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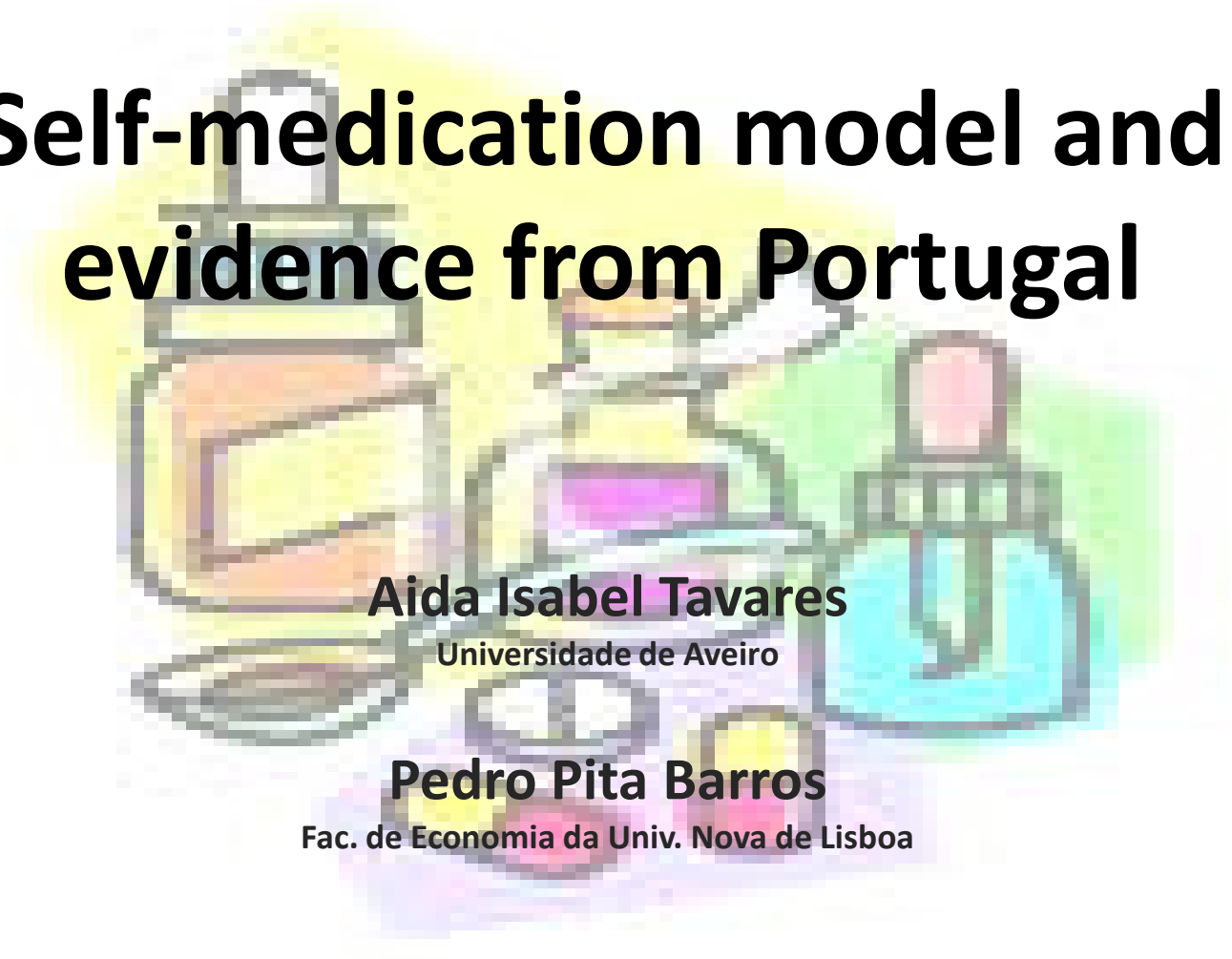
Self-medication model and evidence from Portugal



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Background

Selfmedication (SM)

Selection and the use of medicines by individuals to treat self-recognised illnesses or symptoms (WHO)

Increasing practice all over the world (DC)

medical literacy, increasing #OTC, faster and cheaper

EU – information policy to promote SM

European self-medication pharmaceutical market 2006-2008

	At consumer price level (euro millions)			As a percentage of the total pharmaceutical market (excluding hospital sales)		
	€ millions			%		
	2006	2007	2008	2006	2007	2008
Austria	285	300	308	7.6%	7.5%	7.2%
Belgium	638	665	676	15.7%	15.6%	15.1%
Bulgaria	129	158	192	24.5%	26.5%	28.2%
Croatia	153	165	177	10.9%	10.9%	10.6
Czech Republic	394	437	529	26.4%	25.8%	26.9%
Denmark	222	234	237	9.1%	8.7%	8.1%
Finland	240	273	296	10.2%	10.9%	11.2%
France	1846	1926	1978	6.2%	6.2%	6.6%
Germany	4530	4497	4350	12.9%	12.3%	11.6%
Greece	248	297	319	5.5%	5.7%	5.6%
Hungary	301	287	331	14.1%	13.9%	15.0%
Ireland	274	315	333	14.6%	15.2%	14.8%
Italy	1523	1596	1597	7.9%	8.4%	8.5%
Netherlands	597	628	635	11.2%	10.9%	11.0%
Norway	239	253	261	11.7%	12.0%	12.5%
Poland	1452	1702	1997	25.9%	26.9%	26.8%
Portugal	227	226	229	5.9%	7.2%	6.7%
Romania	364	458	477	23.6%	23.2%	22.4%
Russian Federation	2780	3130	3650	32.0%	34.1%	31.5%
Slovak Republic	143	167	225	10.7%	12.2%	14.8%
Slovenia	41	42	46	6.8%	6.7%	6.9%
Spain	595	618	666	4.4%	4.4%	3.3%
Sweden	348	367	374	9.4%	9.2%	9.3%
Switzerland	584	566	602	16.9%	16.3%	16.2%
United Kingdom	3191	3334	2880	12.3%	12.5%	12.2%
EU-27	**17588**	**18525**	**18675**	**10.5%**	**10.7%**	**10.4%**
Europe	**21344**	**22639**	**23366**	**11.6%**	**11.8%**	**11.6%**

Source: AESGP and AESGP National Associations 2009©

Aim

- Extend SM model Chang&Trivedi (2003) - include time constraint
- Find the determinants of SM – evidence from Portugal

Previous work

1) WHO report (1998) – list of determinant factors
2) Chang&Trivedi (2003) – developing countries - Vietnam
3) Figueras et al. (2000) – evidence from Spain – limited analysis

Theoretical model

Max U(health status, consumption)

Consumption – goods + medical services + SM care

Time – leisure + work + medical attending

Health status – given health status + medical services benefit + SM benefit (uncertain)

Optimal choice

Relative cost of medical care to SM cost is equal to its relative benefit

$\therefore$ Usually the relative cost of medical care to SM cost is high $\Longrightarrow$ high relative benefit $\Longrightarrow$ medical care is used for non-minor illnesses!

Comparative Statics (most relevant)

1) When absolute risk aversion is suf large, than the increase in wage, increases the consumption of medical and SM care.

2) An increase in the time spent on medical care results in a decrease in the OTC consumption.

3) In general, an increase in the uncertainty of SM benefit results in a decrease of its consumption.

Data set

Portuguese 4th National Health Survey (2005)

33 667 adults

47,5 % males & 52,5% females

8,4% choose selfmedication – 57,8% females

Variables and econometric model

Variable	*Description*
Variables describing social and economic status	
Male	1 if male; 0 if female.
Age	Number of years old.
Schyr	School years: number of completed schoolling years
Loginc	Logarithm of income per capita. This is computed from the average income of the chosen interval of incomes by respondent, divided by the square of the number of individuals in the family in order to take into account economies of scale.
Privin	1 if individual has private insurance; 0 otherwise.
Variables describing the health status	
Chrndis	1 if individual has at least one chronic disease; 0 otherwise.
Smoke	1 if individual smoke; 0 otherwise.
Sport	1 if individual do sport; 0 otherwise.
Variables describing time	
Waitapp	Waiting time to get an appointment at the doctor
Waitrec	Waiting time to be received by doctor
Timelab	Working time per week
Variables describing quality	
Perceivedocqual	Perceived doctor quality. The higher this variable, the lower is the perceived quality of doctor.

Probit

$$selfmed = \alpha_0 + \alpha_1 X + \nu,$$

Sport - definition of this variable is provided by CDC - Centers for Disease Control and Prevention, US.

Chronic diseases - diabetes, asthma, high blood pressure, chronic pain, rheumatism, osteoporosis, glaucoma, retina diseases, cancer, kidneys diseases, anxiety, chronic hound, bronquitis, CVA, obesity, depression and heart attack.

The definition of this variable is provided by CDC -- Centers for Disease Control and Prevention, US. Accordingly, the variable takes value 1 if moderated physical activity (moderate physical activity means exercise more than 30 minutes each day, more than 5 days a week) or intense physical activity (intense physical activity means exercise more than 20 minutes each day, more than 3 days a week) is undertaken by the individual, and value 0 if otherwise.

The chronic diseases considered are the following: diabetes, asthma, high blood pressure, chronic pain, rheumatism, osteoporosis, glaucoma, retina diseases, cancer, kidneys diseases, anxiety, chronic hound, bronquitis, CVA, obesity, depression and heart attack.

Results

Adults

	Coef.	P>z
male	-.0582853	0.140
age	-.0025796	0.068
loginc	.041119	0.201
schyr	.0347435	0.000
chrndis	.218758	0.000
smoke	.0540797	0.267
sport	-.0654429	0.299
waitapp	-.0004612	0.108
waitrec	.00047	0.044
perceivedocqual	.0449123	0.059
privin	.1341912	0.022
timelab	-.0035564	0.049
_cons	-1.784.405	0.000

Dependent variable
Probability to choose SM

Iteration 0: log likelihood = -2888.5784
Iteration 1: log likelihood = -2815.3728
Iteration 2: log likelihood = -2814.8591
Iteration 3: log likelihood = -2814.859
Number of obs = 8774
LR chi2(12) = 147.44
Prob > chi2 = 0.0000
Log likelihood = -2814.859
Pseudo R2 = 0.0255

Female and Male

	♂		♀	
	Coef.	P>z	Coef.	P>z
age	.0048	0.010	-.00824	0.000
loginc	.0728	0.091	.0061	0.872
schyr	.0161	0.027	.0397	0.000
chrndis	.0035	0.953	.3487	0.000
smoke	.2423	0.000	-.1424	0.016
sport	-.1559	0.082	.01492	0.836
waitapp	-.0001	0.739	-.0008	0.044
waitrec	-.0003	0.375	.0008	0.001
perceivedocqual	.0930	0.002	-.0038	0.894
privin	.1546	0.044	.0813	0.235
timelab	.0059	0.009	-.0111	0.000
_cons	-3.0458	0.000	-1.3113	0.000

Young (18-49) and Old (≥50)

	Coef.	P>z	Coef.	P>z
male	-.0290	0.622	-.0889	0.097
age	-.0107	0.003	-.0011	0.696
loginc	-.0121	0.806	.0970	0.028
schyr	.0407	0.000	.0281	0.000
chrndis	.3184	0.000	.0471	0.536
smoke	.0818	0.173	.0146	0.866
sport	-.0192	0.822	-.1127	0.231
waitapp	-.0005	0.217	-.0004	0.277
waitrec	.0006	0.097	.0004	0.217
perceivedocqual	.0311	0.377	.0526	0.103
privin	.1404	0.060	.1717	0.079
timelab	-.0051	0.088	-.0026	0.262
_cons	-1.2138	0.000	-2.0603	0.000

Conclusions

- ✓ Age: older implies less SM, *except* for M
- ✓ Income: higher income means more SM for M and old *but not* for young
- ✓ Smoke: significant for gender differences – smoke increases probability of SM for M *but not* for W
- ✓ Time is a complex variable:
  - waiting for an appointment not significant
  - waiting in the waiting room is costly *except* for F and old
  - working time motivates SM for M *but not* in general
- ✓ Perceived quality is a relevant determinant factor *except* for F and young