

Consumer Loyalty in the Swedish Pharmaceuticals Market: Additional Results

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Abstract

Here we present and comment results from additional estimations related to our paper "Consumer Loyalty in the Swedish Pharmaceuticals Market".

1 Additional results

In the paper, results for age-, ATC-groups, municipalities and the month the prescription was dispensed were suppressed in order to save space. The estimation results for the baseline specification, including those for the municipality dummies, are reported in the first two columns of Table A1, while the results for the age and month dummies are illustrated in Figures A1 and A2. The estimates for the 251 ATC-groups are available from the authors upon request. The omitted age-group is children up to and including 4 years of age. Umeå, the county's largest municipality, is the omitted municipality and the omitted month is January 2003. Table A2 shows that the variables in each variable-group are jointly statistically significant.

Tables A3, A4 and A5 presents results from some alternative specifications. In the first column of Table A3 coefficients estimated using a probit instead of a logit model are presented. All other specifications are estimated with logit, as in the paper. Specifications 5, 6 and 7 differ from the baseline by controlling for age using the continuous variables age and age-squared; indicator-variables for patients of age 0-18, 65-84 and 85 years of age or older; and indicators for 1-year age-groups, respectively.

The first and second column of Table A4 present results obtained when controlling for the month the prescription was dispensed using the continuous variables $TimeTrend$ and $TimeTrend^2$, and when controlling separately for each category of prescribers other than physicians. The third and fourth column of Table A4 present results obtained when $100DDD_s$ was replaced by the natural logarithm of this variable and when this new variable was excluded from the specification, respectively. Finally, in Table A5 we report the results obtained when the baseline specification was estimated separately for men and women.

The results show that the qualitative results presented in the paper are robust against changes in the specification. The qualitative results also remain unchanged when a probit estimator is used instead of a logit. The magnitudes of the coefficients are not directly comparable between these two estimators, but the marginal effects estimated with the probit estimator (not presented) are similar in size with those for the logit estimator. The results show a considerable difference between consumers in different municipalities, and also illustrate a non-linear relationship between time and the consumers' age on the one hand and the consumers' decision about generic substitution, on the other hand. Finally, Table 5 show similar patterns for male and female consumer loyalty.

Table A1. Estimation results, coefficients. Baseline specification

Variable		Variable	
<i>Brand</i>	1.65*** (0.01)	<i>Norsjö</i>	-0.23*** (0.02)
<i>Bgen</i>	1.59*** (0.02)	<i>Malå</i>	-0.96*** (0.03)
<i>Other</i>	0.03 (0.92)	<i>Storuman</i>	-0.52*** (0.02)
<i>Parallel</i>	-1.06*** (0.02)	<i>Sorsele</i>	-1.34*** (0.03)
<i>NotMD</i>	-0.26*** (0.04)	<i>Dorotea</i>	-0.54*** (0.03)
<i>Women</i>	0.16*** (0.01)	<i>Vännäs</i>	-0.03 (0.02)
<i>100 DDDs</i>	-0.07*** (0.01)	<i>Vilhelmina</i>	-0.35*** (0.02)
<i>Nordmaling</i>	-0.28*** (0.02)	<i>Åsele</i>	-0.30*** (0.03)
<i>Bjurholm</i>	-0.08*** (0.03)	<i>Lycksele</i>	-0.59*** (0.02)
<i>Vindeln</i>	-0.38*** (0.02)	<i>Skellefteå</i>	-0.11*** (0.01)
<i>Robertfors</i>	-0.05*** (0.02)	<i>NotVästerbotten</i>	-0.04* (0.04)
Observations			890,231
Pseudo R ²			0.30

Notes: The asterisks ***, ** and * denote significance at the 1%, 5% and 10% levels. Robust standard errors are shown in parentheses. Estimation results for age-, ATC-groups and monthly time dummies are suppressed, but are available from the authors upon request.

Table A2. Wald test. Baseline specification

Variable group	Chi ² -value	Prob>Chi ²
<i>Brand, Bgen, Other</i>	19142.99	0.0000
<i>Age_a a ∈ (2, 20)</i>	292.01	0.0000
<i>Mun_m m ∈ (2, 16)</i>	4646.78	0.0000
<i>Trend_t t ∈ (2, 43)</i>	3756.99	0.0000
<i>ATC_g g ∈ (2, 252)</i>	68409.68	0.0000

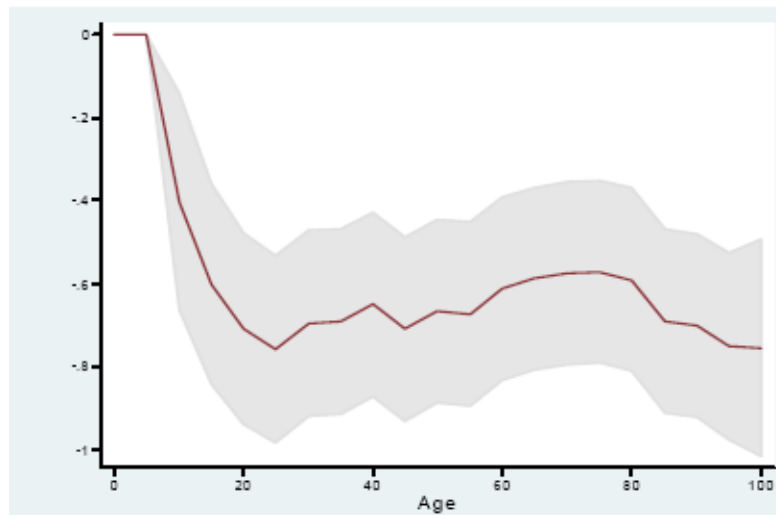


Figure 1. Age-coefficients with 95% CI

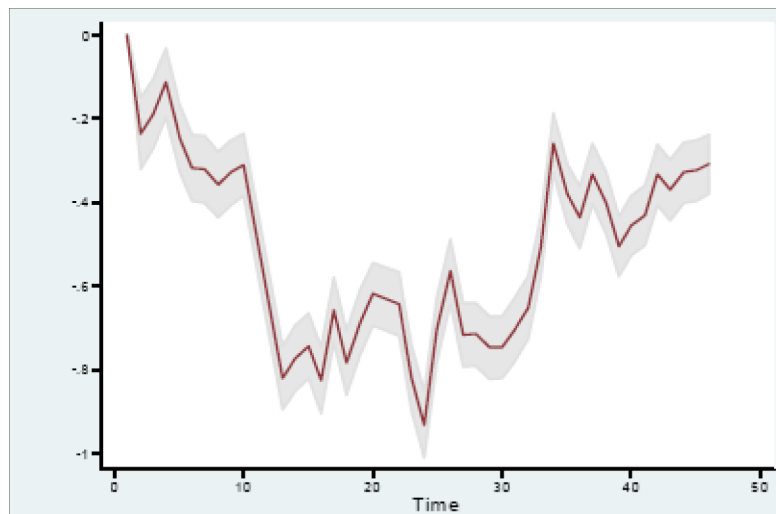


Figure 2. Time-coefficients with 95% CI

Table A3. Estimation results, coefficients

Variable	4	5	6	7
<i>Brand</i>	0.92*** (0.01)	1.65*** (0.01)	1.65*** (0.01)	1.65*** (0.01)
<i>Bgen</i>	0.89*** (0.01)	1.59*** (0.02)	1.59*** (0.02)	1.59*** (0.02)
<i>Other</i>	0.05 (0.59)	-0.06 (1.04)	0.09 (0.93)	0.01 (0.91)
<i>Parallel</i>	-0.56*** (0.01)	-1.06*** (0.02)	-1.06*** (0.02)	-1.06*** (0.02)
<i>NotMD</i>	-0.14*** (0.02)	-0.26*** (0.04)	-0.26*** (0.04)	-0.26*** (0.04)
<i>Women</i>	0.09*** (0.00)	0.15*** (0.01)	0.15*** (0.01)	0.16*** (0.01)
<i>100 DDDs</i>	-0.04*** (0.00)	-0.07*** (0.01)	-0.07*** (0.01)	-0.07*** (0.01)
<i>Age</i>		0.01*** (0.00)		
<i>Age²</i>		-6.45e ⁻⁵ *** (9.59e ⁻⁶)		
<i>Age0-18</i>			0.07** (0.03)	
<i>Age65-84</i>			0.04*** (0.01)	
<i>Age85-</i>			-0.07*** (0.01)	
Observations	890,231	890,231	890,231	890,222
Pseudo R ²	0.29	0.30	0.30	0.30

Notes: The asterisks ***, ** and * denote significance at the 1%, 5% and 10% levels.

Robust standard errors are shown in parentheses. Estimation results are suppressed for ATC-groups, municipalities and monthly time dummies in all specifications, and also for 5-years and 1-year age groups in specification 4 and 7, respectively. These results are available from the authors upon request.

Table A4. Estimation results, coefficients

Variable	8	9	10	11
<i>Brand</i>	1.65*** (0.01)	1.65*** (0.01)	1.65*** (0.01)	1.65*** (0.01)
<i>Bgen</i>	1.60*** (0.02)	1.59*** (0.02)	1.57*** (0.02)	1.58*** (0.02)
<i>Other</i>	-1.34 (0.98)	-0.29 (0.95)	-0.25 (1.06)	-0.28 (1.05)
<i>Parallel</i>	-1.05*** (0.02)	-1.05*** (0.02)	-1.04*** (0.01)	-1.05*** (0.02)
<i>NotMD</i>	-0.26*** (0.04)		-0.27*** (0.04)	-0.26*** (0.04)
<i>Women</i>	0.16*** (0.01)	0.16*** (0.01)	0.16*** (0.01)	0.16*** (0.01)
<i>100 DDDs</i>	-0.07*** (0.01)	-0.07*** (0.01)		
<i>TimeTrend</i>	-0.05*** (1.14e ⁻³)			
<i>TimeTrend²</i>	1.08e ⁻³ *** (2.20e ⁻⁵)			
<i>Midwife</i>		-0.01 (0.06)		
<i>District nurse</i>		-0.22*** (0.09)		
<i>Nurse</i>		-0.25*** (0.07)		
<i>Dental hygienist[#]</i>		1.55*** (0.56)		
<i>Dentist</i>		-0.80*** (0.10)		
<i>ln100 DDDs</i>			-0.03*** (0.01)	
Observations	890,231	890,231	890,222	890,231
Pseudo R ²	0.29	0.30	0.30	0.30

Notes: The asterisks ***, ** and * denote significance at the 1%, 5% and 10% levels.

Robust standard errors are shown in parentheses. Estimation results are suppressed for age-, ATC-groups and municipalities in all specifications, and also for monthly time dummies in specifications 9, 10 and 11. These results are available from the authors upon request. [#] Only 21 prescriptions are written by dental hygienists, and the estimates for this group should therefore be interpreted with caution.

Table A5. Estimation results, coefficients

Variable	Men	Women
<i>Brand</i>	1.64*** (0.02)	1.66*** (0.02)
<i>Bgen</i>	1.57*** (0.02)	1.60*** (0.02)
<i>Other</i>	-0.84 (1.02)	-0.80 (1.16)
<i>Parallel</i>	-1.00*** (0.03)	-1.09*** (0.02)
<i>NotMD</i>	-0.41*** (0.08)	-0.21*** (0.04)
100 <i>DDDs</i>	-0.11*** (0.01)	-0.03*** (0.01)
Observations	355,548	530,239
Pseudo R ²	0.27	0.31

See notes to Table 2 in the paper.