Labor Market Effects of The German Tax Reform 2000

A Behavioral Microsimulation Analysis

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16.11.2004

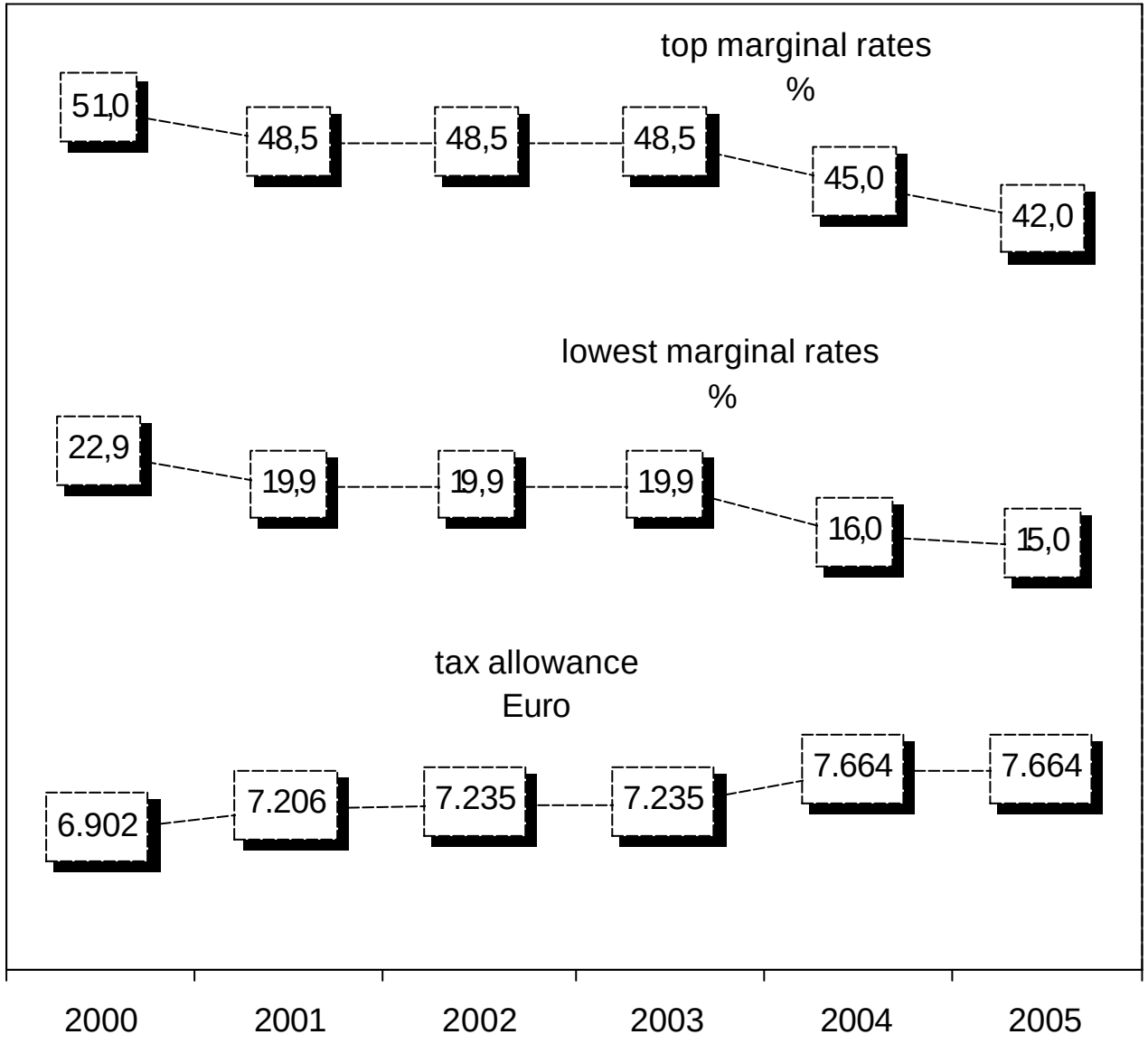
Purpose of the Analysis

- Focus on Personal Income Tax: Change of Marginal Tax Rates
- Ex Ante Evaluation

Empirical Analysis of:

1. Effects on Disposable Income- *Microsimulation*
2. Work Incentive Effects - *Labor Supply Estimation*
3. Wage Effects – *Partial Equilibrium Model*
4. Employment Effects – *Partial Equilibrium Model*

Figure 1: Changes in the personal income tax 2000 – 2005



Effects on Disposable Income

- Simulation of the net household income before and after the reform
  - SOEP (2002-Wave): Private Households 38,8 million
  - Year of Analysis 2000
- Controlling for bracket creeping
  - Inflation 2000-2005 about 8%
  - Tax payments increase in real terms by 6%
  - Government has to reimburse households on average by 240€

Calculation of Net Household Income

11064 households (38, 7 million)

Input

Gross wages, other income, working hours

(GSOEP)

Microsimulation Model

-German tax system
  -Before reform
  -After reform
-Social security contributions
-Child benefits / tax allowances
-Social assistance benefits

Output

Net household income

- before refrom
- after reform

=> winner/loser

Impact on Disposable Income: First Round

		with adjustment for bracket creeping			
		net income(in €) 2000	net income(in €) 2005	Δ (in €)	Δ (%)
west	couple	35,495	36,639	1,145	3.22
	male single	19,774	20,612	838	4.24
	female single	16,159	16,471	312	1.93
	all	27,132	27,981	850	3.13
east	couple	29,138	29,827	689	2.36
	male single	13,525	13,816	291	2.15
	female single	14,014	14,159	145	1.04
	all	22,044	22,507	463	2.10
all		26,183	26,961	778	2.97

Labor Supply Estimation

- Discrete Choice Labor Supply Estimation
  - Discrete vs. continuous specification
    - Non-linearity in budget constraint
    - Endogeneity of wages
  - Limitation of Conditional Logit
    - IIA
    - Random Specification

Method: Conditional Logit

$$U_{ij} = V_{ij} + e_{ij} = X'_{ij} b + e_{ij}$$

$$\Pr(Y_i = k) = \Pr(U_{ik} > U_{im}), \forall k \neq m$$

$$\Pr(Y_i = k) = \frac{\exp\left(X'_{ik} b \right)}{\sum_{j=1}^{J} \exp\left(X'_{ij} b \right)}, k \in J$$

$$\ln L = \sum_{i=0}^{n} \sum_{j=0}^{J} d_{ij} \ln \Pr(Y_i = k),$$

$$d_{ij} = \begin{cases} 1 \Leftrightarrow Y_i = j \\ 0 \end{cases}$$

$$U_{ij}(x_{ij}) = x'_{ij} A x_{ij} + b' x_{ij} + e_{ij}$$

- Flexible Specification
  - Derivatives
  - Labor Supply Elasticities

- Separate estimations for:

•Couples	(flex /flex)	(13 alt)	(obs.: 4157)
•Couples	(fix/flex)	(3 alt)	(obs.: 600)
•Couples	(flex /fix)	(5 alt)	(obs.: 1177)
•Female single		(5 alt)	(obs.: 1055)
•Male single		(3 alt)	(obs.: 820)

Data

- GSOEP (2002)
- Households with flexible labor supply (7809)
  - No self-employed, no students …
- Discrete hour points are defined
- Net household income is simulated for each working category
    - Not observed wages are estimated
- Leisure terms for each category are calculated (80h-working time).
- Household specific variables are interacted with leisure and income.

Labor Supply Elasticities:1% Gross Wage Increase

	couples. both spouses flexible		couples. only one spouse flexible		singles	
	women	men	women	men	women	men
	change in the participation rate (in percentage points)					
all couples/all singles	0.13 (0.12-0.15)	013 (0.11-0.14)	0.16 (0.12-0.20)	0.14 (0.08-0.19)	0.11 (0.07-0.14)	0. 18 (0.13-0.19)
west Germany	0.14 (0.12-0.16)	0.12 (0.11-0.14)	0.17 (0.12-0.21)	0.12 (0.07-0.17)	0.11 (0.07-0.15)	0.16 (0.11-0.20)
east Germany	0.10 (0.08-0.13)	0.14 (0.10-0.18)	0.13 (0.08-0.18)	0.19 (0.11-0.28)	0.10 (0.06-0.14)	0.26 (0.18-0.34)
	change in total hours worked (in percent)					
all couples/all singles	0.35 (0.31-0.40)	0.20 (0.18-0.23)	0.40 (0.28-0.52)	0.22 (0.12-0.32)	0.25 (0.17-0.34)	0.29 (0.20-0.40)
west Germany	0.38 (0.33-0.44)	0.20 (0.17-0.23)	0.43 (0.30-0.56)	0.18 (0.10-0.27)	0.26 (0.17-0.34)	0.24 (0.17-0.33)
east Germany	0.27 (0.20-0.34)	0.22 (0.16-0.28)	0.28 (0.18-0.38)	0.31 (0.14-0.48)	0.24 (0.15-0.33)	0.42 (0.26-0.59)

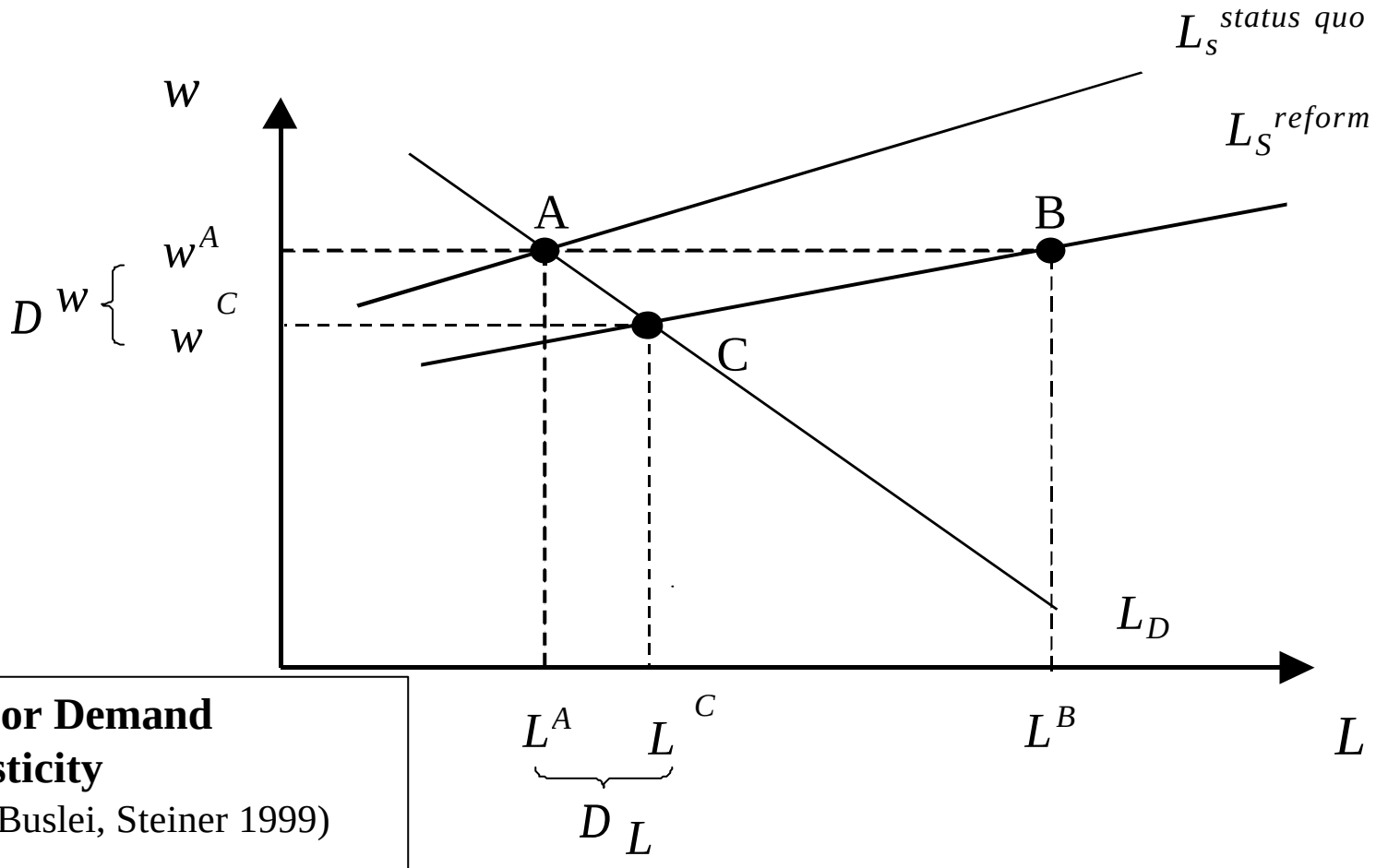
Labor Supply Elasticities: Tax Reform

	couples, both spouses flexible		couples, only one spouse flexible		singles	
	women	men	women	men	women	men
	change in the participation rate (in percentage points)					
all couples/all singles	0.96 (0.84-1.08)	0.74 (0.66-0.83)	0.64 (0.35-1.03)	0.64 (0.41-0.89)	0.46 (0.31-0.62)	0.90 (0.62-1.19)
West Germany	1.01 (0.87-1.16)	0.71 (0.62-0.81)	0.69 (0.35-1.03)	0.61 (0.36-0.86)	0.49 (0.33-0.66)	0.81 (0.49-1.12)
East Germany	0.78 (0.60-0.96)	0.86 (0.65-1.06)	0.44 (0.25-0.63)	0.76 (0.44-1.07)	0.36 (0.22-0.50)	1.20 (0.85-1.55)
	change in total hours worked (in percent)					
all couples/all singles	2.58 (2.24-2.92)	1.20 (1.06-1.34)	1.82 (0.98-2.66)	1.05 (0.61-1.49)	1.23 (0.81-1.65)	1.49 (1.04-1.96)
West Germany	2.73 (2.33-3.14)	1.16 (1.00-1.31)	1.99 (1.03-2.95)	0.99 (0.54-1.45)	1.29 (0.84-1.74)	1.34 (0.89-1.80)
East Germany	2.05 (1.57-2.54)	1.4 (1.02-1.86)	1.06 (0.60-1.53)	1.19 (0.65-1.73)	1.02 (0.62-1.41)	1.96 (1.26-2.65)

Labor Supply Effects: Tax Reform

		number of persons additionally participating after the reform	total hours effect (per week)	hours effect due to additional participation (per week)	conditional hours effect (per week)	number of full time equivalents due to the tax reform
		(1)	(2)	(3)	(4)	(5)
couples	women	125 (102-148)	5,927 (4,911 -6,942)	3,362 (2,744-3,980)	2,565 (2,125-3,004)	87 (71-103)
	men	95 (79-111)	5,110 (4,339-5,880)	3,899 (3,259-4,538)	1,211 (987-1,435)	101 (84-118)
singles	women	24 (16-32)	1,596 (1,077-2,095)	793 (526-1,060)	792 (518-1,088)	21 (14-28)
	men	31 (9-54)	1,759 (865-2,654)	1,290 (430-2,151)	468 (309-628)	34 (11-56)
total		276 (214-338)	14,382 (11,514-17,251)	9,345 (7,693-10,998)	5,037 (4,009-6,065)	243 (199-286)

Wage and Employment Effects



Labor Demand Elasticity

(Buslei, Steiner 1999)

	unskill	/	skill
•Female:	-0,47	/	-0,48
•Male:	-0,67	/	-0,24

Wage effects by region, gender and skill

	West		East	
	skilled	unskilled	skilled	unskilled
	changes in %			
women	2.37	1.88	1.91	1.55
men	2.41	1.16	2.95	1.01

Employment Effects: Tax Reform

		number of persons additionally participating after the reform	total hours effect (per week)	hours effect due to additional participation (per week)	conditional hours effect (per week)	number of full time equivalents due to the tax reform
		(1)	(2)	(3)	(4)	(5)
couples	women	76	3,749	2,039	1,710	53
		(58-94)	(3,012-4,486)	(1,556-2,520)	(1,402-2,019)	(40-65)
	men	48	2669	1983	686	52
		(40-57)	(2,262-3,307)	(1,643-2,322)	(552-819)	(43-60)
singles	women	12	906	406	500	11
		(8-16)	(613-1,199)	(263-547)	(333-669)	(6-14)
	men	14	879	574	305	15
		(-3-30)	(240-1,157)	(-550-1,202)	(198-412)	(-1-31)
total		150	8,203	5,000	3,201	130
		(106-194)	(6,346-10,061)	(3,978-6,022)	(2,256-3,879)	(103-156)

Conclusion

- Households gain from tax reform
- There are significant labor supply effects
- Wage have to decrease by about 2%
- About 50% of the labor supply results in employment
- Employment Effects are on the lower bound