EUSERS SUMMER SCHOOL
Performance and Governance of Services of General Interest.
Critical perspectives on Energy, Telecommunications, Transport and Water Reforms in the EU
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European Economic Liberalization and Households' Gas Prices

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Object of the study

- Third Energy Package Aim - Rationales of the creation of a European Single Market
  - Efficiency gains through liberalization

- Specificity of key industries (energy and infrastructure)
  - The natural monopoly and inefficiency on supply side
  - "[a]n industry in which multi-firm production is more costly than production by a monopoly" William Baumol (1977)
  - increase in the households gas prices

- Therefore, we aim to examine the effect of entry regulation on households' gas prices.

Hypothesis

- Following Bauman (1977), ceteris paribus, we expect that market opening in the natural gas industry increases consumers' gas price.
- H0: Higher entry regulation decreases households' gas prices.
- Geographical coverage: 17 EU states (DE, EST, FR, GER, GR, HU, IRL, IT, LUX, NR, PL, PG, SK, SL, ES, SE, UK)
- Data period: 7 years (2007-2013)

Empirical Model

Static OLS: $Price_{i,t} = b_0 + b_1(Entry)_{i,t} + b_2(Controls)_{i,t} + d_t + e_{it}$ (1)

Static OLS: $Price_{i,t} = b_0 + b_1(Entry)_{i,t-1} + b_2(Controls)_{i,t} + d_t + e_{i,t}$ (2)

Static FE: $Price_{i,t} = b_0 + b_1(Entry)_{i,t} + b_2(Controls)_{i,t} + d_t + n_{i,} + e_{it}$ (3)

Static FE: $Price_{i,t} = b_0 + b_1(Entry)_{i,t-1} + b_2(Controls)_{i,t} + d_t + n_{i,t} + e_{i,t}$ (4)

Dynamic OLS: $Price_{i,t} = b_0 + b_1(Entry)_{i,t} + b_2(Price)_{i,t-1} + (Controls)_{i,t} + d_t + e_{it}$ (5)

Dynamic OLS: $Price_{i,t} = b_0 + b_1(Entry)_{i,t-1} + b_2(Price)_{i,t-1} + (Controls)_{i,t} + d_t + e_{i,t}$ (6)

Dynamic FE: $Price_{i,t} = b_0 + b_1(Entry)_{i,t} + b_2(Price)_{i,t-1} + b_3(Controls)_{i,t} + d_t + n_{i,} + e_{it}$ (7)

Dynamic FE: $Price_{i,t} = b_0 + b_2(Entry)_{i,t-1} + b_3\ Price)_{i,t-1} + b_3(Controls)_{i,t} + d_t + n_{i,t} + e_{i,t}$ (8)

$Price_{i,t}$ = consumer's gas price, kilowatt-hour;

$Entry_{i,t}$ = Entry regulation (0=regulated, 6=unregulated);

$Controls_{i,t}$ = Public Ownership, Vertical Integration, Market Share;

d_t = Time dummies; $n_{i,t}$ = Time-invariant individual heterogeneity; $e_{i,t}$ = Error term.

Static Specification

Dep.var.: Price $_{i,t}$	**OLS(1)**	**OLS(2)**	**FE (3)**	**FE(4)**
Constant	0.044***	0.047***	0.074***	0.080***
	(10.57)	(13.46)	(6.19)	(7.79)
Vertical $_{i,}$	-0.000	-0.000	-0.006*	-0.007*
	(-0.08)	(-0.16)	(-2.82)	(-2.92)
Mrktstr $_{i,t}$	-0.000	0.000	-0.000	0.000
	(-0.03)	(1.02)	(-0.18)	(1.59)
Public $_{i,t}$	0.000	-0.000	-0.001	-0.003*
	(0.12)	(-0.00)	(-1.08)	(-2.36)
Entry $_{i,t}$	-0.006***		-0.002	
	(-4.13)		(-1.11)	
Entry $_{i,t-1}$		-0.006***		-0.001
		(-3.61)		(-0.87)
Time FE	Yes	Yes	Yes	Yes
R-squared	0.25	0.24	0.02	0.02
N	114	98	114	98

t statistics in parentheses, robust standard errors
† p<.10, * p<.05, ** p<.01, *** p<.001

Dynamic Specification

Dep. var. Price $_{i,t}$	**OLS(5)**	**OLS(6)**	**FE(7)**	**FE(8)**
Constant	0.015***	0.015***	0.066***	0.064***
	(5.19)	(5.00)	(6.06)	(5.75)
Price $_{i,t-1}$	0.783***	0.790***	0.338**	0.341**
	(13.70)	(13.55)	(3.53)	(3.33)
Vertical $_{i,t}$	-0.000	-0.000	-0.006*	-0.006*
	(-0.70)	(-0.65)	(-2.56)	(-2.49)
Mrktstr $_{i,t}$	0.000	0.000	0.000	0.000
	(0.47)	(0.43)	(1.53)	(1.43)
Public $_{i,t}$	-0.000	-0.000	-0.004*	-0.003*
	(-1.19)	(-1.35)	(-2.48)	(-2.51)
Entry $_{i,t}$	-0.003*		-0.003**	
	(-2.35)		(-3.50)	
Entry $_{i,t-1}$		-0.002†		0.000
		(-1.72)		(0.01)
Time FE	Yes	Yes	Yes	Yes
R-squared	0.80	0.80	0.13	0.13
N	97	97	97	97

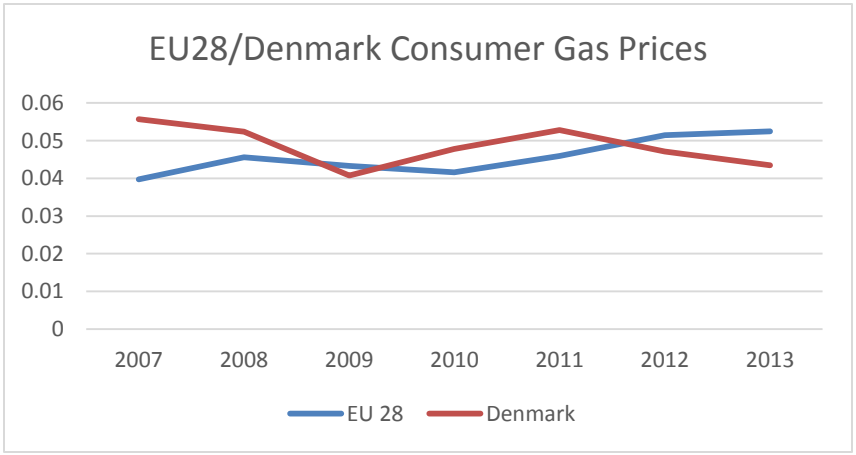
t statistics in parentheses, robust standard errors
† p<.10, * p<.05, ** p<.01, *** p<.001

Case of Denmark (1/2)

- After 1970s oil crisis, Denmark developed an interest over natural gas
- Until the 1990s, strong state control over the gas market
- 2000: Natural Gas Supply Act
- 2004: Consumers' freedom to choose energy supplier

Case of Denmark (2/2)

Country	year	Gas				
		Overall	Entry	Public Ownership	Vertical Integration	Market structure
Denmark	1995	5,13	4,00	6,00	6,00	4,50
Denmark	2000	4,79	3,40	6,00	5,25	4,50
Denmark	2001	3,79	2,40	6,00	5,25	1,50
Denmark	2002	3,76	2,30	6,00	5,25	1,50
Denmark	2003	3,20	2,30	4,50	4,50	1,50
Denmark	2004	2,88	1,00	4,50	4,50	1,50
Denmark	2005	2,88	1,00	4,50	4,50	1,50
Denmark	2006	2,52	0,00	4,10	4,50	1,50
Denmark	2007	2,52	0,00	4,10	4,50	1,50
Denmark	2008	2,53	0,00	4,11	4,50	1,50
Denmark	2009	2,53	0,00	4,13	4,50	1,50
Denmark	2010	2,54	0,00	4,15	4,50	1,50
Denmark	2011	2,54	0,00	4,16	4,50	1,50
Denmark	2012	2,62	0,00	4,48	4,50	1,50
Denmark	2013	2,63	0,00	4,50	4,50	1,50

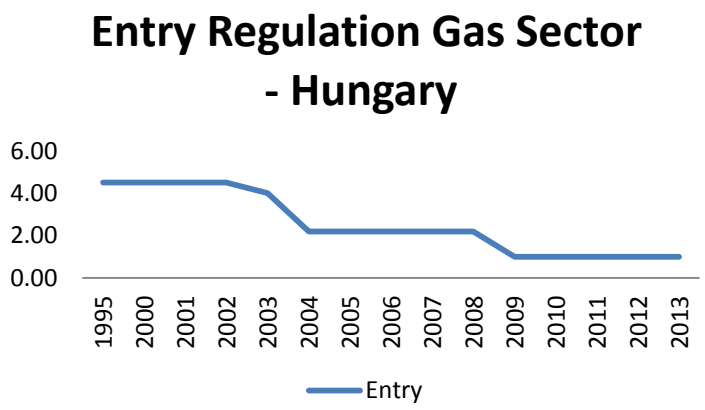


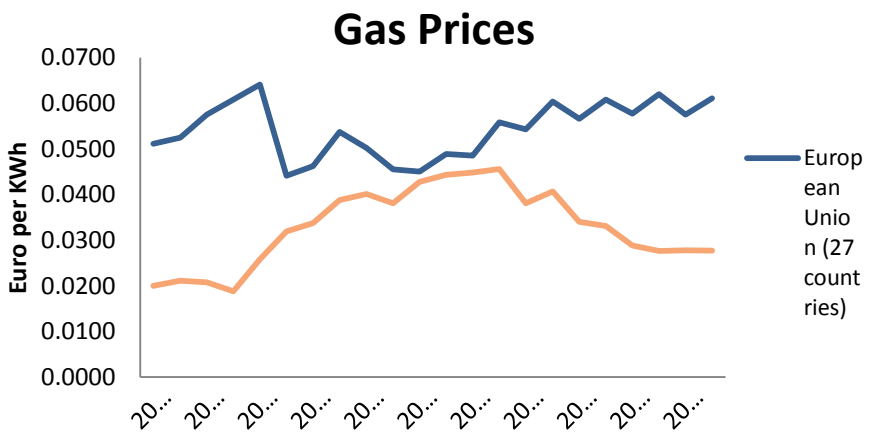
- The OECD indicators show a total free entry in the market.
- The gas consumer price's trend downwards in the period analyzed, expect for a small period of two years between 2009 – 2011
- RES

Case of Hungary

Country	year	Gas				
		Overall	Entry	Public Ownership	Vertical Integration	Market structure
Hungary	1995	4,97	4,50	4,90	6,00	4,50
Hungary	2000	3,94	4,50	0,75	6,00	4,50
Hungary	2001	3,38	4,50	0,75	3,75	4,50
Hungary	2002	3,37	4,50	0,72	3,75	4,50
Hungary	2003	3,23	4,00	0,69	3,75	4,50
Hungary	2004	2,70	2,20	0,36	3,75	4,50
Hungary	2005	2,33	2,20	0,36	3,75	3,00
Hungary	2006	2,24	2,20	0,00	3,75	3,00
Hungary	2007	2,10	2,20	0,00	3,19	3,00
Hungary	2008	2,10	2,20	0,00	3,19	3,00
Hungary	2009	1,80	1,00	0,00	3,19	3,00
Hungary	2010	1,61	1,00	0,00	3,19	2,25
Hungary	2011	1,75	1,00	0,55	3,19	2,25
Hungary	2012	1,75	1,00	0,55	3,19	2,25
Hungary	2013	1,75	1,00	0,55	3,19	2,25

- Regulated Third Party Access - 1
- Decreasing GDP & Gas Consumption
- December 2012 gas prices for household consumers were cut by the State – 20%





Conclusions

- Market opening contributed to increase the households gas price in EU 17

- The countertrends in Denmark and Hungary are explainable by external factors
  - Decreasing gas demand (use of alternative energy sources - Denmark)
  - State regulation of gas prices - Hungary