

# Revealing Social Preferences in Europe

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# Motivation

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## Various approaches

- surveys directly measuring attitudes toward inequality
  - e.g. International Social Survey Program, used for instance in Corneo and Grüner (2002), Osberg and Smeeding (2005)
- Experiments
  - e.g. Fehr and Schmidt (1999)
- Implicit value judgements in poverty/inequality indices
  - e.g. using natural rate of subjective inequality in Lambert et al. (2003)

## Our focus: implicit redistributive taste incorporated in tax-benefit systems

- Recent attempt to use optimal tax framework
- Compare optimal tax schedule to actual one: Saez (US, 2002); Spadaro (France, 2004), Laroque (France, 2005); Brewer, Saez, Shephard (UK, 2007)
- For which degree of inequality aversion does the optimal schedule come close to the actual one?

# Motivation (2)

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- Possibility to invert optimal tax models to retrieve implicit social preferences
- Previous attempts:
  - Commodity taxation: Ahmad and Stern (1984), Christiansen and Jansen (1978)
  - Inversion of Mirrlees model (intensive margin): Bourguignon and Spadaro (France, 2007)
  - Inversion of Saez (2002)'s extensive-intensive model:

## **In this paper**

- Straightforward inversion of Saez (2002)'s model (see also Bourguignon and Spadaro 2007 for France and Blundell et al. 2007 for the UK and Germany)
- Infer the social weights that make European tax-benefit systems optimal
- Compare to qualitative analysis of European welfare regime (Esping-Andersen, 1992)
- Check if implicit weights consistent with the assumption of a Paretian planner

# Optimal taxation: setting

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## Saez (2002)

- $I+1$  types, with income  $Y_i$  increasing with  $i$  (agent monotonicity)
- $T_i$ : net tax paid by group  $i$
- $C_i = Y_i - T_i$ : disposable income of group  $i$
- type 0: unemployed, with  $Y_0 = 0$  and transfer  $C_0 = -T_0$
- $g_i$ : social weights : (per capita) marginal social welfare of a 1 EUR transfer to an individual in group  $i$ , expressed in terms of public funds
- $h_i$ : share of group  $i$  in the population

Optimal tax formula:

$$\frac{T_i - T_{i-1}}{C_i - C_{i-1}} = \frac{1}{\zeta_i h_i} \sum_{j=1}^I h_j \left[ 1 - g_j - \eta_j \frac{T_j - T_0}{C_j - C_0} \right]$$

Optimal tax rule depends heavily on whether labor supply responses are concentrated at the **extensive margin** (participation elasticity  $\eta_i$ ) or the **intensive margin** (earnings elasticity  $\zeta_i$ )

# Optimal taxation: setting (2)

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**Participation elasticity:** % of group  $i$  who stop working following 1% decrease in  $C_i - C_0$

$$\eta_i = \frac{C_i - C_0}{h_i} \frac{\partial h_i}{\partial (C_i - C_0)}$$

**Earnings (mobility) elasticity:** % increase in group  $i$  following 1% increase in  $\Delta C$  assuming that individuals can adjust labour supply only to the neighbouring choice

$$\zeta_i = \frac{C_i - C_{i-1}}{h_i} \frac{\partial h_i}{\partial (C_i - C_{i-1})}$$

Assuming no income effect yields the following normalisation:

$$\sum_i h_i g_i = 1$$

# Optimal taxation: inversion

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Straightforward inversion of the model

Start with last group:

$$g_I = 1 - \eta_I \frac{T_I - T_0}{C_I - C_0} - \zeta_I \frac{T_I - T_{I-1}}{Y_I - Y_{I-1}}$$

Compute social weights recursively:

$$g_i = 1 - \eta_i \frac{T_i - T_0}{C_i - C_0} - \zeta_i \frac{T_i - T_{i-1}}{Y_i - Y_{i-1}} + \frac{1}{h_i} \sum_{j=i+1}^I h_j \left[ 1 - g_j - \eta_j \frac{T_j - T_0}{C_j - C_0} \right] \text{ for } i = 1, \dots, I-1$$

Normalisation condition for the first group:

$$g_0 = \frac{1}{h_0} \left( 1 - \sum_{i=1}^I h_i g_i \right)$$

# Implicit preferences in Europe

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## **Saez (2002), US**

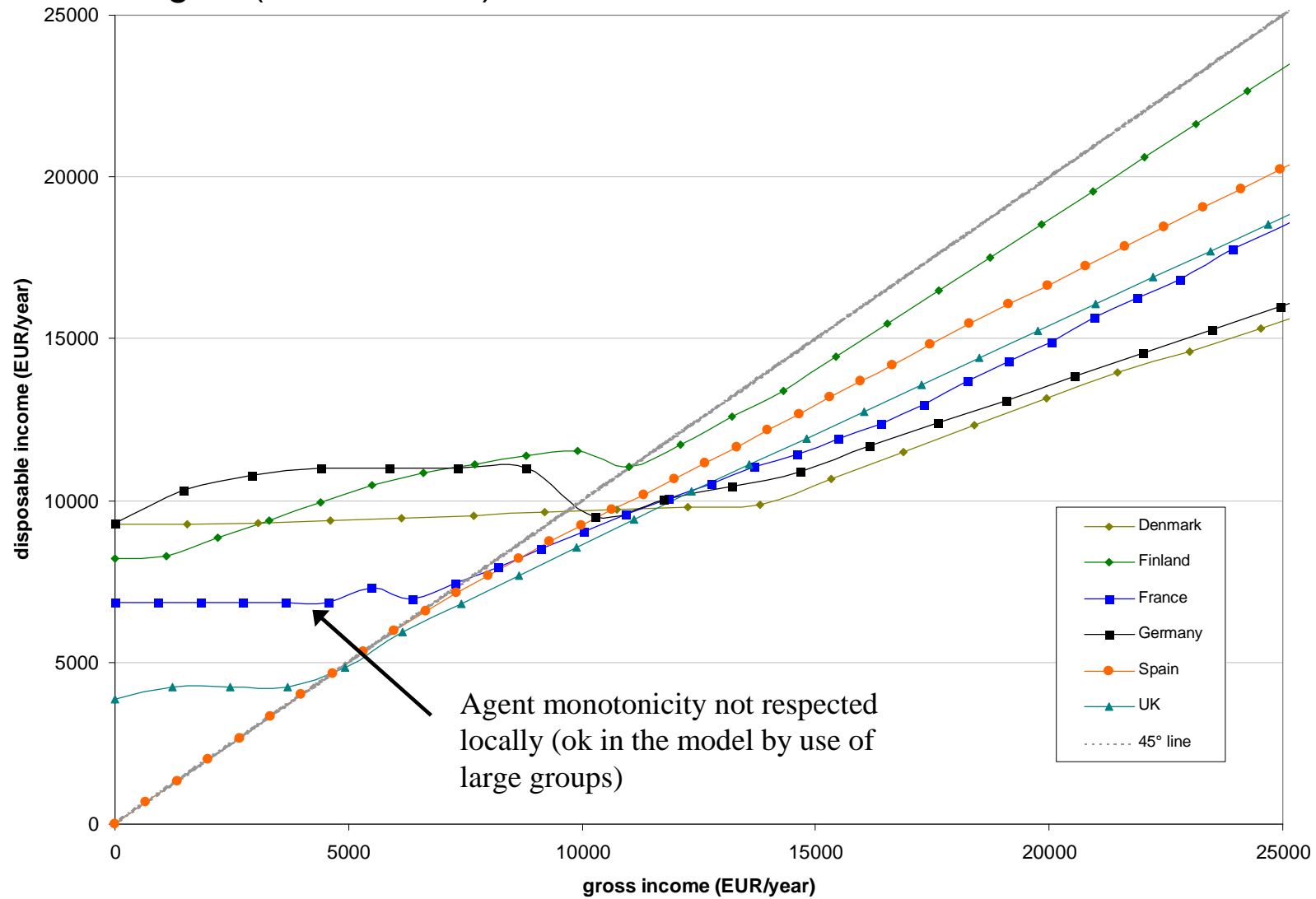
- set of transfers (EITC, TANF, food stamp) for single mothers  
→ well explained by the model
- no benefit for singles and model less relevant

## **Europe**

- contrary to the US, welfare system for singles in several EU countries
- possibility to exploit variation across countries: from no transfers (SP) to highly generous social assistance (DK)
- First intuitions given by budget constraints for hypothetical households

# Budget constraints

## Singles (low incomes)





# Implicit preferences in Europe

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Other questions:

## **Check redistributive tastes:**

- Are social weights decreasing?
- Weights of group 0 versus group 1 ?

## **Test Paretianity of the social welfare function**

- Are social weights  $g_i > 0$  ?
- Up to which elasticity threshold does Paretianity hold?

# Data and selection

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Country	Data	Year	size of selected	weighted no. of singles	proportion of all singles
Denmark	European Community Household Panel	1995	574	417,945	40%
Finland	Income distribution survey	1998	1193	421,447	38%
France	Household Budget Survey	1994/5	1639	3,615,095	40%
Germany	German Socio-Economic Panel	1998	1387	8,242,791	43%
UK	Family Expenditure Survey	1995/6	1227	5,172,454	47%
Italy	Survey of Households Income and Wealth	1996	1482	3,651,857	51%
Spain	European Community Household Panel	1996	738	1,297,780	37%

## Selection:

- single individuals
- potential workers (no pensioners, no student, working age 18-60)
- no substantial capital income (max 10% of earned income)

## Incomes:

$Y_i$ : income from wage and self-employment income

$C_i$ : includes tax, contributions, transfers and (contributory) unemployment benefits (treated as redistributive transfer here)

# Application: defining groups

Arbitrary definitions but attempt to make it comparable across countries

**Type 0:** from 0 to part-time paid at minimum wage (rare observation inbetween)

**Type 1:** working poor (up to 1.3x the minimum wage)

**Type 2:** up to median income

**Type 3:** up to 1.5 x median income

**Type 4:** up to 2 x median income

**Type 5:** above

**Cut-off points (monthly gross income in EUR)**

groups	Denmark	Finland	France	Germany	Italy	Spain	UK
0	0	0	0	0	0	0	0
1	788	574	515	627	509	399	595
2	2050	1492	1338	1630	1322	1038	1548
3	2628	1823	1674	2094	1695	1331	1984
4	3942	2735	2511	3141	2543	1997	2976
5	5256	3646	3348	4188	3390	2662	3968

**Proportions  $h_i$**

groups	Denmark	Finland	France	Germany	Italy	Spain	UK
0	0.06	0.08	0.07	0.05	0.09	0.07	0.15
1	0.25	0.28	0.20	0.24	0.22	0.24	0.17
2	0.20	0.22	0.23	0.20	0.18	0.18	0.21
3	0.37	0.28	0.28	0.32	0.27	0.25	0.25
4	0.07	0.11	0.11	0.13	0.13	0.16	0.12
5	0.06	0.04	0.10	0.06	0.11	0.10	0.10

# Application: extensive elasticity

limited evidence for singles (compared to married women) and no evidence of participation elasticity larger than 0.5 (in contrast to married women)

Country	Data	Selection	Elasticity
<b>Sweden*</b>			
Andren (2002)	HINK 97-98	single mothers	0.5
<b>Finland</b>			
Bargain and Orsini (2006)	IDS 97	single women	0.18 - 0.33
<b>France</b>			
Bargain and Orsini (2006)	HBS 95	single women	0.04 - 0.07
Laroque and Salanie (2002)	Tax revenue 97	single women	0.36
<b>Germany</b>			
Bargain and Orsini (2006)	GSOEP 98	single women	0.08 - 0.15
Bonin, Kempe and Schneider (2002)	GSOEP 00		
Haan and Steiner (2005)	GSOEP 02	single women	0.01 - 0.09
		single men	0.06 - 0.19
<b>Italy</b>			
Aaberge, Colombino and Wennemo (2002)	SHIW 1993	single women	0.06
		single men	0.08

\* There are no results concerning Denmark. Leven and Kreiner (2005) indicates that elasticities for Sweden for Sweden may give some indication of labor supply behavior in Denmark

# Application: extensive elasticity

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**Participation elasticity** in this model:

$$\eta_i = \frac{C_i - C_0}{h_i} \frac{\partial h_i}{\partial (C_i - C_0)}$$

- Classical participation elasticities from the literature correspond to 1% increase in  $Y_i$  rather than in  $C_i - C_0 = Y_i - (T_i + C_0)$
- In most cases,  $T_i + C_0 > 0$  so that  $C_i - C_0$  increase by more than 1% and  $\eta_i$  is overstated by usual estimates
- The inverse is true only when  $T_i < -C_0$ , i.e. when transfers to working poor are very large

**Sensitivity analysis:**

0 (pure intensive model), 0.25 (baseline) and 0.5

# Application: intensive elasticity

Here too, limited evidence for singles but modest size

Country	Data	Selection	Elasticity
<b>Sweden*</b>			
Andren (2002)	HINK 97-98	single mothers	0.55 - 0.87
<b>Finland</b>			
Bargain and Orsini (2006)	IDS 97	single women	0.18 - 0.34
<b>France</b>			
Bargain and Orsini (2006)	HBS 95	single women	0.08 - 0.14
<b>Germany</b>			
Bargain and Orsini (2006)	GSOEP 98	single women	0.09; 0.18
Haan and Steiner (2005)	GSOEP 02	single women single men	0.02 - 0.24 0.09 - 0.28
<b>Italy</b>			
Aaberge, Colombino and Wennemo (2002)	SHIW 1993	single women single men	0.10 0.11
<b>Spain</b>			
Labeaga, Oliver and Spadaro (2005)	ECHP 95	singles	0
Quote in Oliver and Spadaro (2004)			0.5
<b>UK</b>			
Blundell and Walker (1986)	FES 1980	married men	0.024

\* There are no results concerning Denmark. Leven and Kreiner (2005) indicates that elasticities for Sweden for Sweden may give some indication of labor supply behavior in Denmark

# Application: intensive elasticity

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Earnings (mobility) elasticity

$$\zeta_i = \frac{C_i - C_{i-1}}{h_i} \frac{\partial h_i}{\partial (C_i - C_{i-1})}$$

Classical wage elasticity of labor supply

$$\varepsilon_i = \frac{1 - \tau_i}{Y_i} \frac{\partial Y_i}{\partial (1 - \tau_i)} \quad \text{with EMTR } \tau_i = \frac{T_i - T_{i-1}}{Y_i - Y_{i-1}}$$

Relating  $\zeta$  and  $\varepsilon$ :

$$\zeta_i (Y_i - Y_{i-1}) = \varepsilon_i Y_i$$

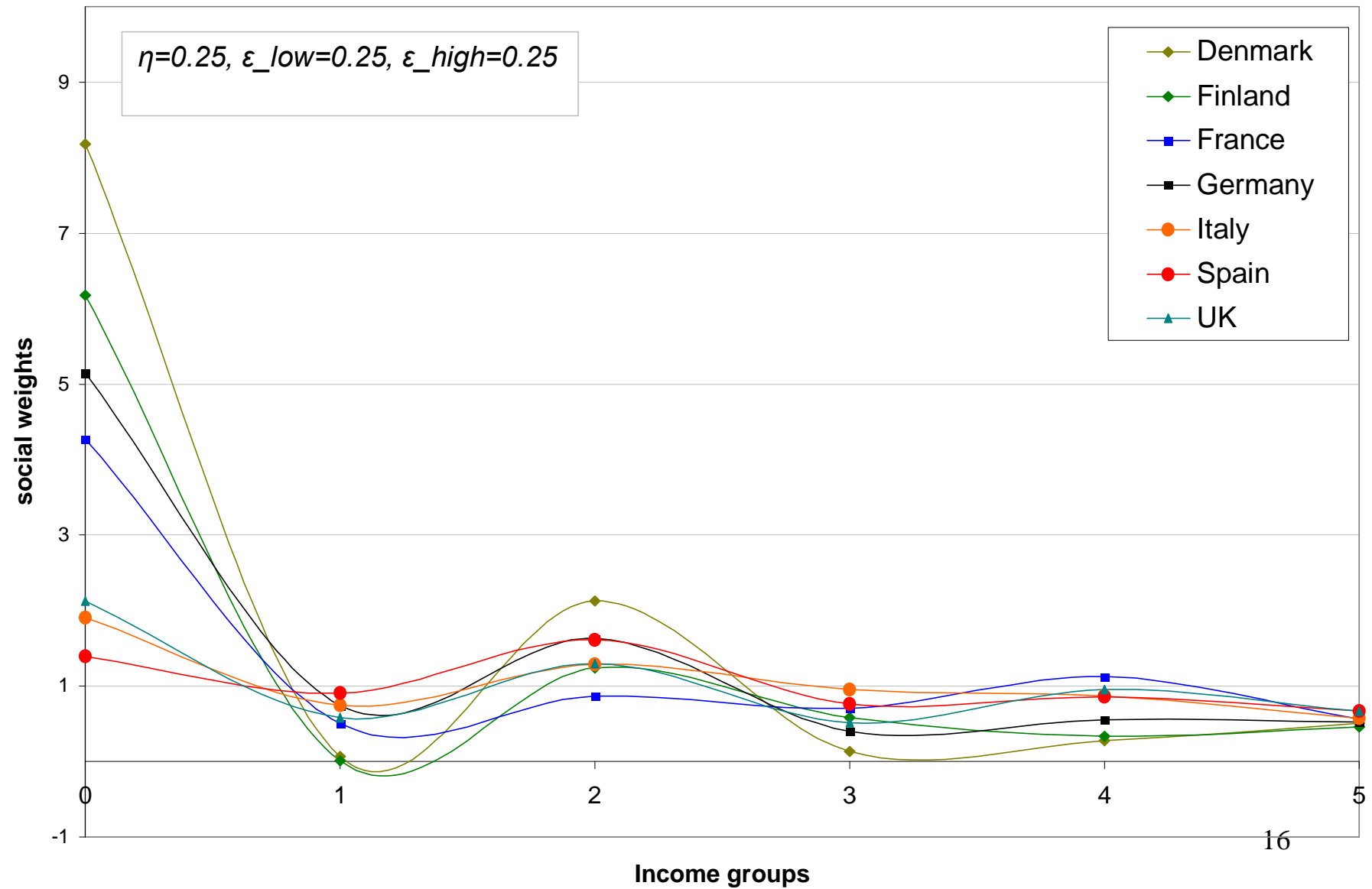
**Numerical application (in terms of  $\varepsilon$ ):**

Saez: 0.25 for low income (up to \$20,000, 1<sup>st</sup> half of distribution) and 0.25 or 0.5 above

Similar choice here:

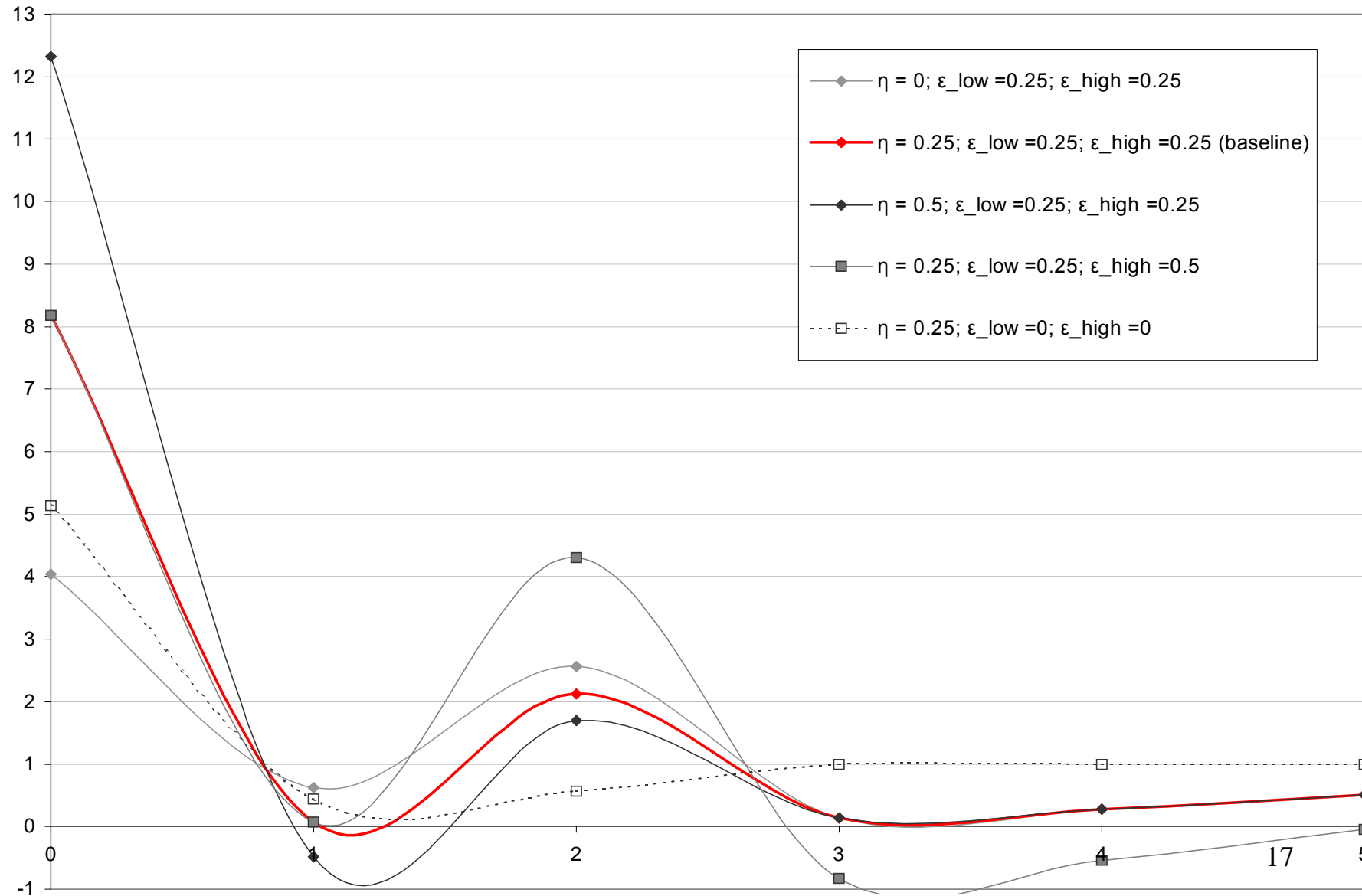
- 0.25 for group 0 to 2 (approx. 1<sup>st</sup> half), above: 0.25 (baseline) or 0.5
- 0 (pure extensive model)

# Results: mixed model (baseline)

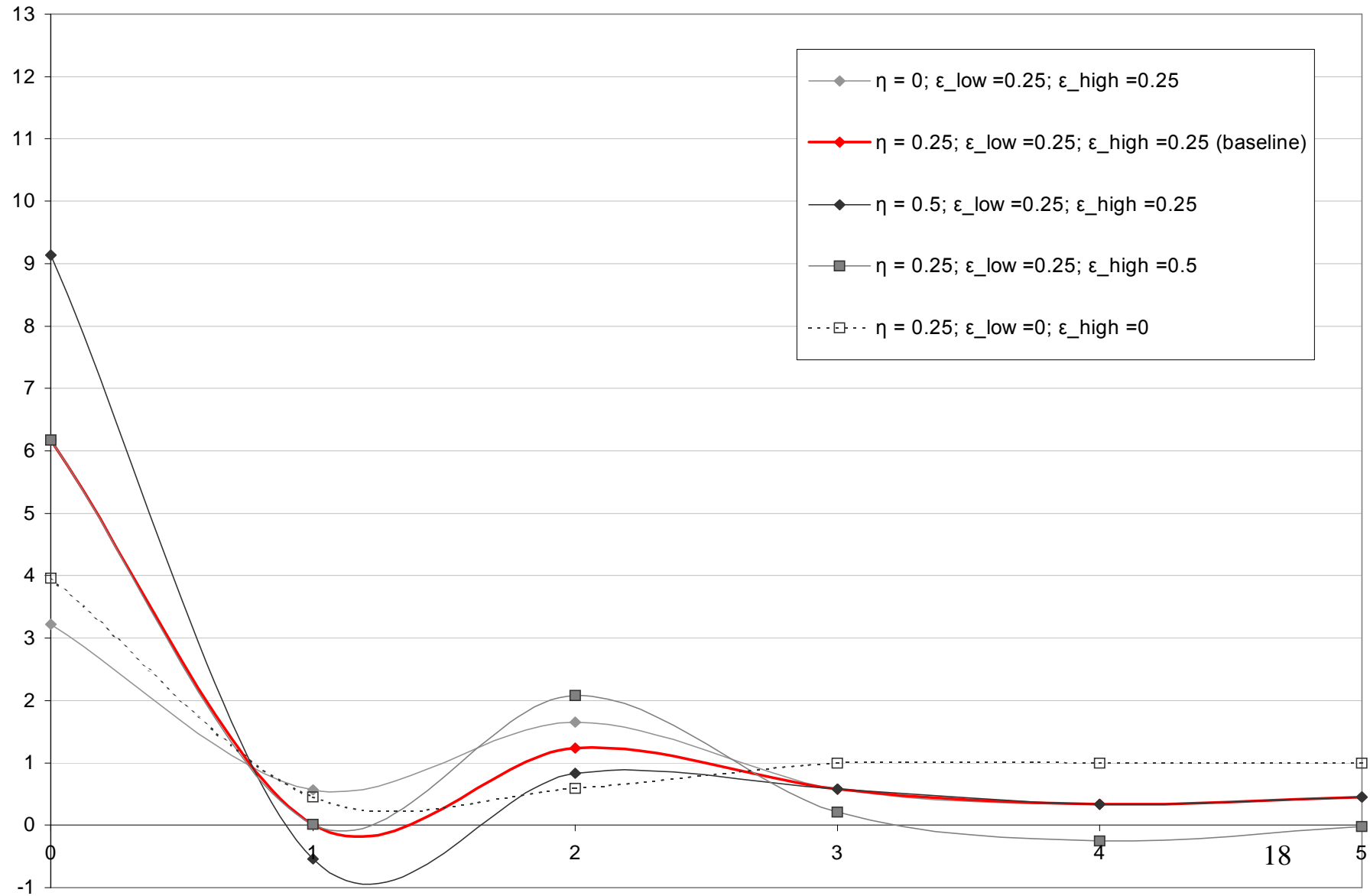




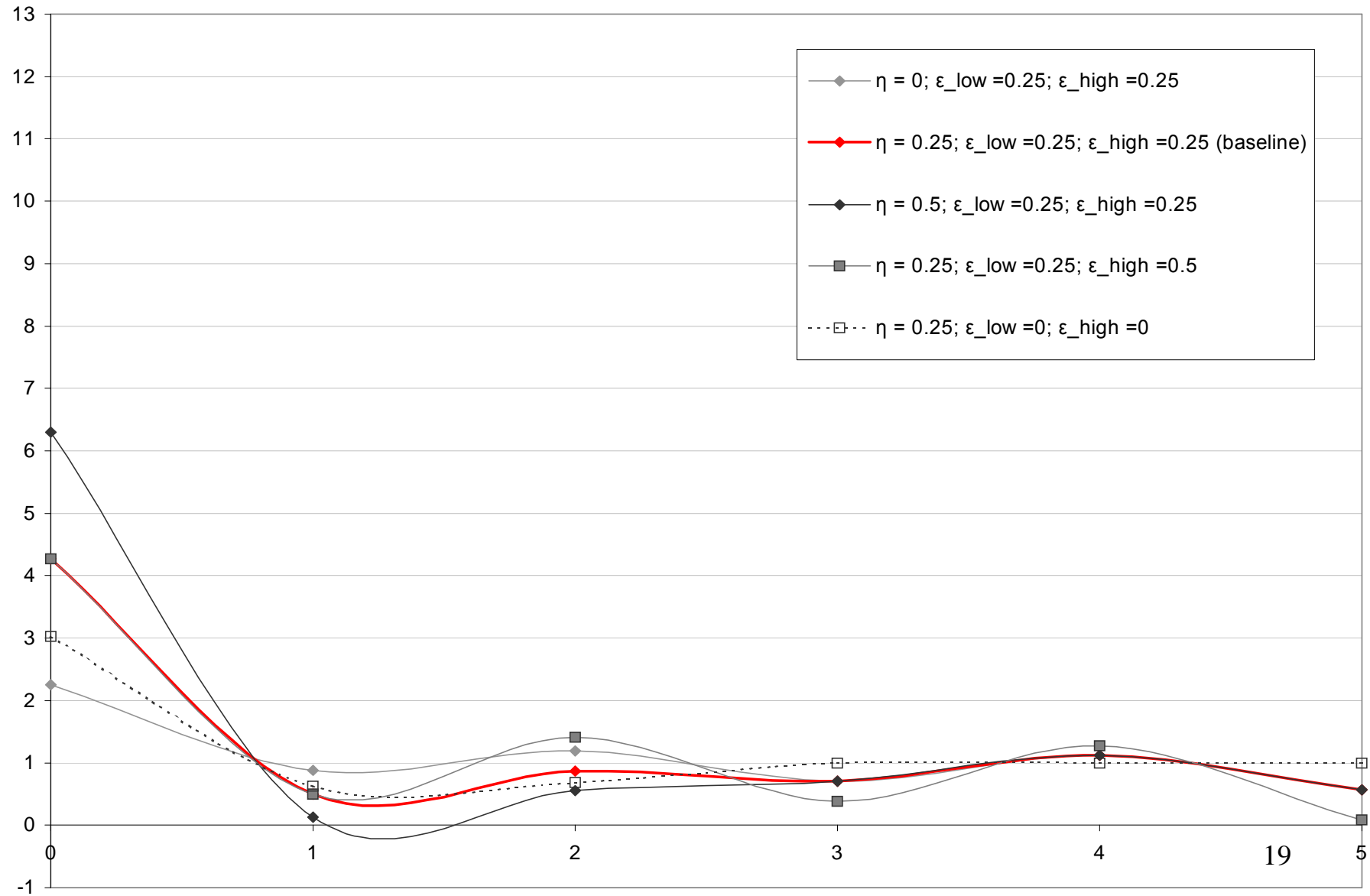
# Sensitivity: Denmark



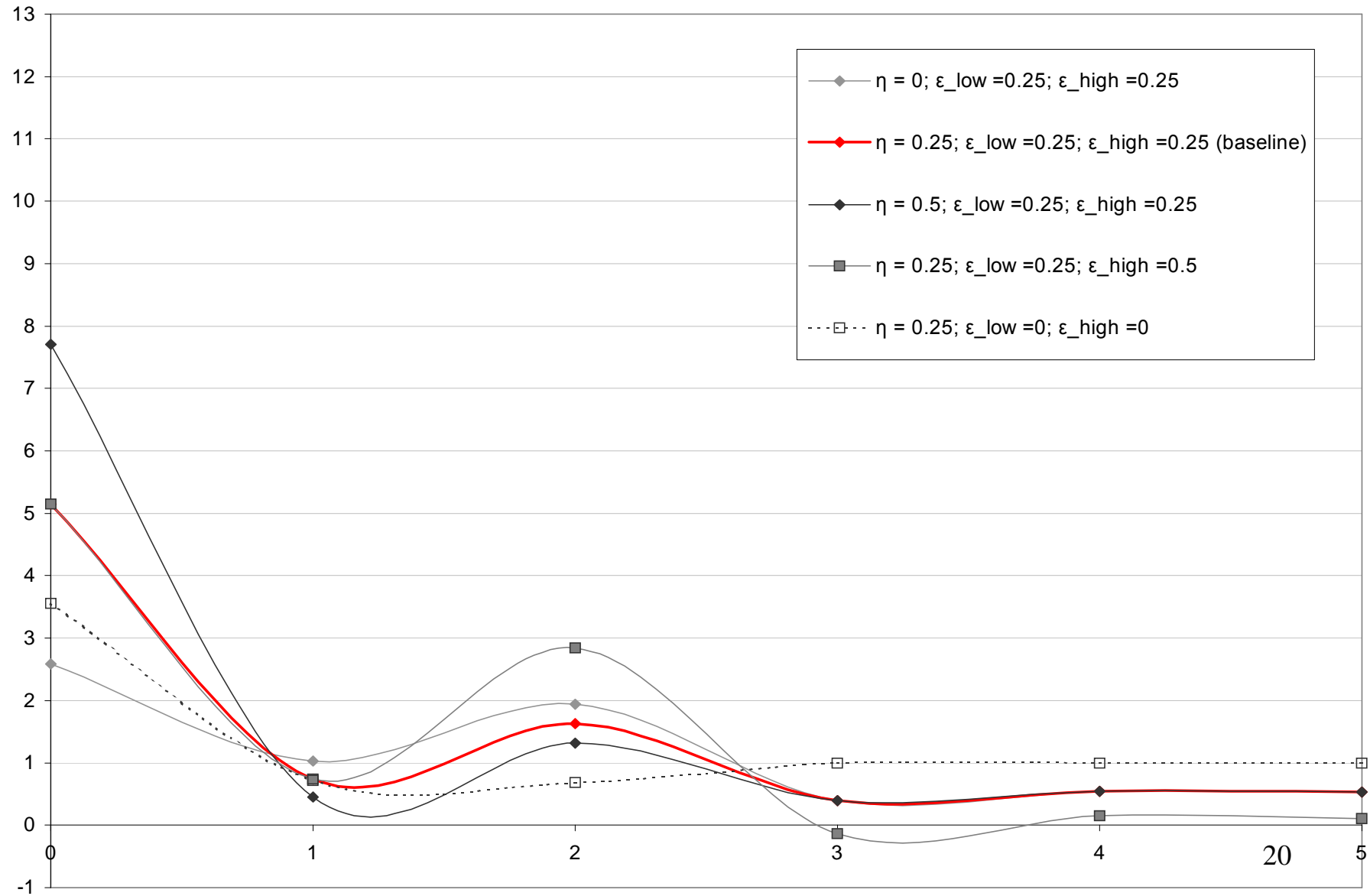
# Sensitivity: Finland



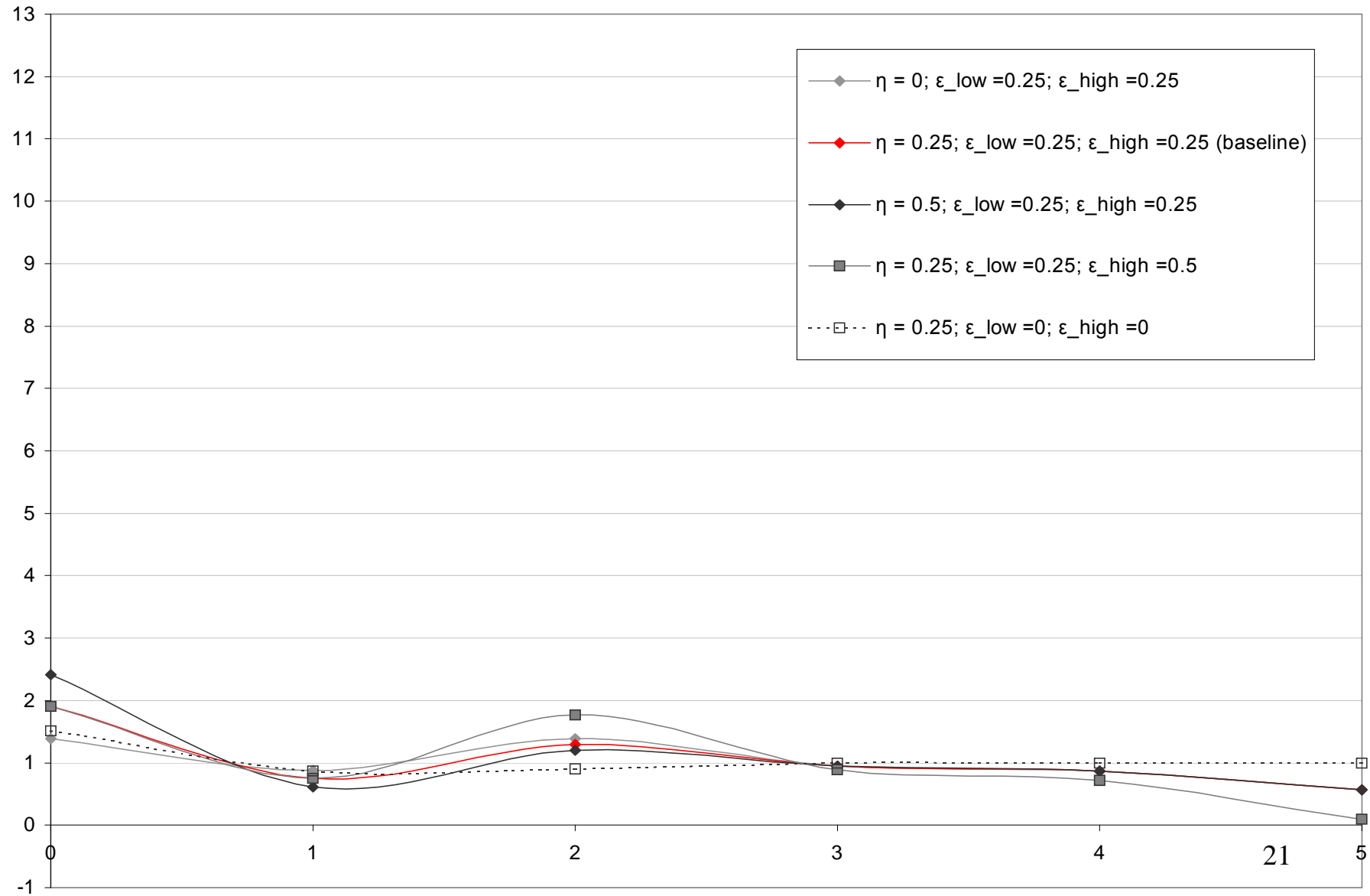
# Sensitivity: France



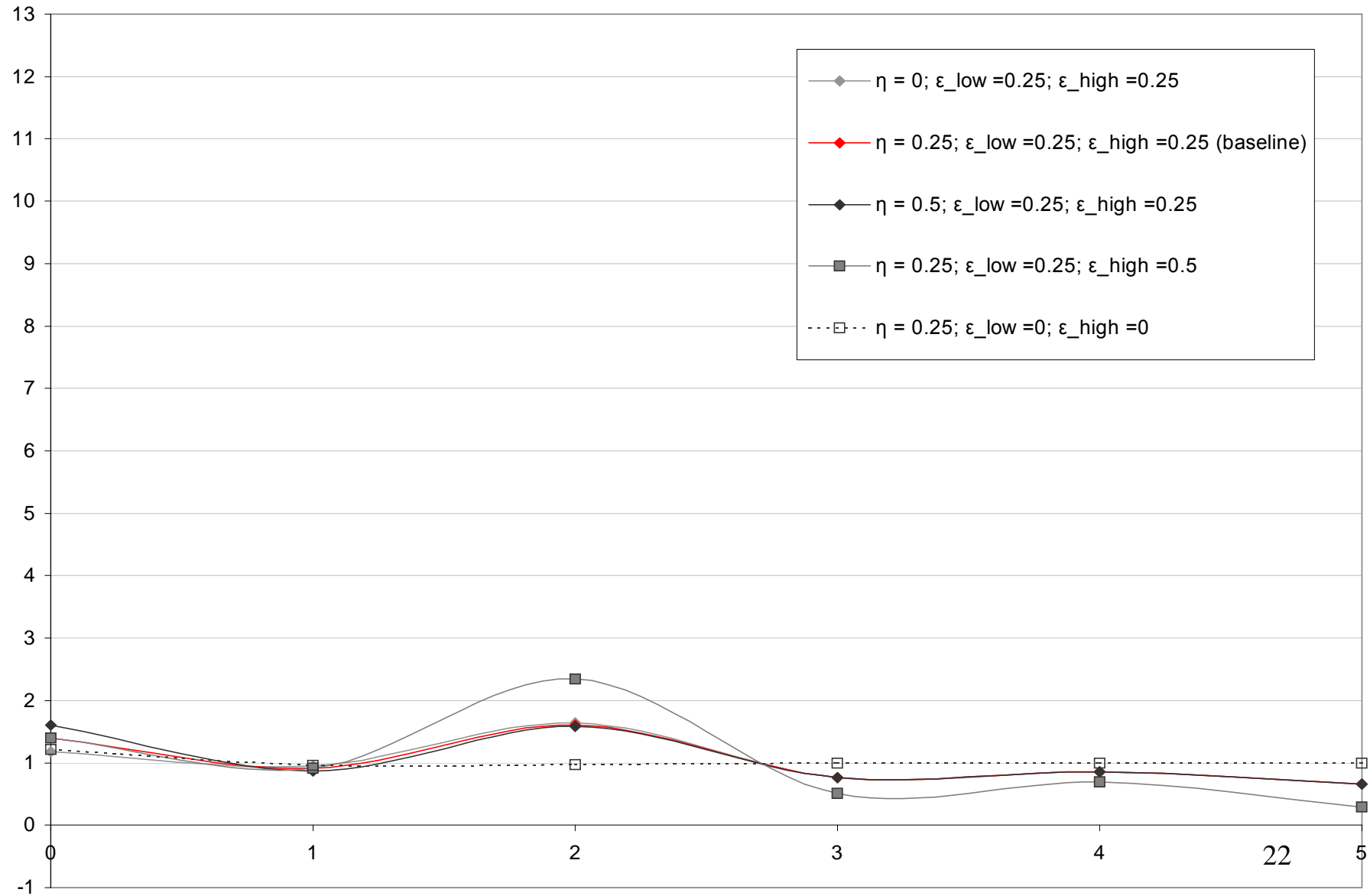
# Sensitivity: Germany



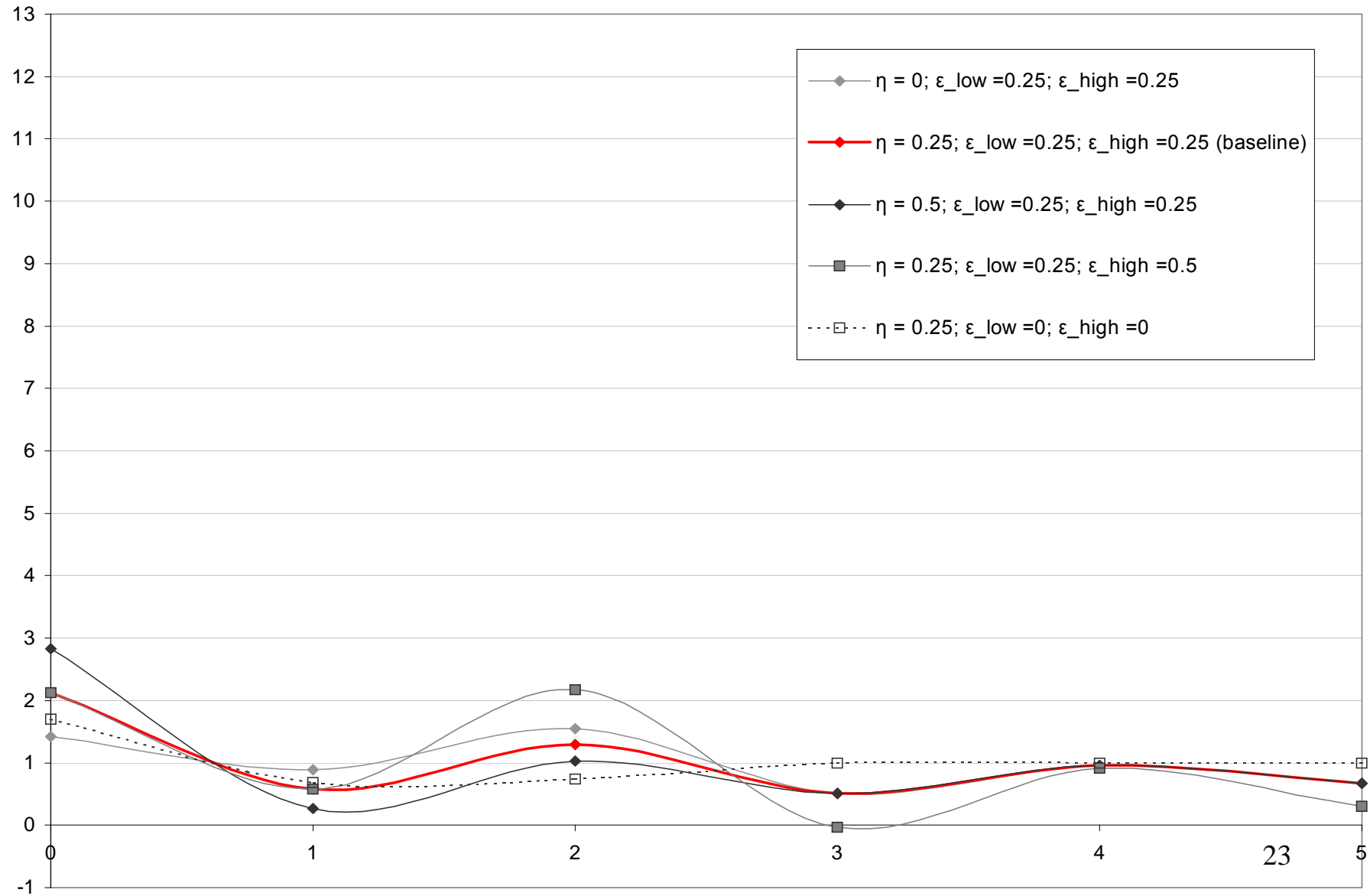
# Sensitivity: Italy



# Sensitivity: Spain



# Sensitivity: UK



# Conclusion

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## Results in line with general intuition on welfare regimes

- 'flat' redistributive tastes in Southern Europe and to some extent in the UK
- generous SA translates into high weight on group 0 in Nordic countries, Germany and France; relatively flat for other groups = close to Rawlsian preferences
- group 1: large distortion (high phase-out rate, esp. in Nordic countries) rationalised by lower social weights
- gap between weights on groups 0 and 1 even larger if high participation elasticity (=reason to accept distortions rationalised by social preferences)

## Paretianity violated

- for higher incomes if high intensive elasticity (esp. in Nordic countries)
  - for group 1 if extensive elasticity not marginal in Nordic countries, if  $>0.5$  in Germany, France, UK ...
- ... but no evidence for elasticities  $> 0.5$  for singles

Social preferences with lower elasticities display a reasonable pattern compatible with the fiction of a Paretian planner



# Conclusion (2)

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## More generally:

- Saez: large SA not optimal if large extensive elasticity but EITC is
- European systems (except South) with generous SA and no EITC for childless singles must be justified by small participation elasticity and/or large redistributive tastes
- Recent trend toward EITC schemes in Europe translates a change in social preferences ... or recognition of the disincentive effects (i.e not so small participation elasticity for some groups) ?

## Future work

- role of unemployment benefits
- look at single parents:
  - large transfers to unemployed (Nordic and corporatist models) versus large transfers to working poor with children (UK)
  - cf following graph
  - more heterogeneity than in the case of childless singles
  - in particular, are negative EMTR from the WFTC due to larger participation elasticity for single mums in the UK or to higher weight  $g_1$  ?

# Budget constraints

Single parents with 2 kids (low incomes)

