case where the fitted values were used, the smoke-free policy reduced consumption by

2.8 cigarettes in the sample with self-employees and by 2.1 cigarettes in the sample without self-employees. In view of the simultaneity bias, these results suggest that the smoke-free policy reduces the daily cigarette consumption by approximately 2 to 3 cigarettes.

4. CONCLUSION

It can be inferred based on the analysis of the Japanese household survey data that the smoke-free policy in a workplace, particularly, the total smoking prohibition, is effective. This study considered the effect of the total smoking prohibition and the separation of the smoking areas focusing on the smoking status upon hiring and during the survey period. The separation of smoking times and the strict natural experiment in view of the economic factors will be the avenues for further research.

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¹ Generally, two-step estimation of Heckman (1979) and two-part model are appropriate to estimate the smoking decision and the cigarette consumption of smokers. In the two-step model, the inverse Mill's ratio was not significant. Thus, we adopted the two-part model. Jones (2000)

summarizes the two-part model.

² Refer to Wooldridge (2003, pp. 432–438) regarding DID.

³ We newly estimated the number of cigarettes consumed during the survey period based on significant explanatory variables alone, except for the dummy variable representing the smoke-free policy in the previous two-part model. Explanatory variables are male dummy, age, age squared and large firm dummy. The equation is given by

$$\begin{aligned} \# \text{ of cigarettes} = & -5.6563 + 5.5946D_MALE + 0.9592AGE - 0.0101AGE^2 - 3.3156D_SCALEL. \\ & (-1.13) \quad (4.76) \qquad (3.92) \qquad (-3.59) \qquad (-3.18) \end{aligned}$$

n = 541 Adjusted R² = 0.0862 Numbers in parentheses are t-statistics.

⁴ Using the mean of descriptive statistics regarding the treatment group and the control group provided in Table 1.

Table 1. Definitions of variables

Variable	Definition	Two-part model				Probit model and DID model (the sample with self-employees)					
		Probit model		OLS		Both group		Treatment group		Control group	
		Mean	Std Deviation	Mean	Std Deviation	Mean	Std Deviation	Mean	Std Deviation	Mean	Std Deviation
<i>D_SMOKE</i>	= 1 if the individual is smoking, = 0 otherwise	0.3638	0.4813			0.7636	0.4253	0.6524	0.4777	0.8297	0.3766
<i>N_SMOKE</i>	Number of cigarette consumed daily during the survey period			19.4935	9.6846	15.6614	12.3135	12.8232	12.1942	17.3478	12.0934
<i>N_SMOKE1</i>	Number of cigarette consumed daily upon hiring (partly using the survey period value)					20.6727	10.3643	20.2439	10.8888	20.9275	10.0512
<i>N_SMOKE2</i>	Number of cigarette consumed daily upon hiring (partly using the estimation of smokers)					16.9229	3.4598	15.8685	3.3870	17.5494	3.3544
<i>D_FREE1</i>	= 1 if the total smoking prohibition is introduced in the workplace, = 0 otherwise	0.0948	0.2930	0.0591	0.2361	0.0364	0.1874	0.0976	0.2976	0	0
<i>D_FREE2</i>	= 1 if the separation of smoking areas is introduced in the workplace, = 0 otherwise	0.4793	0.4997	0.4750	0.4998	0.3364	0.4730	0.9024	0.2976	0	0
<i>D_FREE12</i>	= 1 if <i>D_FREE1</i> = 1 or <i>D_FREE2</i> = 1, = 0 otherwise	0.5741	0.4946	0.5342	0.4993	0.3727	0.4841	1	0	0	0
<i>D_QUIT</i>	= 1 if the individual who was a smoker and without the smoke-free policy at work upon hiring quits smoking, = 0 otherwise					0.2364	0.4253	0.3476	0.4777	0.1703	0.3766
<i>D_TIME</i>	= 1 if the time is present, = 0 otherwise										
<i>D_MALE</i>	= 1 if the individual is male, = 0 otherwise	0.6028	0.4895	0.8614	0.3459	0.9250	0.2637	0.9573	0.2028	0.9058	0.2926
<i>AGE</i>	Age	43.0280	12.5247	41.0684	11.7798	44.7182	11.2937	46.0427	9.7448	43.9312	12.0689
<i>AGE2</i>	Age*Age	2008.1750	1098.3400	1825.1200	1023.0450	2126.9730	1020.9560	2214.3110	896.1305	2075.0760	1086.6130
<i>HNUM</i>	Number of individuals in the household	3.6509	1.1840	3.7061	1.1772	3.7023	1.2036	3.6402	1.1398	3.7391	1.2406
<i>HWNUM</i>	Number of working individuals in the household	1.9493	0.8526	1.7819	0.8436	1.7409	0.8273	1.5610	0.7280	1.8478	0.8647
<i>LINCOME</i>	Log of private income	6.4993	0.4410	6.6432	0.3365	6.7334	0.2783	6.8621	0.1826	6.6570	0.2969
<i>LMEDICAL</i>	Log of household medical expenditure	4.7520	0.5700	4.7595	0.5397	4.7775	0.5267	4.7432	0.5042	4.7979	0.5396
<i>D_OWN</i>	= 1 if the individual has his or her own home, = 0 otherwise	0.7677	0.4224	0.7172	0.4508	0.7682	0.4225	0.7622	0.4270	0.7717	0.4205
<i>MHEALTH</i>	Subjective mental health status on a five point scale (4 = not stressed, 0 = very stressed)	2.4426	0.9070	2.3272	0.9300	2.4000	0.9372	2.3415	0.8892	2.4348	0.9645
<i>SHEALTH</i>	Subjective health status on a five point scale (4=very good, 0=very poor)	3.2804	0.7950	3.2181	0.8122	3.1977	0.8209	3.2195	0.7836	3.1848	0.8433
<i>D_SCHOOL1</i>	= 1 if the individual is a technical school graduate, = 0 otherwise	0.0968	0.2958	0.1109	0.3143	0.0977	0.2973	0.0610	0.2400	0.1196	0.3250
<i>D_SCHOOL2</i>	= 1 if the individual is a junior college graduate or technology college graduate, = 0 otherwise	0.1175	0.3221	0.0647	0.2462	0.0477	0.2134	0.0366	0.1883	0.0543	0.2271
<i>D_SCHOOL3</i>	= 1 if the individual has a university degree or a graduate school degree, = 0 otherwise	0.3678	0.4824	0.3752	0.4846	0.4159	0.4934	0.5732	0.4961	0.3225	0.4683
<i>D_COMPANY</i>	= 1 if the individual is a company employee, = 0 otherwise	0.5694	0.4953	0.7135	0.4525						
<i>D_SELF</i>	= 1 if the individual is a self-employee, = 0 otherwise	0.1375	0.3445	0.1460	0.3535	0.1773	0.3823	0.0427	0.2028	0.2572	0.4379
<i>D_PART</i>	= 1 if the individual is a part-time employee, = 0 otherwise	0.2336	0.4233	0.1035	0.3049						
<i>D_SCALEL</i>	= 1 if the individual works in large firm (1000 - employees), = 0 otherwise	0.1676	0.3736	0.1811	0.3855	0.1727	0.3784	0.3232	0.4691	0.0833	0.2769
Number of observations		1498		541		440		164		276	

Table 2. Two-part model

Variable	Probability of smoking		Level of smoking in present smokers		Probability of smoking		Level of smoking in present smokers	
<i>D_FREE1</i>	-0.0997	** (-2.06)	-4.1083	** (-2.31)				
<i>D_FREE2</i>	-0.0196	(-0.66)	-1.3289	(-1.49)				
<i>D_FREE12</i>					-0.0339	(-1.19)	-1.6570	* (-1.91)
<i>D_MALE</i>	0.4294	*** (11.01)	4.0388	** (2.51)	0.4274	*** (10.96)	3.7939	** (2.36)
<i>AGE</i>	-0.0004	(-0.05)	0.7038	** (2.54)	-0.0001	(-0.01)	0.7088	** (2.55)
<i>AGE2</i>	-0.0001	(-0.82)	-0.0076	** (-2.37)	-0.0001	(-0.88)	-0.0076	** (-2.39)
<i>HNUM</i>	0.0035	(0.28)	-0.0513	(-0.14)	0.0037	(0.29)	-0.0851	(-0.23)
<i>HWNUM</i>	-0.0378	** (-2.15)	-0.1967	(-0.37)	-0.0377	*** (-2.14)	-0.2036	(-0.38)
<i>LINCOME</i>	0.0253	(0.46)	2.4968	(1.33)	0.0305	(0.56)	2.7891	(1.49)
<i>LMEDICAL</i>	-0.0196	(-0.83)	-0.2354	(-0.31)	-0.0194	(-0.82)	-0.2340	(-0.31)
<i>D_OWN</i>	-0.0465	(-1.43)	1.1981	(1.28)	-0.0468	(-1.44)	1.1437	(1.22)
<i>MHEALTH</i>	-0.0347	** (-2.25)	-0.3401	(-0.74)	-0.0347	** (-2.25)	-0.3597	(-0.78)
<i>SHEALTH</i>	-0.0092	(-0.54)	-1.2786	** (-2.51)	-0.0095	(-0.56)	-1.2590	** (-2.47)
<i>D_SCHOOL1</i>	-0.0385	(-0.80)	-0.9122	(-0.67)	-0.0414	(-0.86)	-0.8404	(-0.61)
<i>D_SCHOOL2</i>	-0.0291	(-0.59)	-0.2738	(-0.15)	-0.0335	(-0.68)	-0.4540	(-0.25)
<i>D_SCHOOL3</i>	-0.1320	*** (-4.28)	-1.0513	(-1.14)	-0.1341	*** (-4.35)	-1.1103	(-1.20)
<i>D_COMPANY</i>	0.1999	*** (3.41)	-1.9504	(-0.90)	0.1997	*** (3.41)	-1.8536	(-0.85)
<i>D_SELF</i>	0.2416	*** (3.24)	-0.4946	(-0.21)	0.2356	*** (3.17)	-0.4218	(-0.18)
<i>D_PART</i>	0.2480	*** (2.99)	-2.3330	(-0.82)	0.2421	*** (2.93)	-2.3996	(-0.84)
<i>D_SCALEL</i>	-0.0436	(-1.21)	-2.8587	** (-2.54)	-0.0381	(-1.05)	-2.7579	** (-2.45)
<i>CONSTANT</i>		(-0.63)	-6.2964	(-0.47)		(-0.72)	-8.0436	(-0.60)
Log-likelihood	-798.4486				-799.9118			
Pseudo R ²	0.1870				0.1855			
Adjusted R ²			0.1363				0.1322	
Number of observations	1498		541		1498		541	

Notes: Marginal effect is reported in the probit estimation of the two-part model.

t-ratios are presented in parentheses. *** = significant at 1%; ** = significant at 5%; * = significant at 10%.

Table 3. Probit model of quitting smoking

Variable	Probability of quitting smoking				Probability of quitting smoking			
	The sample with self-employees				The sample without self-employees			
<i>D_FREE1</i>	0.2305	**	(2.02)		0.1467		(1.24)	
<i>D_FREE2</i>	0.0929	**	(2.01)		0.0830	*	(1.70)	
<i>D_FREE12</i>				0.1063	**	(2.42)		0.0878
<i>D_MALE</i>	-0.0929		(-0.84)	-0.1010		(-0.92)	-0.0452	(-0.36)
<i>AGE</i>	0.0575	***	(2.74)	0.0574	***	(2.74)	0.0508	**
<i>AGE2</i>	-0.0005	**	(-2.37)	-0.0005	**	(-2.35)	-0.0004	*
<i>HNUM</i>	0.0042		(0.24)	0.0063		(0.36)	0.0105	(0.54)
<i>HWNUM</i>	-0.0014		(-0.05)	-0.0013		(-0.05)	0.0143	(0.51)
<i>LINCOME</i>	0.2931	***	(2.66)	0.2903	***	(2.65)	0.3568	***
<i>LMEDICAL</i>	0.0331		(0.86)	0.0328		(0.85)	0.0079	(0.18)
<i>D_OWN</i>	0.0213		(0.40)	0.0246		(0.46)	0.0486	(0.84)
<i>MHEALTH</i>	0.0431	*	(1.88)	0.0412	*	(1.80)	0.0567	**
<i>SHEALTH</i>	-0.0159		(-0.62)	-0.0153		(-0.60)	-0.0402	(-1.42)
<i>D_SCHOOL1</i>	0.1504		(1.61)	0.1576	*	(1.69)	0.2189	**
<i>D_SCHOOL2</i>	0.0750		(0.69)	0.0846		(0.77)	0.0833	(0.69)
<i>D_SCHOOL3</i>	0.0356		(0.80)	0.0354		(0.79)	0.0711	(1.39)
<i>D_SCALEL</i>	-0.0418		(-0.84)	-0.0486		(-0.99)	-0.0509	(-1.00)
Log-likelihood	-203.4940			-204.0098			-164.6924	-164.7813
Pseudo R ²	0.1543			0.1521			0.1797	0.1793
Number of observations	440			440			362	362

Notes: Marginal effect is reported.

t-ratios are presented in parentheses. *** = significant at 1%; ** = significant at 5%; * = significant at 10%.

Table 4. DID model

Variable	Using the cigarette consumption during the survey period				Using the cigarette consumption by fitted value			
	With self-employees		Without self-employees		With self-employees		Without self-employees	
<i>D_TIME</i>	-3.5797 ***	(-3.78)	-3.5902 ***	(-3.38)	-0.2016	(-0.27)	-0.4680	(-0.56)
<i>D_FREE12</i>	-0.6973	(-0.60)	-0.2590	(-0.21)	-1.0644	(-1.15)	-0.8366	(-0.86)
<i>D_TIME*D_FREE12</i>	-3.8410 **	(-2.48)	-3.1104 *	(-1.93)	-2.8438 **	(-2.33)	-2.0933	(-1.63)
<i>D_MALE</i>	3.2561 *	(1.80)	2.9612	(1.48)	4.5608 ***	(3.21)	4.3296 ***	(2.72)
<i>AGE</i>	0.0554	(0.18)	0.1950	(0.58)	0.1168	(0.48)	0.1957	(0.73)
<i>AGE2</i>	-0.0012	(-0.35)	-0.0031	(-0.82)	-0.0016	(-0.58)	-0.0026	(-0.87)
<i>HNUM</i>	-0.4256	(-1.24)	-0.5247	(-1.40)	-0.2528	(-0.93)	-0.3520	(-1.19)
<i>HWNUM</i>	-0.4099	(-0.84)	-0.3238	(-0.61)	-0.4493	(-1.16)	-0.4557	(-1.09)
<i>LINCOME</i>	3.0013	(1.56)	1.4558	(0.67)	-1.4887	(-0.98)	-2.5767	(-1.49)
<i>LMEDICAL</i>	-0.3276	(-0.44)	0.5949	(0.74)	-0.5183	(-0.89)	-0.0870	(-0.14)
<i>D_OWN</i>	1.8681 *	(1.91)	1.9765 *	(1.91)	0.3705	(0.48)	0.3899	(0.48)
<i>MHEALTH</i>	-0.5111	(-1.17)	-0.9223 *	(-1.92)	-0.3337	(-0.97)	-0.5657	(-1.48)
<i>SHEALTH</i>	-1.0258 **	(-2.10)	-0.1468	(-0.28)	-0.4925	(-1.28)	0.0238	(0.06)
<i>D_SCHOOL1</i>	-3.8914 ***	(-2.75)	-4.4463 ***	(-3.04)	-2.6253 **	(-2.35)	-3.2609 ***	(-2.81)
<i>D_SCHOOL2</i>	-1.5585	(-0.83)	-0.5292	(-0.27)	-1.3182	(-0.89)	-0.9950	(-0.64)
<i>D_SCHOOL3</i>	-1.8243 **	(-2.09)	-2.2023 **	(-2.33)	-0.5866	(-0.85)	-0.9760	(-1.30)
<i>D_SCALEL</i>	-2.8835 ***	(-2.68)	-2.3231 **	(-2.19)	-3.3314 ***	(-3.92)	-3.0459 ***	(-3.61)
<i>CONSTANT</i>	6.3927	(0.49)	8.0534	(0.56)	28.6363 ***	(2.80)	31.8631 ***	(2.81)
Adjusted R ²	0.0898		0.0811		0.0661		0.0616	
Number of observations	440		362		440		362	

Notes: t-ratios are presented in parentheses. *** = significant at 1%; ** = significant at 5%; * = significant at 10%.