

# **(IV) Taxes and Subsidies in the Labor Market**

Bocconi University, March 2009

# Outline

- Definitions and cross-country comparisons
- Theory and empirical evidence
  - Payroll taxes in competitive markets
  - Employment subsidies in competitive markets
  - Other policy instruments:
    - negative income tax
    - in-work benefits
    - earned income tax credit

# Definitions

- Payroll taxes = income taxes + social security contributions
- Payroll taxes drive a *wedge* between labor costs and net wage
- Social security can be also seen as deferred consumption (public pensions)
- Incidence of taxation is relevant

# Definitions (contd.)

- Average tax rate
- Marginal tax rate
- Progressive tax system
- Social security: employer vs. employees
- Tax system is complex: impossible to summarize it by one particular number

Table 4.1: Payroll taxes and VAT rates, 2005 (%)

	Average tax wedge			Marginal	
	Income tax	SSC	Total	tax wedge	VAT
Australia	22.6	5.7	28.3	35.4	10
Austria	11.6	32.6	44.2	57.3	20
Belgium	21.4	34.0	55.4	66.4	21
Canada	14.9	16.7	31.6	40.7	7
Czech Republic	8.6	35.2	43.8	48.1	19
Denmark	30.2	11.0	41.3	49.2	25
Finland	20.1	24.5	44.6	54.9	22
France	10.8	39.3	50.1	55.8	19.6
Germany	17.3	34.6	51.9	65.1	16
Greece	4.4	34.4	38.8	54.1	18
Hungary	14.7	34.5	49.2	76.9	25
Iceland	23.4	5.6	28.9	39.7	24.5
Ireland	11.4	14.4	25.8	53.0	21
Italy	13.6	31.8	45.4	52.7	20
Japan	5.9	21.8	27.7	31.8	5
Korea	2.5	14.8	17.2	24.4	10
Luxembourg	11.1	24.1	35.2	52.4	15
Mexico	5.6	12.6	18.2	22.8	15
Netherlands	9.5	29.1	38.6	51.0	19
New Zealand	20.5	0.0	20.5	33.0	12.5
Norway	18.7	18.5	37.2	43.2	25
Poland	5.3	38.2	43.5	45.8	22
Portugal	8.2	28.1	36.3	47.1	19
Slovak Republic	6.9	31.4	38.3	44.4	19
Spain	10.7	28.3	39.1	45.5	16
Sweden	18.1	29.8	47.9	48.8	25
Switzerland	9.6	20.0	29.6	36.0	7.6
Turkey	12.7	30.0	42.7	44.5	18
United Kingdom	15.7	17.8	33.5	40.6	17.5
United States	14.6	14.5	29.0	34.0	–

Note: SSC = social security contributions; both average and marginal tax rates concern single persons without dependents who earn 100% of the average production wage (APW); total average tax wedge = combined central and sub-central government income tax plus employee and employer social security contribution taxes, as a percentage of labor costs defined as gross wage earnings plus employer social security contributions; tax wedge includes cash transfers. Note that in Australia, Canada, New Zealand, VAT is known as GST (goods and service tax); the U.S. do not have VAT but sales taxes.

Source: OECD Tax data base.

Source: Tito Boeri and Jan van Ours (2008), *The Economics of Imperfect Labor Markets*, Princeton University Press.

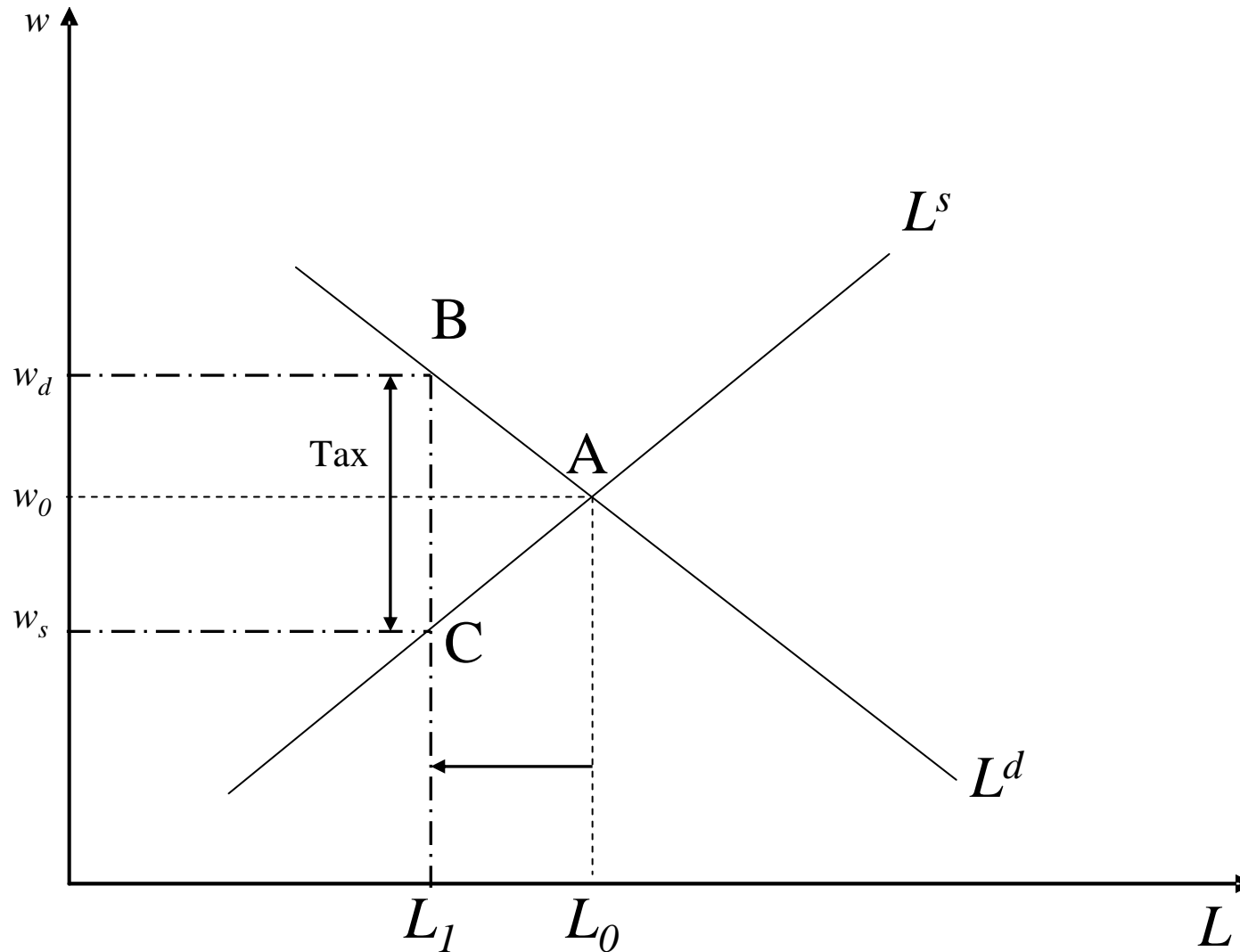
# Cross-country comparisons

- Average production worker (APW) wage: annual gross wage earnings of adult, full-time manual workers in manufacturing sector
- Average payroll tax rate: 17.2 (Korea) – 55.4 (Belgium)
- Marginal tax rate: 22.8 (Mexico) – 76.9 (Hungary)
- Most countries (except Sweden and Turkey): marginal tax rates substantially higher than average tax rates – progressive tax systems

# Positive theory

- Effect of taxes on labor supply: extensive vs. intensive margin
- Effect on labor demand: increase in costs
- Equilibrium effect: employment is reduced
- The employment loss depends on demand and supply elasticity
- The same holds for the burden on employers vs. employees (e.g., inelastic supply means burden on the latter)

# Payroll taxes in competitive markets

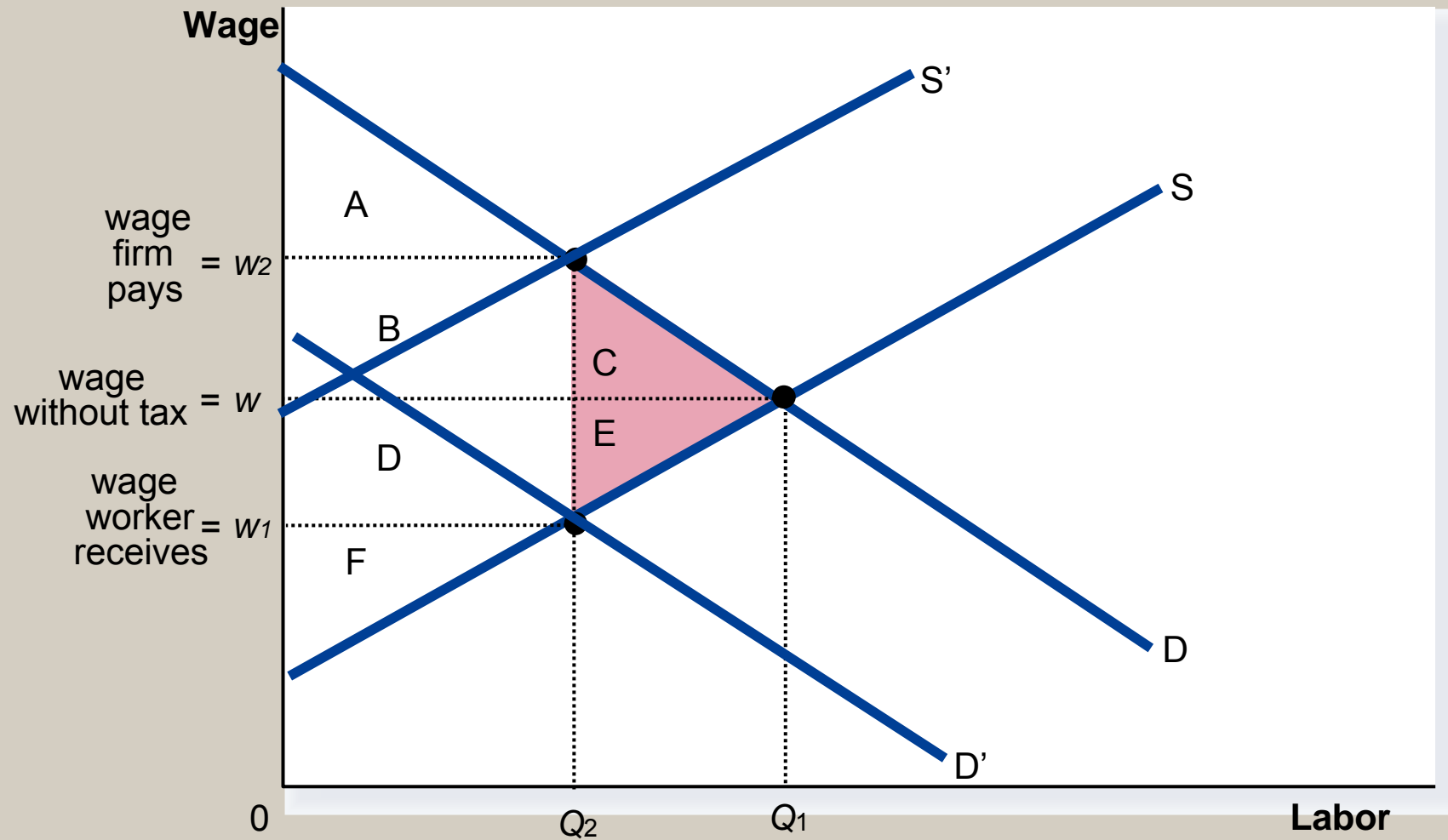


Source: Tito Boeri and Jan van Ours (2008), *The Economics of Imperfect Labor Markets*, Princeton University Press.

# Normative theory

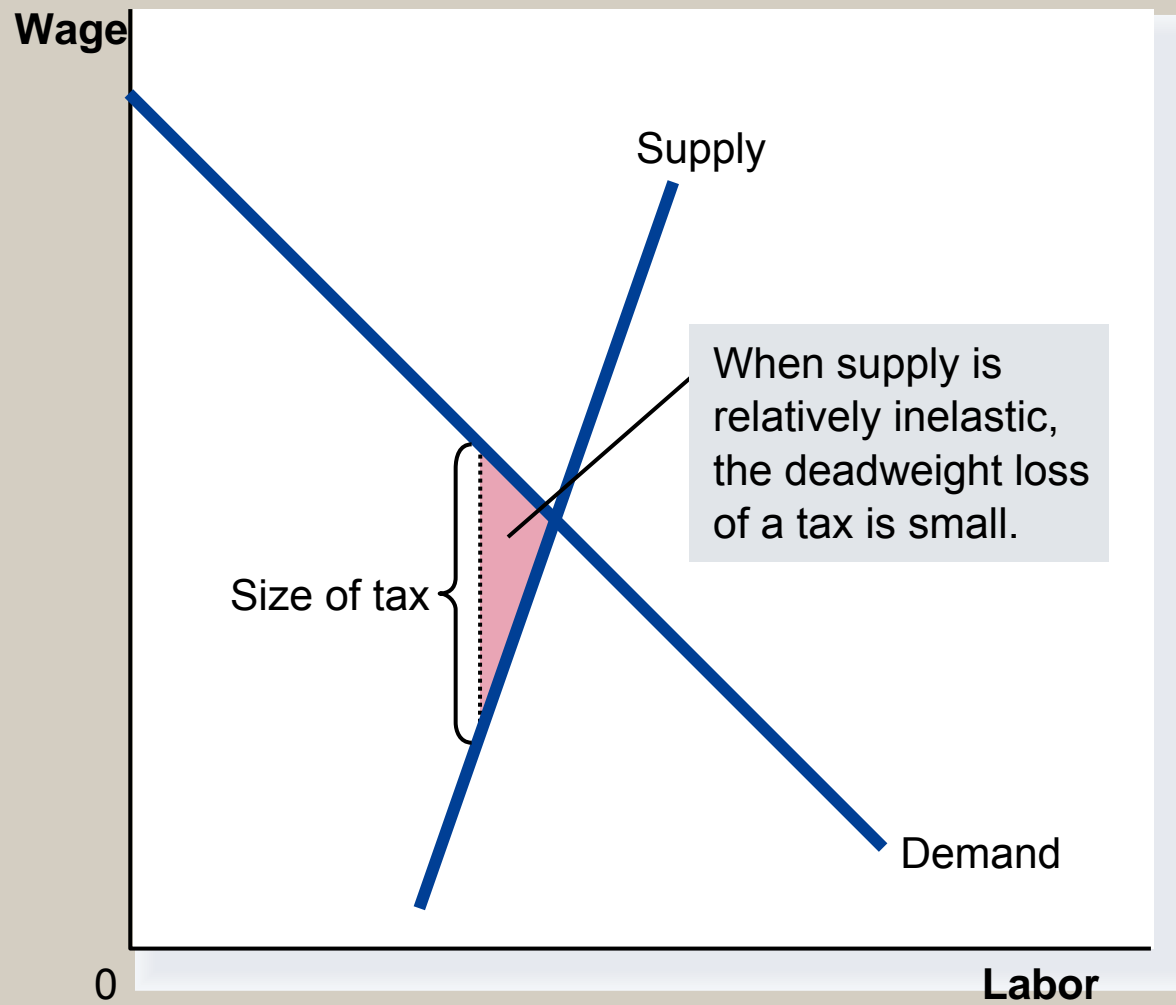
- Taxes reduce surplus of both employers and employees
- They increase welfare of government programs beneficiaries
- But: deadweight loss because of wedge and unexploited gains from trade
- Again, deadweight loss depends on the elasticity of labor supply and demand

# The deadweight loss of payroll taxes



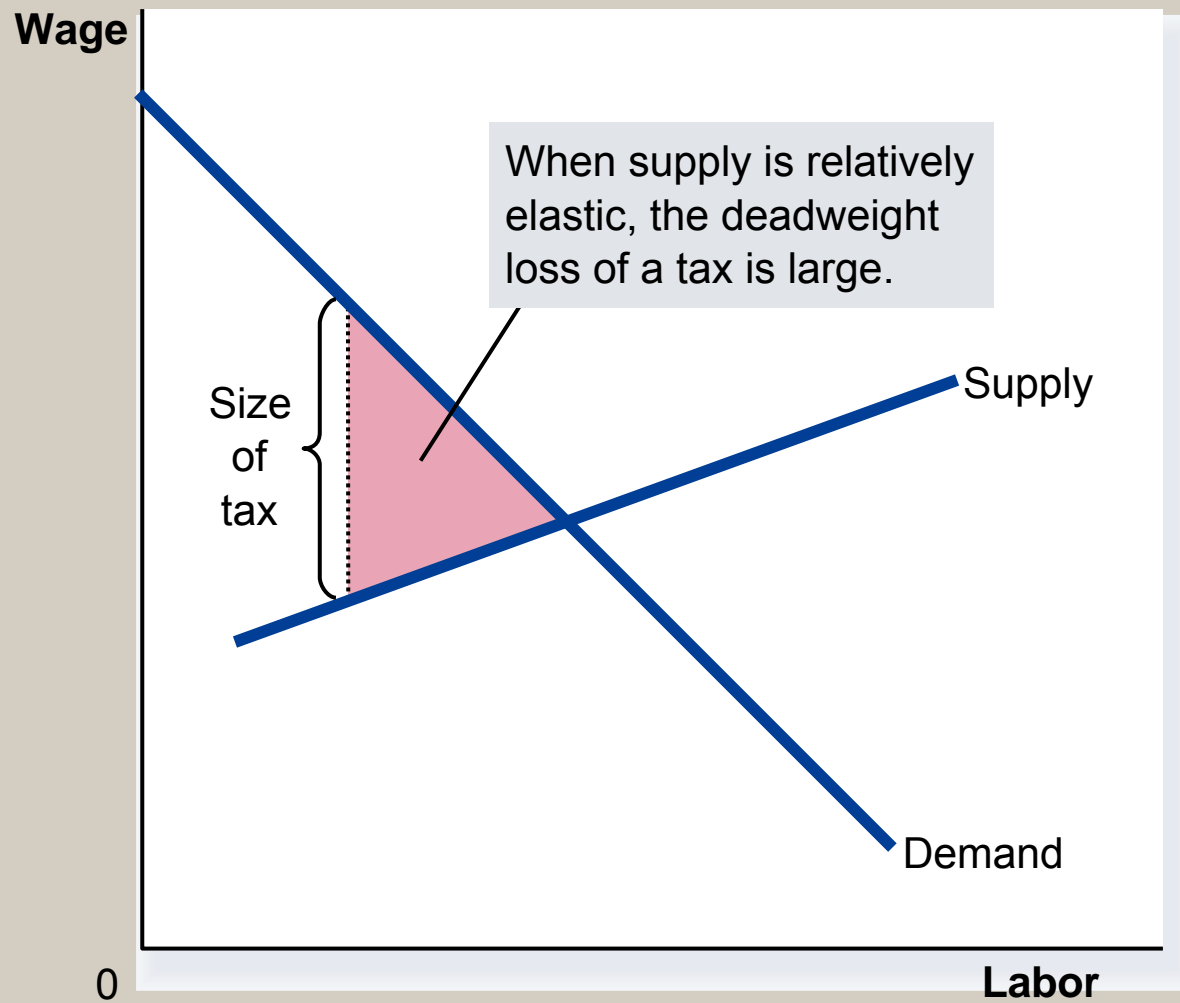
# Tax distortions and elasticities

(a) Inelastic Supply



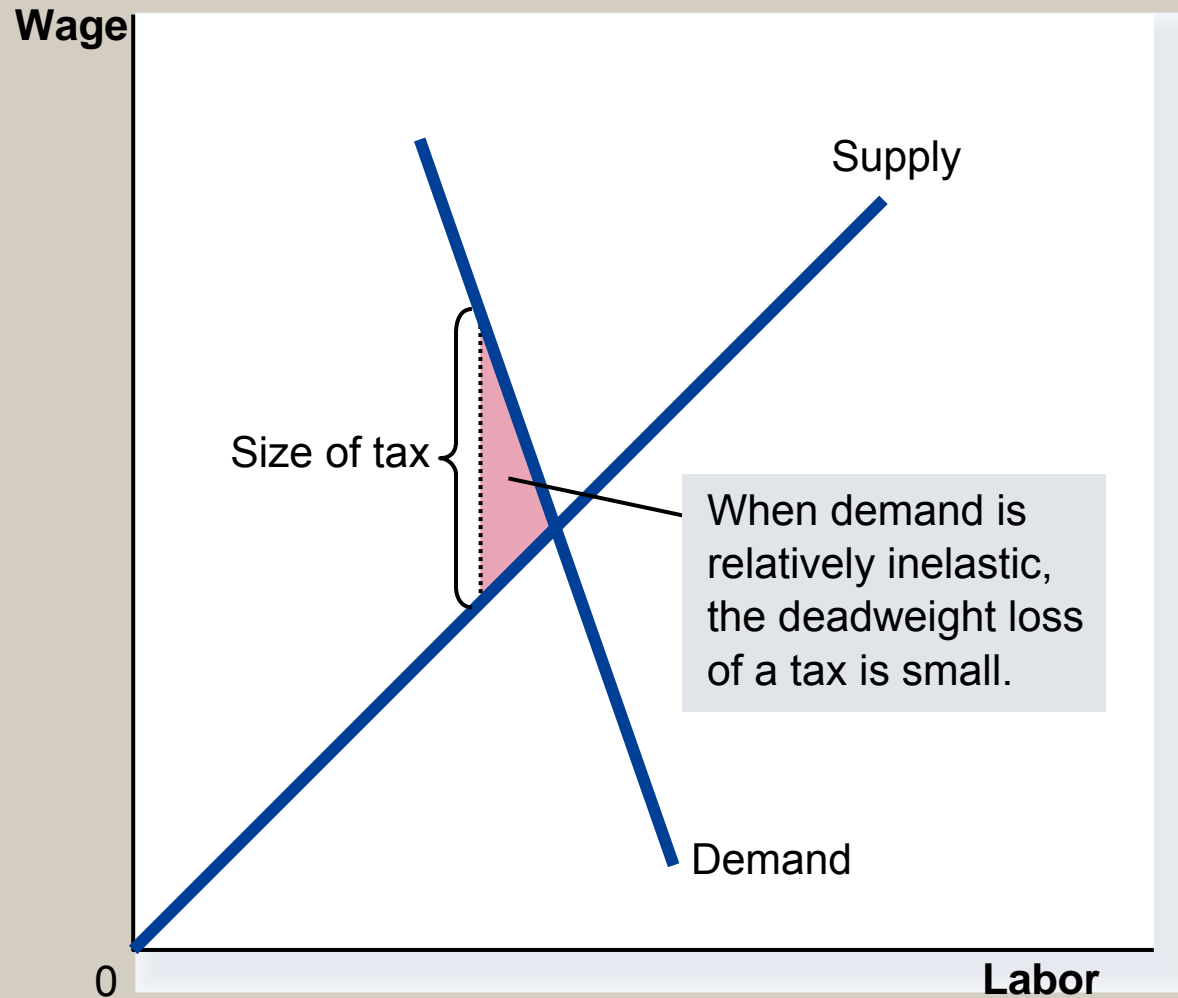
# Tax distortions and elasticities

(b) Elastic Supply



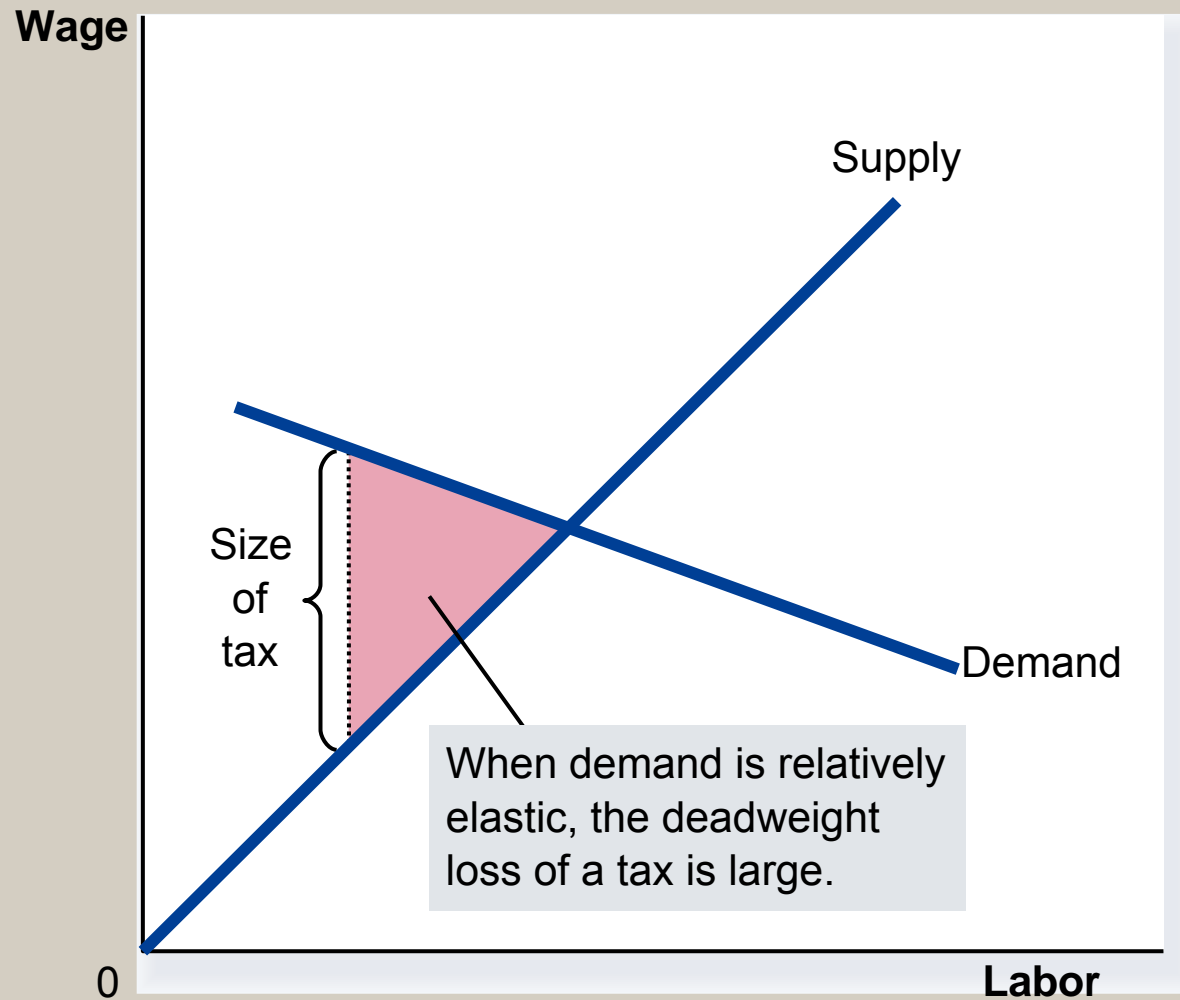
# Tax distortions and elasticities

(c) Inelastic Demand



# Tax distortions and elasticities

(d) Elastic Demand



# Employment subsidies

- By the same token, employment subsidies increase both equilibrium wage and employment
- *But*, if we take into account government expenditure (also without distortions), they create deadweight loss
- Only because of externalities or market imperfections, they can have efficiency justification

# Empirical evidence on payroll taxes

- Labor supply of regular full-time workers probably inelastic to tax changes
- *But* four groups of workers seem affected:
  - Workers with high incomes (but no Laffer curve)
  - Workers with low incomes (means-testing)
  - Workers nearing retirement
  - Out of labor force, but considering to enter
- Possible solution to some of these disincentives: in-work benefits

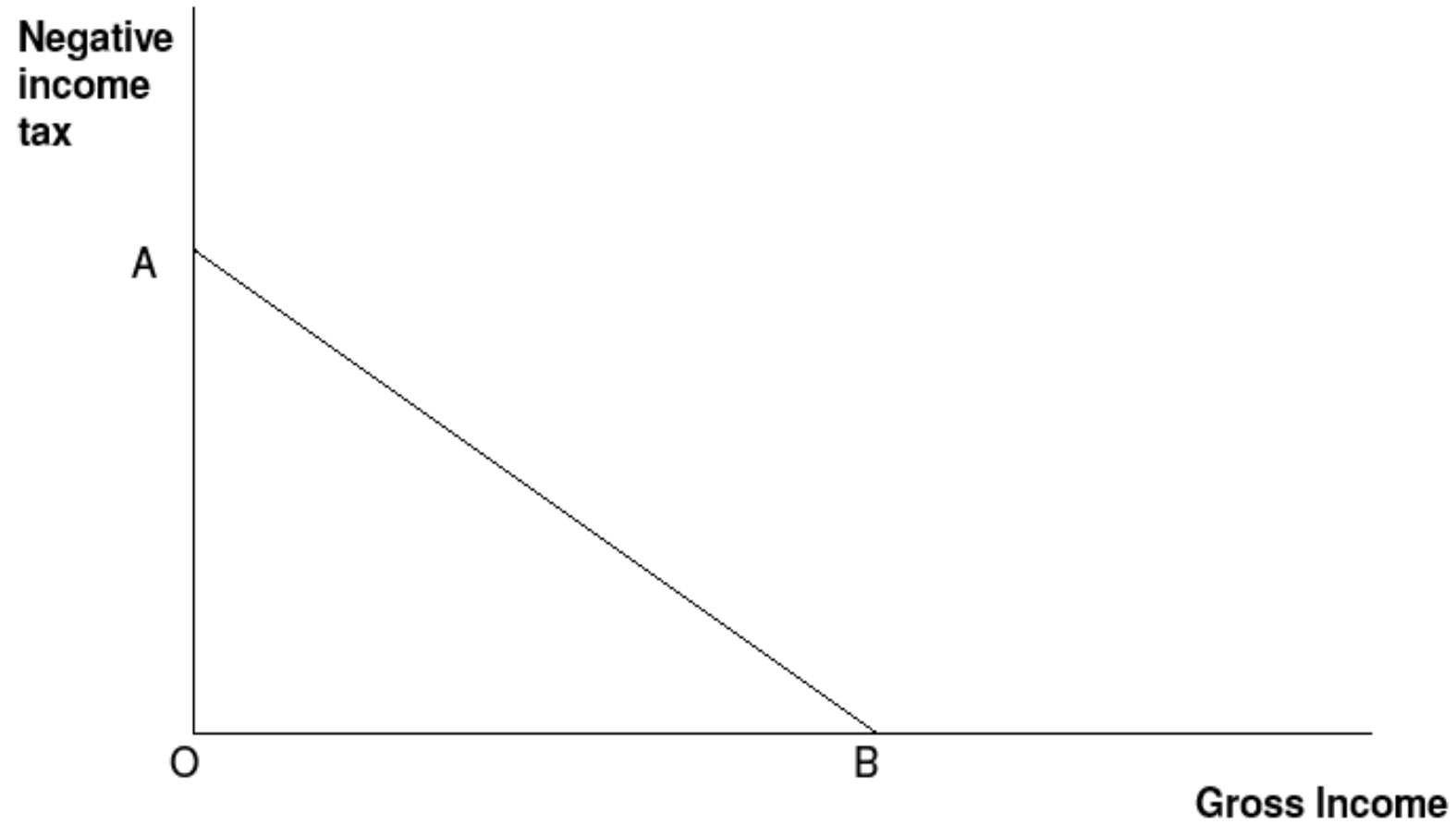
# Gender-based taxation

- Recent proposal (Alesina, Ichino, and Karabarbounis 2007) aims at exploiting labor supply reactivity, rather than just reducing its side effects
- Reduce income taxes on women and increase, by less, those on men (constant revenues).
- Aim: reduce tax distortions and increase women labor force participation
- Intuition: labor supply of women is more elastic (Ramsey principle)

# Other policy instruments

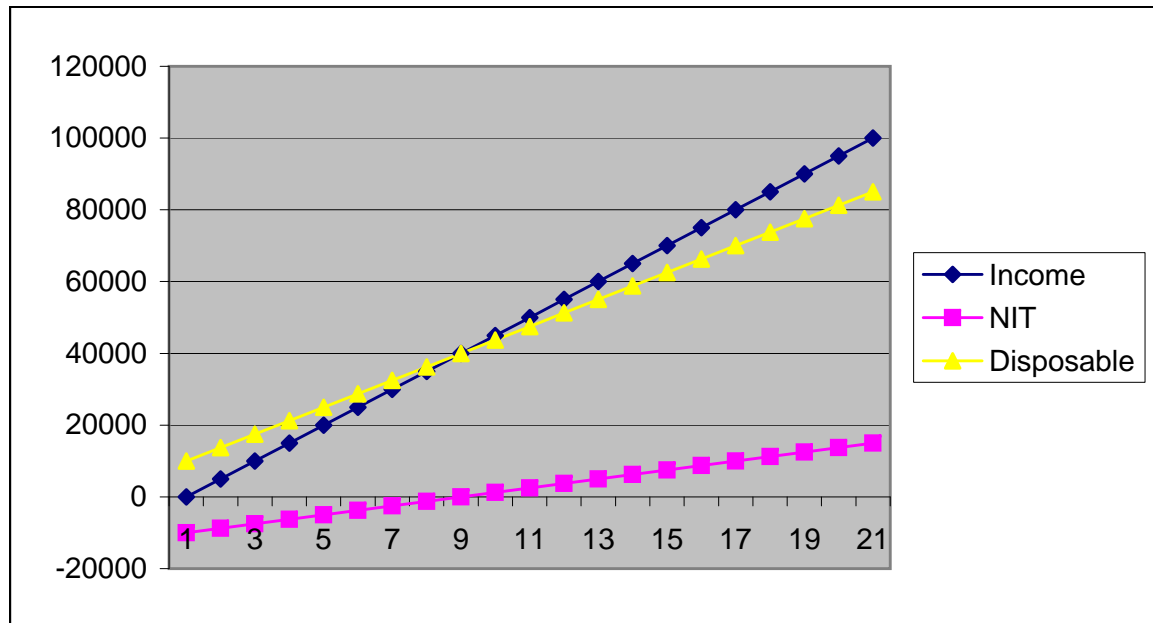
- **Negative Income Tax (NIT):** individuals get (lower) welfare benefits, but benefits are withdrawn by a percentage of the increase in earnings (flat tax plus fixed govt. payment)
- **In-Work Benefits:** individuals receive benefits only if they work. The size of the benefits depend on gross income
  - Motivation: remove disincentives to work
  - Empirical evidence: effect on participation, but only temporary (Card and Hyslop 2005)

## Negative income tax

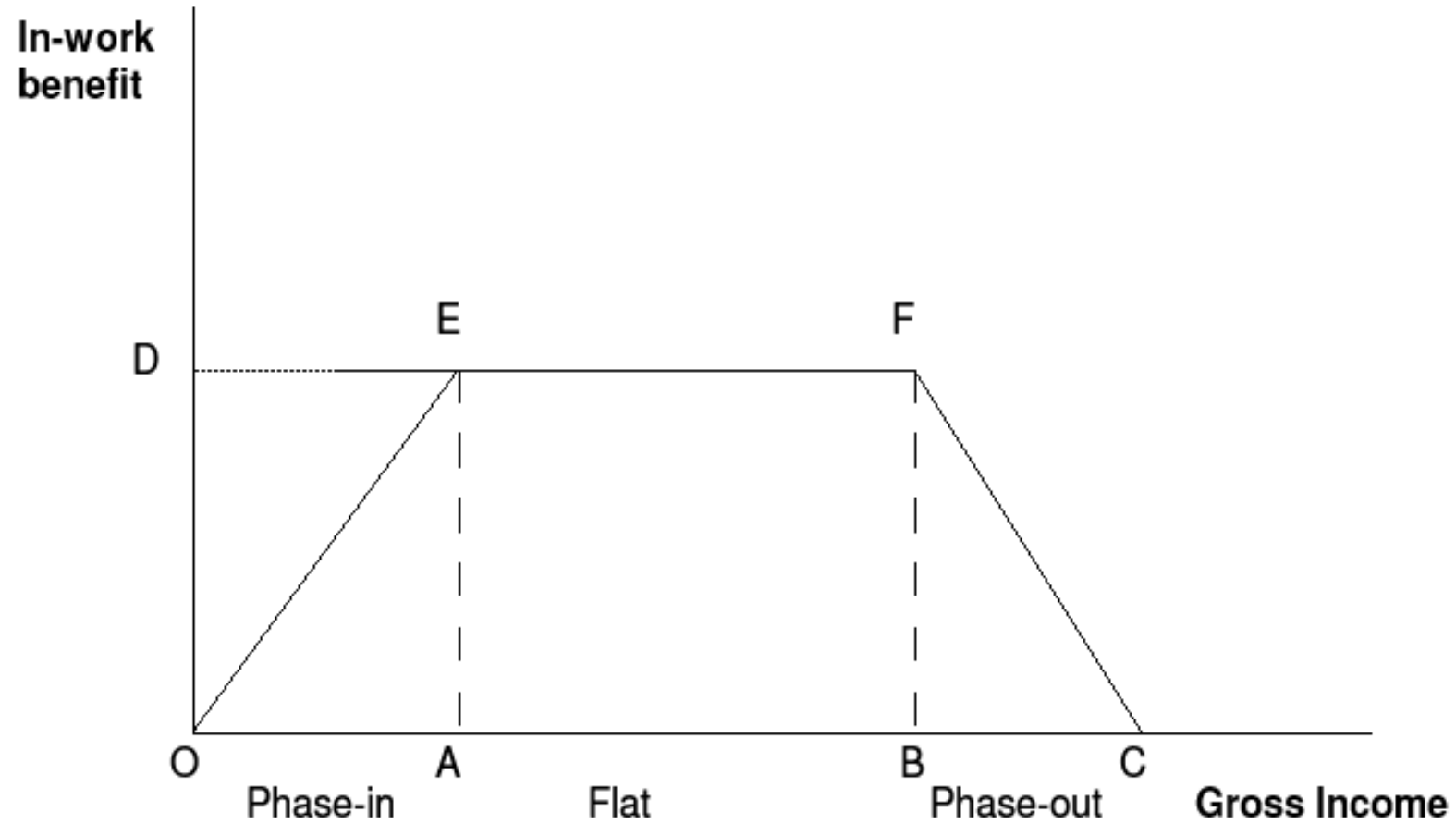


Source: Tito Boeri and Jan van Ours (2008), *The Economics of Imperfect Labor Markets*, Princeton University Press.

Flat rate	Payment	Income	NIT	Disposable Income
0,25	10000	0	-10000	10000
0,25	10000	5000	-8750	13750
0,25	10000	10000	-7500	17500
0,25	10000	15000	-6250	21250
0,25	10000	20000	-5000	25000
0,25	10000	25000	-3750	28750
0,25	10000	30000	-2500	32500
0,25	10000	35000	-1250	36250
0,25	10000	40000	0	40000
0,25	10000	45000	1250	43750
0,25	10000	50000	2500	47500
0,25	10000	55000	3750	51250
0,25	10000	60000	5000	55000
0,25	10000	65000	6250	58750
0,25	10000	70000	7500	62500
0,25	10000	75000	8750	66250
0,25	10000	80000	10000	70000
0,25	10000	85000	11250	73750
0,25	10000	90000	12500	77500
0,25	10000	95000	13750	81250
0,25	10000	100000	15000	85000



## In-work benefits



Source: Tito Boeri and Jan van Ours (2008), *The Economics of Imperfect Labor Markets*, Princeton University Press.

# In-work benefits: empirical evidence

- Data on Canadian Self Sufficiency Project (Card and Hyslop 2005)
- Randomized evaluation
- Benefits duration: up to three years
- Outcome: percentage on income assistance
- **Result: no permanent effects**

Years	Control	Treated	<b>Effect</b>
0.5	90.8	83.1	<b>7.7</b>
1	83.7	72.4	<b>11.3</b>
2	73.0	63.3	<b>9.7</b>
3	65.4	58.8	<b>6.6</b>
4	56.7	53.5	<b>3.2</b>
5	50.6	48.4	<b>2.2</b>
5.75	45.0	45.0	<b>0.0</b>

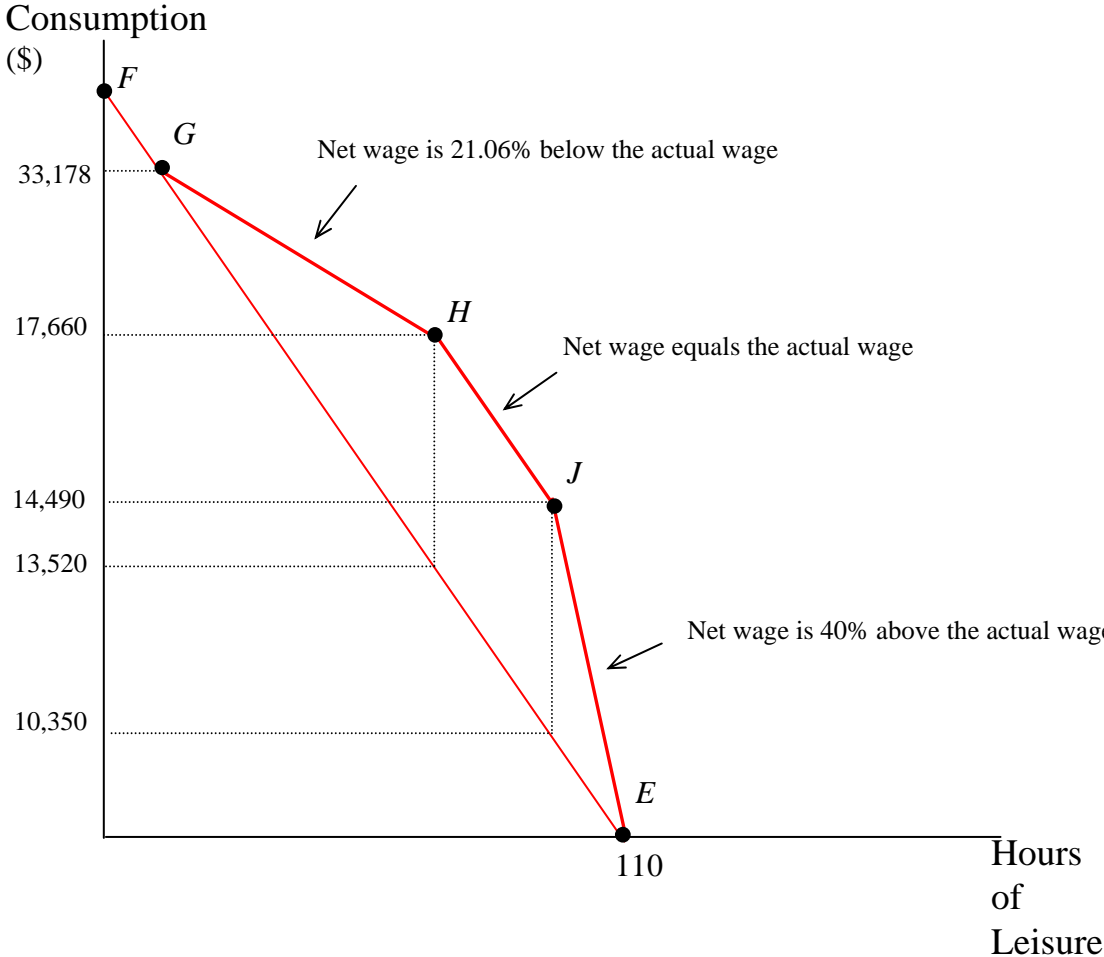
# Earned Income Tax Credit (EITC)

- EITC is an example of in-work benefits
- In the US, since 1935, Aid to Families with Dependent Children provided cash welfare transfers to needy single-parent families
- But: adverse effect on work participation
- In 1987, EITC emerged as alternative
- Advocates claim that EITC helps the working poor (target efficiency) with very low distortions on labor supply

# EITC budget constraint

- EITC example: working mother with two qualifying children
  - Earnings  $< 10,350$ : 40% tax credit (**phase-in**)
  - From 10,350 to 13,520: tax credit of 4,140 (**maximum benefit**)
  - From 13,520 to 33,178: tax credit reduced by 21.06 cents each dollar (**phase-out**)
  - Earnings  $> 33,178$ : no tax credit
- It affects budget constraint ( $\rightarrow$  next graph)

# The EITC and the Budget Line



# EITC impact on labor supply: theory

- Different (starting) cases
  - Out of labor force:  $\uparrow$  participation (as higher wage more likely to match reservation wage)
  - Phase-in: both income ( $\downarrow$  work) and substitution ( $\uparrow$  work), then ambiguous total effect
  - Max credit: only income ( $\downarrow$  work), then negative total effect
  - Phase-out: both income ( $\downarrow$  work) and substitution ( $\downarrow$  work), then negative total effect

# EITC impact on labor supply: empirical evidence

- Eissa and Liebman (1996):  
diff-in-diff identification  
strategy to evaluate the  
impact of EITC expansion  
in 1986
- *Treatment group*: unmarried  
women with children.  
*Control group*: unmarried  
women without children
- Labor force participation of  
target group increased by  
the program

	<i>Treated</i>	<i>Control</i>
<i>Before</i>	72.9	95.2
<i>After</i>	75.3	95.2
<i>Diff</i>	2.4	0.0
<i>Diff-in-diff</i>	<b>2.4</b>	