

The Non-Equivalence of Labour Market Taxes: A Real-Effort Experiment

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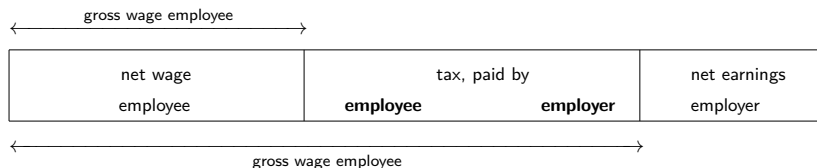
4 Conclusion

Introduction

- Labor taxes: Payroll taxes levied on the employer and income taxes
- These taxes exist everywhere, usually side-by-side
- According to classic public finance, these taxes are equivalent
- Is this realistic if individuals are not fully rational?

Introduction

- Many difficulties for empirical work / field experiments – calls for a lab experiment
- Our experiment: Equivalence by design – no general equilibrium mechanisms (framing)
- Approach most favorable to incidence equivalence



Mechanisms

Why do we expect different reactions to the taxes?

- (i) A euro of wage is more salient than a euro of tax (people do not fully take taxes into account) ['net wage illusion']
- (ii) A tax is a loss that, ceteris paribus, individuals would prefer to avoid (an employee sees a tax paid by herself as more of a loss than a tax paid by her employer) ['tax loss effect']
- (iii) Individuals derive positive utility when a public good is provided to others using tax payments they made ['warm glow'; depends here on the perception of the tax]

Outcomes

The different taxes can lead to different outcomes on multiple dimensions. We look at differences with respect to

- Preferences concerning the size of the public sector
- Subjective well-being
- Labor supply and job performance

Relevant for

- Policy making
- Optimal taxation theory
- Political economy

Preview of the results

Taxes on the employee's side lead to the following outcomes (when compared to taxes on the employer's side):

- Preferences for a smaller public sector
- Lower subjective well-being
- Higher labor supply

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Design – Overview

- 2×2 between-subject design
- Framing as income tax (40%) or employer payroll tax (66.7% of corresponding lower wage)
- Tax is lost or contributed to a public good (multiplication factor 1.3)
- Selfish rational agents: Equivalence of all four treatments

	Employer payroll tax	Income tax
Nothing in return	<i>EN</i>	<i>IN</i>
Public good	<i>EP</i>	<i>IP</i>

Equivalence between Treatments

	<i>EN</i>	<i>IN</i>	<i>EP</i>	<i>IP</i>
Gross wage	280.8	468	239.32	398.87
Income tax (40%)		-187.2		-159.55
Net wage	280.8	280.8	239.32	239.32
Own performance PG benefits			41.48	41.48
Net earnings employee	280.8	280.8	280.8	280.8
Employer tax (66.7% of gross wage)	-187.2		-159.55	
Total labor costs (wage + tax)	468	468	398.87	398.87
Net earnings employer	49.8	49.8	49.8	49.8

Design

- Groups of 6 (5 employees, 1 employer)
- Neutral framing of the incentive scheme
- Real effort task (next slide)
- Regular work-task involves 4 rounds of 8 minutes
- Instead of working, subjects can also choose a “fixed payment option”
- Payments for correctly solved problems decreases in attempts

Amount of correct additions in this round so far: 1
 Amount of incorrect additions in this round so far: 1
 Remaining problems that can be solved in this round: 28

Round 1 of 4

Time: 06:53

Total wage earned in this round: 429 (minus 171.6)

If your next answer is correct you will receive 390 points (from which 156 will be deducted).

38 39 24 30 58 67 53 60 53 58
 73 20 12 79 56 32 29 24 79 40
 24 30 43 25 21 59 25 73 78 41
 67 23 10 77 35 30 15 25 40 76
 48 58 20 36 28 35 15 29 49 57
 33 71 30 53 44 72 65 55 56 49
 73 62 39 50 78 35 72 22 69 44
 54 14 71 50 63 42 71 52 70 17
 25 12 13 23 62 68 71 41 65 43
 42 16 24 74 38 68 32 56 65 74

83 57 25 13 51 34 66 42 74 63
 12 69 29 28 19 37 53 77 57 74
 22 22 58 46 75 82 66 82 13 70
 14 50 47 58 21 76 56 81 19 30
 27 62 52 38 59 36 54 42 68 74
 67 21 78 64 25 67 78 77 46 83
 20 73 63 13 40 51 45 57 15 45
 74 83 81 52 46 71 43 34 42 37
 37 62 31 34 13 23 20 78 36 62
 54 75 55 67 65 40 59 34 23 28

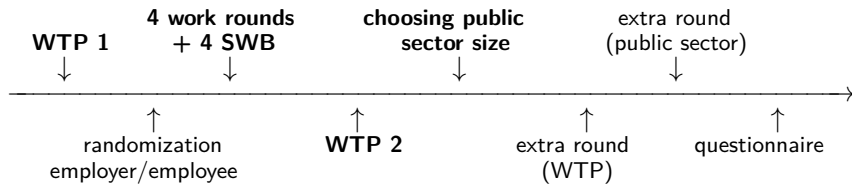
Largest number in the left matrix plus largest number in the right matrix:

 OK

Measuring the Outcome Variables

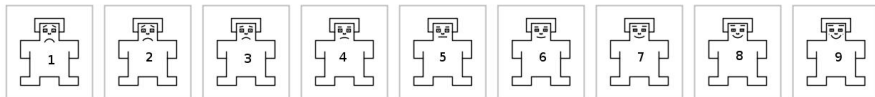
- Measures for public sector size preferences and SWB will be explained below
- Labor supply at the extensive margin: Willingness to pay for an extra round (before and after participating in the regular rounds)
- Labor supply at the intensive margin: Time spent in "work-mode"
- Job performance: Number of correct additions

Timeline



Subjective Well-Being

How would you describe your mood at the moment? Please choose according to the shown graph.



- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9

OK

Preferences for Public Sector Size

- Random dictator chooses “rules” of an extra round
- Public good in all treatments now
- Slider moving from the left to right
 - Increases the duty
 - Decreases the multiplication factor of the public good

Please choose your most preferred position of the slider.

Multiplication factor of the common fund:	3.00
Contribution to the common fund, expressed as a percentage of your wage:	0.00



OK

Slider: Equivalence between Treatments

- Net wage and tax payments (and employer earnings) are the same across treatment for same slider positions
- Tax bases (gross wages) are different
- Thus, tax *rates* must increase at a different level and gross wages must change when tax is levied on employer
- Subjects know this, but change in gross wage is not shown when moving the slider

	Slider pos.	Mult. factor	Tax rate	Tax base / gross wage	Net wage	Tax revenue	Net earnings employer
<i>EP</i>	20	2.55	17.65%	339.04	339.04	59.83	49.8
<i>IP</i>	20	2.55	15%	398.87	339.04	59.83	49.8

Main Hypotheses

Null-hypothesis for all outcome variables:

- There is no difference in outcome between payroll tax and income tax treatments

Mechanisms and Outcomes

- The mechanisms have the following influences on the outcomes (under an income tax as compared to an employer tax):

	Public Sector Pref.	Subjective Well-Being	Labor Supply
Net Wage Illusion	+	+	+
Tax Aversion	-	-	-
Warm Glow	+	+ ^{PG}	+ ^{PG}
Overall	-/+	-/+	-/+

- Warm-glow only exists in the treatments with a public good for SWB and LS (^{PG})

Additional Hypotheses

Mechanisms don't lead to one-sided alternative hypotheses. However, if they play an important role, we get additional (alternative) hypotheses:

- For subjective-well being and labor supply, there should be a positive interaction effect between income tax treatment and public good treatment

Implementation

- Programmed in php
- Duration between 90 and 120 min
- Show-up fee of 7 euros, average earnings about 22 euros
- 240 subjects in total, 60 per treatment

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Results: Public Sector Size Preference

Table: Public sector size preference

	Employer payroll tax mean (std. error)	Income tax mean (std. error)	Treatment diff. p-value Wilcoxon
Nothing in return	51.18 (4.22)	33.00 (2.77)	0.002
Public good	41.18 (3.69)	33.12 (2.96)	0.080

Results: Subjective Well-Being

Table: Subjective well-being

	Employer payroll tax mean (std. error)	Income tax mean (std. error)	Treatment diff. p-value Wilcoxon
Nothing in return	21.84 (0.66)	18.94 (0.84)	0.007
Public good	21.16 (0.77)	21.82 (0.75)	0.594

Results: Labor Supply at the Extensive Margin

Table: Labor supply at the extensive margin

	Employer payroll tax mean (std. error)	Income tax mean (std. error)	Treatment diff. p-value Wilcoxon
Measure 1			
Nothing in return	1416.3 (34.8)	1525.4 (46.1)	0.133
Public good	1408.8 (39.8)	1462.7 (40.8)	0.268
Measure 2			
Nothing in return	1273.9 (45.3)	1347.0 (49.7)	0.167
Public good	1229.2 (39.2)	1328.0 (38.6)	0.035

Results: Labor Supply at the Intensive Margin and Job Performance

Table: Labor supply at the intensive margin and job performance

	Employer payroll tax mean (std. error)	Income tax mean (std. error)	Treatment diff. p-value Wilcoxon
Intensive margin			
Nothing in return	1570.5 (58.1)	1522.5 (66.2)	0.703
Public good	1426.5 (66.7)	1570.5 (60.6)	0.072
Job performance			
Nothing in return	20.56 (1.07)	19.64 (1.17)	0.679
Public good	18.40 (1.21)	21.02 (1.23)	0.139

Results

- These results are robust to using regressions
- Regressions furthermore allow us to investigate interaction between tax and public good conditions

Results – Public Sector Size Preferences

	Coefficient	Std. error
Tax (1=income tax)	-17.15***	(5.54)
PG (1=public good)	-9.91*	(5.46)
Tax * PG	9.04	(7.77)
Intercept	72.30***	(19.58)
Age	-1.40*	(0.83)
Gender (1=male)	4.18	(4.03)
Studies (1=econ+science)	-2.41	(4.50)
Lab experience (1=yes)	9.67	(6.04)

Results – Subjective Well-Being

	Coefficient	Std. error
Tax (1=income tax)	-2.80***	(1.08)
PG (1=public good)	-0.62	(1.05)
Tax * PG	3.09**	(1.51)
Intercept	23.81***	(3.80)
Age	-0.04	(0.16)
Gender (1=male)	1.54**	(0.78)
Studies (1=econ+science)	-0.61	(0.87)
Lab experience (1=yes)	-1.79	(1.17)

Results – Labor Supply at the Extensive Margin

	Measure 1		Measure 2	
	Coefficient	Std. error	Coefficient	Std. error
Tax (1=income tax)	125.77**	(62.39)	94.51	(79.18)
PG (1=public good)	12.42	(61.95)	-35.93	(78.16)
Tax * PG	-85.91	(87.84)	-3.24	(110.95)
Intercept	1378.04***	(220.72)	1282.63***	(281.23)
Age	0.02	(9.37)	-1.09	(11.95)
Gender (1=male)	142.80***	(45.28)	96.51*	(57.70)
Studies (1=econ+science)	10.90	(49.92)	-77.71	(64.51)
Lab experience (1=yes)	-84.08	(67.99)	-48.44	(85.97)

Results – Labor Supply at the Intensive Margin and Job Performance

	Labor supply, intensive		Job performance	
	Coefficient	Std. error	Coefficient	Std. error
Tax (1=income tax)	-86.45	(111.44)	-0.53	(1.67)
PG (1=public good)	-198.75*	(108.42)	-1.87	(1.64)
Tax * PG	281.49*	(155.95)	3.14	(2.34)
Intercept	1636.92***	(390.39)	18.91***	(5.88)
Age	1.61	(16.81)	-0.04	(0.25)
Gender (1=male)	-21.96	(80.57)	1.87	(1.21)
Studies (1=econ+science)	143.60	(89.72)	3.20**	(1.35)
Lab experience (1=yes)	-107.49	(121.60)	-1.13	(1.81)

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Summary of the Results and Policy Implications

- Preferences for a larger public sector under a payroll tax
 - Policy implications unclear
- Higher subjective well-being under a payroll tax
 - Levy taxes on employer's side
- Higher labor supply under an income tax
 - Levy taxes on employee's side

Concluding Remarks

- These "equivalent" duties are not equivalent
- Especially results on public sector size preference and subjective well-being are novel
- Differences are important for policy design and to understand political behavior
- It is important to take all dimensions into account when deciding on policies!

Thank you for your attention!