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20 years of Belgian tax benefit policies: a bird's view on equity & efficiency

A. Decoster, S. Perelman, D. Vandelannoote,
T. Vanheukelom, G. Verbist,

andre.decoster@kuleuven.be
http://www.econ.kuleuven.ac.be/ew/academic/econover/members/andre.htm
Centrum voor Economische Studiën
Naamsestraat, 69
B-3000 Leuven

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1. Aim
2. Policies
3. Method
4. Results
5. Conclusion

1. Aim

- inequality: regained centre stage
- => ? role of gov't? policies?
- use of microsimulation models
- features:
  - ex ante (but retrospective)
  - bird's view: many different policies
  - heterogeneous population => distributional
  - even arithmetic: work incentives

1. Aim

- application: Belgium 1992-2012
- two (important) caveats:
  1. descriptive; not normative/evaluative
  2. not a description of real world changes in distribution, but counterfactuals
  3. two metrics: distribution & incentives
     but: ≠ eventual equity-efficiency trade-off

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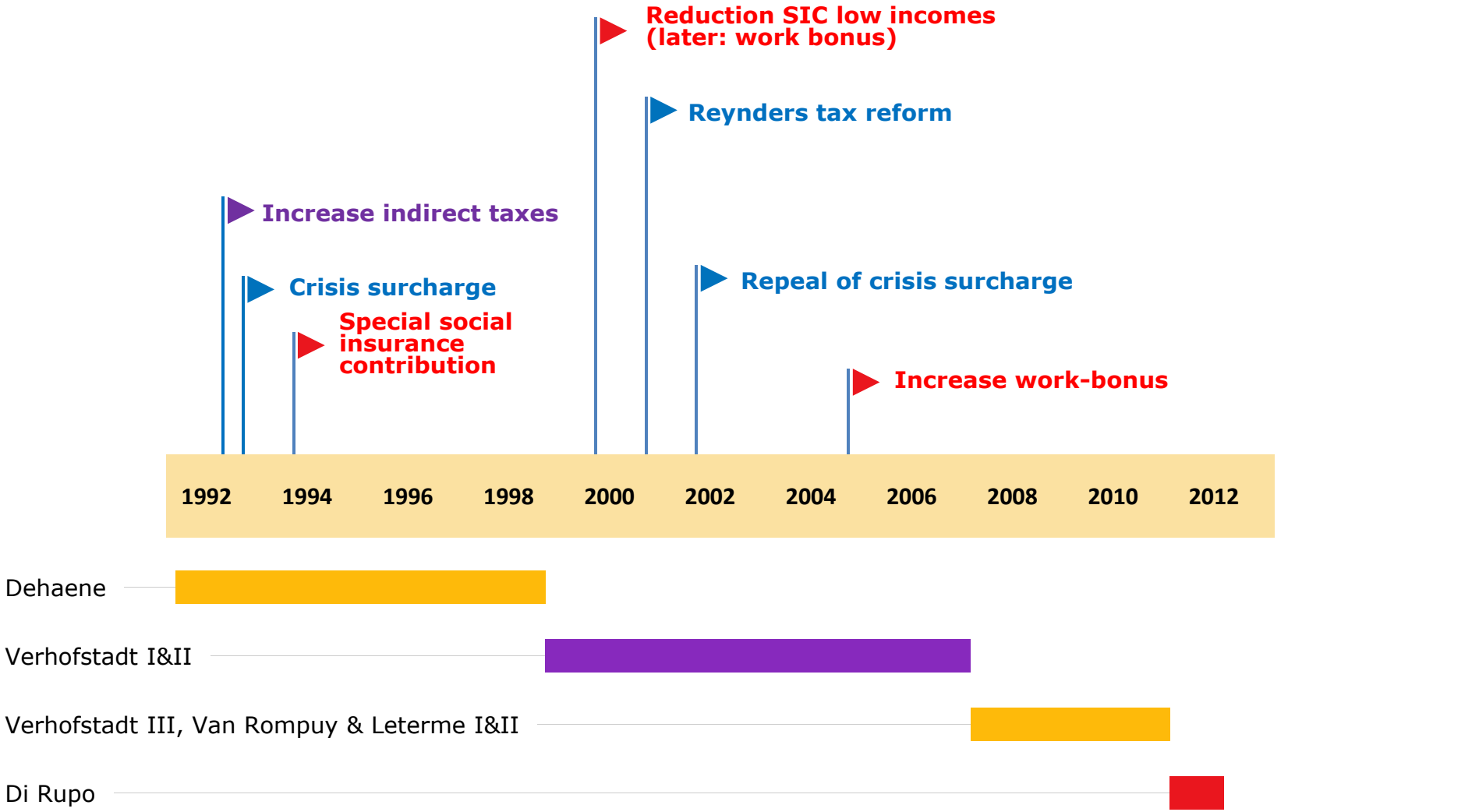
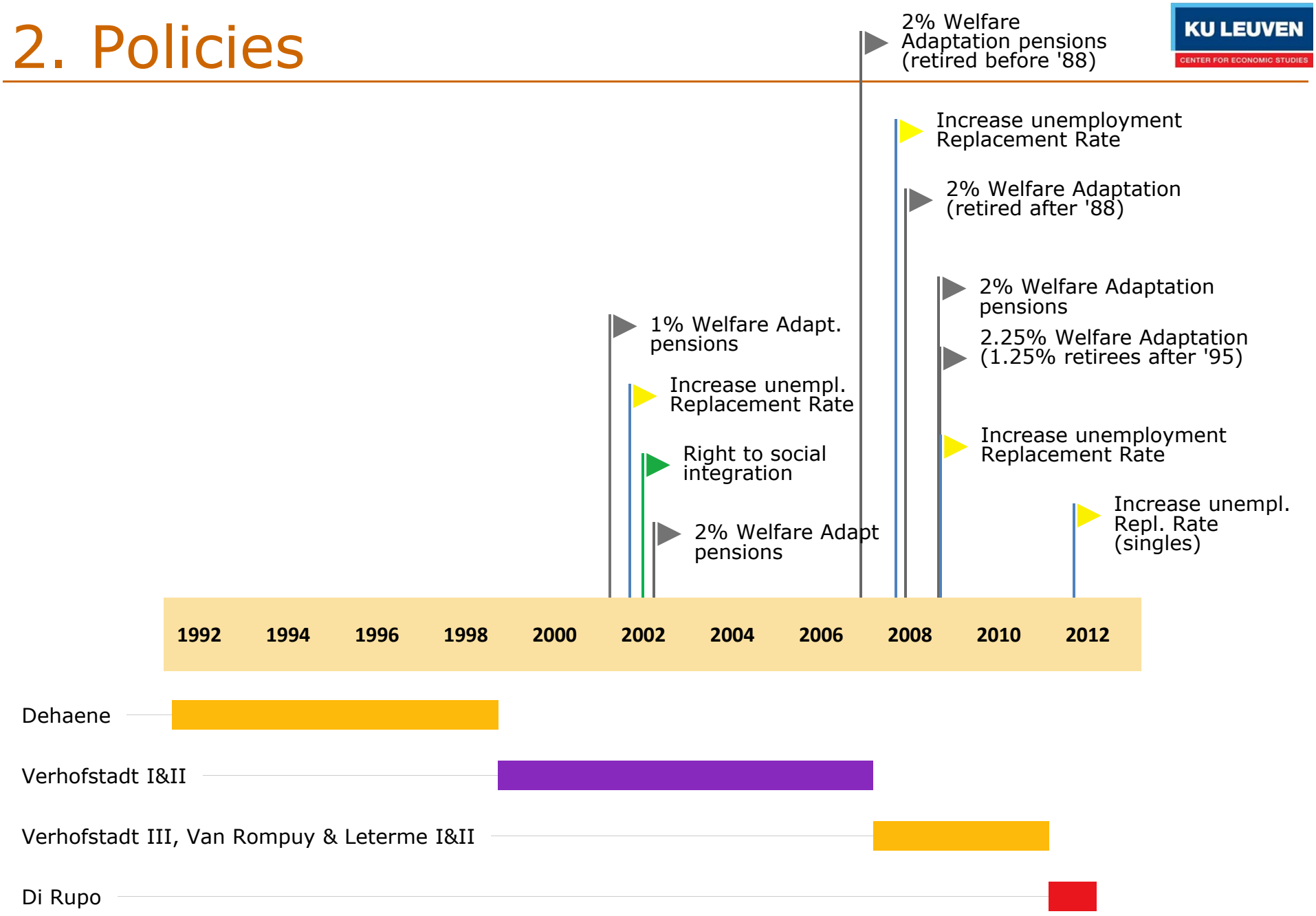
2. Policies


Reduction SIC low incomes (later: work bonus)
Reynders tax reform
Increase indirect taxes
Crisis surcharge
Special social insurance contribution
Repeal of crisis surcharge
Increase work-bonus
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012
Dehaene
Verhofstadt I&II
Verhofstadt III, Van Rompuy & Leterme I&II
Di Rupo

2. Policies


2% Welfare Adaptation pensions (retired before '88)
Increase unemployment Replacement Rate
2% Welfare Adaptation (retired after '88)
2% Welfare Adaptation pensions
1% Welfare Adapt. pensions
2.25% Welfare Adaptation (1.25% retirees after '95)
Increase unempl. Replacement Rate
Increase unemployment Replacement Rate
Right to social integration
Increase unempl. Repl. Rate (singles)
2% Welfare Adapt pensions
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012
Dehaene
Verhofstadt I&II
Verhofstadt III, Van Rompuy & Leterme I&II
Di Rupo

2. Policies

- many more changes, but
- not all policies can be simulated in MSM
  - non cash: public good provision;
    - subsidized public transport
    - subsidized education
    - provision elderly care
    - …
  - even changes in cash elements
    - eligibility conditions
    - dynamic elements (UB-duration, pension rights, ...)

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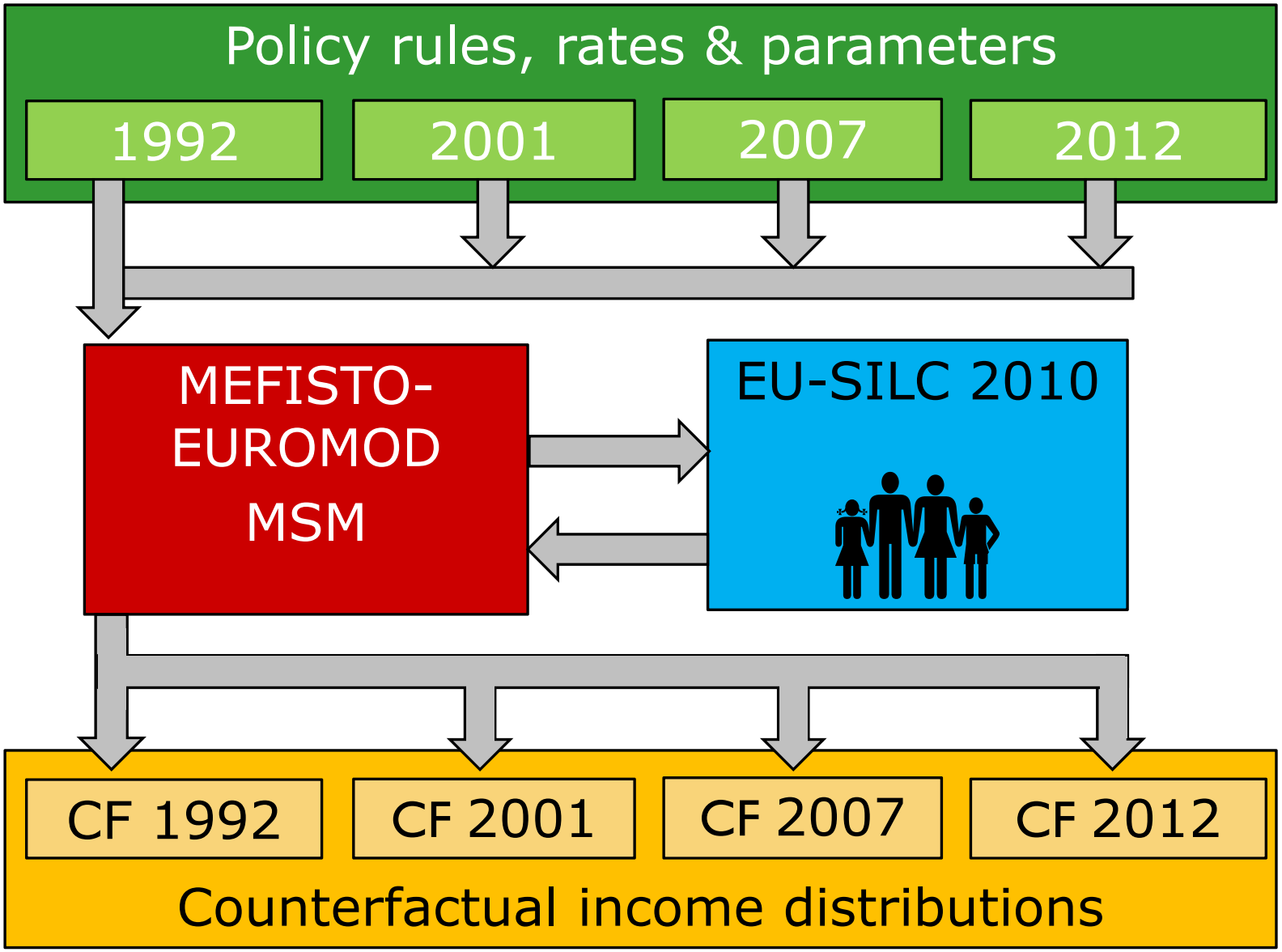
3. Method

1. microsimulation model
2. counterfactual income distribution
3. by changing policy parameters
4. on a given population
5. processing output => 2 metrics

3.1 Method: MSM



3.1 Method: MSM-caveat nr. 1

- counterfactual income distribution
- real world changes in income distribution:
  1. changes in gross incomes
     (return to education, technology, globalisation)
  2. changes in socio-demographic situation
     (more singles, lone parents, ageing, ...)
  3. policy
     (taxes, benefits, non cash policies, ...)

3.1 Method: MSM-caveat nr. 1

- counterfactual income distribution
- real world changes in income distribution:
  1. changes in gross incomes
     (return to education, technology, globalisation)
  2. changes in socio-demographic situation
     (more singles, lone parents, ageing, ...)
  3. policy
     by simulating counterfactuals
- Bargain and Callan (2010)

3.1 Method: MSM-caveat nr. 1

- Bargain and Callan (2010)
- disposable income for *h* in year *t:*

$$y_h^t = d^t\left(\mathbf{p}^t, \mathbf{x}_h^t, \mathbf{z}_h^t\right)$$

tax benefit system

nominal parameters tax benefit system

gross incomes

socio-demographic characteristics

$$y_h^0 = d^0\left(\mathbf{p}^0, \mathbf{x}_h^0, \mathbf{z}_h^0\right)$$

3.1 Method: MSM-caveat nr. 1

- B&C decompose actual change:

$$y_h^t - y_h^0 = d^t\left(\mathbf{p}^t, \mathbf{x}_h^t, \mathbf{z}_h^t\right) - d^0\left(\mathbf{p}^0, \mathbf{x}_h^0, \mathbf{z}_h^0\right)$$

$$= \underbrace{d^t\left(\mathbf{p}^t, \mathbf{x}_h^t, \mathbf{z}_h^t\right) - d^0\left(\pi \cdot \mathbf{p}^0, \mathbf{x}_h^t, \mathbf{z}_h^t\right)}_{\text{effect of policy}}$$

$$+ \underbrace{d^0\left(\pi \cdot \mathbf{p}^0, \mathbf{x}_h^t, \mathbf{z}_h^t\right) - d^0\left(\pi \cdot \mathbf{p}^0, \pi \cdot \mathbf{x}_h^0, \mathbf{z}_h^0\right)}_{\text{effect of gross income \& demogr. change}}$$

$$+ \underbrace{d^0\left(\pi \cdot \mathbf{p}^0, \pi \cdot \mathbf{x}_h^0, \mathbf{z}_h^0\right) - d^0\left(\mathbf{p}^0, \mathbf{x}_h^0, \mathbf{z}_h^0\right)}_{\text{nominal fiscal drag}}$$

3.1 Method: MSM-caveat nr. 1

- B&C decompose actual change:

$$y_h^t - y_h^0 = d^t\left(\mathbf{p}^t, \mathbf{x}_h^t, \mathbf{z}_h^t\right) - d^0\left(\mathbf{p}^0, \mathbf{x}_h^0, \mathbf{z}_h^0\right)$$

$$\neq d^t\left(\mathbf{p}^t, \mathbf{x}_h^t, \mathbf{z}_h^t\right) - d^0\left(\pi \cdot \mathbf{p}^0, \mathbf{x}_h^t, \mathbf{z}_h^t\right)$$

effect of policy

- only counterfactual
- dependent on SILC 2010
- default: full indexation of parameters
  - non-indexation = discretionary policy

3.1 Method: MSM-caveat nr. 2

- not all policies are simulated
- three cases
  1. policy parameterized in MSM
     - e.g. PIT, child benefits, minimum income, VAT, ...
  2. policy not parameterized
     - e.g. pensions, unemployment benefits, ...
  3. policy not simulated
     - degressivity UB, maximum billing, ...
     - withholding tax on capital income, ...
     - all "non cash" policy changes

3.1 Method

- despite the two caveats:
- informative description of policy orientation
- by means of two measures
  - equity (or: distributional effect)
  - efficiency (or: effect on work incentives)

3.2 Method: measuring equity

- distribution gains/losses due to Δpolicy
  - by income group (deciles)
  - by subgroups of age, household composition, labour market status, ...
- redistributive power T&B-system
  - compares inequality before and after T&B
  - can be decomposed in

$$Redistribution = average\ tax \times progressivity$$

$$G^1 - G^0 \simeq \frac{t}{1-t} \times P$$

3.3 Method: measuring incentives

- efficiency = cost of distortion TB-system
- redistribution and/or collecting R
  is not lump sum but distortionary
  => welfare cost (Excess Burden)
- three elements (see e.g. Saez et al.):
  - marginal tax rates
  - behaviour (here: labour supply elasticity)
  - empirical distribution

3.3 Method: measuring incentives

- role of marginal tax rates:
  - intensive margin (working more): METR's

$$m_h = 1 - \frac{d(1.05 * x_h) - d(x_h)}{0.05 * x_h} \quad (\text{elasticity} : \varepsilon_h)$$

  - extensive margin (participating or not): PTR's

$$\tau_h = 1 - \frac{d(x_h^{\text{in work}}) - d(x_h^{\text{out work}})}{x_h^{\text{in work}}} \quad (\text{elasticity} : \eta_h)$$

mostly larger, important for lower wages/education

3.3 Method: measuring incentives

- three elements welfare cost of distortion:
  - marginal tax rate
  - behaviour (labour supply elasticity)
  - empirical distribution
- appear in formula for MCPF
  (= deadweight loss tax-benefit system)
  - compares with lump sum tax or benefit
  - use: controversial, lot of debate
  - here: descriptive device of distribution of MTR's in a heterogeneous population

3.3 Method: measuring incentives

- MCPF calculated as (Kleven & Kreiner):

$$MCPF = \frac{1}{\sum_{i=1}^{10}\left[1 - \frac{m_i}{1-m_i}\varepsilon_i - \frac{\tau_i}{1-m_i}\eta_i\right]s_i}$$

- elasticities:
  - from Belgian LS-model (estimated on SILC)
  - from literature (Kleven & Kreiner 2006)

3.3 Method: measuring incentives

- Elasticities (Kleven & Kreiner 2006)

Quintile	Elasticity at the intensive margin	Elasticity at the extensive margin
Q1	0.1	0.4
Q2	0.1	0.3
Q3	0.1	0.2
Q4	0.1	0.1
Q5	0.1	0

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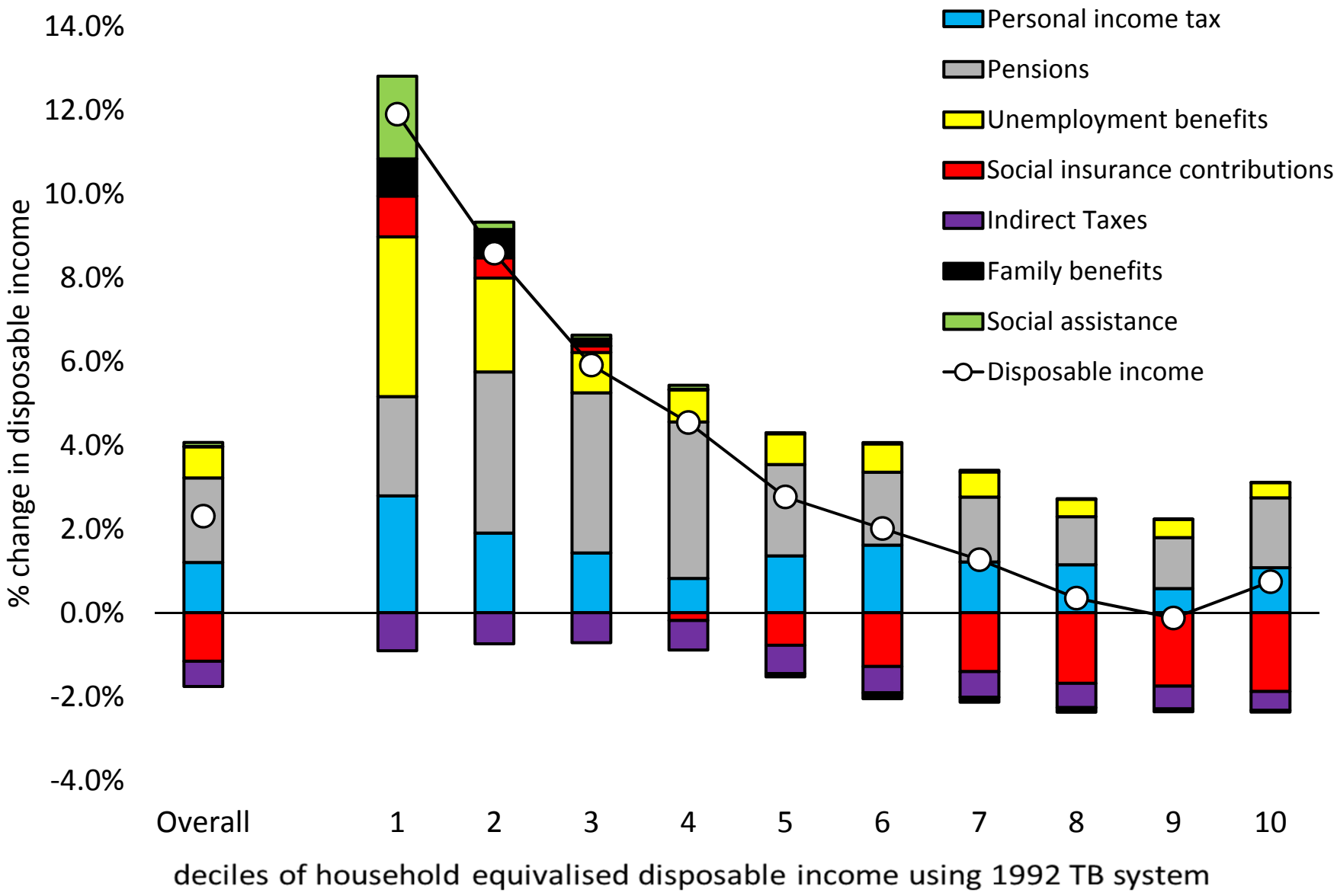
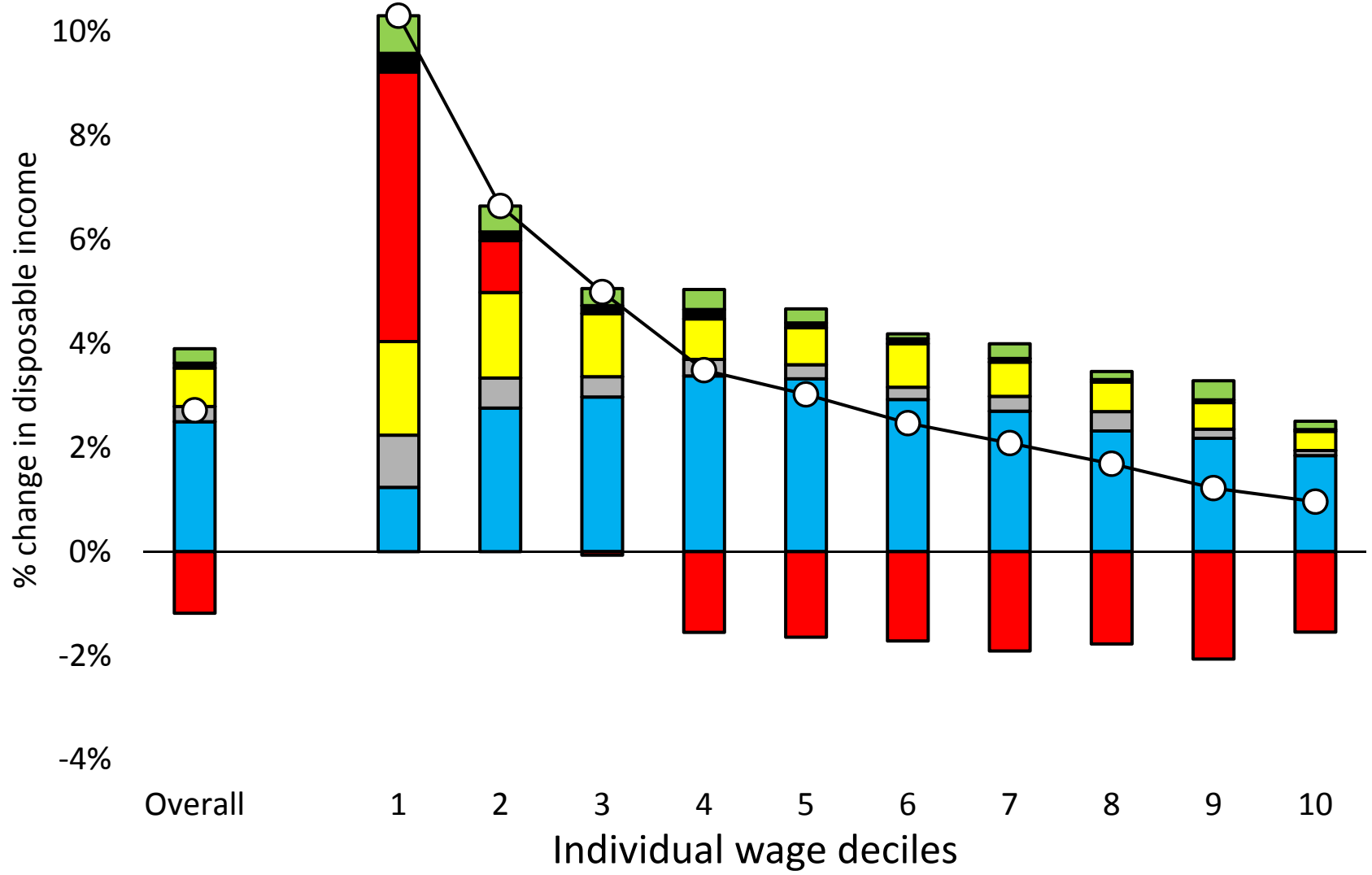
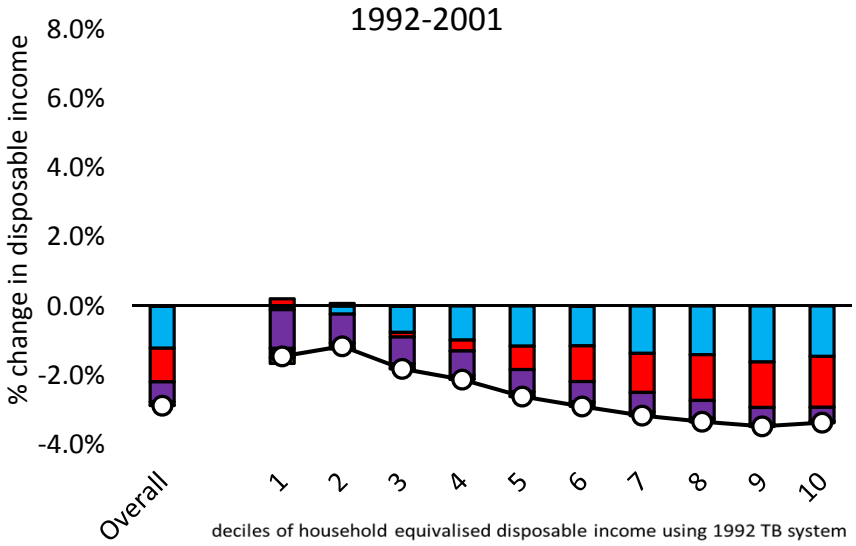
4.1 Redistribution (1): total population

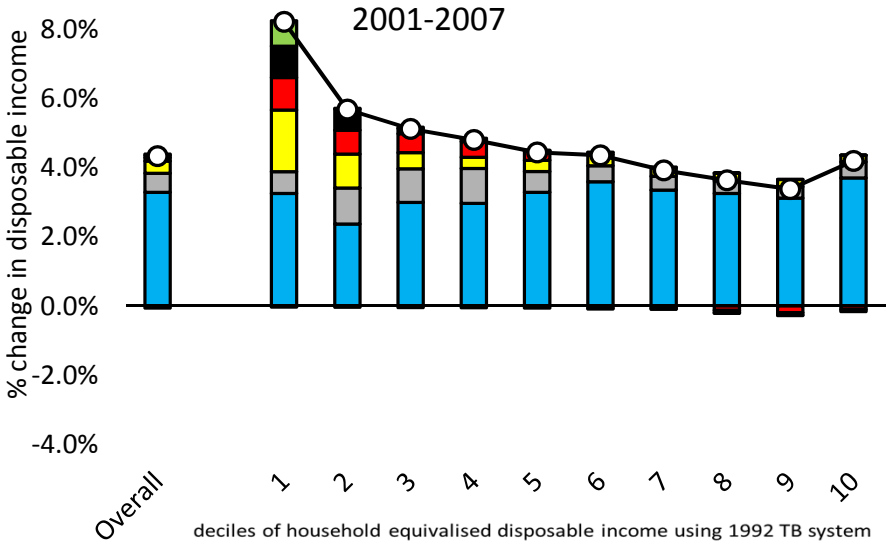


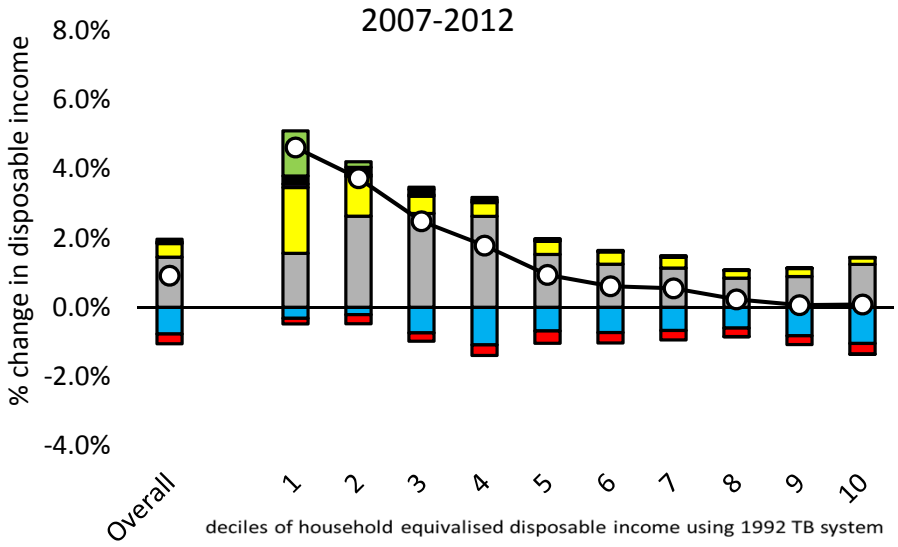
4.1 Redistribution (2): active population



4.1 Results: Redistribution (4)







4.1 Results: Redistribution (5)

Redistribution and progressivity

	1992	2001	2007	2012
RS	9.9	10.4	11.0	11.4
P	27.4	26.9	32.3	33.9
Av. tax rate	30.9	32.3	29.4	29.3

4.1 Results: Redistribution (6)

Kakwani index

	1992	2001	2007	2012
All	27.4	26.9	32.3	33.9
PIT	13.3	13.4	16.3	16.7
SIC	0.6	2.5	2.9	3.3
Repl.inc.	-95.6	-95.6	-95.9	-96.1
Benefits	-18.8	-17.9	-19.3	-19.6

4.1 Results: Redistribution (7)

Average tax rate

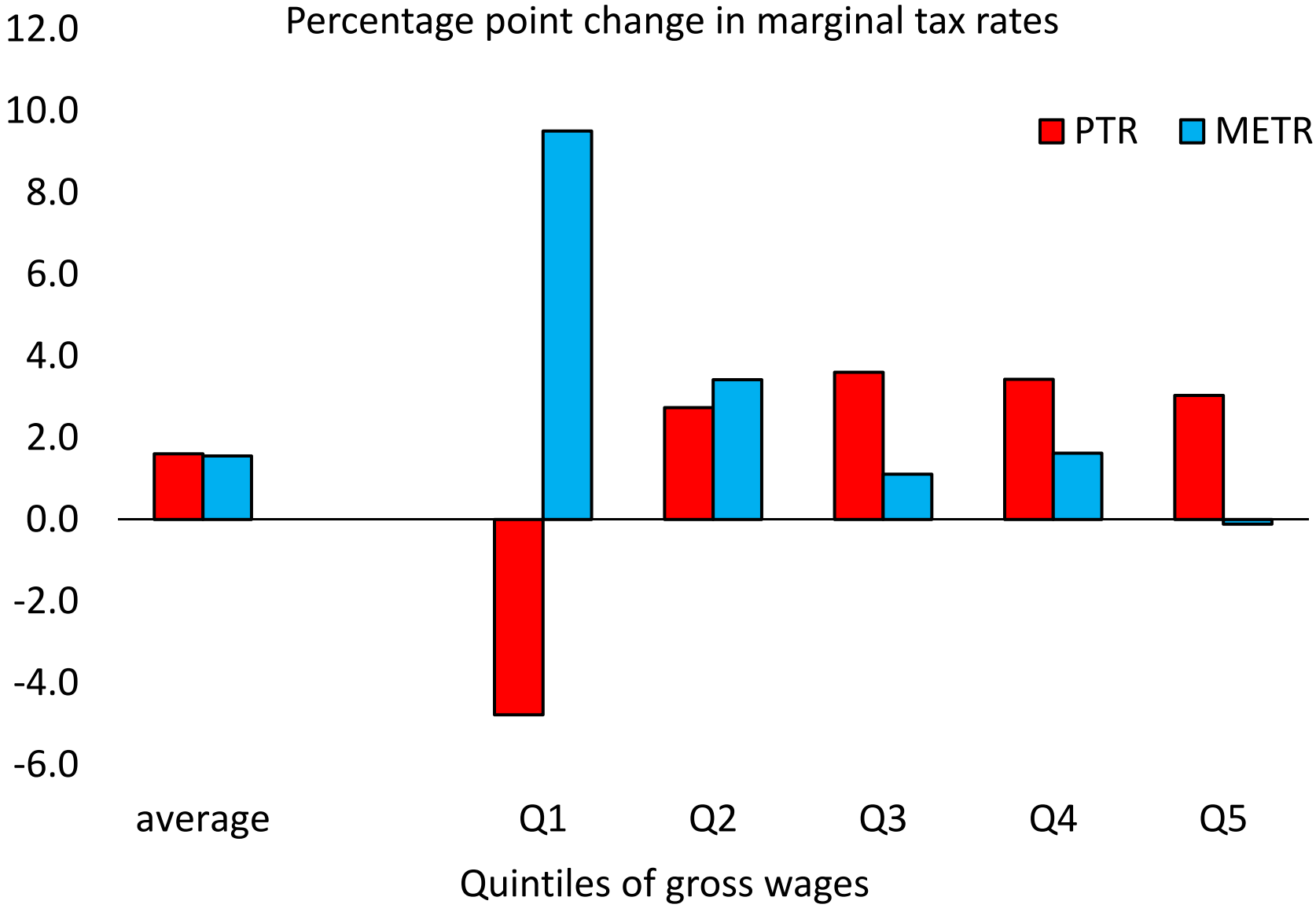
	1992	2001	2007	2012
All	30.9	32.3	29.4	29.3
PIT	30.5	31.6	28.6	28.7
SIC	14.4	14.9	15.0	15.0
Repl.inc.	-4.7	-4.7	-5.0	-5.3
Benefits	-10.4	-10.4	-10.2	-10.3

4.1 Results: Redistribution (8)

Reynolds Smolensky

	1992	2001	2007	2012
All	9.9	10.4	11.0	11.4
PIT	5.5	5.8	6.2	6.3
SIC	-0.2	0.1	0.2	0.3
Repl.inc.	3.4	3.4	3.6	3.8
Benefits	0.6	0.5	0.6	0.6

4.2 Results: Work Incentives '92-'12



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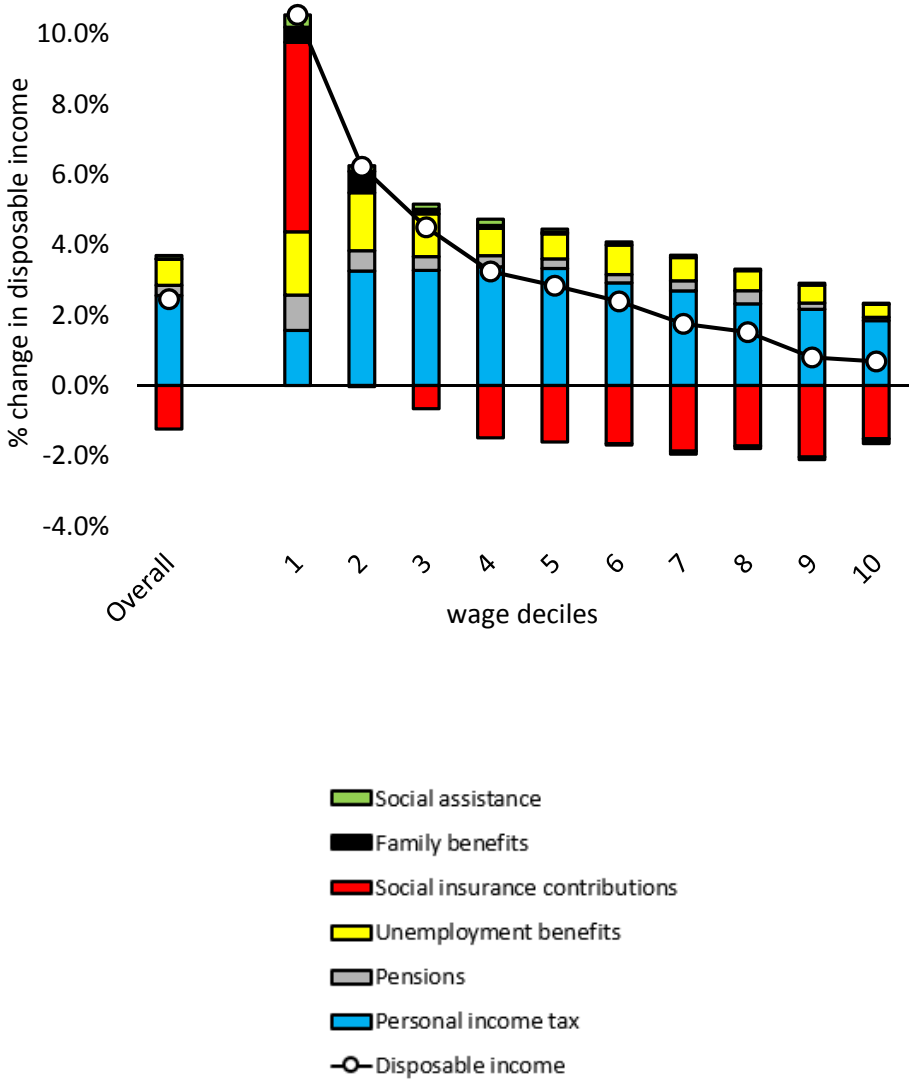
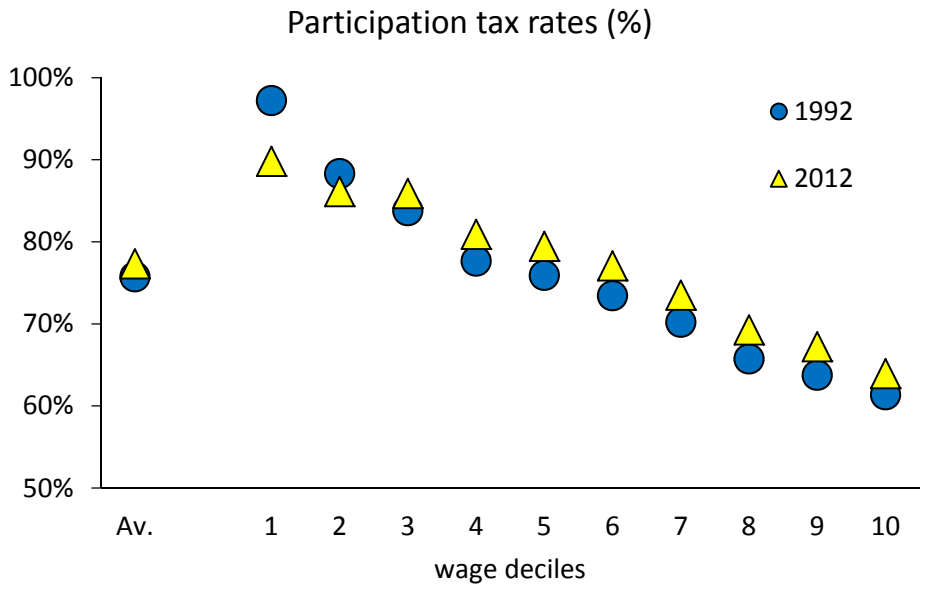
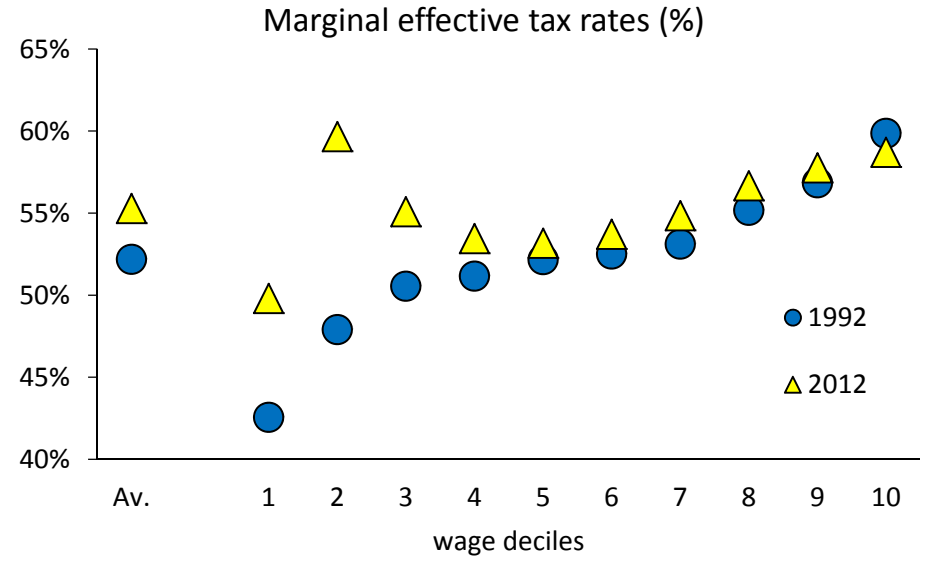
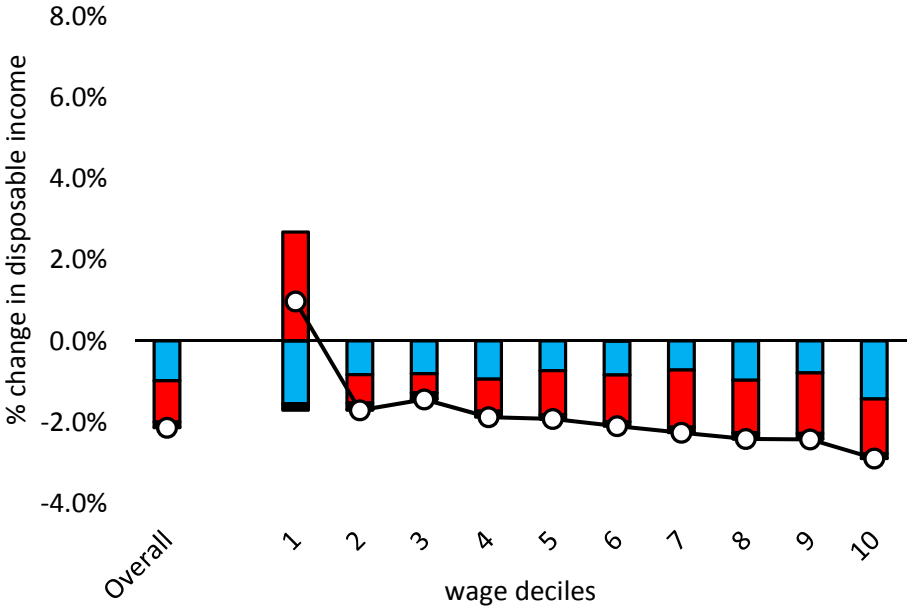
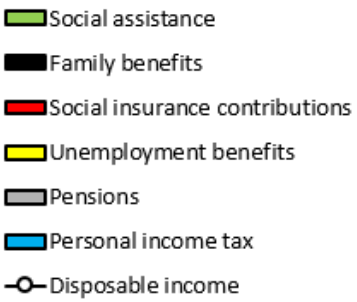


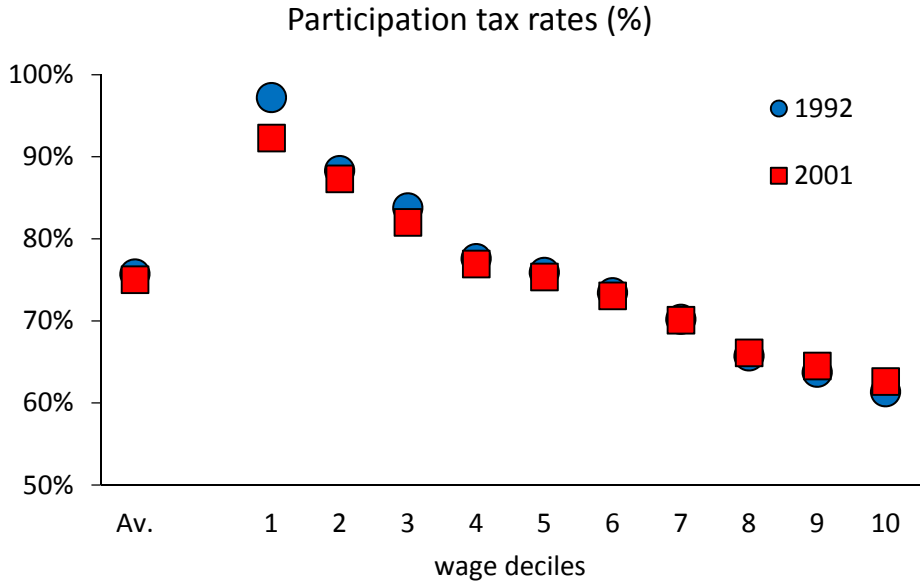


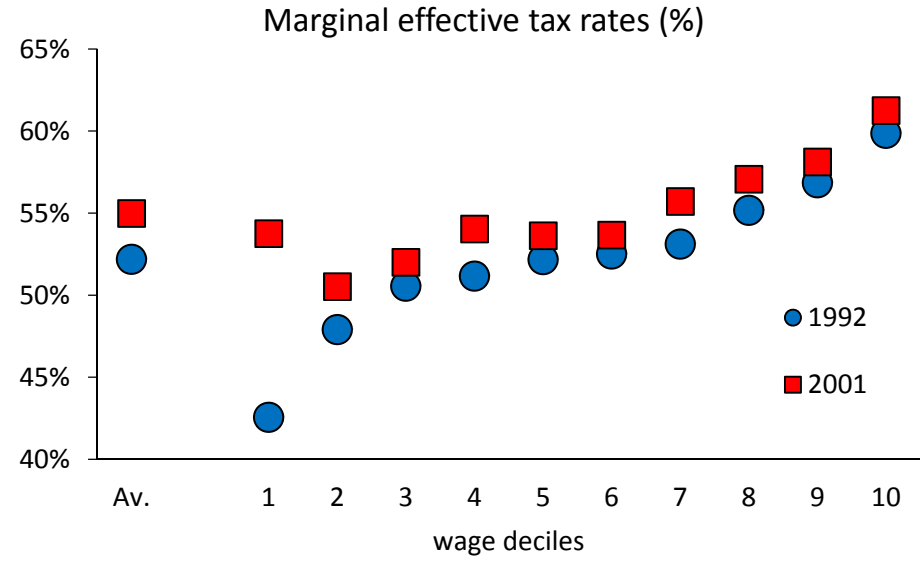


4.2 Results: Work Incentives '92-'01

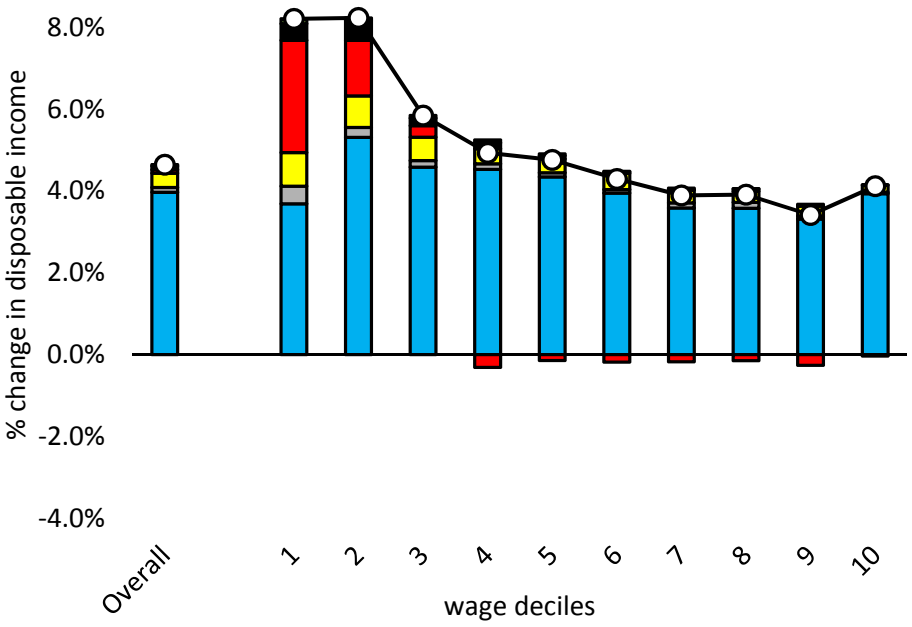


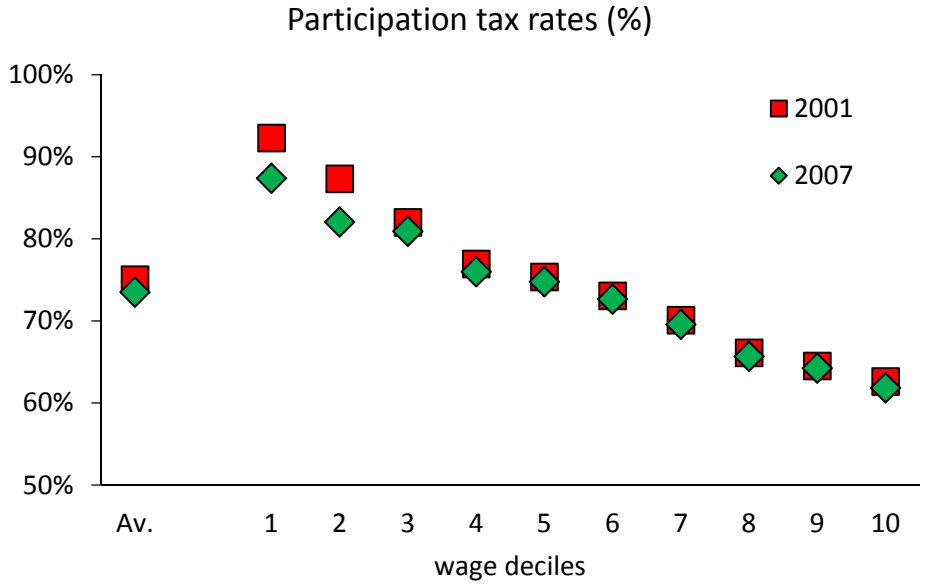


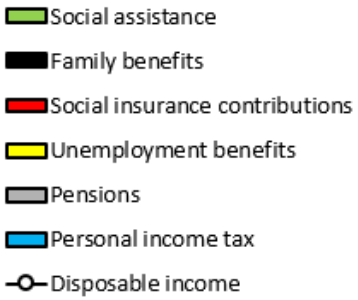


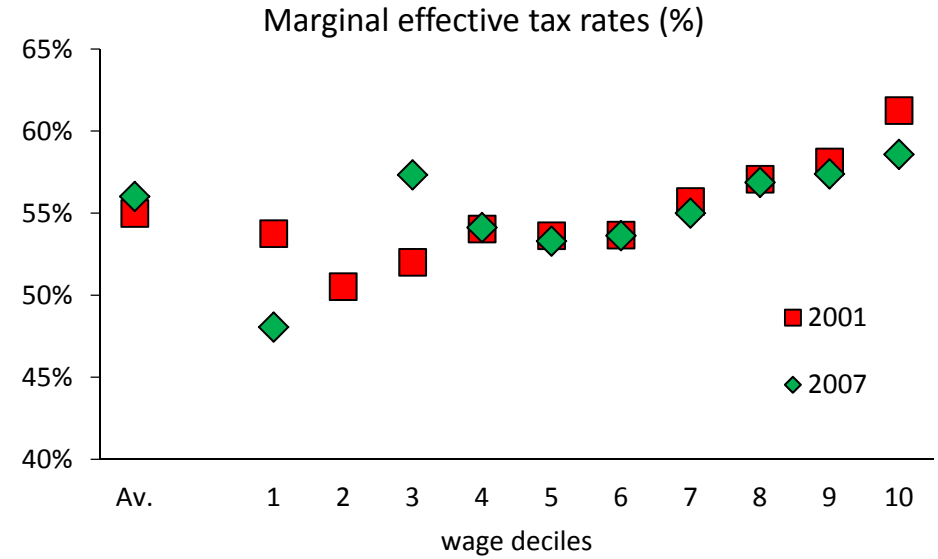


4.2 Results: Work Incentives '01-'07

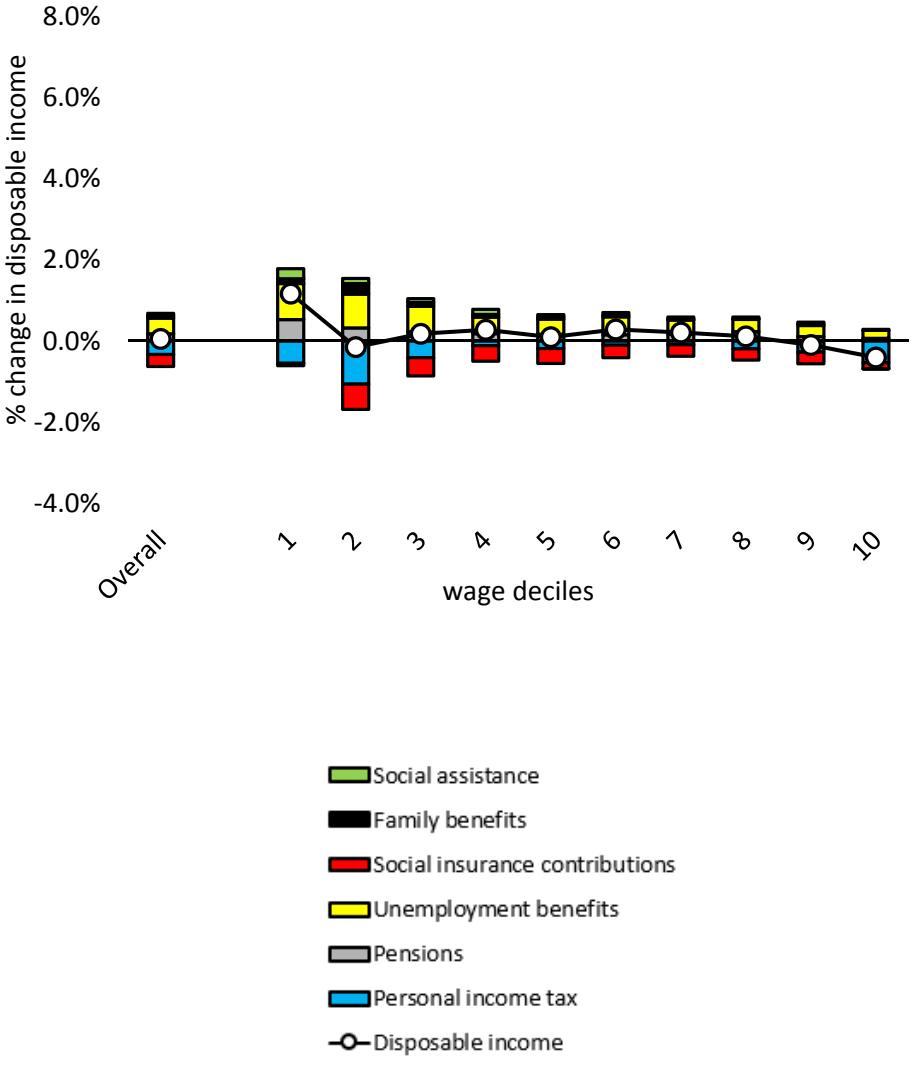


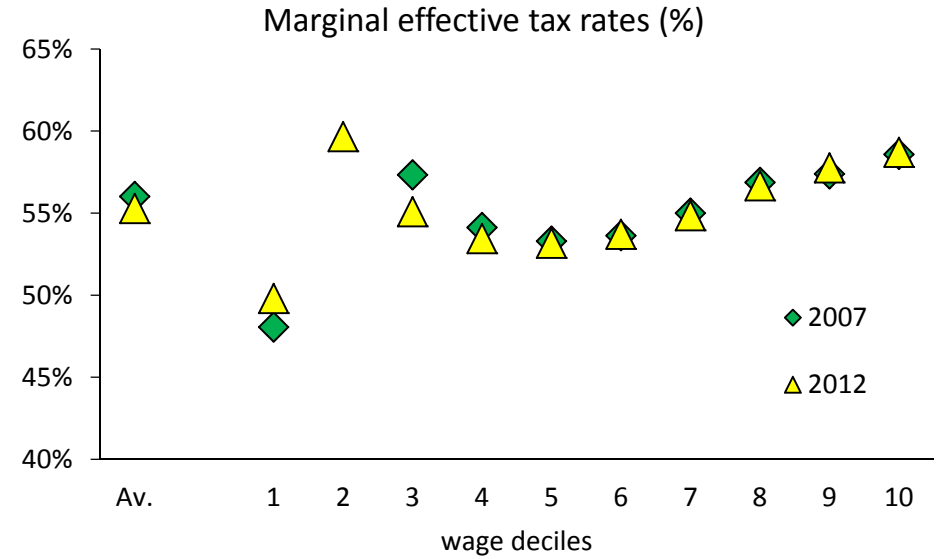






4.2 Results: Work Incentives '07-'12





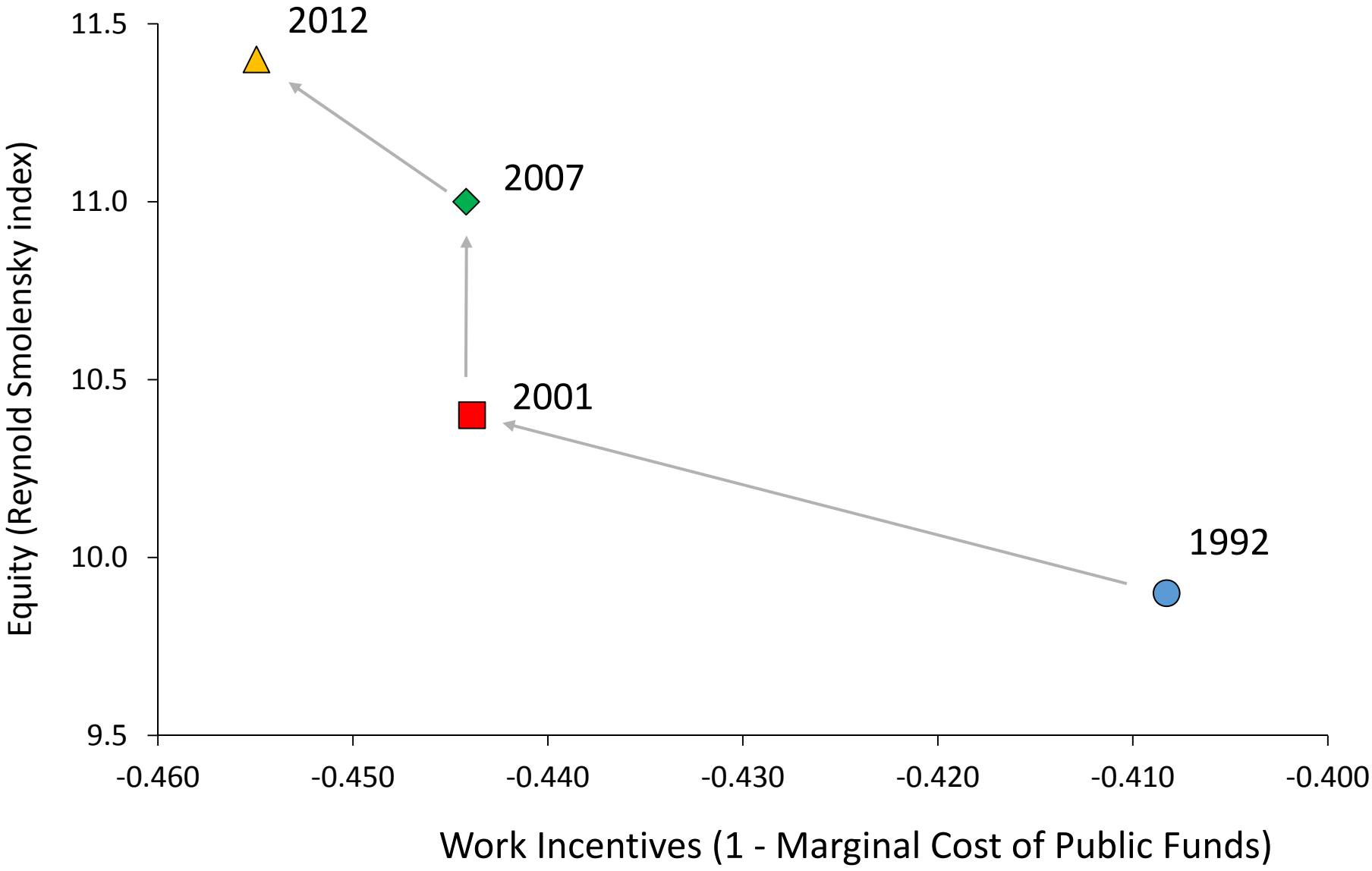
4.2 Results: MCPF

Marginal cost of public funds

1992	2001	2007	2012
1.408	1.444	1.444	1.455

$$MCPF = \frac{1}{\sum_{i=1}^{10}\left[1-\frac{m_i}{1-m_i}\varepsilon_i-\frac{\tau_i}{1-m_i}\eta_i\right]s_i}$$

4.3 Results: policy shift?



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Conclusion (1)

- policy last 2 decades: has put equity first
  - fiscal consolidation 90's: progressive
  - bottom incomes: tax decrease 2001-2007
  - UB increase 2001-2007
  - pension benefit increase 2007-2012
- at the incentive side:
  - PTR's have decreased, thanks to WorkBonus
  - fading out reflected in higher MTR's
  - overall: MTR slightly increased

Conclusion (2)

- if inequality has (slightly) increased
- probably not due to tax benefit policies

or

- with less equity-concerned TB-policies
- inequality in disposable income might have increased much more

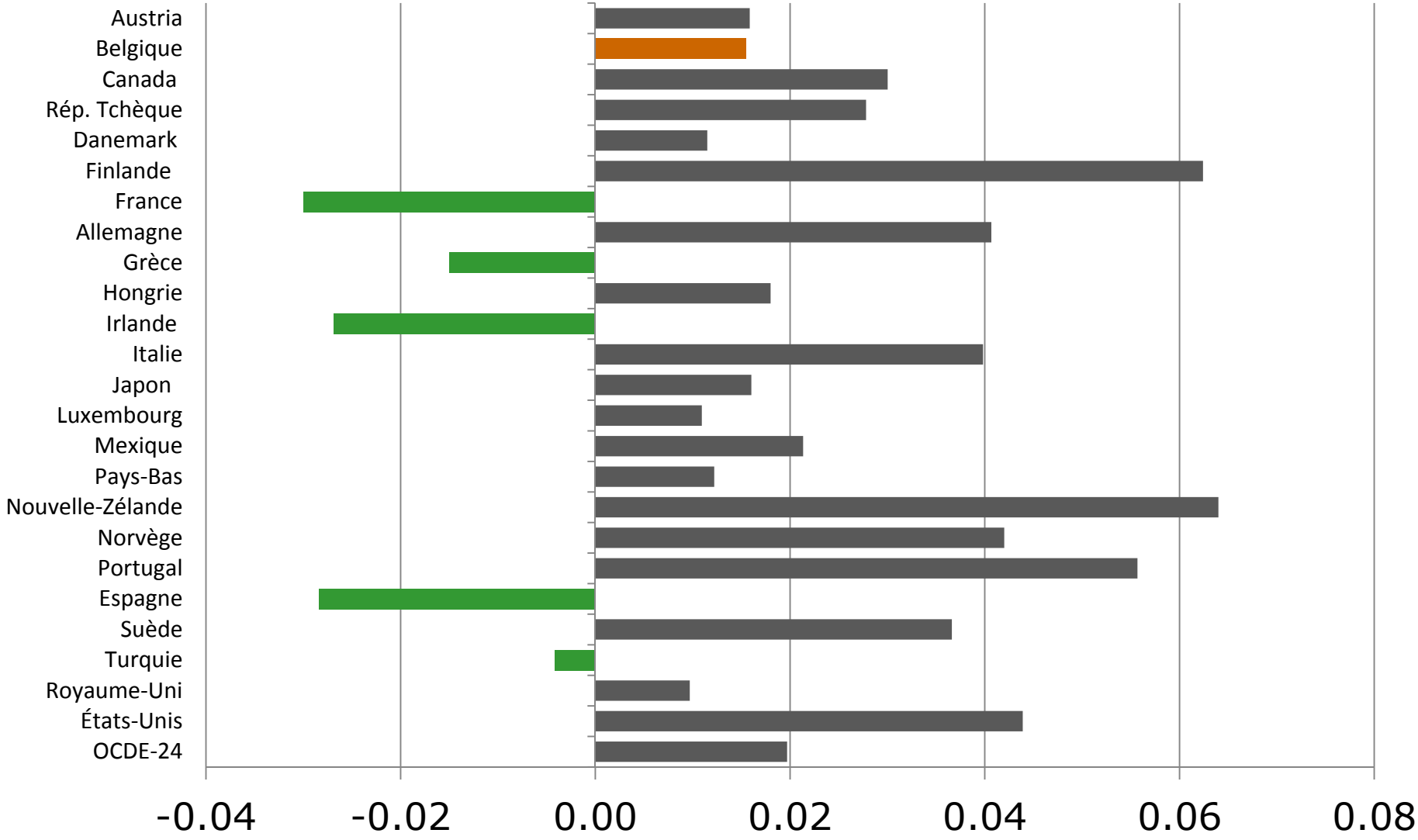
Further research

- use labour supply elasticities of own estimated model
- introduce dynamic elements
  - dependence of UB on duration of U-spell
  - build-up of pensions rights
  - in general: eligibility
  - take-up of subsistence income (Leefloon)

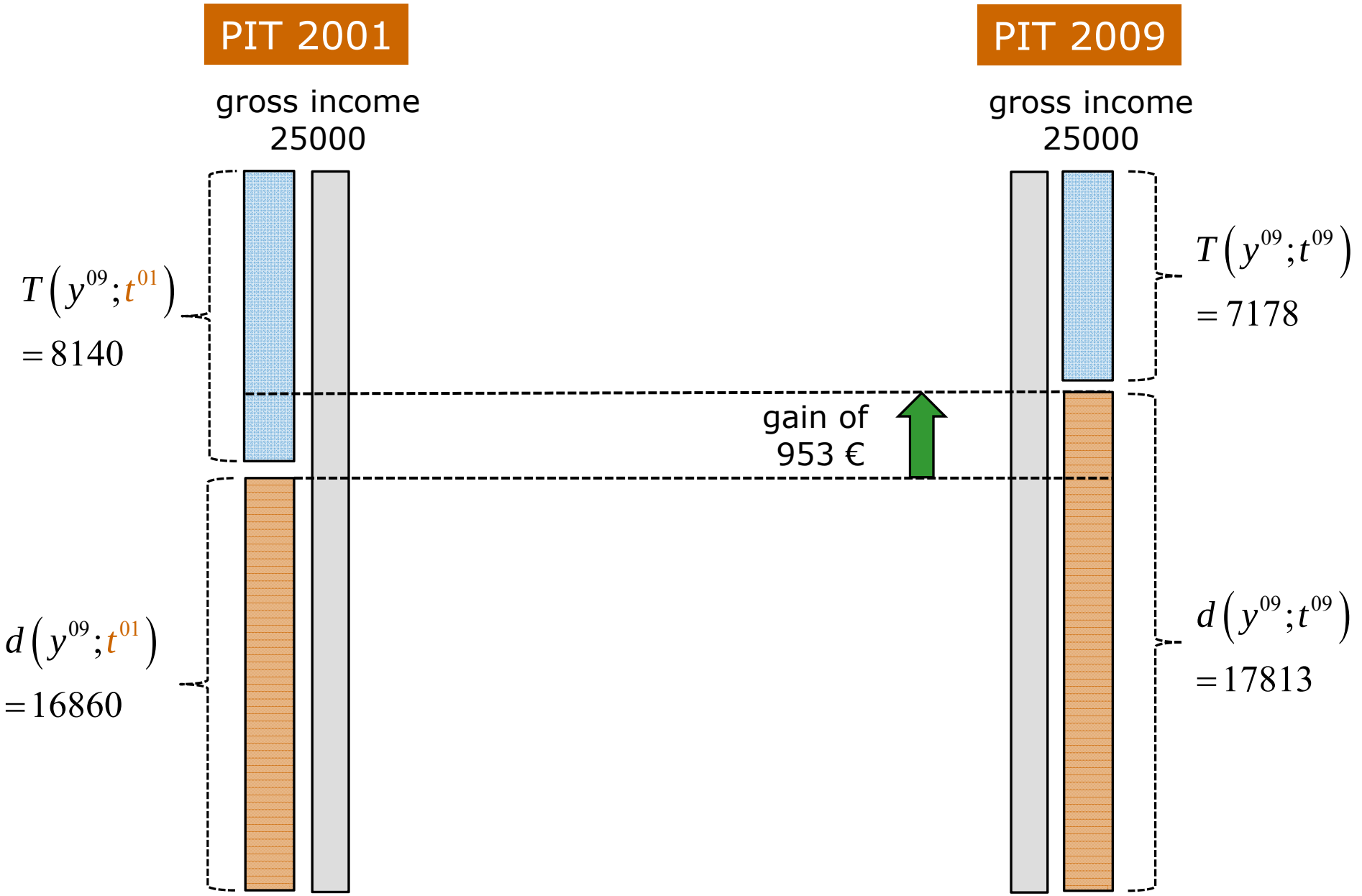
Thank you for your attention

Extra: OECD Growing Unequal

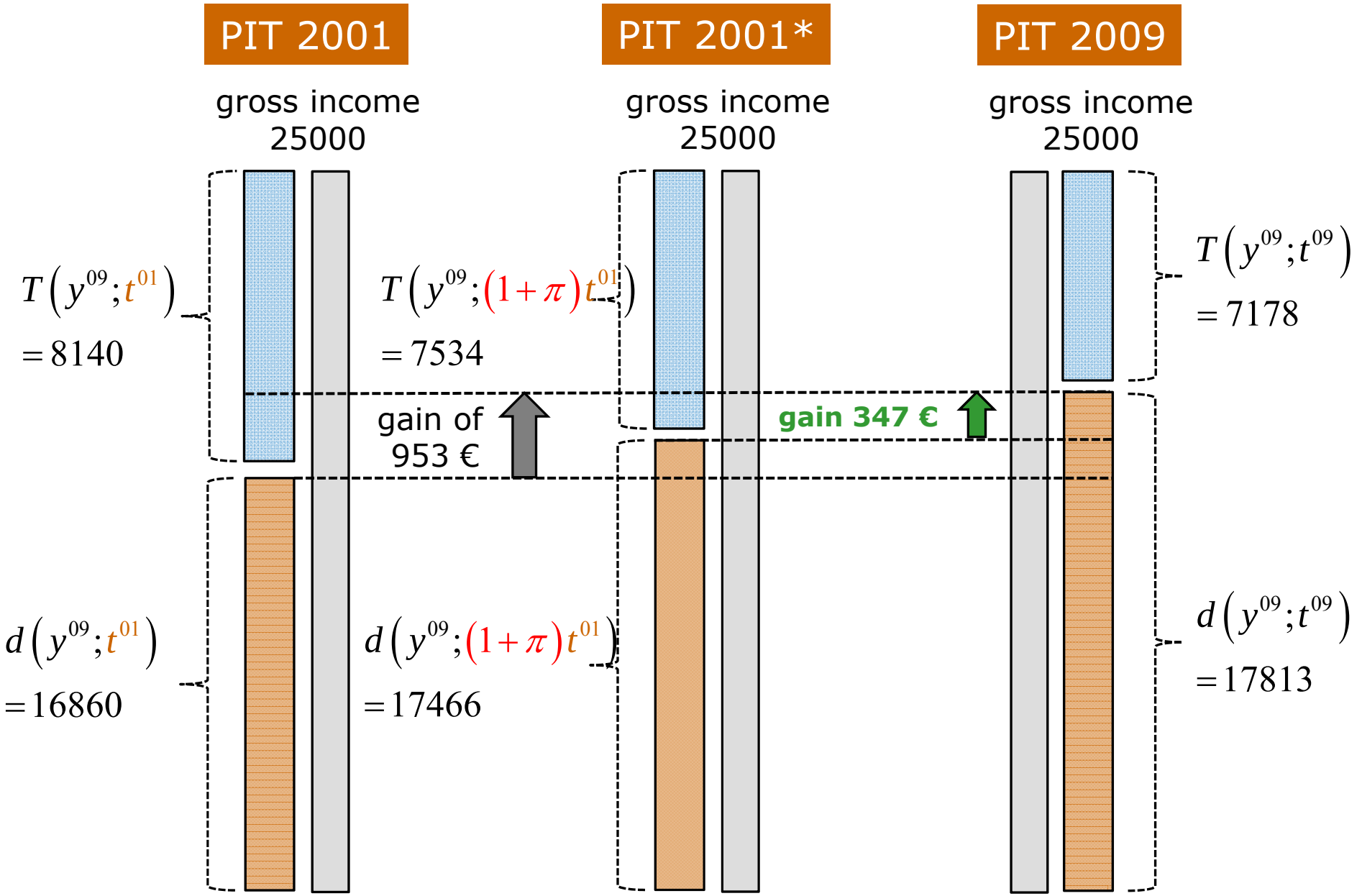
Figure 1.2 Change in Gini mid 80's -> mid 2000's



Extra: Method, case 1 policies in MSM



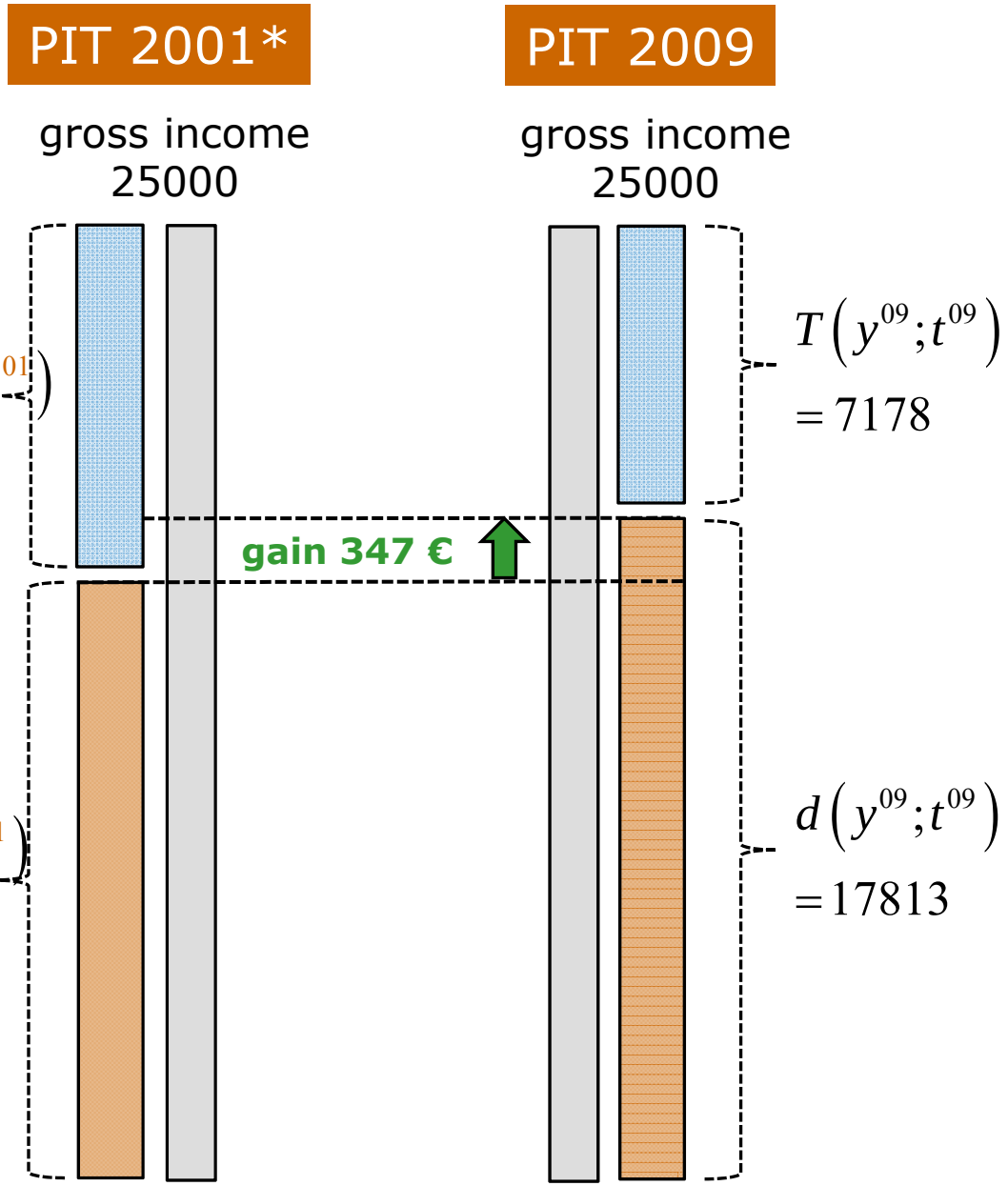
Extra: Method, case 1 policies in MSM



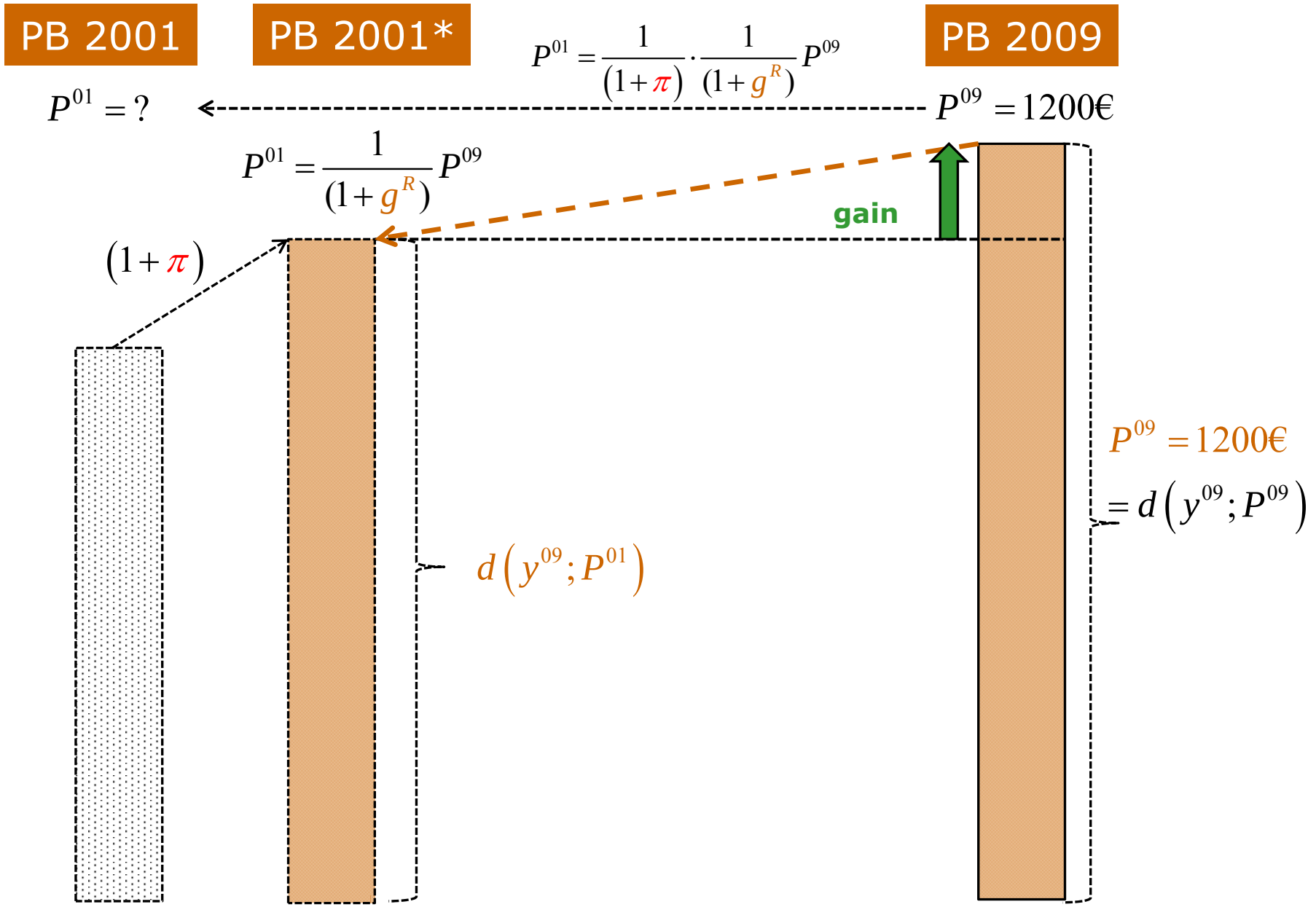
Extra: Method, case 1 policies in MSM

Assumption:

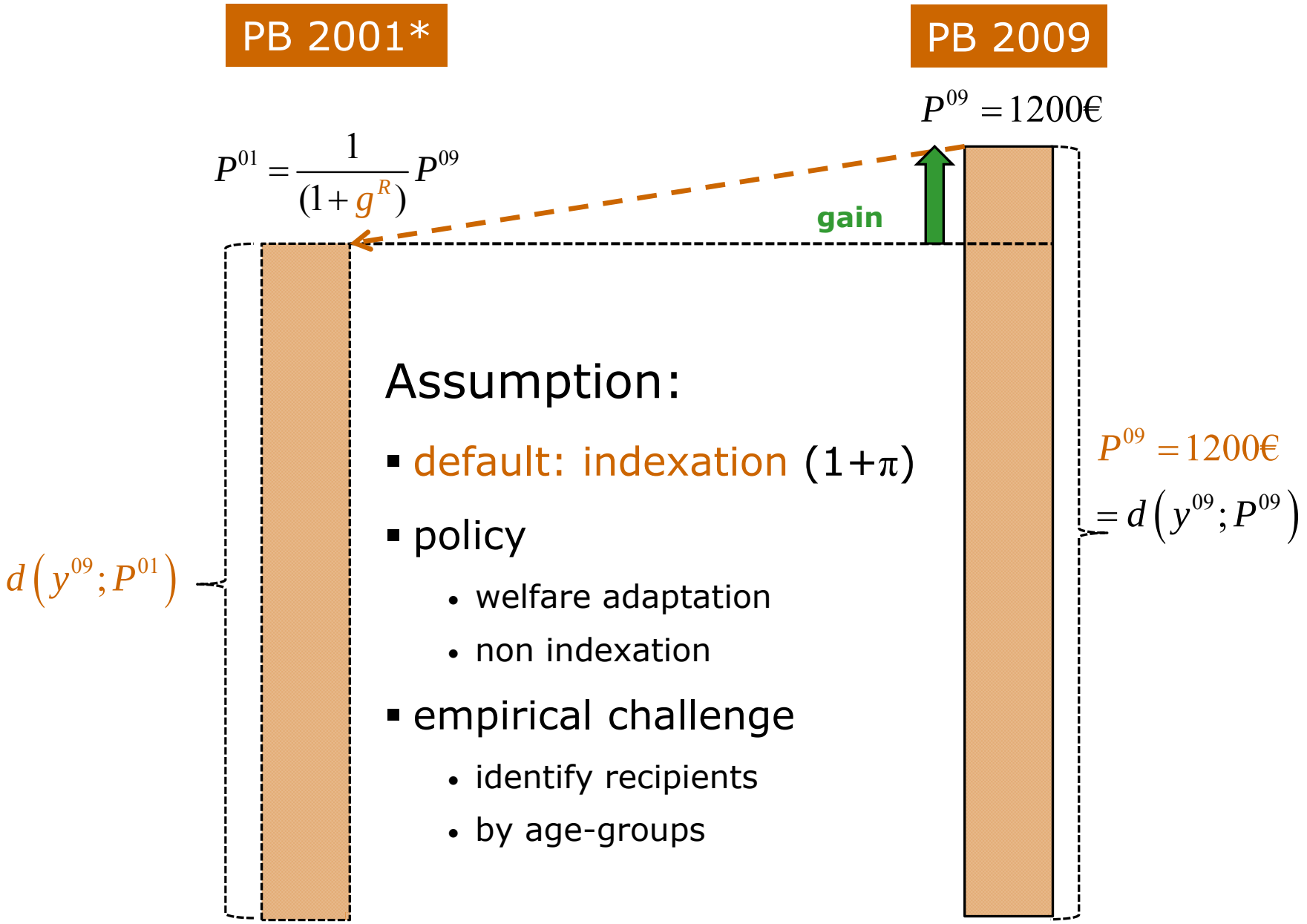
- default: indexation $(1+\pi)$
- policies:
  - non indexation
  - other



Extra: Method, case 2 pension (PB)



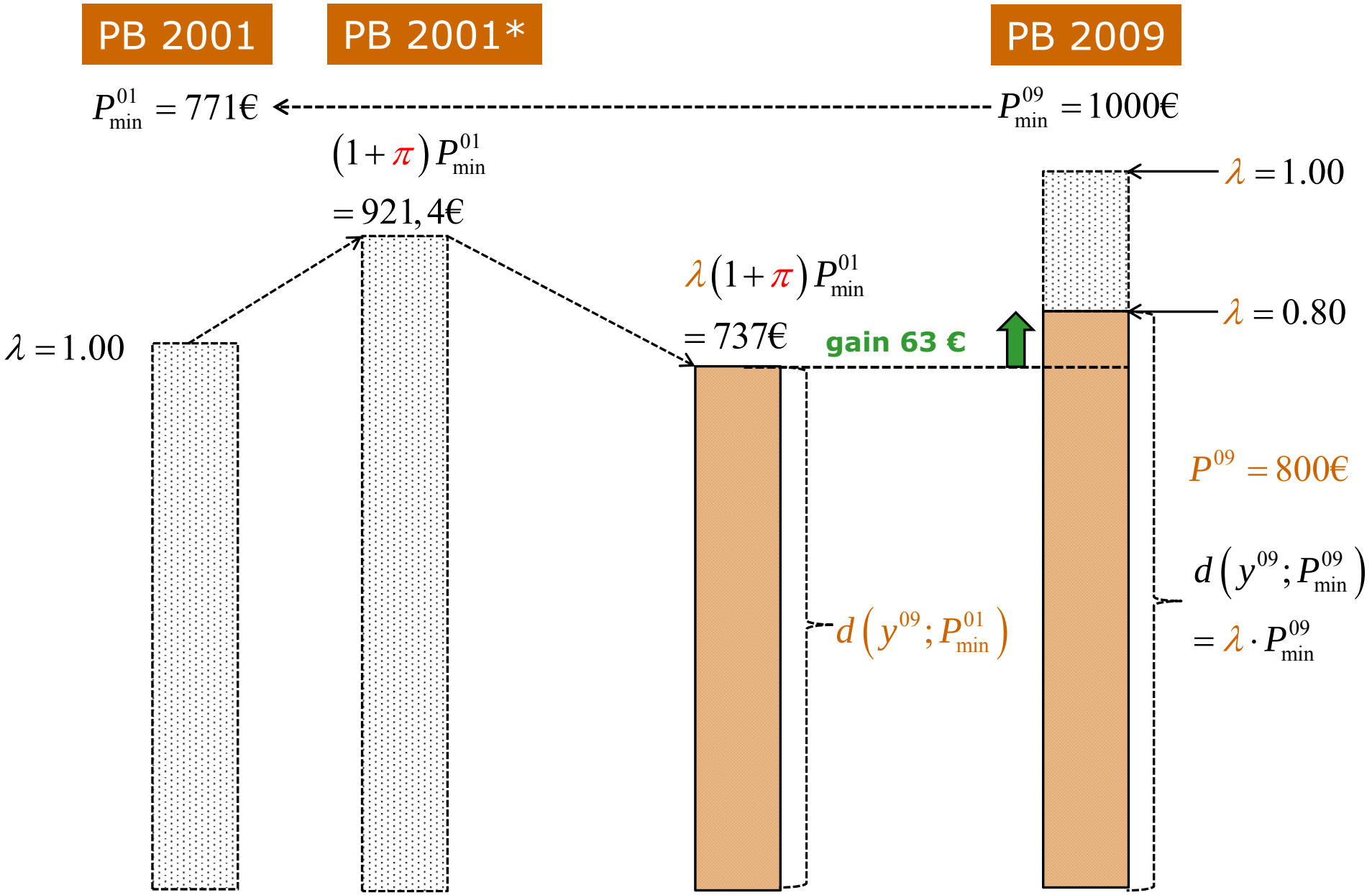
Extra: Method, case 2 pension (PB)



Assumption:

- default: indexation $(1+\pi)$
- policy
  - welfare adaptation
  - non indexation
- empirical challenge
  - identify recipients
  - by age-groups

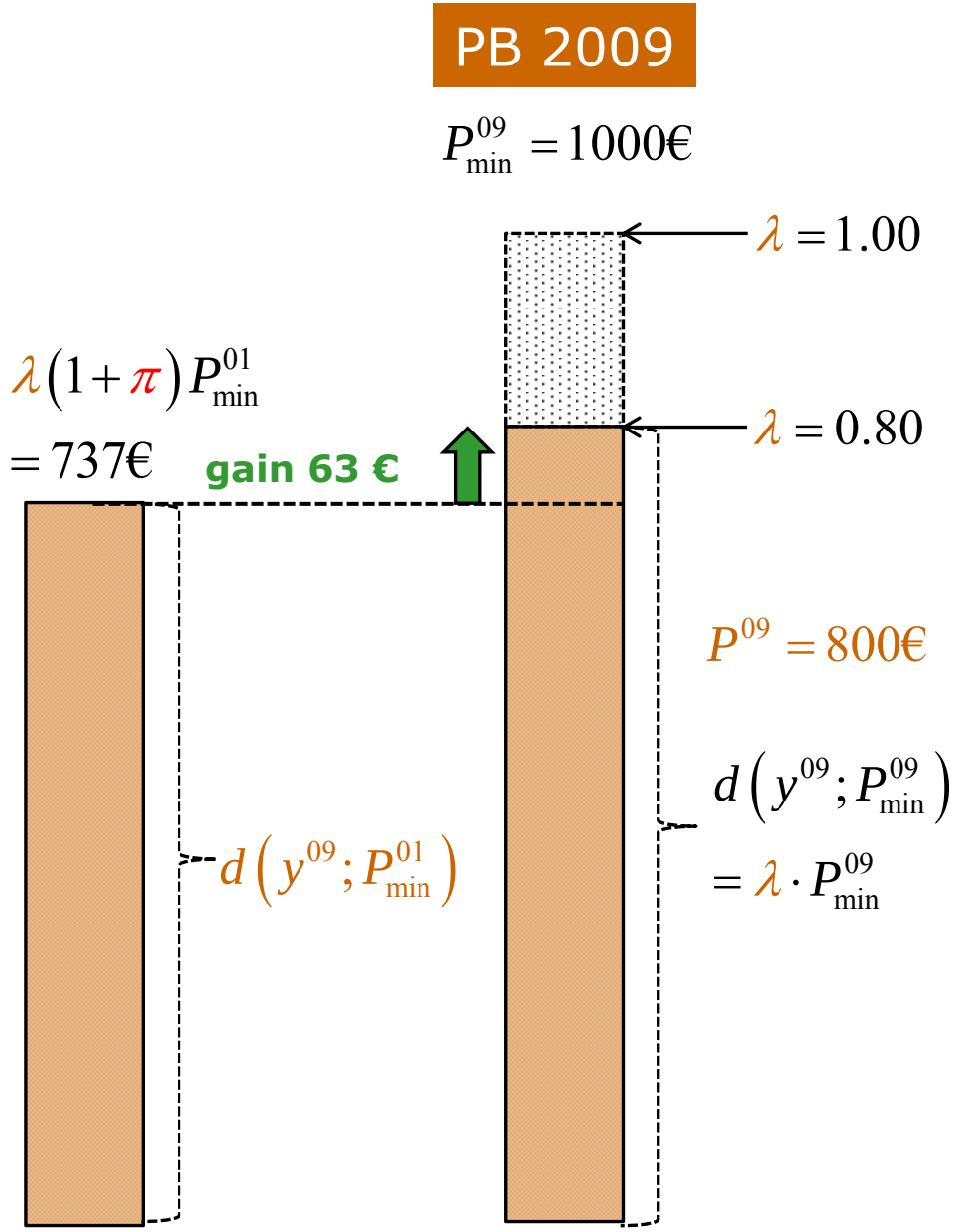
Extra: Method, case 2b minim. pension



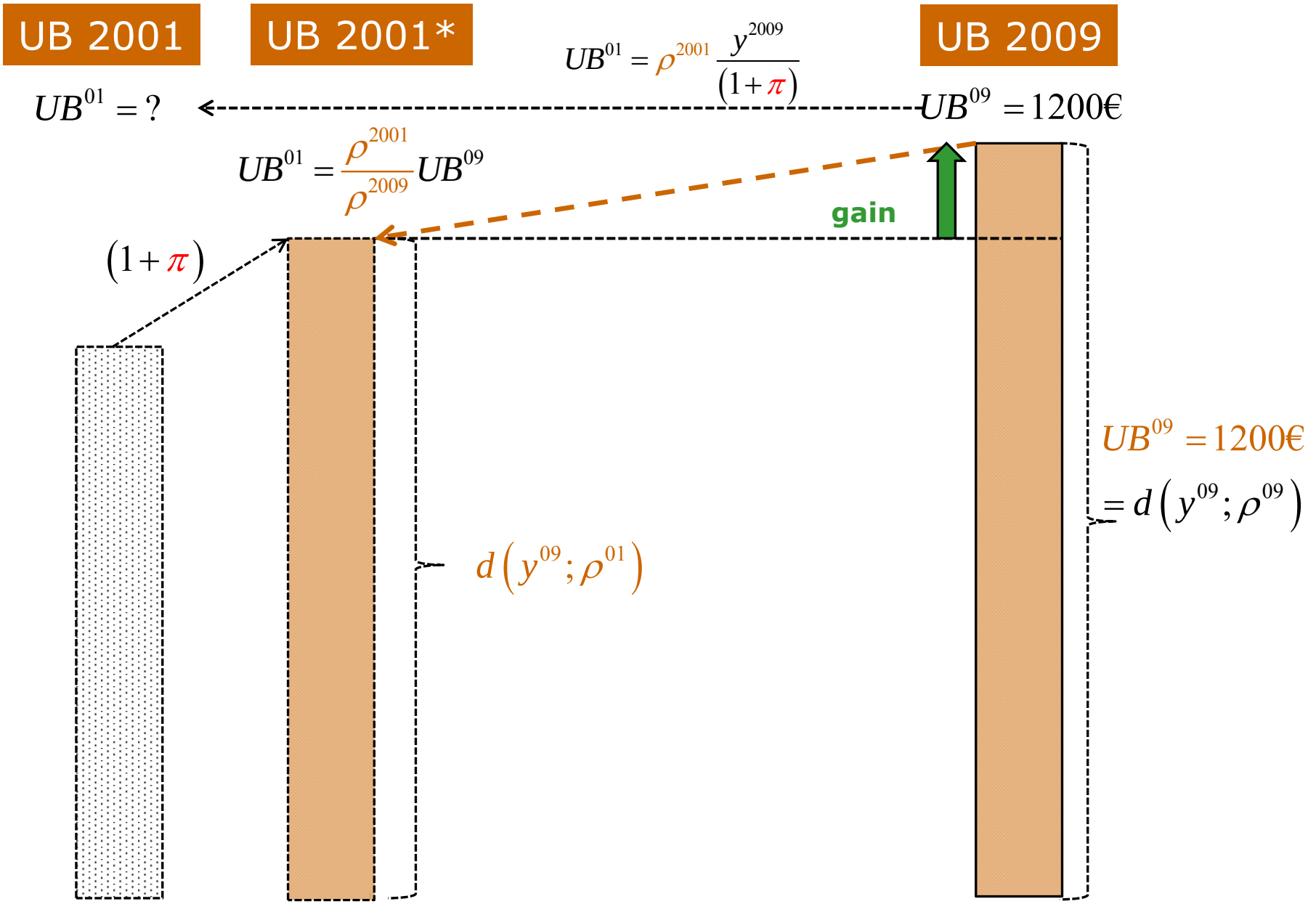
Extra: Method, case 2b minim. pension

Assumption:

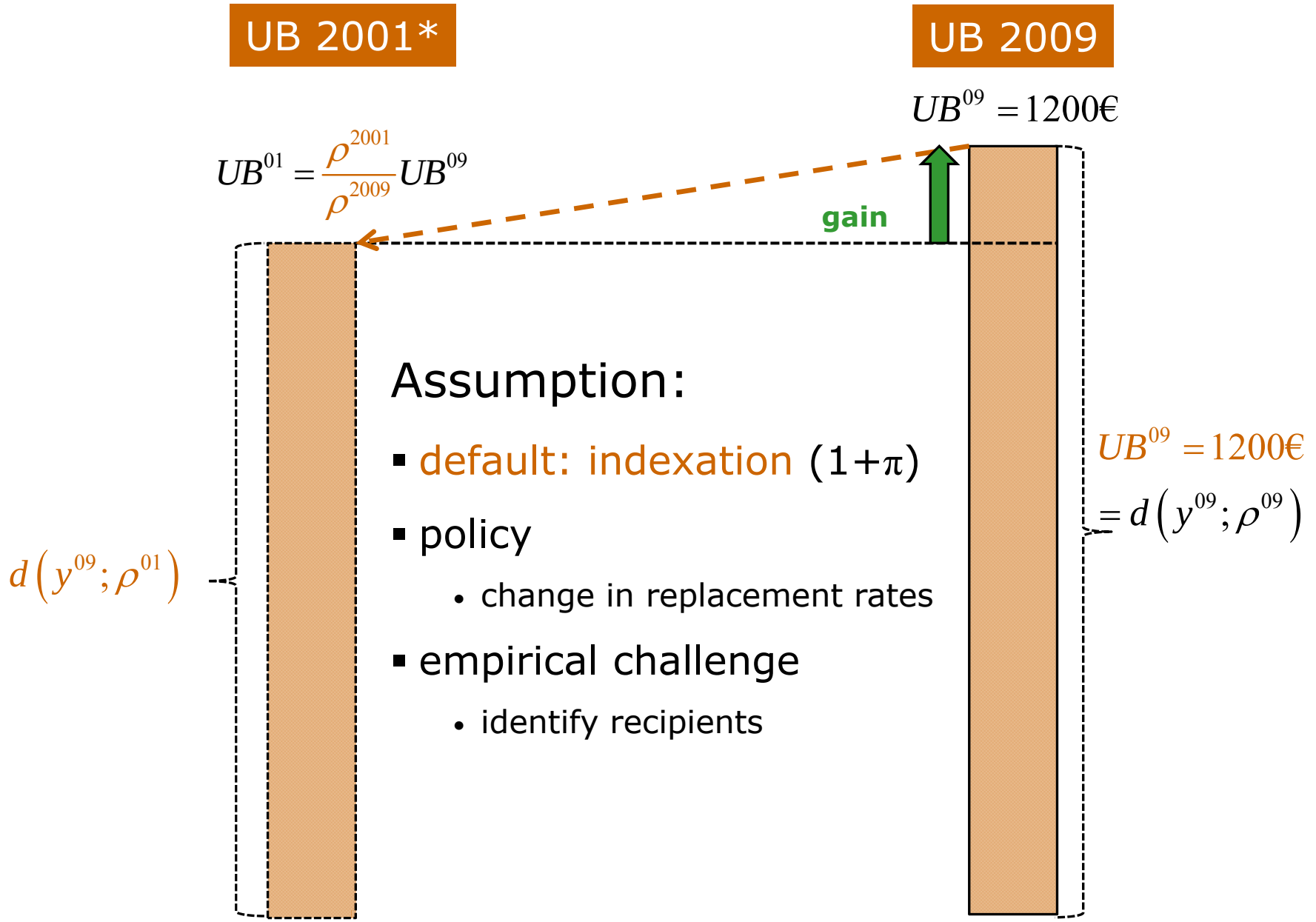
- default: indexation $(1+\pi)$
- policy
  - welfare adaptation
  - non indexation
  - other measures
- empirical challenge
  - identify recipients
  - reconstruct amounts of previous policy years



Extra: Method, case 3 Unemploym. B.



Extra: Method, case 3 Unemploym. B.



Assumption:

- default: indexation (1+π)
- policy
  - change in replacement rates
- empirical challenge
  - identify recipients