

Micro-Macro Workshop

Analysing Welfare Reform
in a Microsimulation-AGE Model:
The Value of Disaggregation

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Example of a Realistic Social Security Reform Proposal

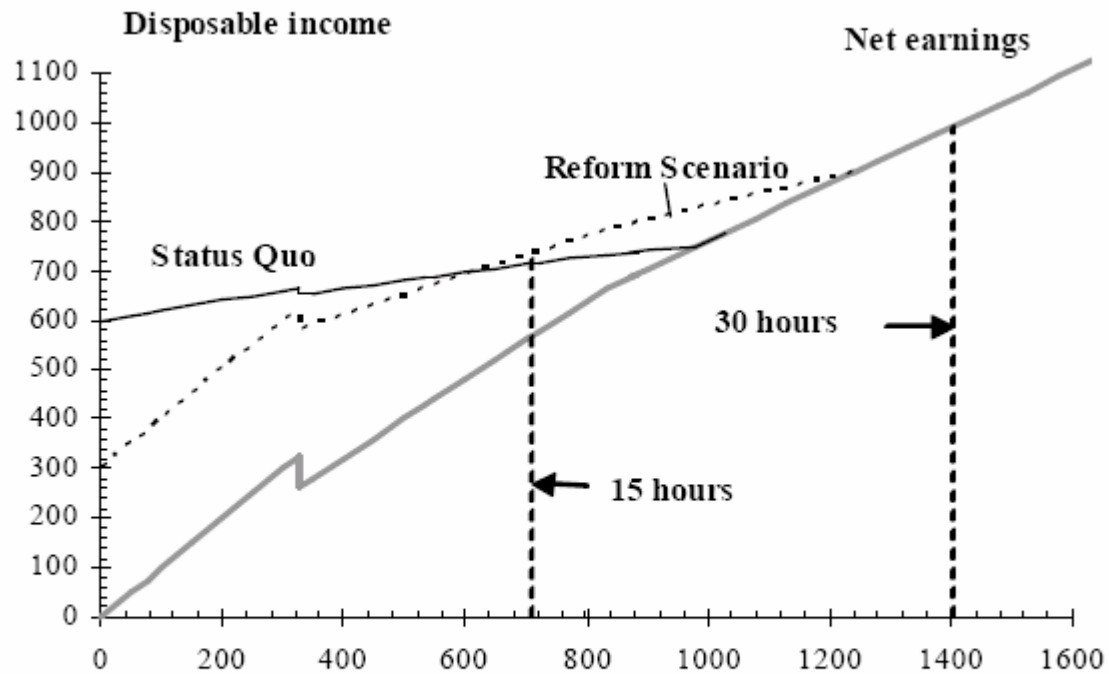


Figure 1: Income function of a single without children

Example of a Realistic Social Security Reform Proposal

- Initial situation: “Poverty trap”:
 - Relatively high basic social security payments.
 - High transfer withdrawal rates.
 - Low labour supply incentives, particularly in couples.
- Social security reform:
 - Lower basic social security payments.
 - Lower transfer withdrawal rates.

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Expected impacts:

- Higher labour supply incentives, particular at the lower end of the wage distribution.
- Lower wages.
 - normal labour supply effect.
 - deterioration of trade union's fallback option
 - effect of tax progressivity (unclear)
- Higher production.
- Higher tax revenue → compensatory tax cuts.

Simulation results: Role of the aggregation level

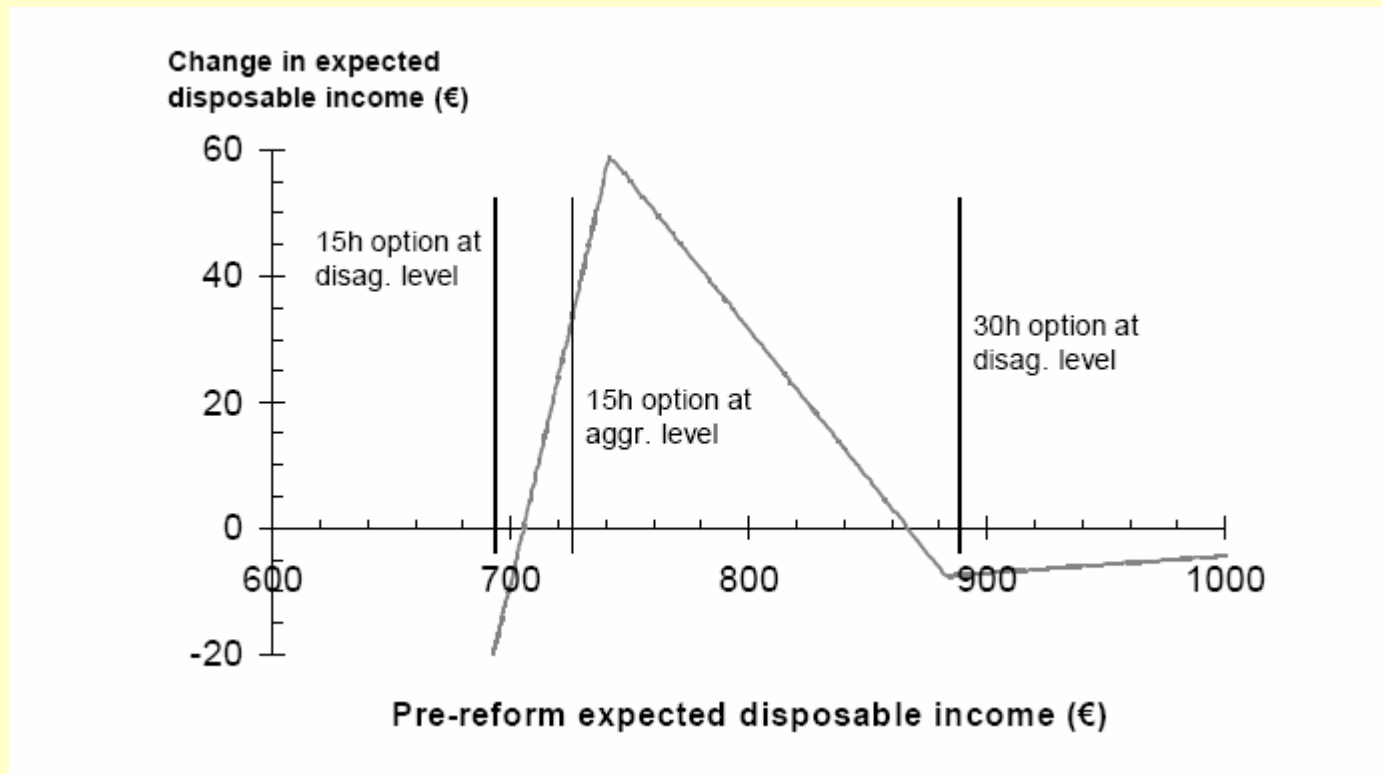
- We compare a fully disaggregated version with a version with representative households per household type.

Table 1: Hours distribution of single females without children

Hours	Low-skilled single women			High-skilled single women		
	Benchm. share (%)	Post-ref. distrib.		Benchm. share (%)	Post-ref. distrib.	
		Aggr. version	Disag. version		Aggr. version	Disag. version
	(1)	(2)	(3)	(4)	(5)	(6)
0	20.7	9.2	13.5	13.9	5.4	7.4
15	8.6	9.9	10.1	4.8	5.9	5.9
30	3.4	7.2	6.1	7.4	9.7	9.4
38	53.4	57.8	55.3	53.0	55.9	55.0
47	13.8	16.0	15.0	20.9	23.1	22.4

Simulation results: Role of the aggregation level

- Income effect of the reform on particularly those individuals that were non-participating in the initial situation.



Comparison of versions

Labour supply effects

- Disaggregated version has weaker labour supply responses across all groups.

Table 3: Partial labour supply effects

Group	Aggregated version			Disaggregated version		
	PR	AWT	TLS	PR	AWT	TLS
Married men	1.88	-0.11	1.90	1.39	-0.14	1.35
Married women	0.97	0.13	1.54	0.10	-0.07	0.09
Singles	5.85	-0.36	6.74	4.39	-0.41	4.91
Low-skilled	3.66	0.14	5.47	2.28	0.02	3.33
High-skilled	1.87	-0.05	2.19	1.18	-0.08	1.34
All	2.20	-0.05	2.68	1.38	-0.08	1.64

PR: participation rate (change in percentage points), AWT: average working time (change in per cent), TLS: total labour supply in hours (change in per cent)

Comparison of versions

General equilibrium effects

- Effects on wages and employment are weaker in disaggregated version.

Table 5: General Equilibrium Effects on Wages and Employment

	Aggregated version			Disaggregated version		
	Low skilled	High skilled	Total	Low skilled	High skilled	Total
Gross wage (%)	-4.73	-2.66	-3.63	-4.12	-2.18	-3.09
Labour supply (%)	2.97	1.15	1.38	1.44	0.60	0.71
in 1000 persons	153.70	347.50	501.20	98.12	222.98	321.10
Employment (%)	3.55	0.99	1.28	3.07	0.81	1.06
in 1000 persons	146.99	295.31	442.30	135.36	254.82	390.17
Unempl. rate (p.p.)	-0.69	0.16	0.07	-1.66	-0.26	-0.45
Av. marg. tax (p.p.)	4.09	1.69		4.45	0.65	

Comparison of versions

General equilibrium effects

- In disaggregated version the positive effect of the reform on the public budget disappears.

Table 6: General Equilibrium Effects on Macroeconomic Variables

	Aggregated version	Disaggregated version
VA share of labour (p.p.)	-1.20	-1.00
Interest rate (%)	4.81	3.89
Aggr. consumption (%)	-0.57	-0.42
Aggr. investment (%)	5.22	4.21
GDP (%)	0.61	0.51
Inc. tax adjustment (p.p.)	-0.11	0.00

Simulation results: Partial vs. general equilibrium

- In general equilibrium, labour supply reacts less strongly because of wage feedback effects.

Group	Partial equilibrium			General equilibrium		
	Disaggregated version			Disaggregated version		
	(4) PR	(5) AWT	(6) TLS	(4) PR	(5) AWT	(6) TLS
Married men	1.39	-0.14	1.35	1.24	-0.20	1.12
Married women	0.10	-0.23	0.09	-0.06	-0.30	-0.21
Singles	4.39	-0.29	4.91	4.22	-0.38	4.62
Low-skilled	2.28	-0.15	3.33	2.03	-0.25	2.89
High-skilled	1.18	-0.21	1.34	1.04	-0.27	1.12
All	1.38	-0.20	1.64	1.22	-0.27	1.38

Conclusions

- Model setup allows the combined analysis of
 - detailed LS decision (intensive vs. extensive margin)
 - GE effects on wage and unemployment
 - consequences of balancing public budget
- Full disaggregation of households results in less strong labour supply effects.
- Wage reactions in general equilibrium dampen labour supply effects.
- Optimal model setup depends on the economic variables that one is interested in.