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Conspicuous Consumption and the Distribution of Income within Social Groups

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ABSTRACT

This paper explores the relationship between the dispersion of group income and conspicuous consumption levels of individuals in multi-group settings. Consistent with existing finding we find a negative relationship between income dispersion and conspicuous consumption. Further, using South African data, we find evidence that increasing the income distribution has precisely the reverse of the hypothesized effect: as the dispersion of income within a group increases, rich households in the group tend to *reduce* spending on visible goods, while the poor tend to *increase* spending on visible goods.

JEL classifications: D12, D83, J15, O12.

Keywords: Conspicuous consumption, income distribution, signaling, status, South Africa.

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1 Introduction

Both the magnitude and manner in which consumption patterns are driven by the a desire of individuals to demonstrate their wealth to others has been the subject of a intense debate in the recent literature (e.g. Frijters and Leigh, 2008; Heffetz, 2011; Arrow and Dasgupta, 2009). Recent empirical studies of household spending patterns across different social groups in the US and South Africa have revealed that spending on conspicuous, highly visible goods is influenced by the average income of the social group that individuals belong to (Charles et al., 2009; Kaus, 2010). Individuals who belong to a social group that possesses a relatively high average income tend to spend relatively less on visible goods compared to others who belong to a social group with a low average income. This can be explained with a signaling model of conspicuous consumption in which society infers the individuals socioeconomic position from both the individual's expenditure on conspicuous consumption and their group income (Charles et al., 2009).

If social group income is truly used by observers to judge individual wealth, the distribution of wealth within a group could also influence the individual's ability to signal status to others. Here Charles et al. (2009) point out that there exists some theoretical ambiguity in their model about how the dispersion of group income affects conspicuous spending. The model hypothesizes that a mean-preserving increase in the dispersion of group income will lead to an increase in spending by relatively rich households, while relatively poor household will reduce spending on visible goods. Using South African data, we find evidence that increasing the income distribution has precisely the reverse of the hypothesized effect is true: as the dispersion of income within a group increases, rich households in the group tend *reduce* spending on visible goods, while poor tend to increase spending on visible goods. We suggest that taking into account how the rank of household within a group may affect social status could explain these findings.

2 Model and Data

There are many potential ways in which changes in the income distribution can affect conspicuous consumption. For example, it can affecting the type of goods that are used to signal wealth or which groups individuals decide to signal their wealth to. We focus on the model of status signalling in the presence of social groups by (Charles et al., 2009) which is based on Glazer and Konrad (1996). Consider an economy in which individuals belonging to a group k have incomes y_i^k, which is drawn from the income distribution $f_k(y)$ on the interval $[y_{min}^k, y_{max}^k]$. Income is not publicly observed and is used to consume visible goods, c, and those goods which are not observed *(y-c)*. In the separating equilibrium each individual maximizes $\upsilon(y_i^k - c_i^k) + \varphi(c_i^k) + \omega(s_i^k)$ subject to their budget set and society's beliefs about each individuals income are correct $s_i(c_i^k(y_i^k)) = y_i^k$.

The model predicts that because c_i^k is strictly with y_i, a mean-preserving increase in the dispersion of group income caused by a redistribution of income from a relatively poor household (A) to a relatively wealthy household (B) leads to an increase in the level of visible spending by wealthy households (Hypothesis 1). Whether increasing dispersion generally increases or decreases conspicuous consumption across the entire group depends whether increases in spending by B outweigh the decreases in spending on visible goods by A. If c_i^k increases with y_i in a concave (convex) increasing dispersion would have a negative (positive) effect on average group spending on conspicuous consumption since the increase in c_A^k is not as large as (larger than) the fall in c_B^k. Charles et al. (20009) found that for white Americans higher dispersion in social group income has a negative and significant effect on visible spending, which suggest that c_i^k increases with y_i in concave fashion.

To examine this hypothesis with South African data, we begin with the basic model of spending on conspicuous consumption (cf. specification (1) and (2) in Table 2) as used in Kaus (2010). In line with Charles et al. (2009) visible spending is defined as the sum of

all household expenditures spent on personal care, clothing and footwear, jewelry, and cars. Reference groups are defined by social affiliation and regional proximity. For the South African case, it is assumed that these reference groups can be defined at a provincial level. For the inference of one's income in anonymous interactions, it is thus necessary to know one's social affiliation and place of residence.[1]

Log spending on the pooled basket of visible goods and services Vis_i is regressed on group dummies indicating a household as being Black Bl_i or Coloured Col_i, the log of a household's permanent income $pInc_i$, a vector of demographic indicators $\mathbf{Dem_i}$, i.e., area type, age, age squared, and family size as well as a vector of year dummies $\mathbf{Yr_i}$. The corresponding regression can be formulated as follows:

$$ln(Vis_i) = \beta_0 + \beta_1 * Bl_i + \beta_2 * Col_i + \gamma * ln(pInc_i) + \delta * \mathbf{Dem_i} + \epsilon * \mathbf{Yr_i} + \varepsilon_\mathbf{i}. \quad (1)$$

To examine whether observed differences in conspicuous consumption between social groups can be accounted for by differences in group income levels, as suggested by Charles (2009), the following regression is estimated (cf. specification (2) in Table 2):

$$ln(Vis_i) = \beta_0 + \alpha * ln(Inc^{\mu}_{k,t}) + \gamma * ln(pInc_i) + \delta * \mathbf{Dem_i} + \epsilon * \mathbf{Yr_i} + \zeta_\mathbf{i}, \quad (2)$$

where k refers to one of 27 provinces/group units and $Inc^{\mu}_{k,t}$ denotes the average income of a certain group in one of the nine provinces in a certain year. Note that permanent income, measured by total expenditure, needs to be instrumented to alleviate endogeneity and measurement error problems.[2] The log-log formulation of the regression equation allows to interpret its coefficient γ as (permanent) income elasticity of visible consumption expenditures.

Specifications (3) to (5) in Table 2 introduce measures of income dispersion instead of mean group income of the social groups. There are a number of ways in which the dispersion of group income can be measured. To provide a robust investigation we consider the following three measures. Specification (3) begins with the log of the standard deviation (σ) of income of a certain group in one of the nine provinces in a certain year:

$$ln(Inc^{\sigma}_{k,t}), \quad (3)$$

Specification (4) introduces the coefficient of variation, which is a normalized variant of the standard deviation:

$$Inc^{\upsilon}_{k,t}, \quad (4)$$

where υ is defined as σ/μ and denotes the coefficient of variation of income of a certain group in one of the nine provinces in a certain year. Specification (5) introduces the Gini coefficient (γ) of income of a certain group in one of the nine provinces in a certain year:

$$Inc^{\gamma}_{k,t}, \quad (5)$$

Specifications (6) to (8) introduce the former three variables alongside mean group income.

The data is taken from the South African income and expenditure survey (IES) conducted in the 1995, 2000, and 2005. It is designed to cover a representative sample of South African households, the sample size consists of 29,582 households in 1995, 26,263 in 2000, and 21,144 in 2005, respectively. Table 1 reports the size of social groups across provinces, while table 2 report on the social income distribution.

Two data-related problems should be noted. First, the structure of the IES 2005 series differs from preceding surveys (Yu, 2008). Second, it has occasionally been questioned whether the IES of 2000 meets a fully representative standard (Burger et al., 2004; van der

[1] See Charles et al. (2009) and Kaus (2010) for a discussion on the visible consumption item composition and reference groups.

[2] Tests of the statistical validity of different sets of instruments suggest a specification with log of current income as a single instrument.

Berg et al., 2008). Regarding the first problem, the classification of expenditure items was changed from the Standard Trade Classification to the UN Statistics Division's Classification of Individual Consumption According to Purpose (COICOP) in 2005. Moreover, the data collection methodology changed from recall to diary method. The second problem concerns mainly procedural weaknesses of the 2000 IES sample. Due to migration between the 1996 census and the collection of IES data for 2000, the survey is known to overrepresent the Black population while underrepresenting the White population (Özler, 2007). To account for possible shortcomings, some adjustments are necessary (see Kaus, 2010, for the exact treatment).

3 Results

Our results (see Table 3) indicate that increasing dispersion has a negative and significant effect on household spending on visible consumption (see specifications 3 to 5). This is consistent with Charles et al (2006) findings for white Americans. Specification (6) shows that joint inclusion of $ln(Inc^{\sigma}_{k,t})$ also tend to reduce the magnitude of $Inc^{\mu}_{k,t}$. This reflects the fact that correlation coefficient between these two variables is very high (greater than 0.9), although the coefficients between $Inc^{\mu}_{k,t}$ and the other two measures of dispersion are relatively low (around 0.4). Despite still being negative, multicollinearity present in specification (6) induces both mean group income and the standard deviation to decrease in significance levels. In the absence of multicollinearity (specifications (7) and (8)) mean group income as well as the dispersion variables are negative and significant.

TABLE 3 ABOUT HERE

Concerning Hypothesis 1, we examine how the effect of the dispersion of social group income on conspicuous consumption depends on whether households are below or above average group income. Following the partition approach (Yip and Tsang, 2007), we create dummies within each group to separate between households above and below the average social group income, and then interact these dummies with the dispersion variable. The term $LowINT$ in Table 4 captures the effect of dispersion on conspicuous spending for households whose income is below their average group level (using $Inc^{\upsilon}_{k,t}$ in specifications (1-2) and $Inc^{\gamma}_{k,t}$ in specifications (3-4). The term $HighINT$ does the same thing respectively for households that are above the average group income in their region.

TABLE 4 ABOUT HERE

The results reveal strong evidence that the influence of average group income dispersion on the household's consumption of visible goods itself depends on the relative position of the household within their social group. $HighINT$ is negative and significant in specifications 2, 3 and 4. On the other hand, the term $LowINT$ is not significant in any of the specifications (1-4). This suggests that the negative effect that the dispersion of income has on conspicuous consumption is mainly driven by the reduction in spending on visible goods by households that possess an above average group income. These findings are confirmed by Figure 1 in which maps the effect of the coefficient of variation on visible income by income decile. Note that the coefficient intercepts the x axis and becomes negative at the point where household is above half the population. This figures confirms that, controlling for change in average group income, relatively wealthy households tend to reduce their spending on visible goods as dispersion of social income increases.

What explains this result? The possibility of visible goods being inferior goods is ruled out by the positive income coefficient present in table 3. Casual inspection of the Engel curves also reveal that these goods possess a relatively linear relationship **(see Engel curve figure wolle to include)**. As alternative, this Could be explained within group rank affects individual and status and conspicuous consumption. increasing the dispersion of income

seems to have the same effect as rise in mean group income on conspicuous consumption: it has a negative effect on how much relatively wealthy people spend on visible goods. Increasing income distribution caused by the entry of persons below an individuals into a group would increase the group rank of the relative rich individuals (see for example (Clark and Oswald, 1998)). This increase in status may explain why the rich consequently reduce conspicuous consumption as income dispersion increases. On the other hand, for the poor, entry of rich individuals, reduces their relative social rank. If their relative rank within the group negatively affects their status, then relatively poor households may be forced to compensate by increasing their status spending.

4 Conclusion

Our results show that the negative relationship between dispersion of social group income and the consumption of visible goods is driven by a reduction in spending on conspicuous goods by high income group members.

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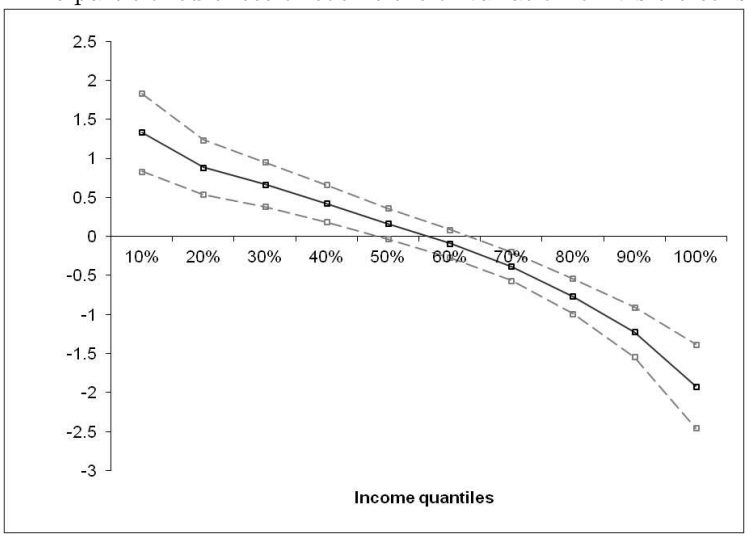
Figure 1: The partitioned effect of coefficient of variation on visible consumption



Notes: The upper and lower lines denote the 95 percent confidence interval of the estimated effect (middle line) of the coefficient of variation on visible consumption for different deciles of the permanent income distribution.

5 Tables, Figures and Appendix

Table 1: Population Statistics in South African Provinces

	Population share	Share Black	Share Coloured	Share White
Eastern Cape	0.14	0.88/0.84	0.07/0.07	0.05/0.09
Free State	0.06	0.88/0.81	0.03/0.03	0.09/0.16
Gauteng	0.20	0.74/0.71	0.04/0.03	0.20/0.26
KwaZulu-Natal	0.21	0.85/0.87	0.02/0.02	0.05/0.10
Limpopo	0.12	0.97/0.97	0.00/0.00	0.02/0.03
Mpumalanga	0.07	0.92/0.89	0.01/0.01	0.07/0.11
Northern Cape	0.02	0.36/0.41	0.52/0.42	0.12/0.17
North West	0.08	0.92/0.88	0.02/0.02	0.07/0.10
Western Cape	0.10	0.27/0.24	0.54/0.47	0.18/0.30
National	1	0.79/0.76	0.09/0.08	0.10/0.15

Notes: The figures before the slash denote official 2001 census numbers (StatsSA, 2009). The figures after the slash refer to survey weighted statistics form the pooled sample.

Table 2: Income distribution by social group, province and year

	Black			Coloured			White		
	1995	2000	2005	1995	2000	2005	1995	2000	2005
Province 1									
Mean	32728.99	26348.76	30400.01	49804.64	47917.7	51394.92	147164.6	146419.6	192179.1
SD	26441.20	24088,04	22871.21	43177.93	47026.28	51855.17	136599.9	138249.7	212239.2
Min	353.20	0	0	3602.65	0	0	7629.14	0	1399.73
Max	188609.3	203520	141.734.8	270198.7	276480	303883.5	1058525	729600	1913720
Kurtosis	4.55	13.88	6.43	7.20	7.90	8.08	13.10	5.93	22.23
Skewness	2.11	2.73	1.70	1.85	2.10	2.17	2.60	1.65	3.51
Median	24849.45	19507.2	24807.26	36026.49	31641.6	33106.54	113642.4	107238.4	129117.9
Obs.	525	575	484	1578	1473	1357	1017	393	505
Province 2									
Mean	25781.26	19023.63	25825.99	39182.37	35560.79	48394.75	144264.9	130234.7	143887.1
SD	29425.02	24074.64	31894.8	38471.3	43422.09	54007.2	150017.3	107392.3	128441.8
Min	0	0	10.13	2119.21	0	918.09	847.68	0	753.49
Max	212651.7	161879	205526.6	216773.50	294645.8	336475.8	1010155	538240	707177.3
Kurtosis	12.11	11.97	11.71	7.00	15.49	9.69	10.81	5.02	7.13
Skewness	2.81	2.82	2.81	1.93	3.17	2.33	2.52	1.41	1.86
Median	16529.8	9927.04	14624.6	25107.28	20313.6	28231.65	97211.48	94347.52	111308.7
Obs.	3945	2892	2234	622	264	271	536	194	235
Province 3									
Mean	20221.81	23279.4	26681.35	29132.04	28642.95	37628.26	118314.3	157165.1	152355.3
SD	18932.6	26104.22	29713.99	27144.52	34780.25	46973.54	116566.1	170788.7	132462.7
Min	706.40	0	0	2331.13	0	0	5298.01	0	49.63
Max	103692.7	181760	185637.8	178013.2	193920	305224.9	863053.4	1024000	583561.4
Kurtosis	8.09	12.74	10.40	8.84	8.67	11.74	13.48	11.48	4.10
Skewness	2.13	2.73	2.54	2.19	2.37	2.76	2.74	2.69	1.25
Median	13637.09	13608.96	16722.89	20266.67	15360	19991.96	86534.21	111308.8	106881.8
Obs.	393	474	759	614	603	756	373	187	168
Province 4									
Mean	21450.73	20552.79	29892.91	23398.76	36653.13	48926.31	106350.5	134023.6	160872.3
SD	23330.83	23218.34	35376.95	22025.07	52606.28	59511.47	86830.55	157270.7	158188.2
Min	0	0	0	3108.17	3840	785.75	2525.39	0	7213.94
Max	153640.6	177036.8	209435.3	121854.3	267882.3	265616.9	535099.3	1275520	849357.2
Kurtosis	9.34	14.27	9.63	8.32	12.13	5.82	6.79	21.63	7.52
Skewness	2.35	2.93	2.51	2.15	2.92	1.83	1.69	3.65	1.97
Median	12856.51	12791.04	16966.77	16741.72	16588.8	20060.11	84768.21	93440	119645.2
Obs.	2267	1989	1428	198	39	95	589	199	189
Province 5									
Mean	36428.58	21118.66	24359.89	69648.24	53954.49	60460.1	159608.5	146532.8	195855.8
SD	33017.66	22830.43	26069.3	56989.33	47738.32	62576.82	161426	119582.5	174105.1
Min	0	0	0	8476.82	2304	502.73	0	1605.12	168.26
Max	205562.9	161280	180965.5	339072.8	194513.9	332674.9	1245362	768000	918191.6
Kurtosis	8.25	12.53	11.98	7.21	4.68	9.64	17.68	7.44	7.55
Skewness	2.10	2.78	2.73	1.79	1.50	2.34	3.29	1.75	1.97
Median	25430.46	13670.4	15890.01	53969.09	40832	42650.16	125209.7	115200	153257.6
Obs.	3437	3654	4172	192	37	51	625	251	154
Province 6									
Mean	32752.54	25668.49	29436.99	45434.44	43830	33614.48	161481.8	119135.3	160103.2
SD	36836.47	26451.27	34040.65	41482.26	45773.17	32084.79	238247.1	109173	135002.4
Min	0	0	0	4944.81	0	2211.80	3856.95	0	4298.94
Max	233070.2	192000	204198.3	190011.5	161479.7	156426.8	2609913	697600	630290.9
Kurtosis	9.41	10.22	9.07	4.41	3.84	6.30	44.67	12.01	5.15
Skewness	2.37	2.37	2.37	1.42	1.36	1.81	5.40	2.48	1.59
Median	19072.85	16896	16965.8	28821.19	24064	22044.07	105960.3	98304	120423.8
Obs.	1897	2473	1351	118	38	52	337	172	112
Province 7									
Mean	54925.75	32685.81	44299.28	86688.53	60281.42	145346.2	177865.9	162569.1	230072.8
SD	50223.16	33419.99	49538.32	64665.74	64356.33	160736.1	143335	145843.3	226921.2
Min	2295.81	0	0	4662.25	0	3215.59	3758.06	0	333.93
Max	307284.8	230400	306663.5	328300.2	360832	588497.1	974834.4	988160	1452604
Kurtosis	7.03	11.60	9.45	4.05	9.37	3.93	9.53	7.62	8.94
Skewness	1.88	2.62	2.36	1.18	2.39	1.43	2.17	1.77	2.17
Median	38135.1	23040	27366.3	72376.16	39014.4	77601.13	146449.4	122880	162929.7
Obs.	1686	3141	1935	250	143	48	1052	481	402
Province 8									
Mean	30410.09	24828.44	29752.81	63656.19	40311.65	29769.64	135926.6	120580.6	203050
SD	24909.68	26089.8	34762.45	44593.81	36488.74	38088.85	104586.6	108833.9	169670.7
Min	2295.81	0	0	8264.9	2227.2	2836.76	7883.44	0	10512.49
Max	154702	187649.3	274018.5	166887.4	154060.8	56702.53	646357.6	101747.2	813092.8
Kurtosis	7.13	12.47	14.47	2.32	5.71	1	6.11	5.28	4.84
Skewness	1.84	2.78	2.98	0.73	1.72	0	1.58	1.21	1.37
Median	23836.64	16000	18550.71	49801.32	27648	29769.64	110675.5	101747.2	140047.3
Obs.	1844	2075	1540	56	23	2	378	95	98
Province 9									
Mean	41963.7	23426.63	25777.37	76779.06	11468.8	37775.82	164174.2	159768.8	143577.5
SD	52121.83	31693.5	30108.74	60255.67	3284.79	36100.48	159547.5	154549.3	107998.6
Min	0	0	0	7064.02	7680	9304.97	3178.81	0	22002.48
Max	363463.1	217600	211357.6	199576.2	13516.8	100250.8	1147947	858880	609598.8
Kurtosis	11.19	14.02	12.19	2.39	1.5	2.95	17.83	8.36	8.33
Skewness	2.64	3.12	2.81	0.72	-0.70	1.26	3.32	2.11	2.06
Median	21282.12	12288	15575.74	65917.88	13209.6	23927.05	124326.7	113600	105591.4
Obs.	2310	2870	1809	14	3	5	184	86	63

Notes: text if necessary

Table 3: The effect of group income dispersion on the household consumption of conspicuous goods and services

Variables	Specifications							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
social group variables								
Black	0.56***	0.09	0.13	0.57***	0.59***	0.09	0.09	0.12
	(0.04)	(0.09)	(0.08)	(0.04)	(0.04)	(0.09)	(0.09)	(0.09)
Coloured	0.37***	0.04	0.06	0.38***	0.39***	0.03	0.03	0.05
	(0.04)	(0.07)	(0.06)	(0.04)	(0.04)	(0.07)	(0.07)	(0.07)
Moments of the income distribution								
$Inc^{\mu}_{k,t}$		-0.30***				-0.18*	-0.32***	-0.30***
		(0.05)				(0.09)	(0.05)	(0.05)
$ln(Inc^{\sigma}_{k,t})$			-0.30***			-0.13		
			(0.05)			(0.09)		
$Inc^{v}_{k,t,}$				-0.05			-0.16*	
				(0.08)			(0.08)	
$Inc^{\gamma}_{k,t}$					-0.75**			-0.76**
					(0.28)			(0.28)
Household controls								
Income	1.32***	1.34***	1.34***	1.32***	1.32***	1.34***	1.34***	1.34***
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Age	(-)***	(-)***	(-)***	(-)***	(-)***	(-)***	(-)***	(-)***
Age^2	(+)***	(+)***	(+)***	(+)***	(+)***	(+)***	(+)***	(+)***
Education>10 years	(-)**	(-)**	(-)**	(-)**	(-)**	(-)**	(-)**	(-)**
Education (university degree)	(-)*	(-)*	(-)*	(-)*	(-)	(-)*	(-)*	(-)*
Area type (urban)	(-)	(+)	(+)	(-)	(-)	(+)	(+)	(+)
Family size (various dummies)	(+)***	(+)***	(+)***	(+)***	(+)***	(+)***	(+)***	(+)***
Year1995	(-)***	(-)***	(-)***	(-)***	(-)***	(-)***	(-)***	(-)***
Year2000	(+)***	(+)***	(+)***	(+)***	(+)***	(+)***	(+)***	(+)***
Constant	(-)***	(-)**	(-)***	(-)***	(-)***	(-)**	(-)**	(-)**
Prob>F	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
R^2 (centered)	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
Obs.	72163	72163	72163	72163	72163	72163	72163	72163

Notes: The regressions use the full sample described in Table 1 in Kaus (2010). Robust standard errors, clustered at PSU level, are indicated in parentheses. *** (**, *) Significant at the 0.1% (1%, 5%) level.

Table 4: The Interaction of income dispersion and group income

Variables	Specifications			
	(1)	(2)	(3)	(4)
	coefficient of variation		Gini coefficient	
social group variables				
Black	0.76***	0.10	0.78***	0.13
	(0.05)	(0.09)	(0.05)	(0.09)
Coloured	0.52***	0.05	0.54***	0.07
	(0.05)	(0.07)	(0.05)	(0.07)
$Inc^{\mu}_{k,t}$		-0.48***		-0.46***
		(0.06)		(0.06)
interaction effects - partitioning approach				
Low INT	0.08	-0.04	-0.51	-0.44
	(0.08)	(0.08)	(0.29)	(0.29)
High INT	-0.14	-0.34***	-0.99***	-1.09***
	(0.08)	(0.08)	(0.28)	(0.28)
Household controls				
Household Income	1.46***	1.54***	1.46***	1.54***
	(0.04)	(0.04)	(0.03)	(0.04)
Age	(-)***	(-)***	(-)***	(-)***
Age^2	(+)***	(+)***	(+)***	(+)***
Education>10 years	(-)**	(-)***	(-)**	(-)***
Education (university degree)	(-)**	(-)**	(-)**	(-)**
Area type (urban)	(-)	(+)	(-)	(-)
Family size (various dummies)	(+)***	(+)***	(+)***	(+)***
Year1995	(-)***	(-)***	(-)***	(-)***
Year2000	(+)***	(+)***	(+)***	(+)***
Constant	(-)***	(-)***	(-)***	(-)**
Prob>F	0.0000	0.0000	0.0000	0.0000
R^2 (centered)	0.49	0.49	0.49	0.49
Obs.	72163	72163	72163	72163

Notes: The regressions use the full sample described in Table 1 in Kaus (2010). Robust standard errors, clustered at PSU level, are indicated in parentheses. *** (**, *) Significant at the 0.1% (1%, 5%) level.