

Online Appendix to “Dynamic Taxation”*

Stefanie Stantcheva

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*Stantcheva: Harvard, CEPR, and NBER (e-mail: ssantcheva@fas.harvard.edu); I thank Clément Herman, Julia Paul-Venturine, and Yannic Rehm for outstanding research assistance.

TABLE A-1: AGE-DEPENDENT FEATURES OF THE TAX SYSTEM IN SELECTED COUNTRIES

Life-cycle related					Explicitly age-dependent		
Income	Family	Consumption	Capital	Social security	Pension age	Tax-favored pension plans	Other age-related features
Germany							
Income tax: on annual taxable income, progressive, marginal tax rates from 0% to 45%	Child tax deductions; Child benefit; Joint tax filing for married couples	VAT: Flat tax rate, standard rate 19%, reduced rate 7%	Capital gains tax: (includes interest and dividends) flat tax of 25% on income above threshold; Real estate purchase tax: 3.5 – 6.5% of property value; Property tax: 0.26 – 0.35% on estimated property value	Contributions: employer 20.7%, employee 19.4-20.9%, total 40.1%-41.6%	Statutory age: 65 (increases to 67 until 2031)	Pension contribution tax deduction: 86% of pension contribution up to threshold	Long-term care surcharge: 0.25% of income (above 23 years if taxpayers has no children)
Austria							
Income tax: on annual taxable income, progressive, marginal tax rates from 0% to 55%	Family benefits; Child tax credit	VAT: Flat tax rate, standard rate 20%, medium rate 13%, reduced rate 10%	Capital gains tax: flat tax rate of 25% (on deposits) or 27.5% (other capital incomes); Real estate purchase tax: 0.5-3.5% of property value; Property tax (levied locally on estimated property value)	Contributions: employer 21.38%, employee 18.12%, total 39.50 %	Statutory age: 65 for men, 60 for women (increase for women to 65 until 2033)	Employer pension fund: no income tax on contributions made by employer and tax-favored contributions by employee; Deduction of taxable income: only 25% of pension benefit resulting from higher voluntary insurance are liable to income tax	

Switzerland (*decentralized*)

Income tax: Federal tax, progressive, marginal rates from 0% to 11.5%; Cantonal tax, mostly progressive, marginal rates mostly below 13%; Municipal tax, as a share of cantonal tax, up to 51%	Child allowance; Education allowance; Joint tax filing for married couples	VAT: Flat tax rate, standard rate 7.7%, medium rate 3.7%, reduced rate 2.5%	Capital gains tax: 35% withholding tax on interest and dividend income (sometimes deductible from income tax or refunded); Property rates vary between cantons; property tax on estimated value; Wealth tax (cantonal and local); Imputed rent tax	Contributions: employer 8%; employee 8%; total 16%; Sizeable employer-specific pension schemes and private health insurance	Statutory age: 65 for men, 64 for women	Reduced withholding tax on pensions: 15%
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Denmark

State tax: progressive, marginal rate from 12.16 % to 15%; Local tax: rates vary, average rate of 24.9%; Labour market tax: flat at 8%	Child benefit; Joint tax return for married couples	VAT: Flat tax rate, standard rate 25%	Capital gains tax: progressive on shares and dividends, marginal rates of 27%-42%, property gains exempt if principal dwelling; Property tax: on estimated property value, marginal rate of 1%-3%	Contributions: independent of income, per year, employer DKK 2,271.60, employee DKK 1,135.80, total DKK 3,407.40; Voluntary unemployment insurance (tax-deductible contributions); Old-age pension contribution (fixed monthly amount of DKK 284; employer two thirds, employee one third)	Statutory age: 65 (increases to 67 over the next years)	Tax deduction for contributions to private plans; Reduced income tax rates and pension income below threshold tax exempt
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Sweden							
Income tax: on annual taxable income, progressive, marginal tax rates (national and municipal) up to 57%. Municipal tax rates vary	Child benefit	VAT: Flat tax rate, standard rate 25%, medium rate 12%, reduced rate 6%	Capital gains tax: flat rate of 30%; Property tax: on estimated property value (SEK 8.049 or 0.75%, for single family homes)	Contributions: employer 31.42%, 24.26% for pensions, employees 7% (capped and fully refundable), total up to 62.68%	Statutory age: flexible, from 61 (increases to 64 over the next years)		Reduced social security contribution: under 26 years of age (rate of 15.49%) and for employees over 68
France							
Income tax: on annual taxable income, progressive, marginal tax rates from 0% to 45%.	Child benefit; Parental benefits; Family quotient (reduction of tax base depending on the family composition)	VAT: Flat tax rate, standard rate 20%, medium rate 10%, reduced rate 5.5%	Capital gains tax: flat tax rate of 19%, plus 17.2% social contributions; Property tax: rates set by local authorities; Wealth tax: replaced by tax on real estate (since 2018), rates 0.7% - 1.5% above threshold	Contributions: employer 45%, employee around 22% (15% for public, various regimes), total between 60 and 67%, plus special deductions for low-income employees.	Statutory age: 62 (full pension after 43 years of contribution or above 67)	Tax deductions on payments to pension schemes	Minimum income: only over 25 years, unless 2 years of work experience; Tax deductions for dependents if over 60.
Belgium							
Income tax: on annual taxable income after deductions, progressive, marginal tax rates up to 50%	Child benefits; Tax reimbursements for dependent children (conditioned on income, no age limit); Marital quotient (only for single-earner families)	VAT: Flat tax rate, standard rate 21%, medium rate 12%, reduced rate 6%	Capital gains tax: flat rate of 15% (can be declared in income tax); Property tax: on value, regional rate 1.25%-2.5%	Contributions: employer 33-40.73%, employee: 13.07% in private sector and 11.05% in public, total: 44.05%-53.8%	Statutory age: 65 (will increase to 67); Anticipated pension plans and part-time early retirement: at least 55	Tax deduction on payments towards pension schemes: taxed at the moment of withdraw or at 60	

Italy

Income tax: on annual taxable income, progressive, marginal tax rates from 23% to 43%	Child benefits; Parental benefits; Dependent tax deductions; Child tax deductions	VAT: Flat tax rate, standard rate 22%, medium rate 10%, reduced rate 4%	Capital gains tax: 26% (12.50% for government bonds); Wealth tax: 0.76% on real assets abroad, 0.15% on all assets abroad; Property taxes: municipal (0.2%-0.76% of taxable base value); Housing tax: subject to maximum when combined with municipal property taxes	Contributions: employer around 30%, employee around 10%, total around 40% (depends on number of employees of the company and employee's position)	Statutory age: 66 (to be increased), with exceptions (62 for female in private sector, 63 and 6 months for self-employed female and temporary workers); Early pension: 64 years after 20 years of contribution	Tax deductions on payments to pension schemes (up to threshold)	Reduction of tax base for retired (up to threshold)
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Spain (decentralized)

Income tax: on annual taxable income, progressive, marginal tax rates from 19% to 43%	Child benefits; Dependent child tax reductions (until 26 years with max. resource condition); Education allowances	VAT: Flat tax rate, standard rate 21%, medium rate 10%, reduced rate 4%	Capital gains tax: part of taxable income; Property tax: based on cadastral value, 0.3- 0.4%; Wealth tax: depends on region, 0.2-3.75% of net assets above the threshold (includes primary residence allowance)	Contributions: employer 29.9%, employee 6.35%, total 36.25%	Statutory age: 65 (to be increased incrementally to 67)	Tax deductions on payments to pension schemes: up to threshold or 30% of income	Unemployment assistance benefits: older than 45 or dependents or at least 6 months of contribution
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Portugal

Income tax: on annual taxable income, progressive, marginal tax rates from 14.5% to 48%	Parental allowances; Child Benefits; Education allowances	VAT: Flat tax rate, standard rate 23%, medium rate 13%, reduced rate 6%	Capital gains tax: 16.5%-35%; Property tax: 0.3-0.8%	Contributions: employers 11%, employees 23.75%, total 34.75%	Statutory age: 66 years and 4 months	Tax deductions on payments to pension schemes (up to 20% of earnings, decreases with age)
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United States (<i>decentralized</i>)							
Federal income tax: on annual taxable income, progressive, marginal rates from 10% to 37%. State income tax, varying rates and degree of progressivity, marginal rates from 0% to 12.3%. Various deductions	Child tax credit; Dependent tax deductions	Sales tax: Levied at the state/local level, sizeable differences between states	Capital gains tax: federal level, short-term gains treated as ordinary income, long-term gains taxed at lower (progressive) rates (0-20%); Property tax: levied at local level, sizeable differences	Contributions: employer 6.2%, plus 1.45% for Medicare, plus 0.6% for unemployment, employee 6.2%, plus 1.45% for Medicare, total 15.9%	Statutory age: 67 (early retirement with lower pension from 62)	Tax deductions on payments to pension schemes: phased out as income increases	Medicare: citizens above 65, covers medical expenditure; Children health insurance program, in low-income, uninsured families below the age of 19; Income tax credit for elderly (up to threshold) under some conditions.
Norway							
Income tax: on annual taxable income, progressive, top marginal tax rate 46% (varies slightly depending on source of income)	Child benefit; Parental benefits; Childcare income tax deduction; Unemployment depending on number of children	VAT: Flat tax rate, standard rate 25%, medium rate 15%;, reduced rate 12%	Capital gains tax: flat rate of 22%; Property tax: on the assessed value of the property (equal to 20-50% of market value), ranges from 0.2 to 0.7% depending on the municipality; Wealth tax: 0.85% on net assets above threshold	Contributions: employer 14.1%, employee 8.2%, total 22.3%	Statutory age: 67 (early retirement from 62, decreases the pension, minimum guaranteed)	Tax deductions on payments to pension schemes; Reduced social security contributions on pensions (5.1% instead of 8.2%)	
Canada (<i>decentralized</i>)							
Income tax: Federal income tax, on annual taxable income, progressive, marginal rates from 0% to 33%. Provincial income tax, varying rates and degree of progressivity, marginal rates from 4% to 25.75%	Child benefit (phased out with increasing income)	GST and Provincial Sales Tax: Flat tax rate, standard rate 13% (slight variations between provinces)	Capital gains tax: 50% of gains are taxable under income tax; Property tax: varies depending on the region	Pension plan contributions: employer 5.2%, employee 5.2%, total 10.4%; Unemployment insurance contributions: Employer 2.268%, employee 1.62%, total 3.888%.	Statutory age: 65 (Early retirement from 60, with reduction in pension)	Pension plan contribution deducted from gross income	Reduction of taxable base for pensioners over 65 (if low-income)

Ireland

Income tax: on annual taxable income, progressive, standard rate at 20%, higher marginal rate at 40%, various deductions	Child benefit; Parental benefits	VAT: Flat tax rate, standard rate 23%, medium rates 9% and 13.5%, reduced rate 4.8%	Capital gains tax: 33% (flat rate); Dividend withholding tax: 20% (flat rate); Property tax: marginal rate 0.18%-0.25% of market value of the house, local variations	Universal contributions: paid on all income above threshold, progressive rates from 0.5% to 8%. Reduced rates (0.5-2%) for people above 70; Social insurance contributions: standard rates employer 10,95%, employee 4%	Statutory retirement age: 66	Pension plan contributions deductible from taxable gross income	Means-tested non-contributory benefit: lower amount for 18-24. Job seeker's allowance lower for people under 26; Annual exemption limit on income tax for people aged 65 and above (increased for couples); Age tax credit: in addition to personal tax credit (EUR245 if single above 65, EUR490 if married and both over 65)
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United Kingdom

Income tax: on annual taxable income, progressive, up to 45% with various deductions.	Child benefit, Child tax credit (part of universal credit)	VAT: Flat tax rate, standard rate 20%, medium rate 5%, reduced rate either 5% or 0%	Capital gains tax: 28% for residential property, 20% for other assets, deductions for low-income households; Dividend tax: flat rate between 7.5% and 38.1% (depending on income); Real estate purchase tax: based on property value, between 0% and 12% (15% for second property)	Contributions: Employers 13.8%, employees 12% (2% for income above GBP 4,167/month), total around 25.8%, exemptions for low-income and over 66	Statutory retirement age: between 65 and 66 (to be increased to 66 until 2020)	Reduction of pension tax base: 25% reduction if pension is taken a lump-sum; Tax deductions on private pension contributions: capped, depends on total income tax	Exemption for social security contributions for employees above retirement age (66); Bereavement payment and allowance: if spouse dies before pension age, tax-free lump-sum GBP2,000, plus allowance of up to GBP350/week for a year
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TABLE A-2: EMPIRICAL LITERATURE ON CAPITAL TAXATION

Citation	Countries	Time period	Tax variation	Main result	Size
Capital gains tax					
Feldstein et al. (1980)	USA	1973	Variation across individuals	Reduction in capital gains realization	-3.8
Minarik (1981)	USA	1973	Variation across individuals	Reduction in capital gains realization	-0.4
Auten and Clotfelter (1982)	USA	1967-1973	Variation across/within individuals over time. 1969 reform	Reduction in long-run capital gains realization	Transitory: -1.1 Permanent : -0.4
Lindsey (1987)	USA	1965-1982	Variation across individuals and over time.	Increase in tax decreases the fraction of realized capital gains reported in tax returns	Transitory: -2.1 Permanent: -1.4
Poterba (1987)	USA	1965-1982	Variation over time. Multiple reforms	Increase in tax decreases the fraction of realized capital gains reported in tax returns	-1
Auerbach and Poterba (1988)	USA	1954-1986	Variation across time	Non-significant decrease in capital gains realization	0
Auten et al. (1989)	USA	1979-1983	Variation across/within individuals. 1981 reform	Reduction in capital gains realization	Transitory: -3 Permanent: -1.6
Slemrod and Shobe (1990)	USA	1979-1984	Variation across/within individuals. 1981 reform	Non-robust reduction in capital gains realization	0
Gillingham and Greenlees (1992)	USA	1954-1989	Variation over time. Multiple reforms	Non-significant but large reduction in capital gains realization	0
Burman and Randolph (1994)	USA	1980-1983	Variations across/within individuals. 1981 reform	Transitory shock in tax rate decreases capital gains realization, permanent shock effect not significant	Transitory: -6.4 Permanent: 0

Auerbach and Siegel (2000)	USA	1986-1993	Variations across/within individuals. Multiple tax reforms	Reduction in capital gains realization	Transitory: -4.4 Permanent: -1.7
Dowd et al. (2015)	USA	1999-2008	Variation across/within individuals. 2001 and 2003 reforms	Reduction in capital gains realization	Transitory: -1.2 Permanent: -0.8

Dividend tax						
Chetty and Saez (2005)	USA	1980-2004	Variation across firms over time. 2003 reform	Tax cut increases dividend payments		Short-run: -0.5
Wealth tax						
Brühlhart et al. (2016)	Switzerland	2001-2012	Variation across/within individuals and across cantons over time	Increase in wealth tax decreases reported wealth		Net-of-tax: 1.2
Seim (2017)	Sweden	2000-2006	Variation across/within individuals and bunching at the zero-tax threshold	Increase in wealth tax has a negative impact on reported taxable net wealth		Net-of-tax: 0.1 to 0.3
Jakobsen et al. (2020)	Denmark	1980-1996	Variation across/within individuals, at exemption threshold, and over time. 1989 reform	Decrease in wealth tax leads to increase in wealth accumulation, effect increases with time		Long-run net-of-tax Moderately wealthy: 0.5 Very wealthy: 2
Capital income tax						
Pirttilä and Selin (2011)	Finland	1992-1995	Variation across/within individuals over time. Dual tax reform of 1993	Decrease in tax on capital income leads to income shifting for self-employed		Net-of-tax All: 0 Self-employed: 0.5 to 59
Kleven and Schultz (2014)	Denmark	1980-2005	Variation across/within individuals over time. 1980s tax reforms	Capital income elasticities 2-3 times larger in absolute value than labor income ones		Net-of-tax: 0.1 to 0.3
Estate and inheritance taxes						
Slemrod and Kopczuk (2000)	USA	1916-1996	Age variation across individuals over time. Multiple reforms	Negative impact of taxes on reported estate value		Net-of-tax: 0.2
Holtz-Eakin and Marples (2001)	USA	1992	Variation across individuals and states	Negative impact of taxes on reported estate value		Net-of-tax: 0.1
Kopczuk and Slemrod (2003)	USA	1916-1984	Variation across individuals and states over time. Multiple tax reforms	Increase in potential savings leads to later time of death. Possibly due to reporting timing.		Death elasticity: 0.6

Bakija and Slemrod (2004)	USA	1965-1998	Variation across individuals and states over time	Increase in estate and inheritance taxes leads to decrease in number of estate tax returns	Returns elasticity: -0.1
Joulfaian (2005)	USA	1989	Variation across individuals and states	Increase in relative gift price with respect to estate leads to decrease in gifts.	Gift elasticity: -2.3 to -2.9
Joulfaian (2006)	USA	1951-2001	Variation across states over time	Increase in estate tax leads to decrease in taxable estate.	Net-of-tax: 0.1

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