# Tax Reform and its Implications for Inequality

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*University College London and Institute for Fiscal Studies*

Slide Presentation

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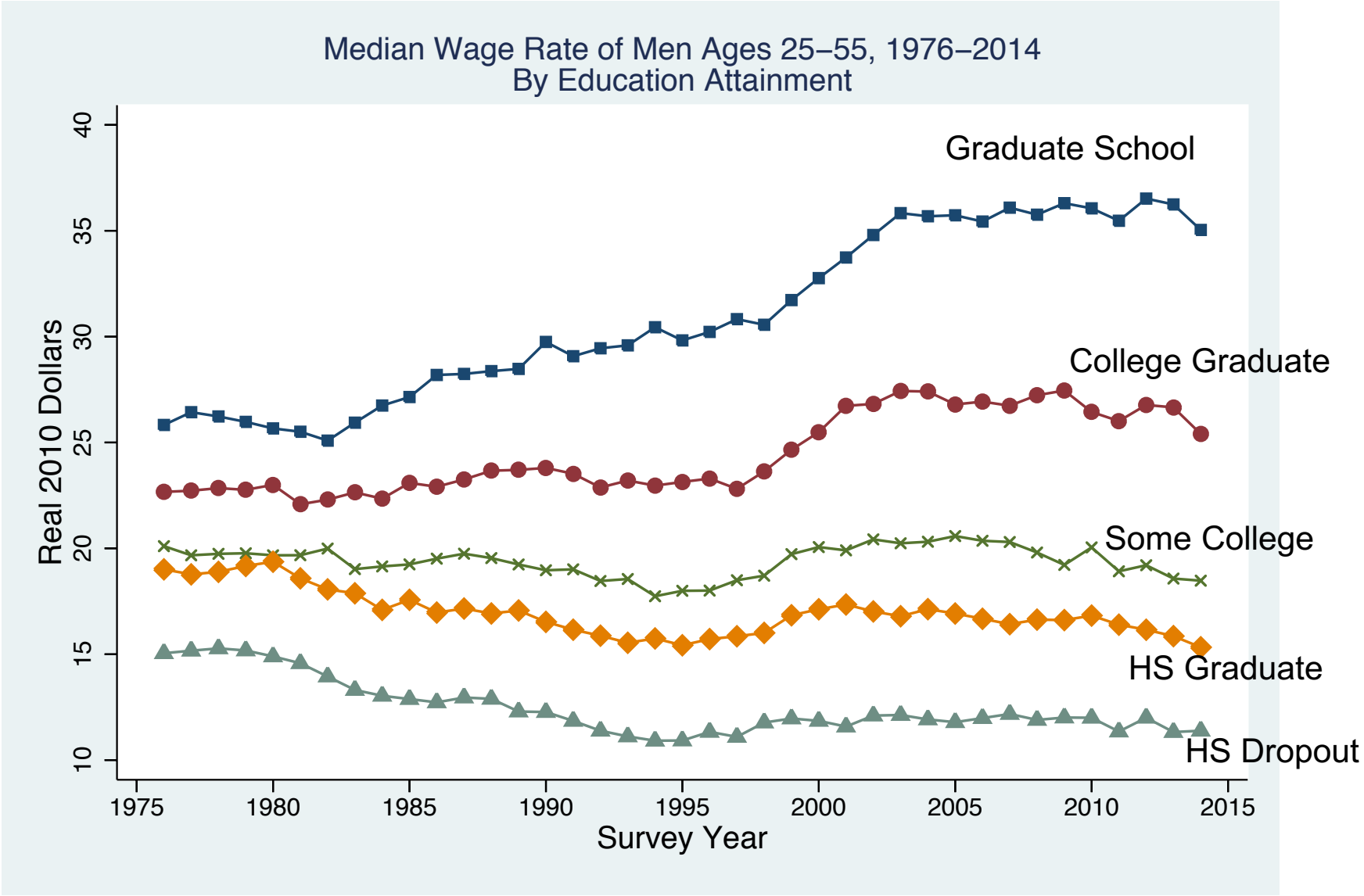
# Tax Reform and its Implications for Inequality

- Even before the financial crisis, many economies faced increasing inequality and growing pressure to increase employment and earnings
  - the great recession added to the pressure on government revenues, making it even more important to get the tax and welfare-benefit system right.
- Focus here will be on tax and welfare-benefit reforms as they impact on the *labour earnings, human capital and inequality*.
  - Looking also at the *role of empirical evidence in the analysis of tax reform*. A data revolution in empirical economics…
- Examining some of the key challenges:
  - falling real earnings for low skilled,
  - inequality at the top.
- Let's set the scene….

# Male Median Real Wages for Men (US)




Source: Blundell and Ziliak (2017), Notes: CPS.

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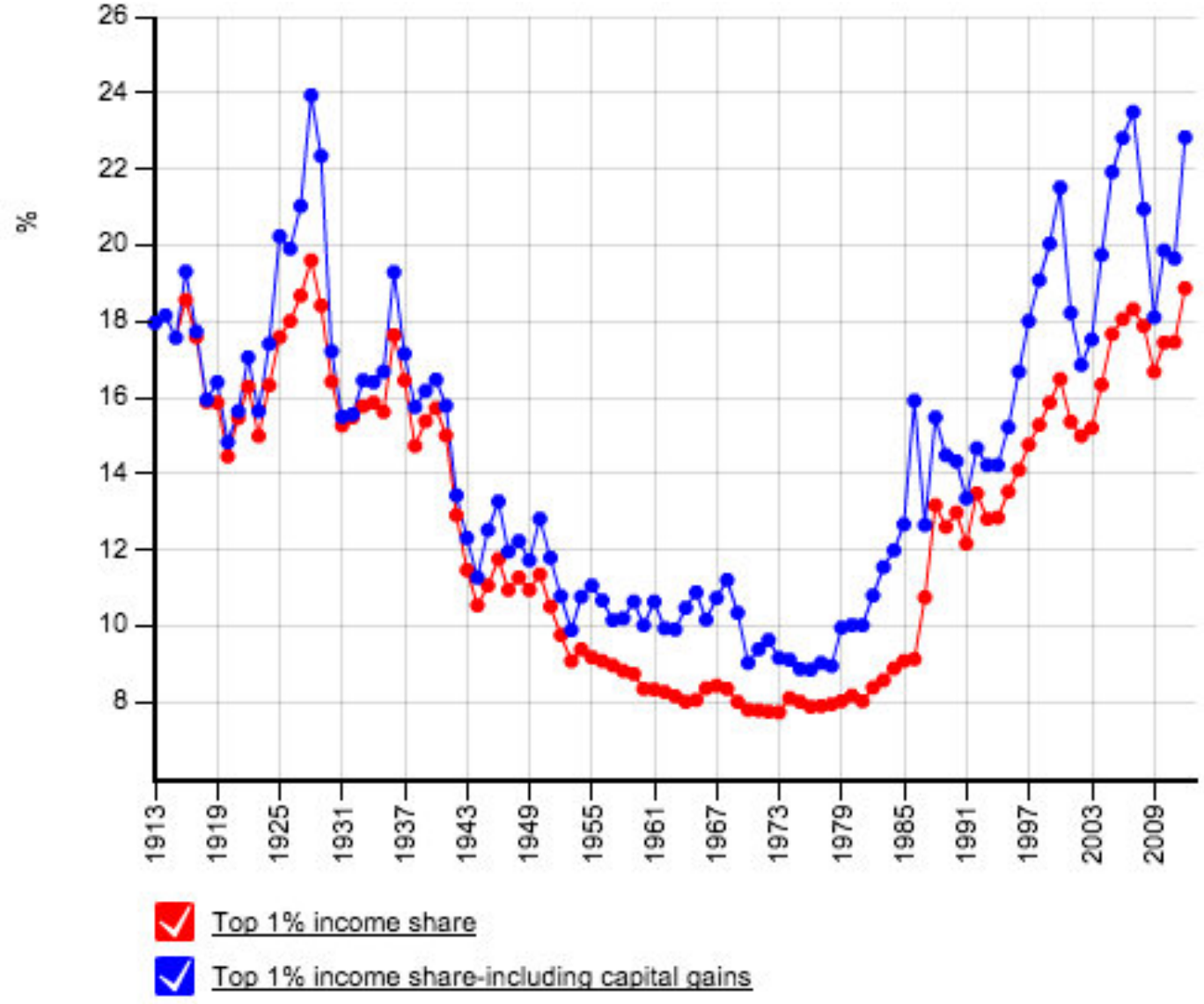
# Top Income Shares in the US




Source: Piketty and Saez (2013), Notes: World Top Incomes Database

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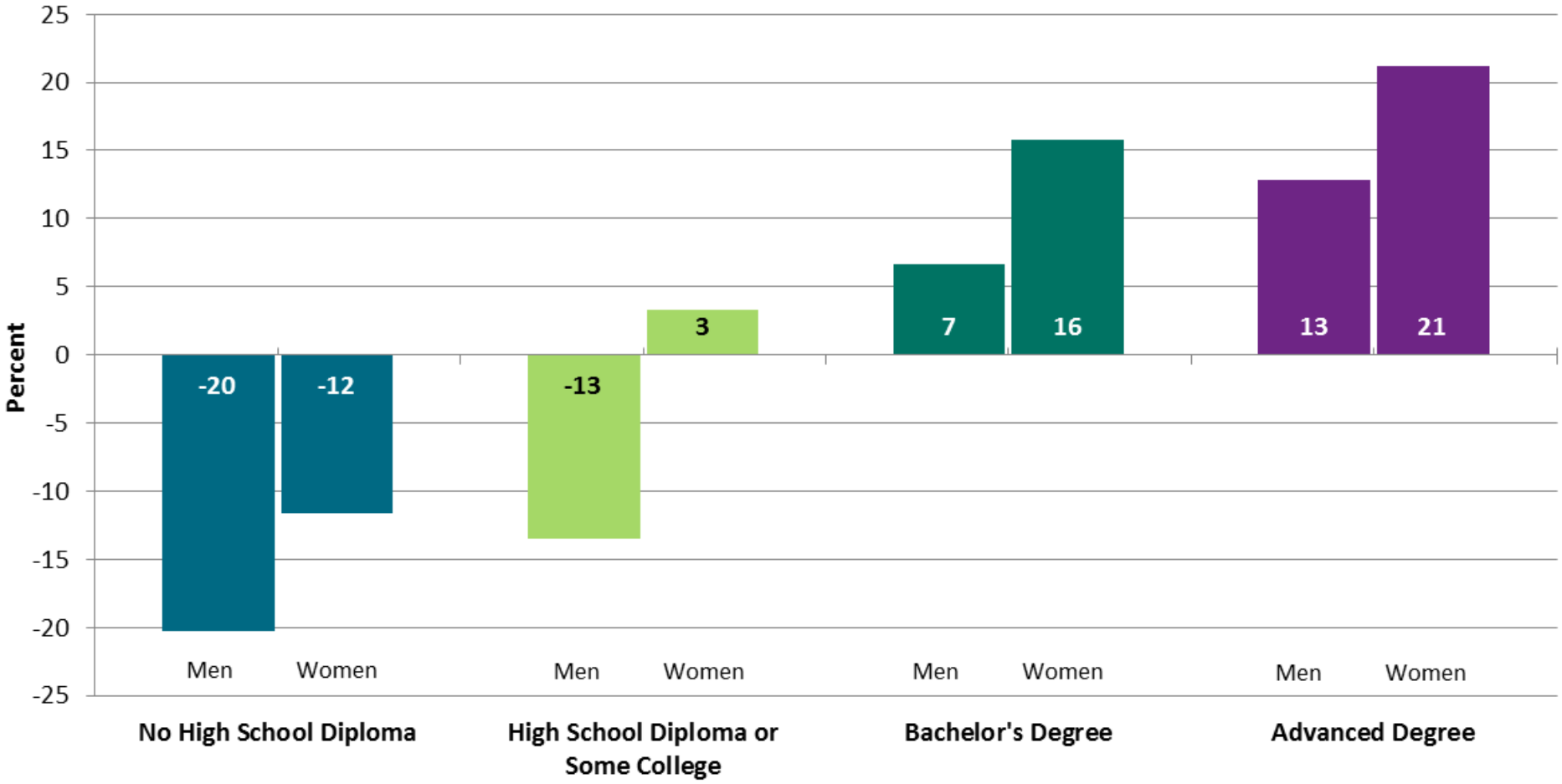
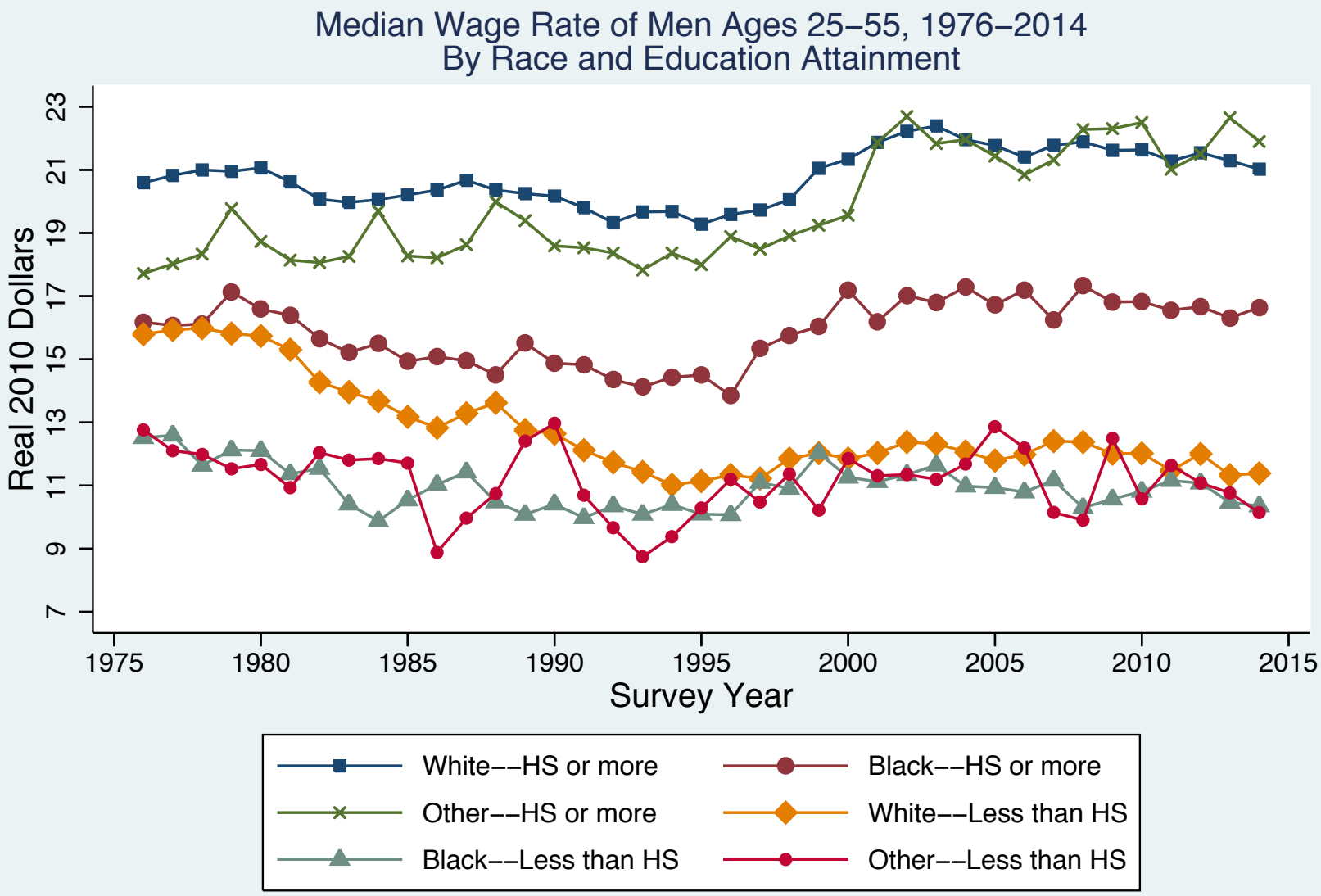
# Percent Change in Median Real Earnings for Men and Women from 1990-2013, for US by Education




Note: assortative partnering implies this has not improved 'between family inequality'.

Source: Hershbein and Kearney (2015)

# Male Median Real Wages by Race and Education (US)




Source: Blundell and Ziliak (2017), Notes: CPS.

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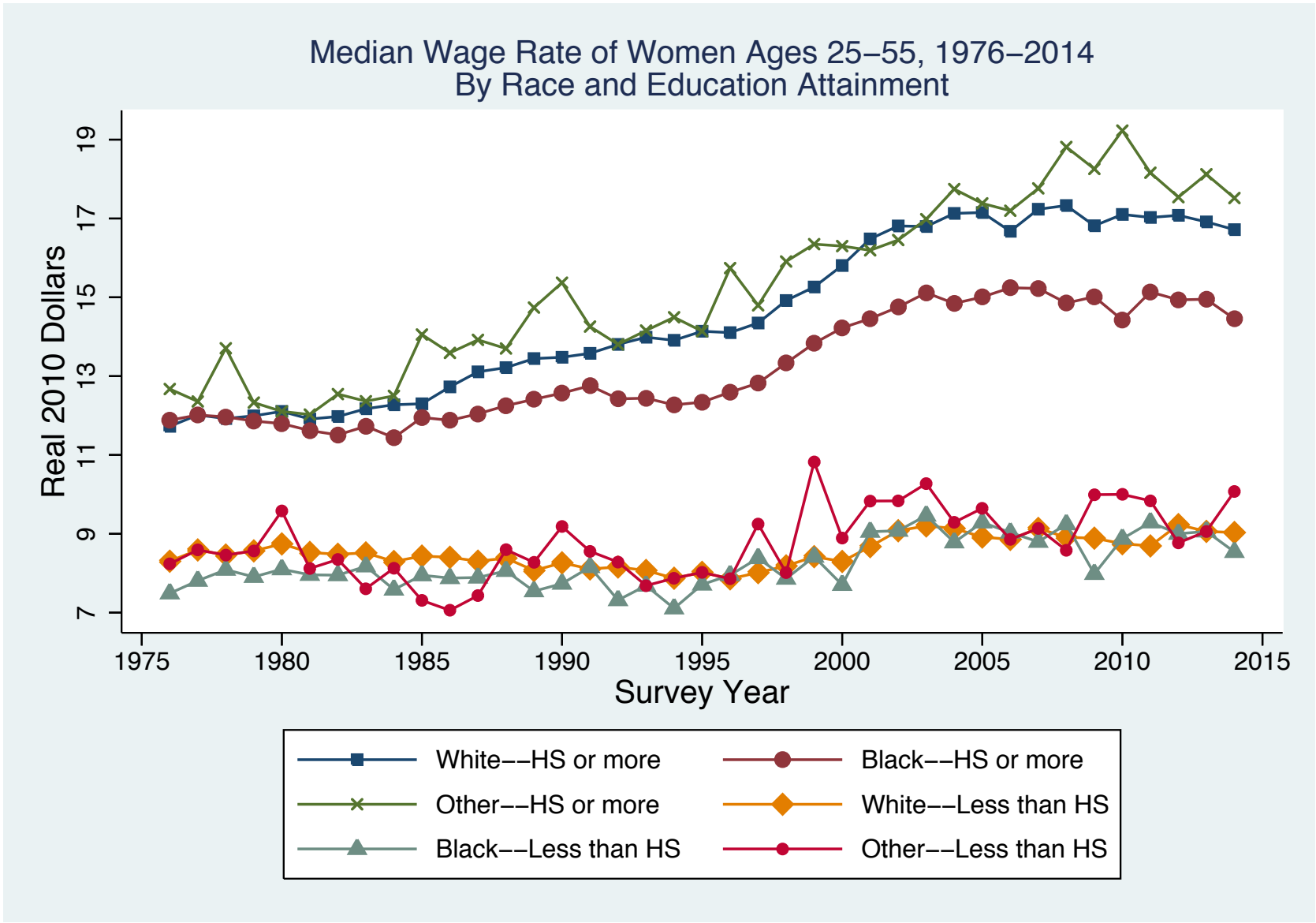
# Female Median Real Wages by Race and Education (US)




Source: Blundell and Ziliak (2017), Notes: CPS.

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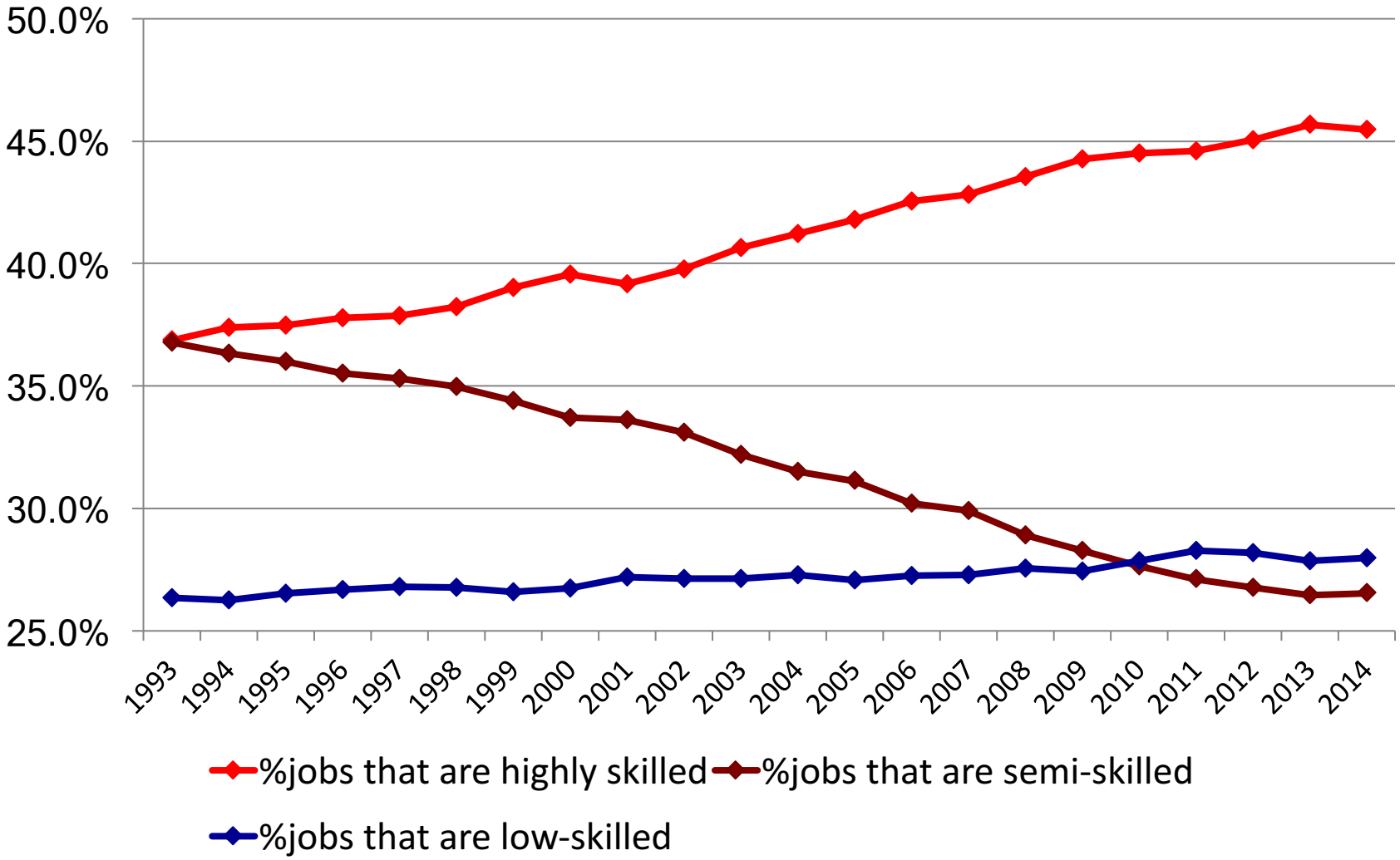
# The decline in the share of semi-skilled occupations (UK)




high-skilled: "Managers and senior officials", "Professional occupations", "Associate professional and technical";
semi-skilled: "Administrative and secretarial", "Skilled trades", "Process, plant and machine operatives";
low-skilled: "Personal service", "Sales and customer service", "Elementary occupations";

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Source: Blundell, Green Jin (2015), Notes: UK LFS.

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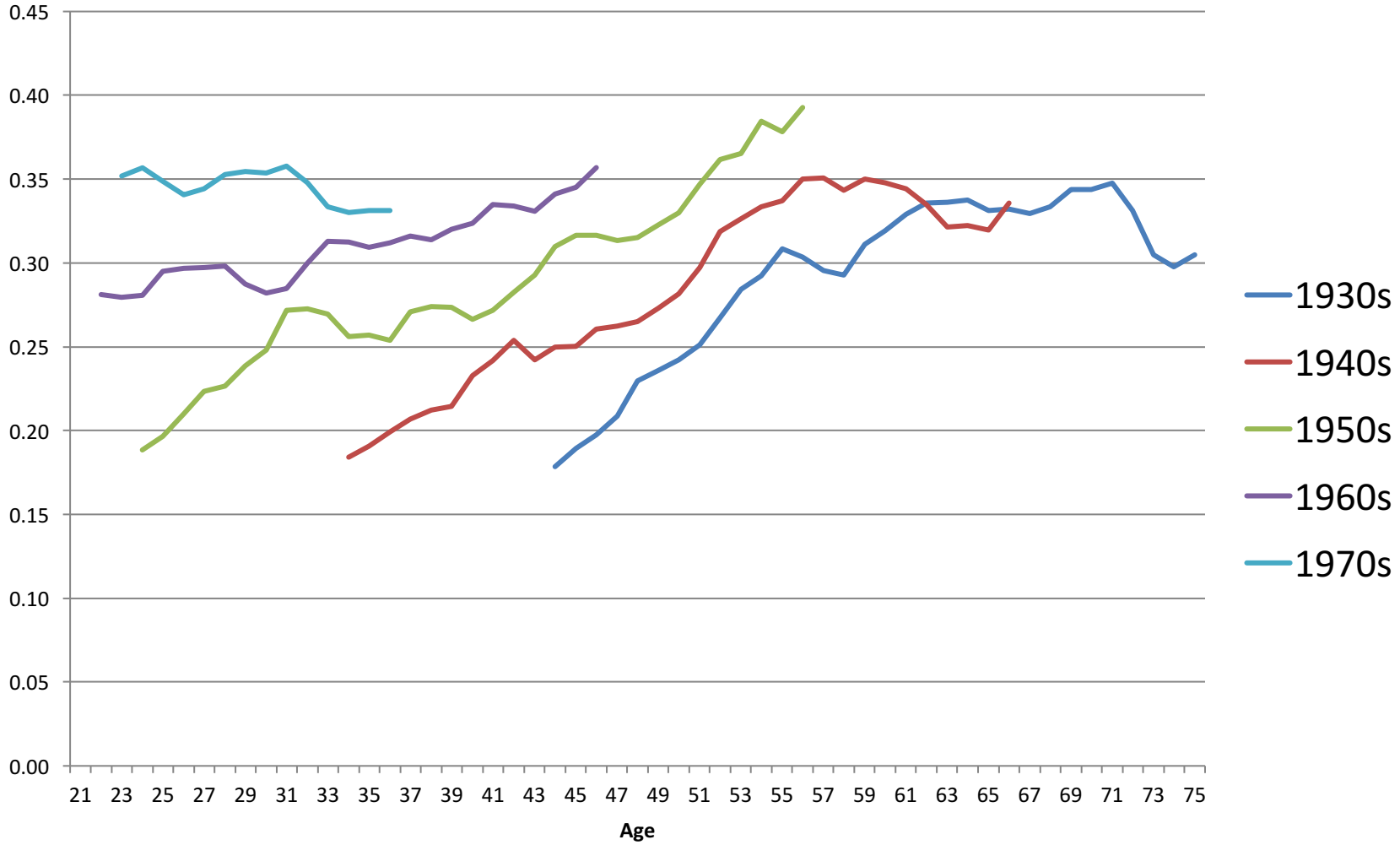
# Consumption Inequality by Age and Birth Cohort – UK

## Younger cohorts facing increasing inequality:




Notes: younger cohorts entering with much larger inequality than previous cohorts….

Notes: Variance of log consumption (equivalised); Source: Blundell, Joyce and O'Dea (2016).

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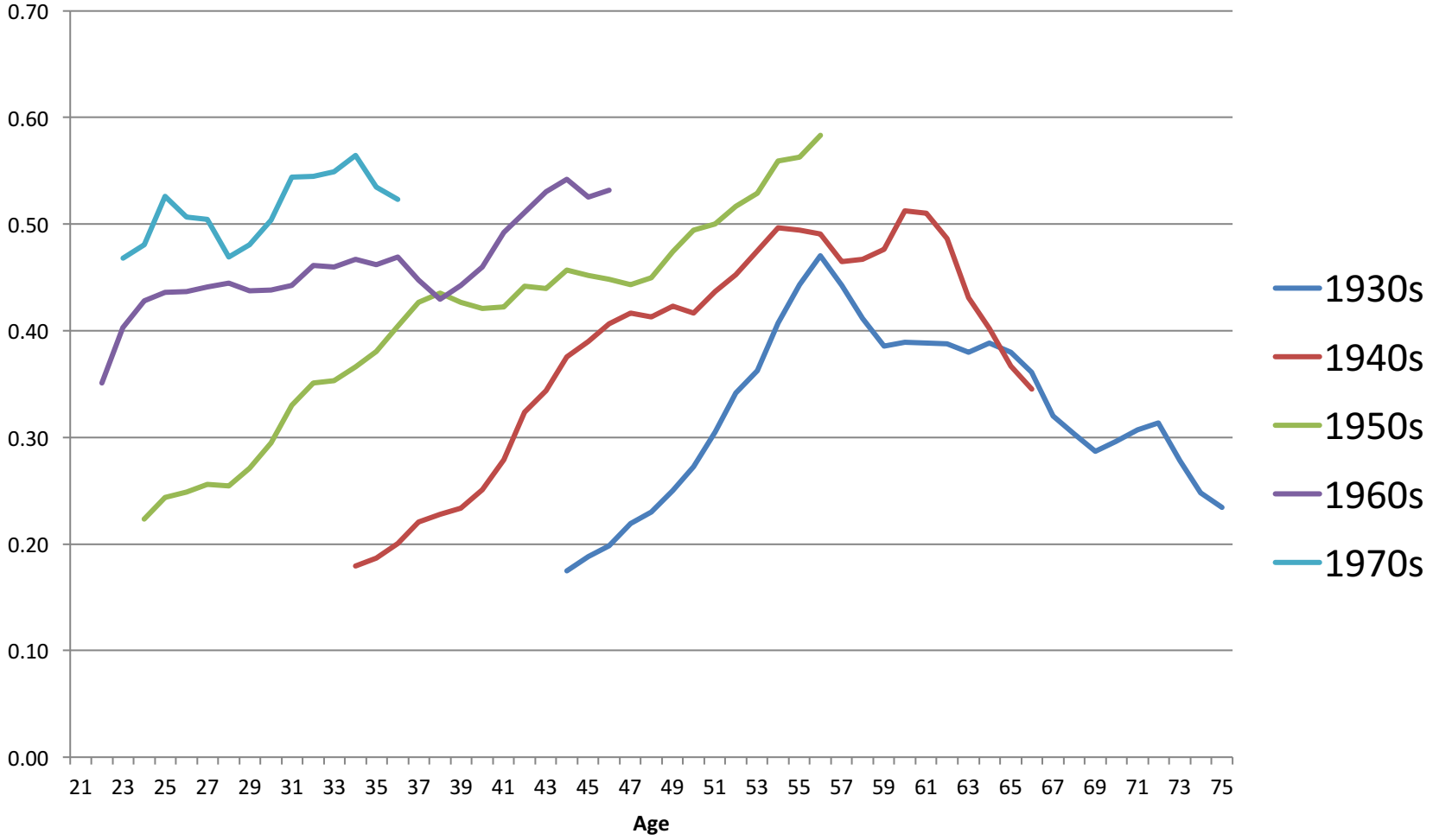
# Income Inequality by Age and Birth Cohort

## Younger cohorts facing increasing inequality (UK):




Notes: Variance of log income (equivalised); Source: Blundell, Joyce and O'Dea (2016).

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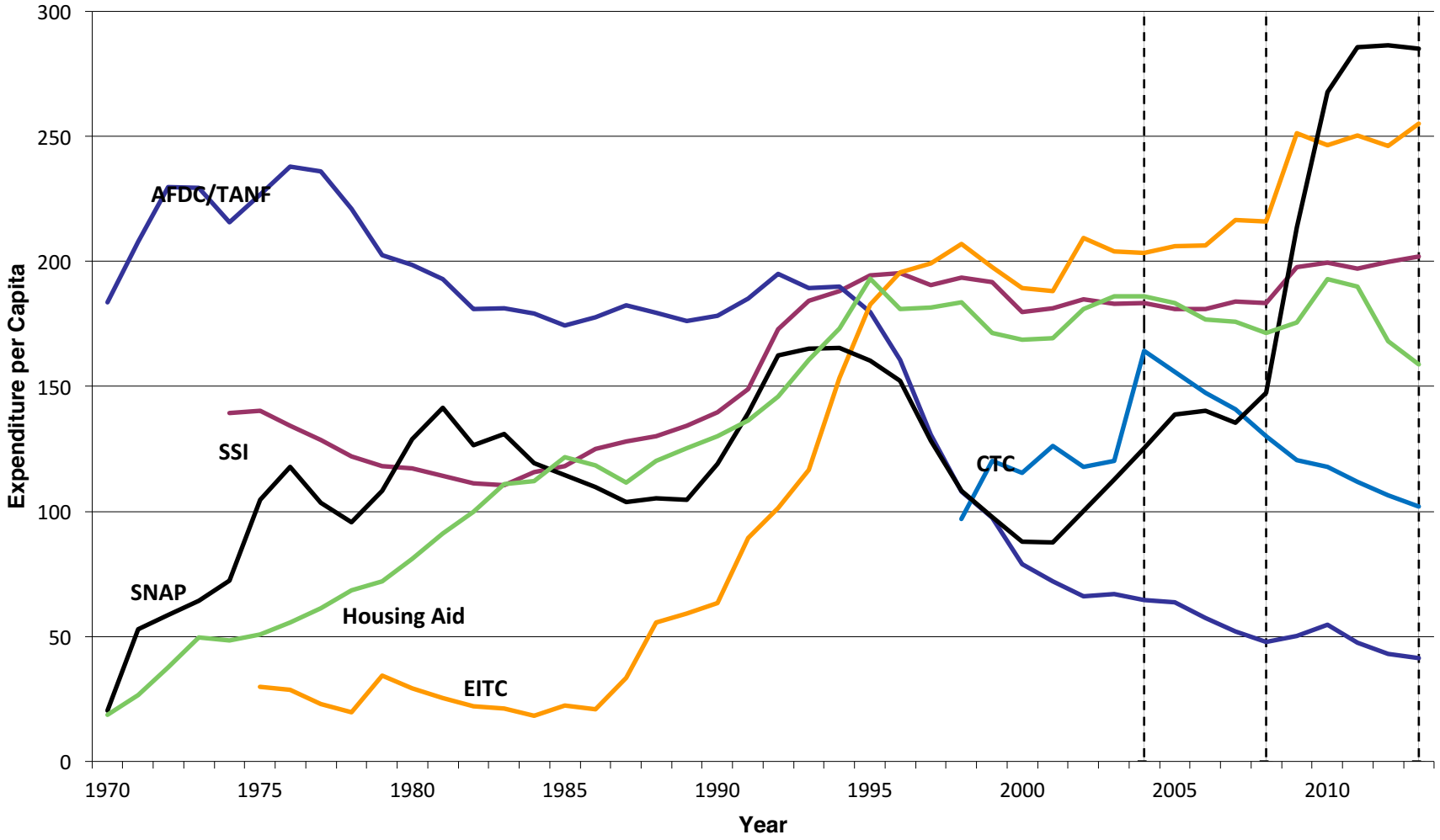
# Consumption Inequality by Year and Birth Cohort – US

## Younger cohorts facing increasing inequality:


Notes: Variance of log consumption (equivalised); Source: Attanasio and Pistaferri (2015)

# Expenditure per Capita on Non-Medicaid Means Tested Programs, US 1990 - (real 2009 dollars)




Source: Moffitt (2017)

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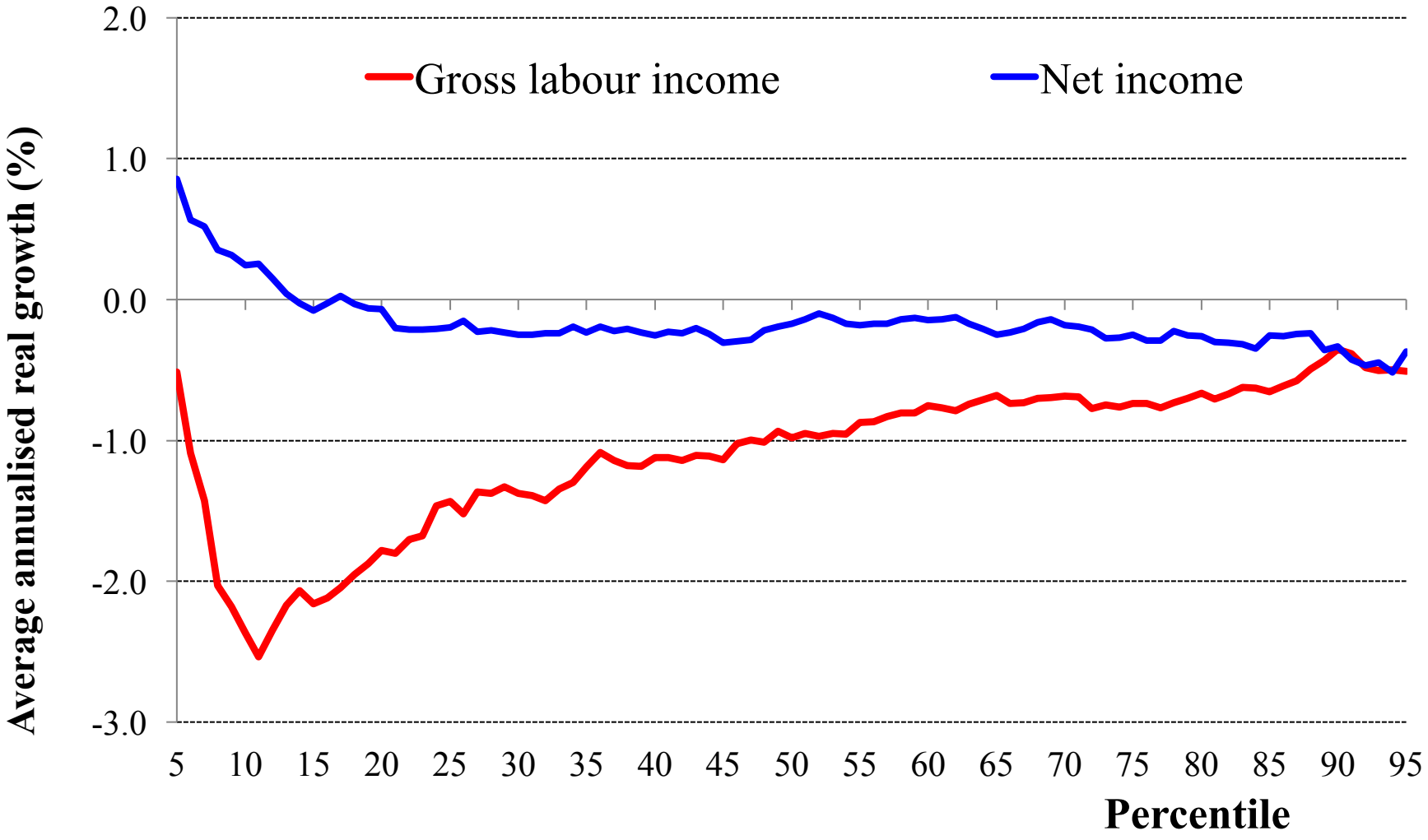
# Income growth for working households 07/08 to 14/15: UK




Notes: Includes self employment income and self employed households.
Family Resources Survey. All income measures are equivalised.
Source: Belfield, Blundell, Cribb, Hood and Joyce (2016)

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# Tax Reform and its Implications for Inequality

Draw on the *Mirrlees Review* => *Chaired by Jim Mirrlees; organised by IFS.*

- A comprehensive review of tax reform for the 21st century:
  - new evidence, new theory, a new economic environment.
- Aimed at developed open economies:
  - UK, US, France, Germany, Spain, Korea, NZ, Holland, Japan,…
- Two accessible volumes: '*Dimensions of Tax Design*' and '*Tax by Design*', published in 2011 by OUP, available *open access.*
- Also draw on four "spin-off" studies:
- 'Labour Supply and the Extensive Margin'*; AER* '11
- 'Optimal Taxation of Low Income Families'*; REStudies* '12
- 'Two Decades of Inequality: earnings and redistribution'; *Economica '16.*
- 'Labour Supply, Human Capital and Tax Reform'*; Ecta* '16

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# How we should use evidence in tax design?

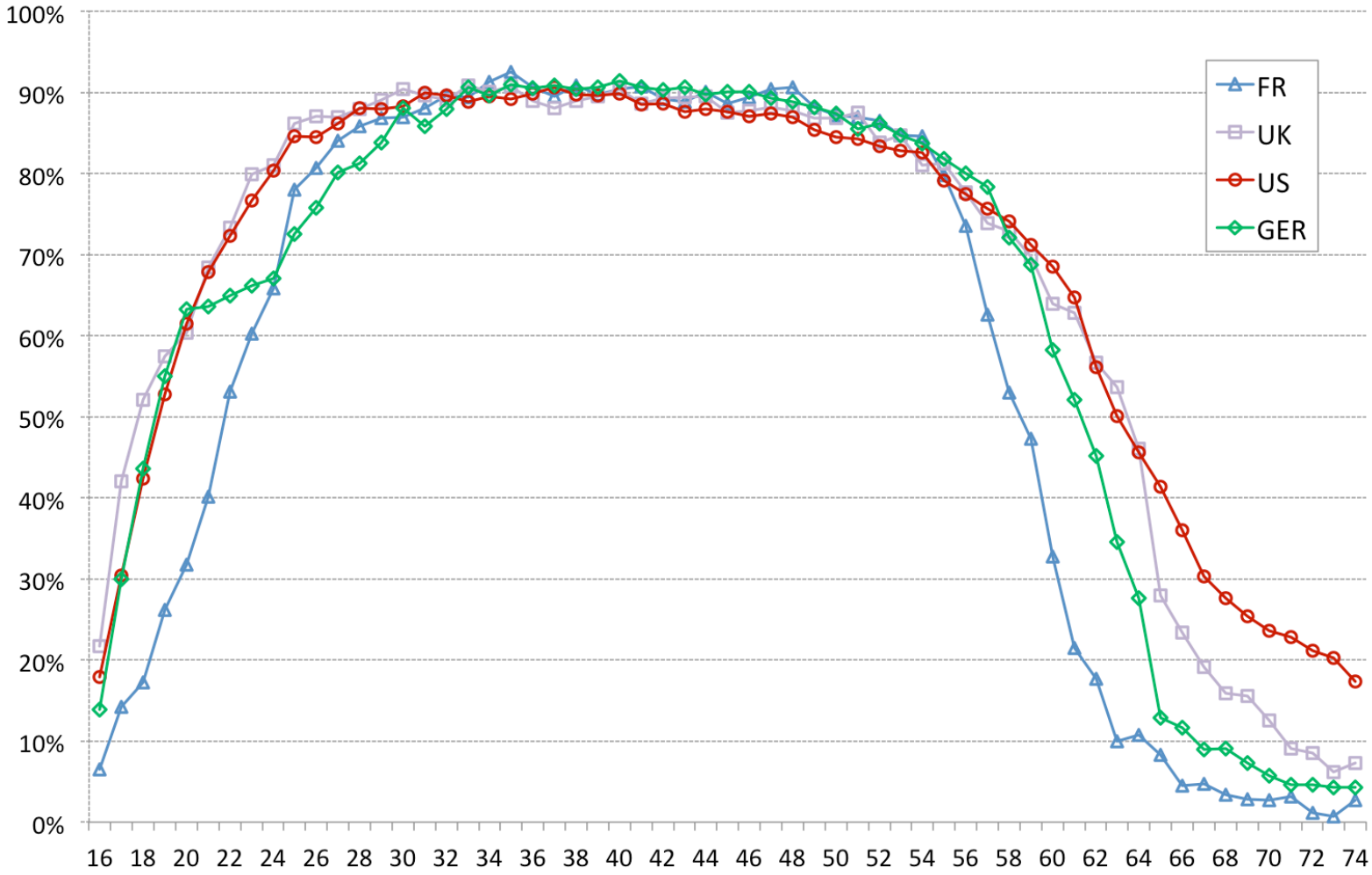
Reflecting on the *Mirrlees Review*, propose 5 steps(!):

1. Key margins of adjustment to reform
2. Measurement of effective incentives
3. The importance of information and complexity
4. Evidence on the size of responses
5. Implications for policy design

- => build an empirically based agenda for tax reform to address inequality and enhance earnings.

# 1: Key margins of adjustment

## Employment for men by age – FR, UK, US & GER 2007




Source: Blundell, Bozio, Laroque and Peichl (2014)

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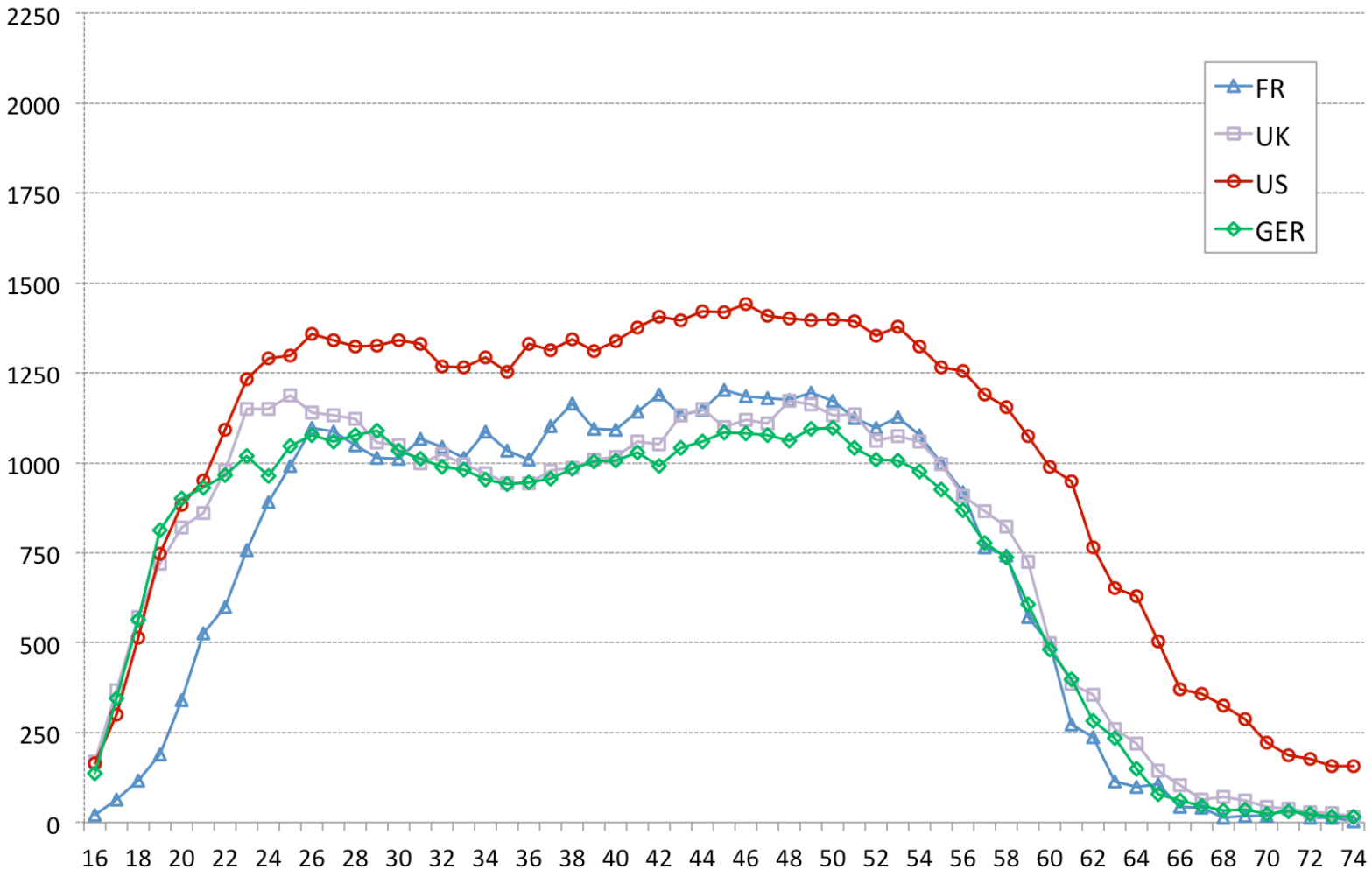
- It's not all the extensive margin
  - intensive and extensive margins both matter
  - and they matter in different ways by age and demographic groups
- Female hours?

# Female Hours by age




Blundell, Bozio, Laroque and Peichl (2014)

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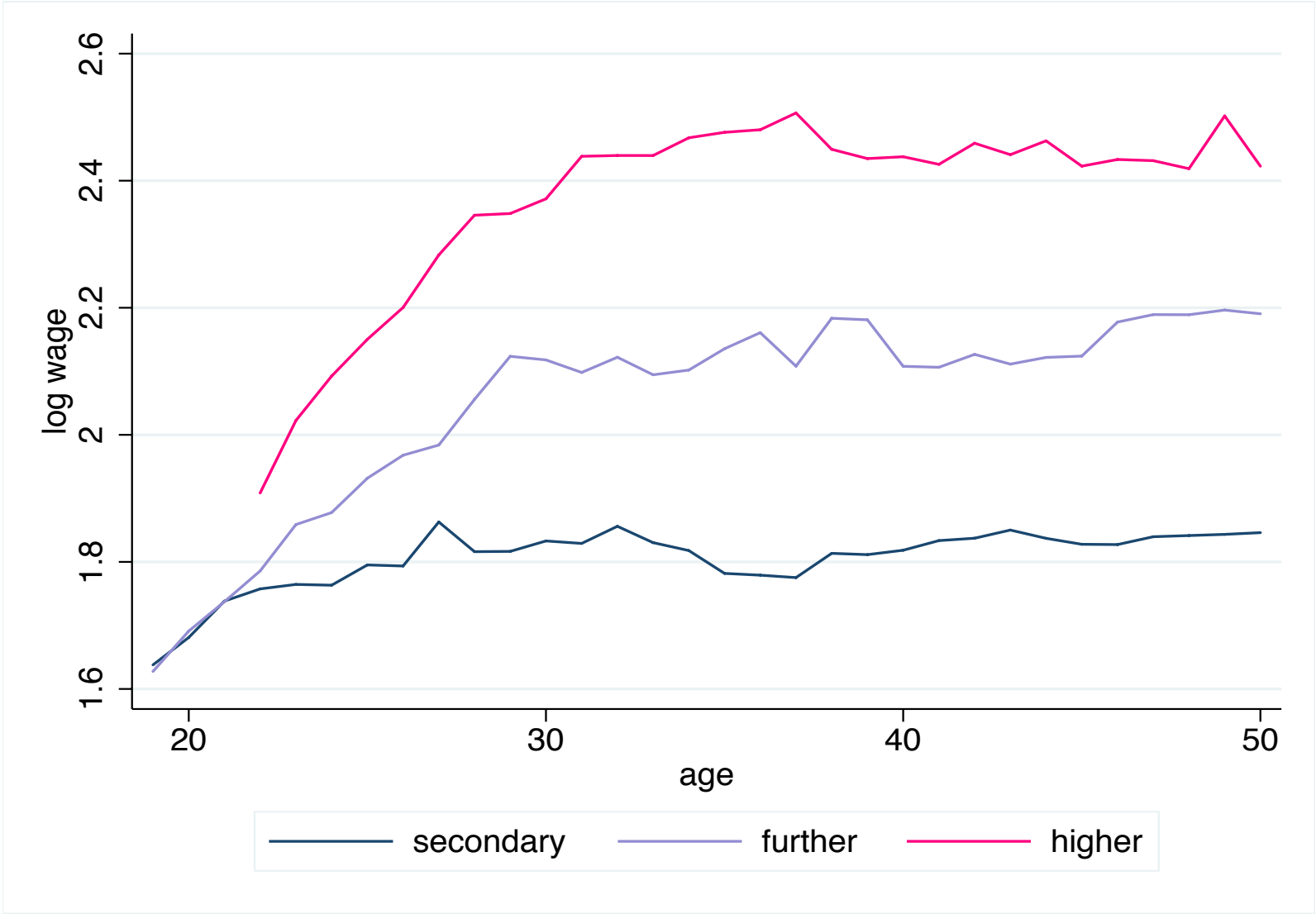
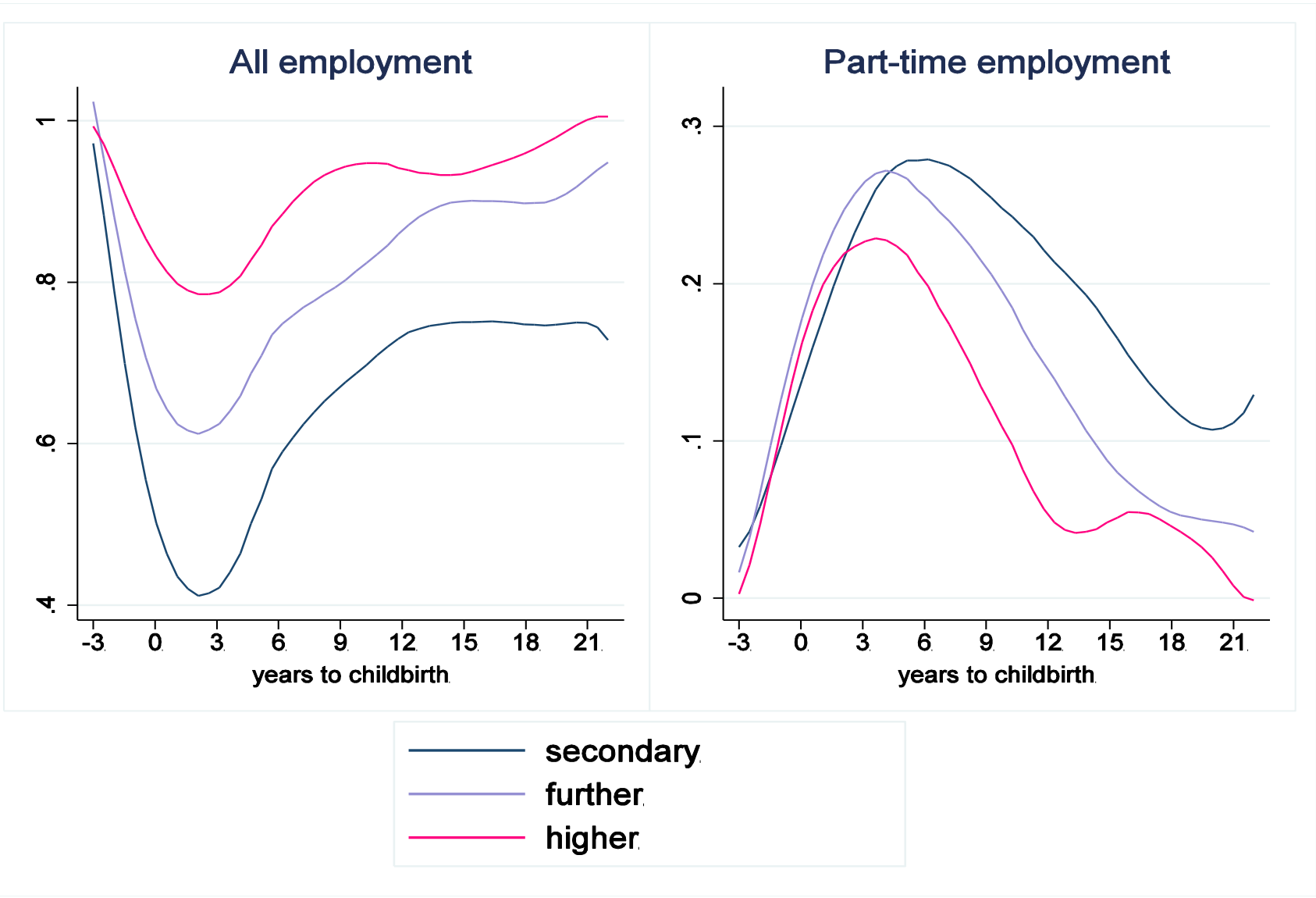
# Wage profiles by education and age –Women

- returns to experience appear strongly *complementary* with education




Source: Blundell, Dias, Meghir and Shaw (2016), Notes: UK BHPS

# Women's employment after childbirth




Source: Blundell, Dias, Meghir and Shaw (2016), Notes: UK BHPS

# Key facts …..

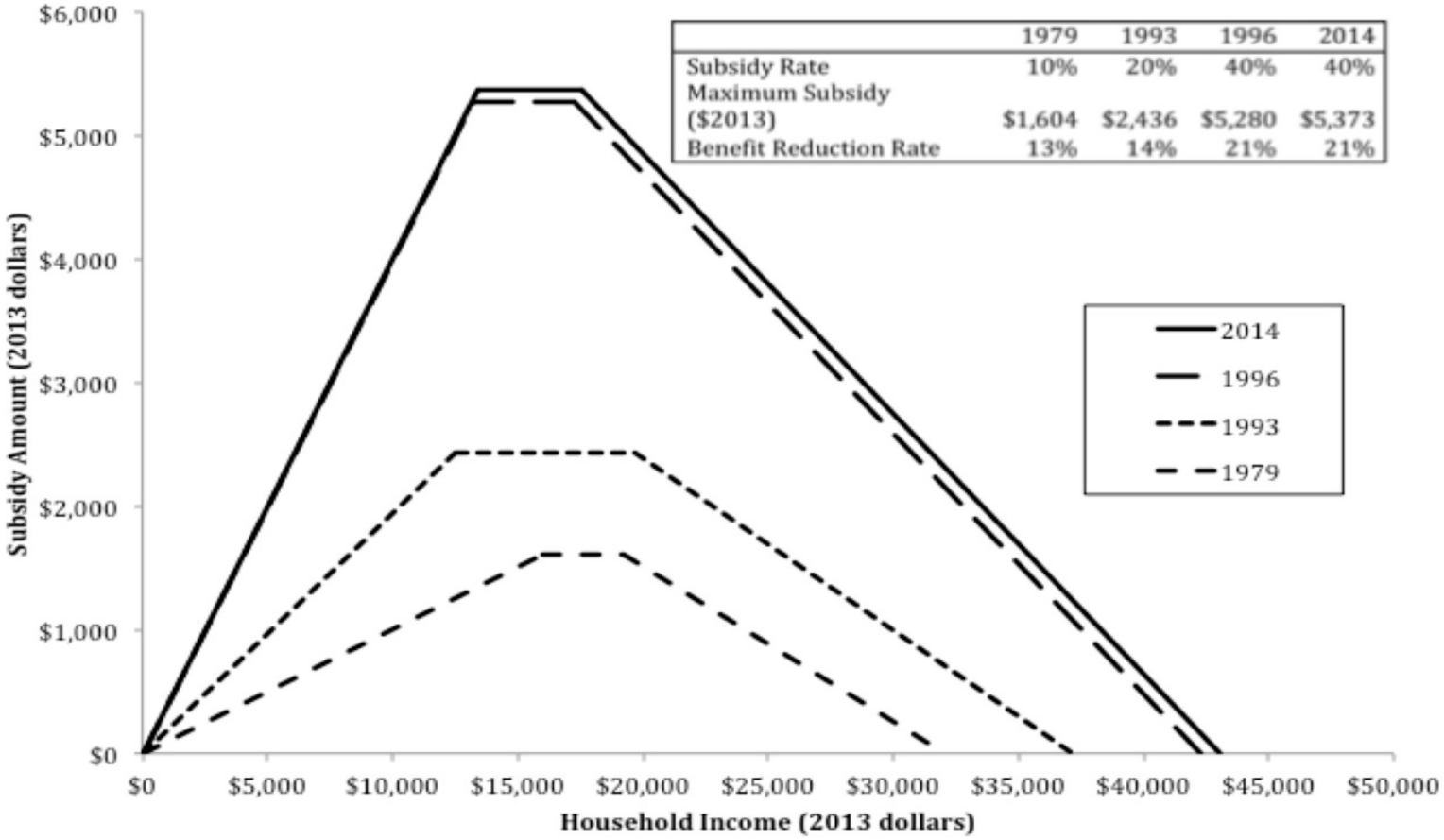
- A lifetime view of employment and hours
  - differences by extensive and intensive margin accentuated at particular ages and for particular demographic groups,
  - higher attachment to the labor market for higher educated, career length matters.
- Wages grow stronger and longer over the lifetime for higher educated
  - human capital profiles in work appear to be complementary to education investments.

# 2. Measurement of effective incentives

- Precisely how is tax (and welfare benefit) policy likely to impact on the incentives facing the key players?
- e.g. overlapping taxes, tax credits and welfare benefits.
  - What are the 'true' effective tax rates on (labor) earnings?

# EITC Subsidy Schedule

## US Single Parent with Two Children




| | 1979 | 1993 | 1996 | 2014 |
|---|---|---|---|---|
| Subsidy Rate | 10% | 20% | 40% | 40% |
| Maximum Subsidy ($2013) | $1,604 | $2,436 | $5,280 | $5,373 |
| Benefit Reduction Rate | 13% | 14% | 21% | 21% |

Source: US Department of Treasury

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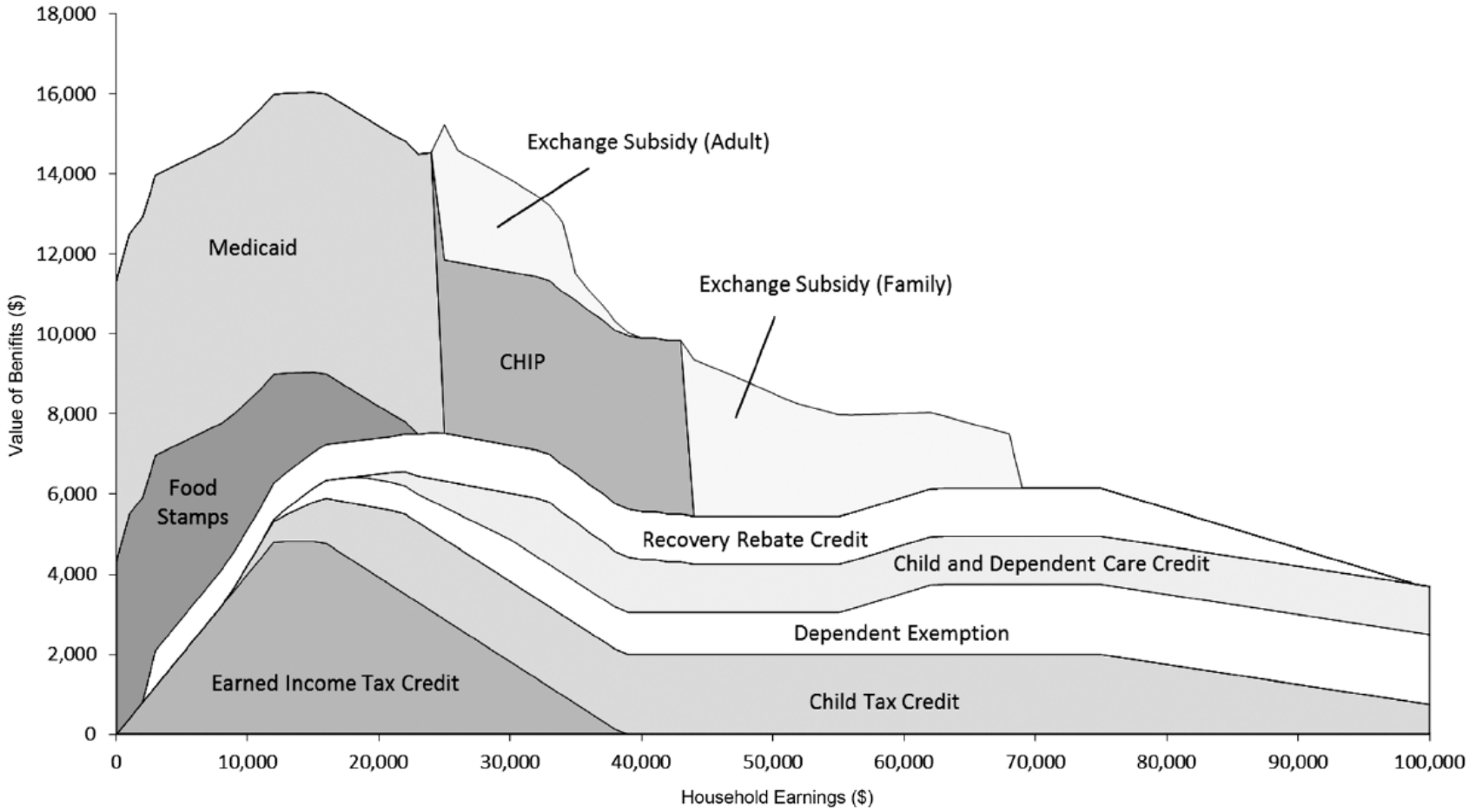
# Universally Available Tax and Transfer Benefits

## US Single Parent with Two Children




Source: Urban Institute (NTJ, Dec 2012).
Notes: Value of tax and value transfer benefits for a single parent with two children.

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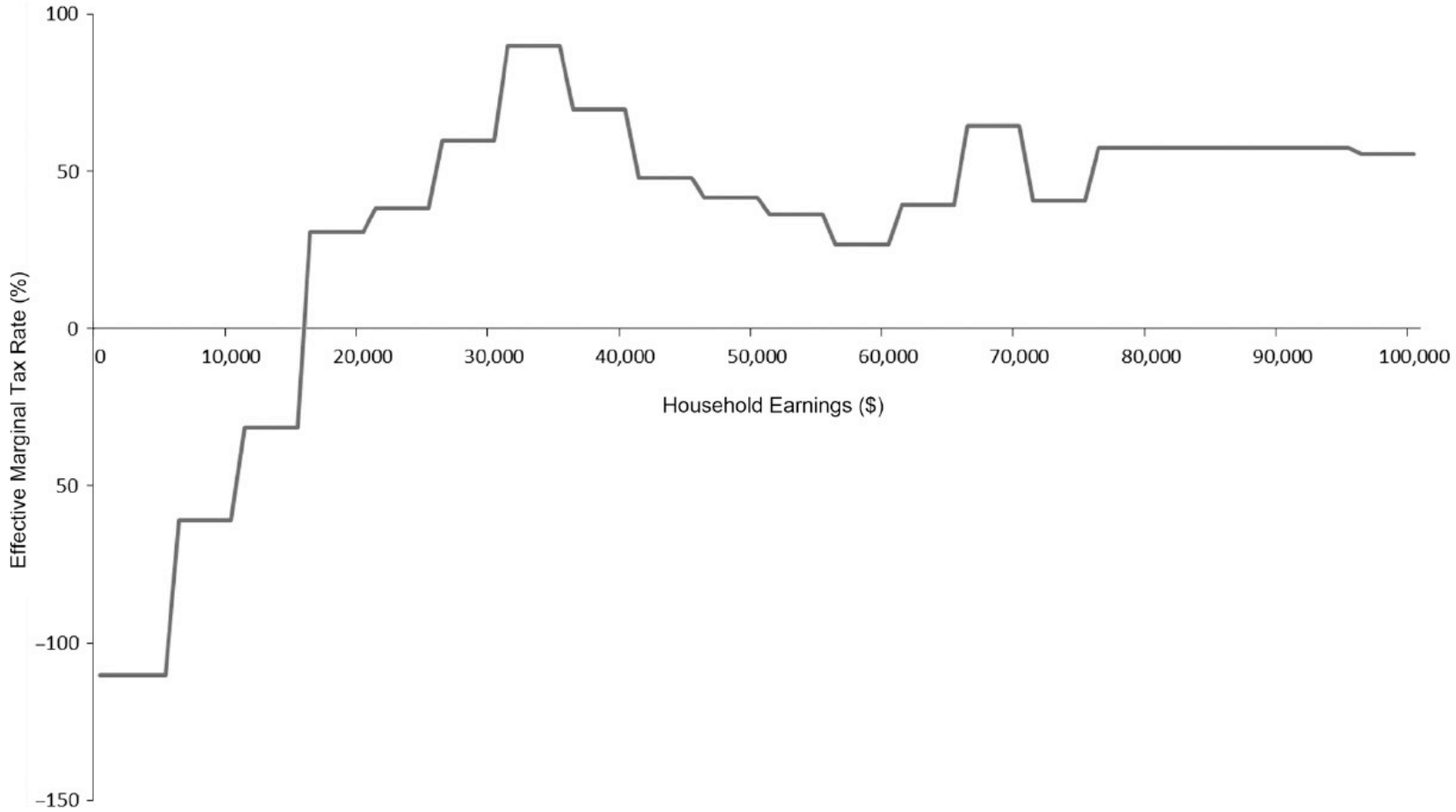
# Effective Marginal Tax Rates

## US Single Parent with Two Children in Colorado




Source: Urban Institute (NTJ, Dec 2012).
Notes: Value of tax and value transfer benefits for a single parent with two children.

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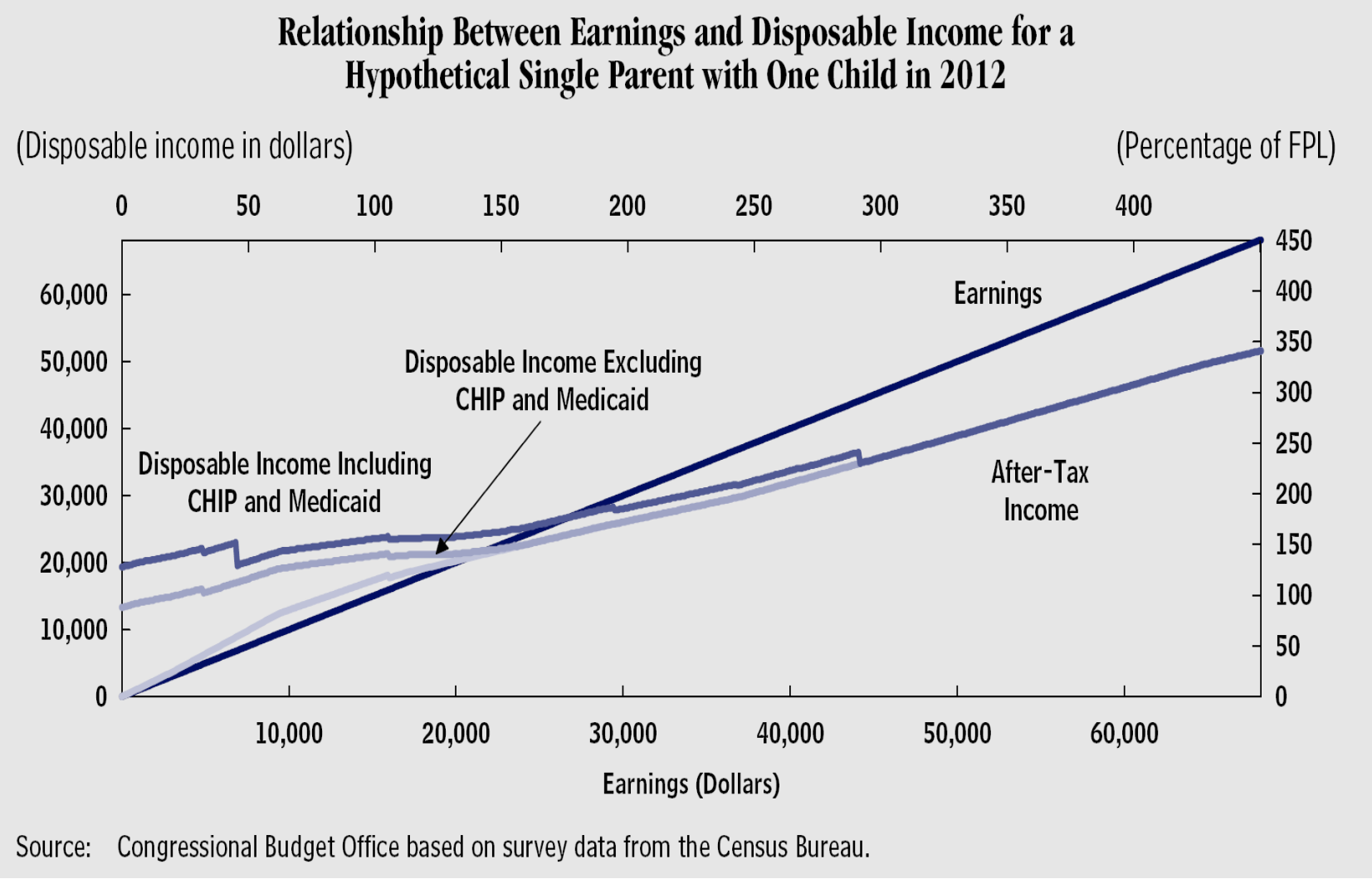
# Budget Constraint for Single Parent: US 2012




Source: CBO (2012).
Notes: This example assumes that the taxpayer files as a head of household, has one child, and qualifies for both the EITC and the CTC.

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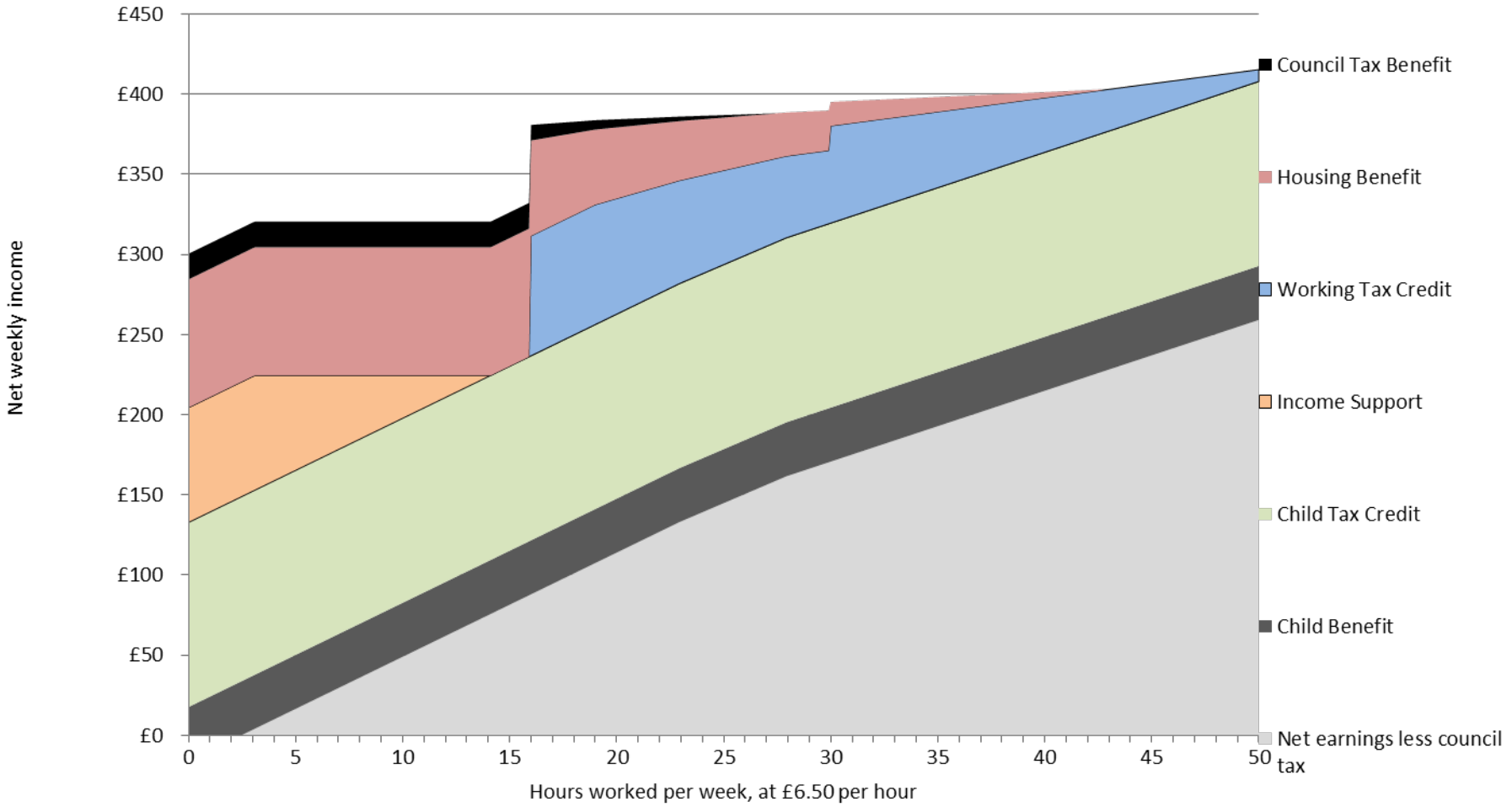
# Budget Constraint for Single Parent: UK 2012




**Notes: wage £6.50/hr, 2 children, no other income, £80/wk rent. Ignores council tax and rebates**

Source: Mirrlees Review

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# Effective tax rates on lower incomes…..

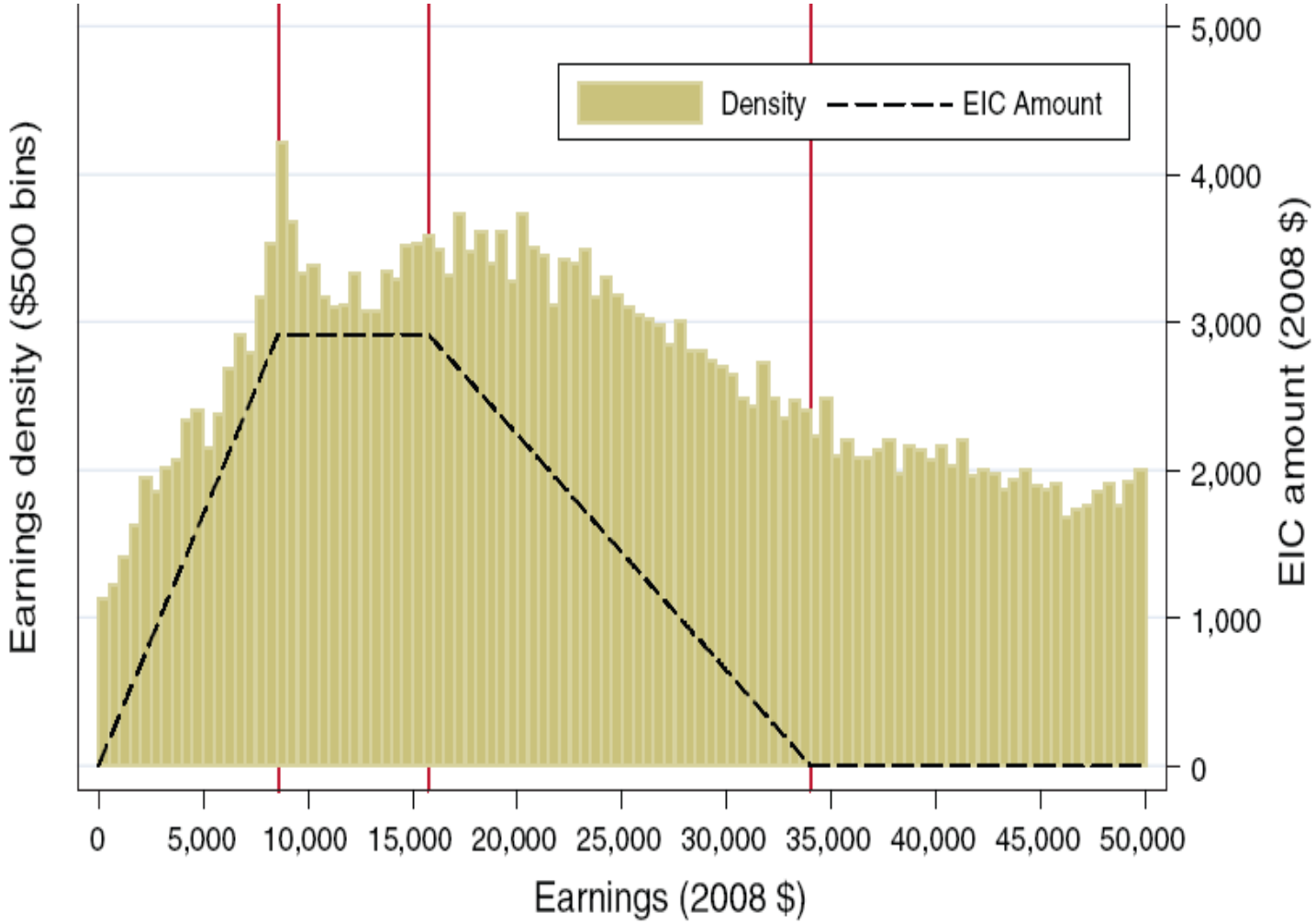
- The main defects in current tax credit and welfare/benefit systems
  - *Participation tax rates* at the bottom remain very high
  - *Marginal tax rates* are very high for some low income working families because of phasing-out of means-tested welfare-benefits and tax credits
  - *Complex cocktail* of different overlapping welfare-benefits, tax credits and taxes.
- We'll come back to look at tax rates on top incomes…

# 3. The importance of information and complexity

- How is the policy likely to be understood by the agents involved?
- For example, how ‘salient’ are the various tax incentives in the policy reform?
  - Information and stigma
  - Bunching at kink points

# Bunching at Tax Kinks and the EITC

## One child families: US




Source: Saez (2010)

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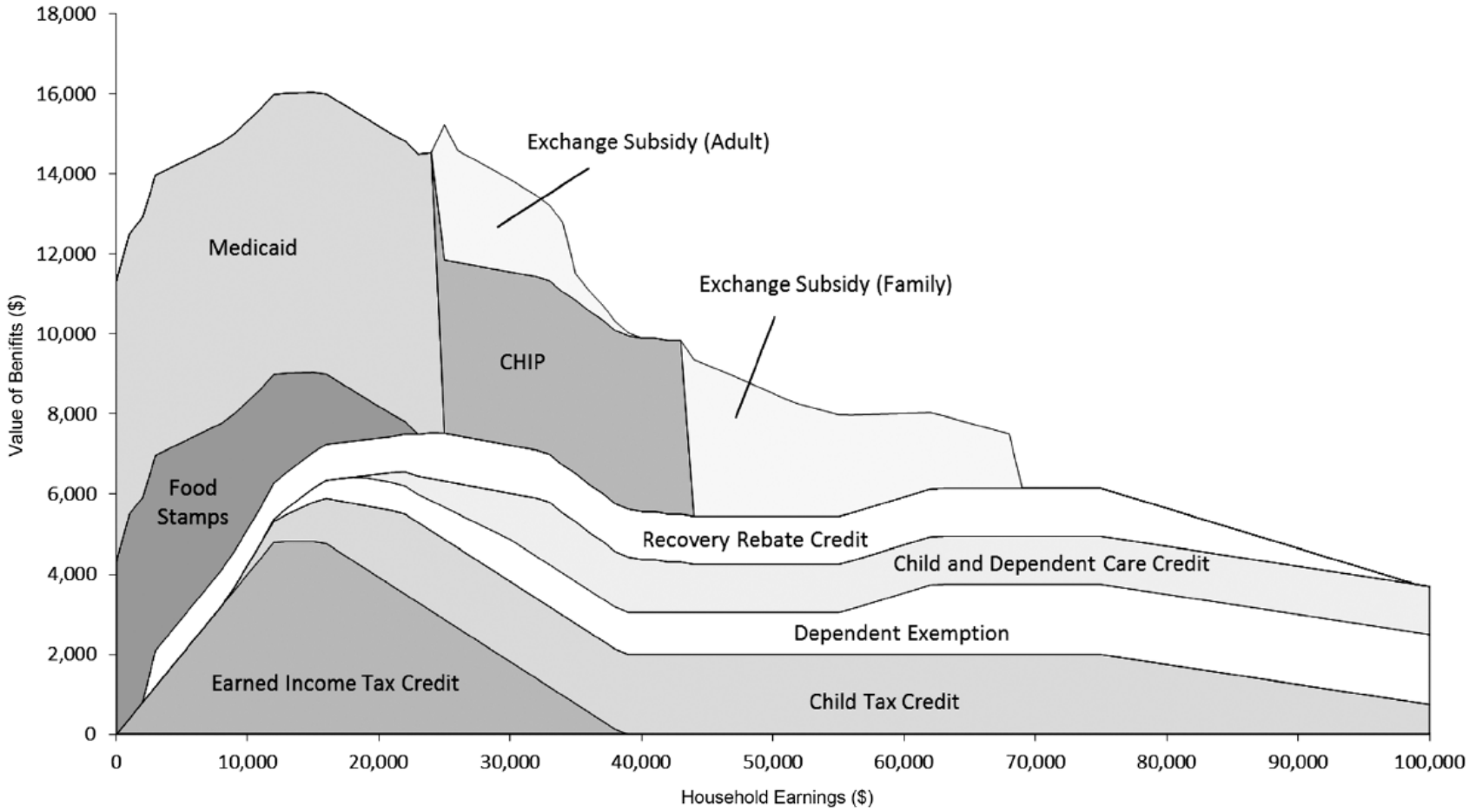
# Universally Available Tax and Transfer Benefits

## US Single Parent with Two Children




Source: Urban Institute (NTJ, Dec 2012).

Notes: Value of tax and value transfer benefits for a single parent with two children.

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# Bunching at Tax Kinks and the EITC

## One child families: US


Source: Saez (2010)

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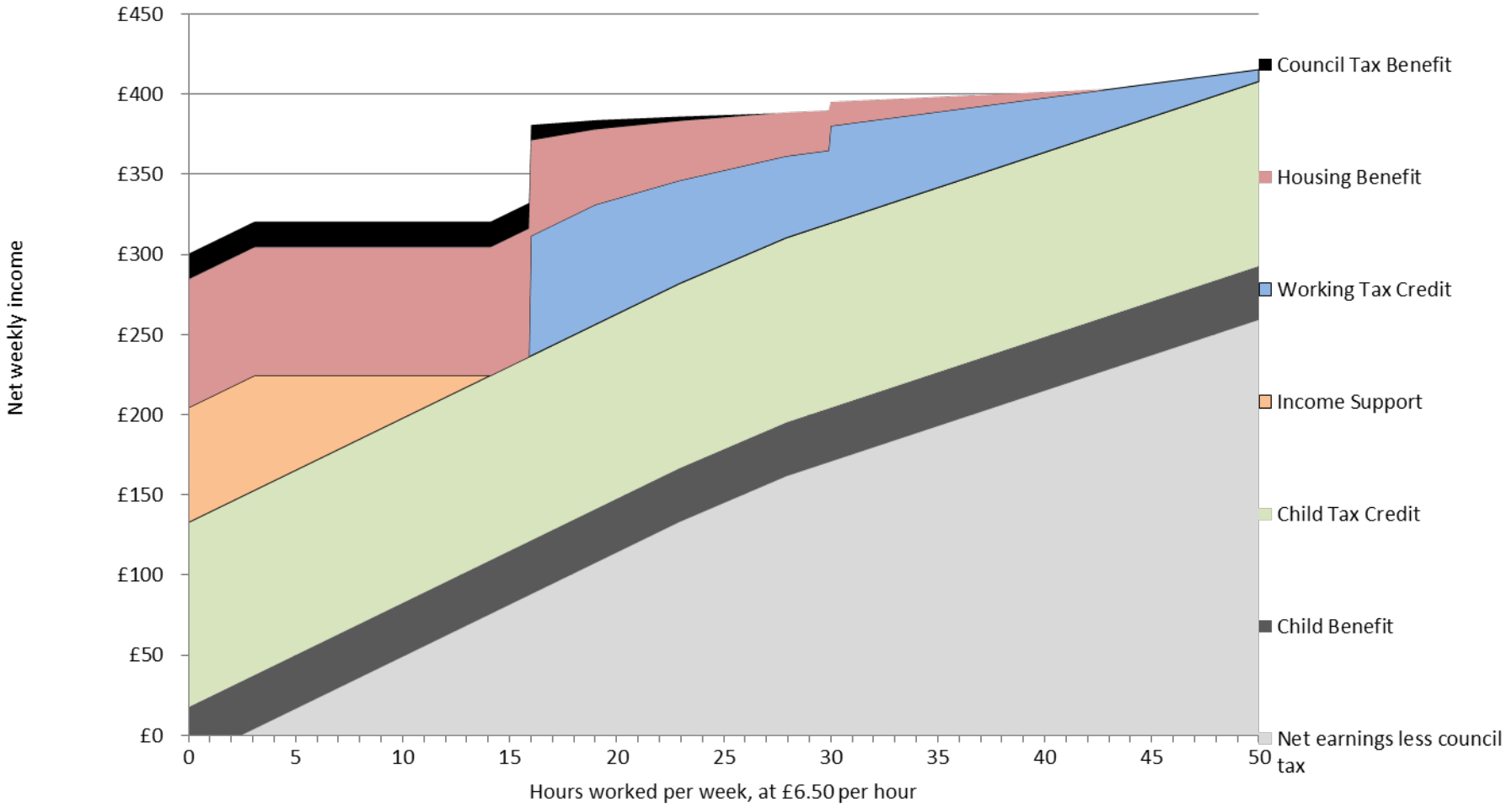
# Budget Constraint for Single Parent: UK 2012




**Notes: wage £6.50/hr, 2 children, no other income, £80/wk rent. Ignores council tax and rebates**

Source: Mirrlees Review

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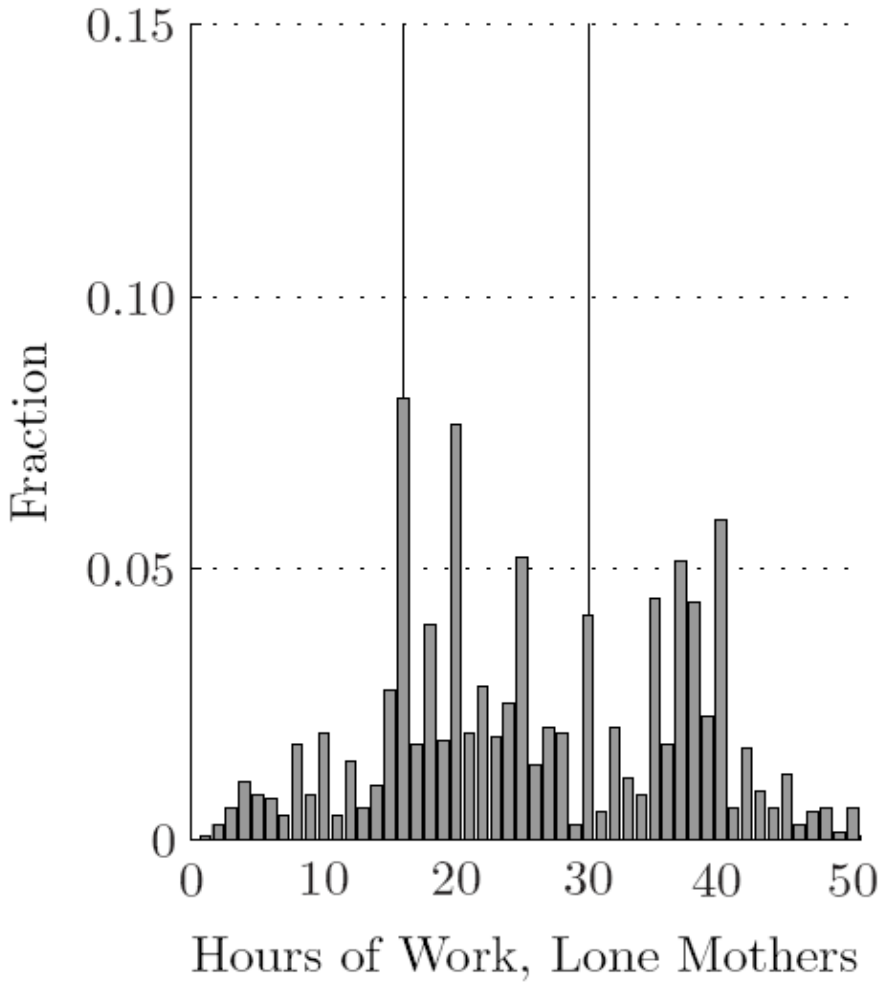
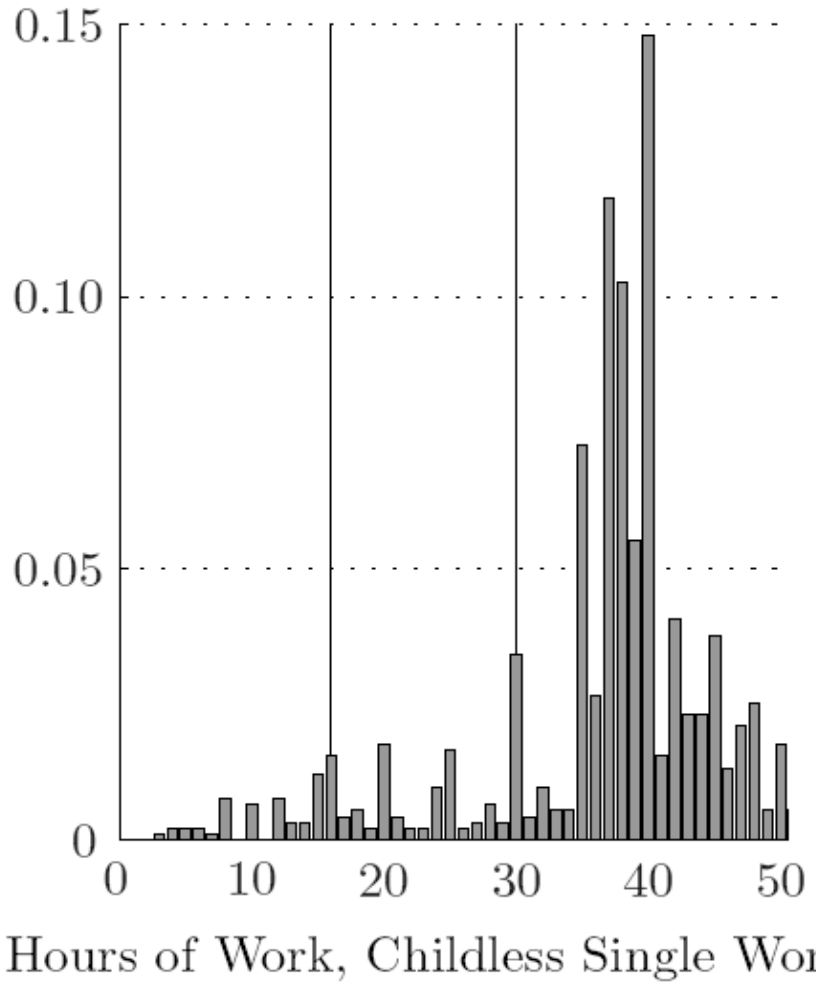
# Are these hours rules salient?

## Single Women (aged 18-45): Bunching at Tax Kinks

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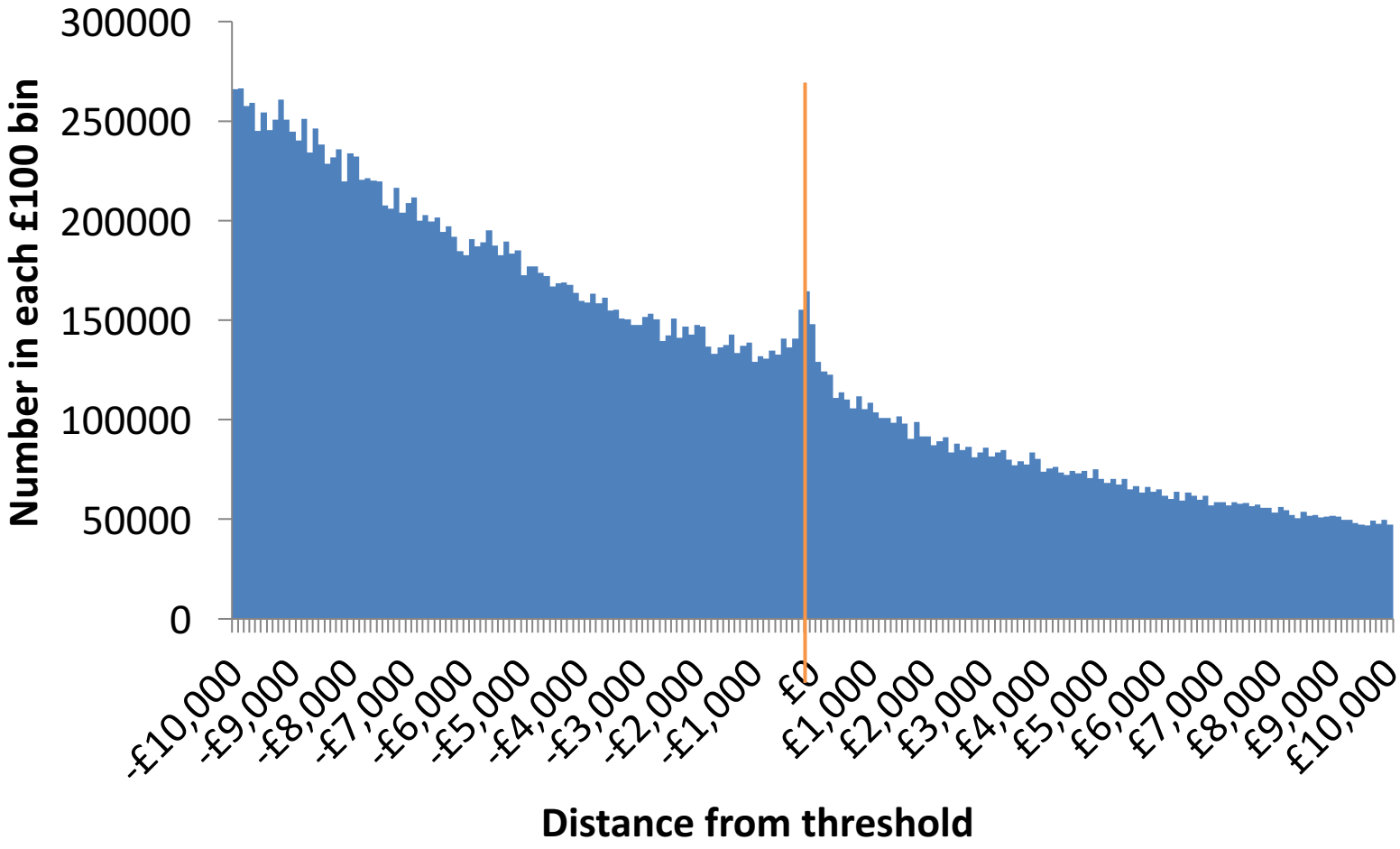
# Bunching at the higher rate tax thresholds, the case of the UK




Source: Mirrlees Review

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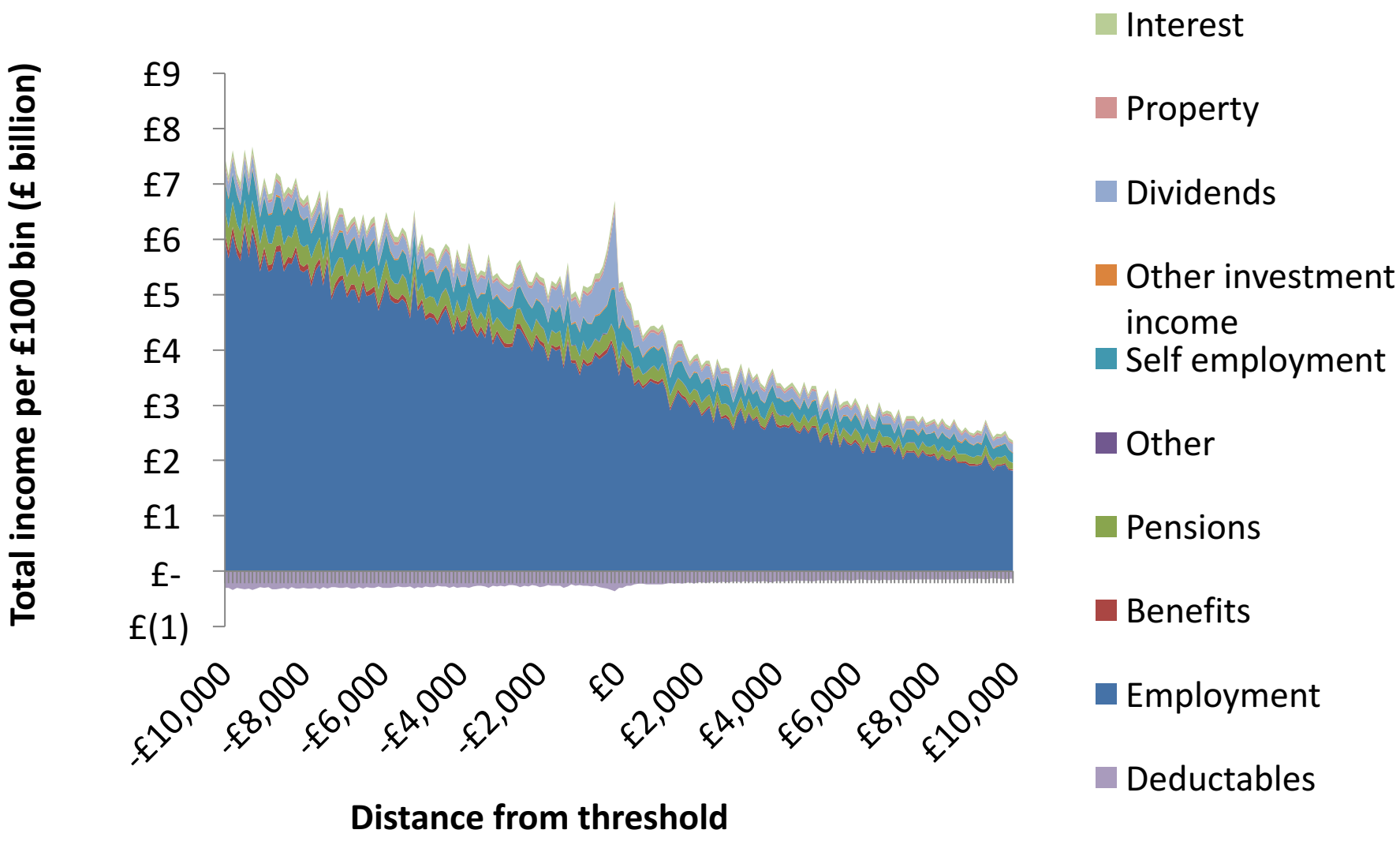
# Composition of income around the higher rate tax threshold




=> measure taxable income elasticity

Source: Mirrlees Review

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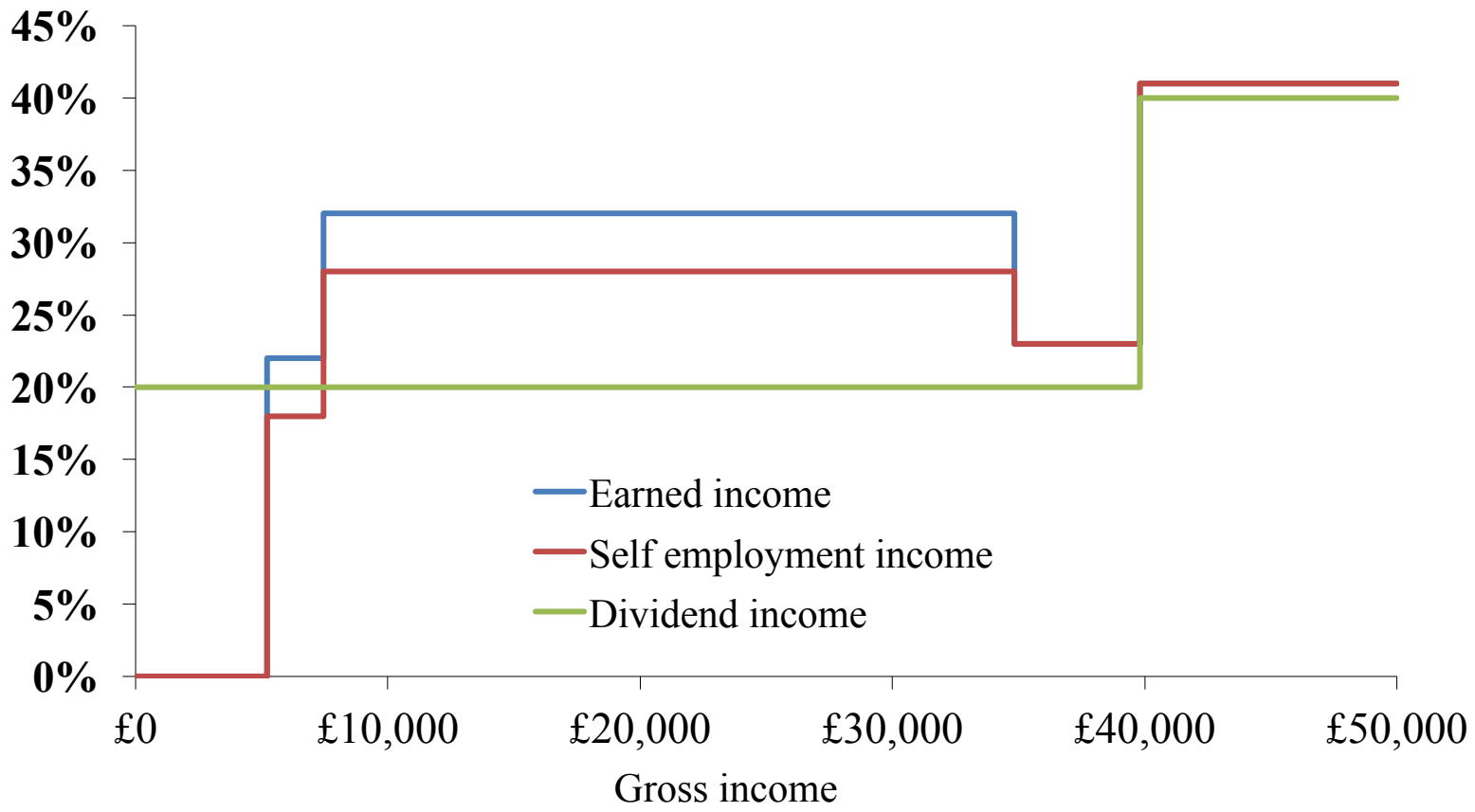
# Marginal tax rates by income level, UK 2007–08




Note: assumes dividend from company paying small companies' rate. Includes income tax, employee and self-employed NICs and corporation tax.

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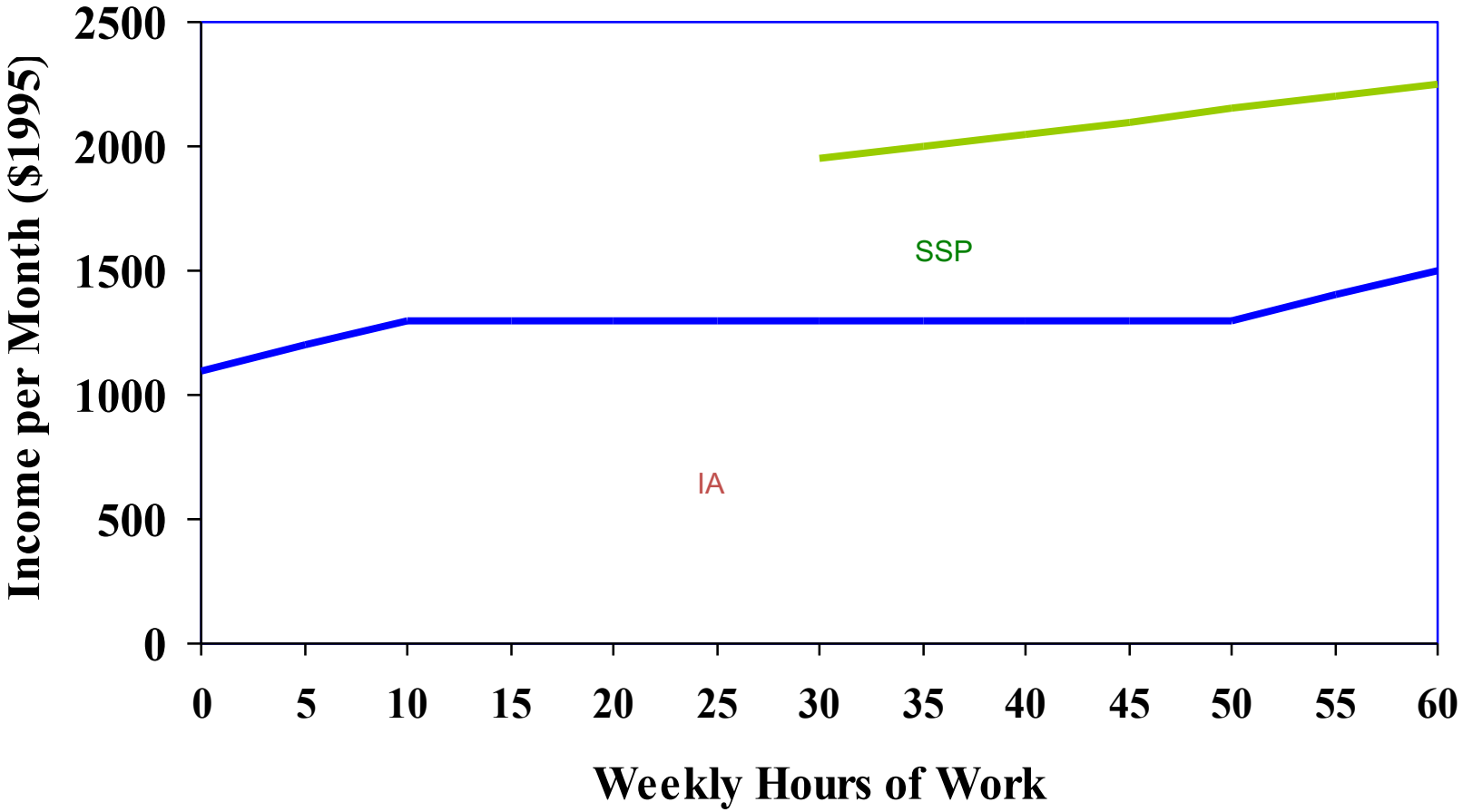
# 4. Evidence on the size of responses

- This is where rigorous *microeconometrics* is essential.
- An 'eclectic' use of two approaches:
  1. Quasi-experimental/RCT/reduced form evaluations of the impact of specific (historic) reforms.
     - 'robust' but limited in scope.
  2. A 'structural' estimation based on the detailed pay-offs and constraints faced by individuals and families
     - comprehensive in scope and allows *counterfactual policy simulations and optimal design*, but fragile;
     - need account for life-cycle facts, effective tax rates, nonlinear budget constraints, and salience/stigma.
- Do we have an RCT for tax credit reform?

# Self Sufficiency Program (SSP): An RCT Field Experiment

*Budget Constraint for a Single Parent on Minimum Wage*




Blundell and Moffitt (2010)

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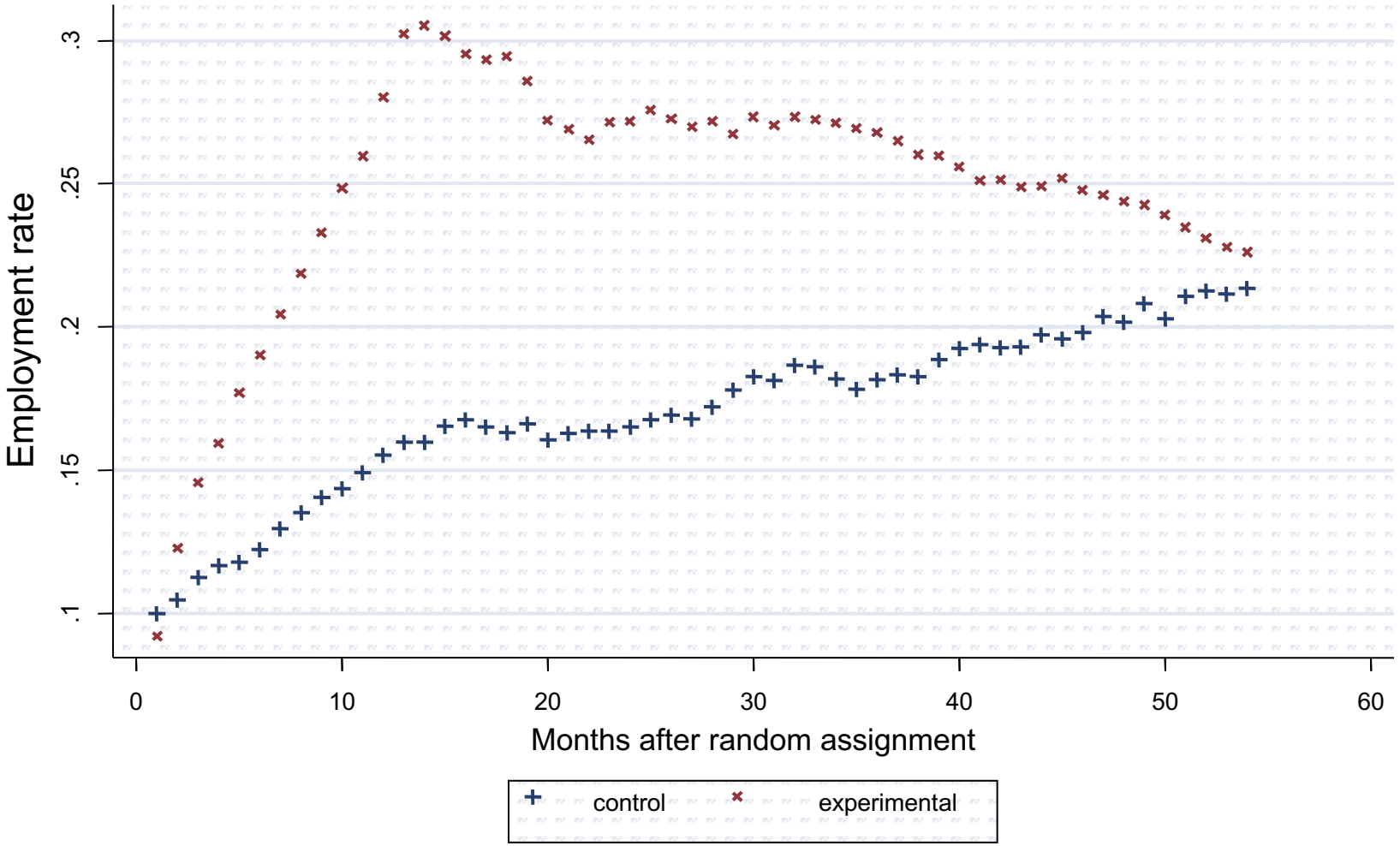
# SSP: Employment Rate by months after RA




Blundell and Moffitt (2010)

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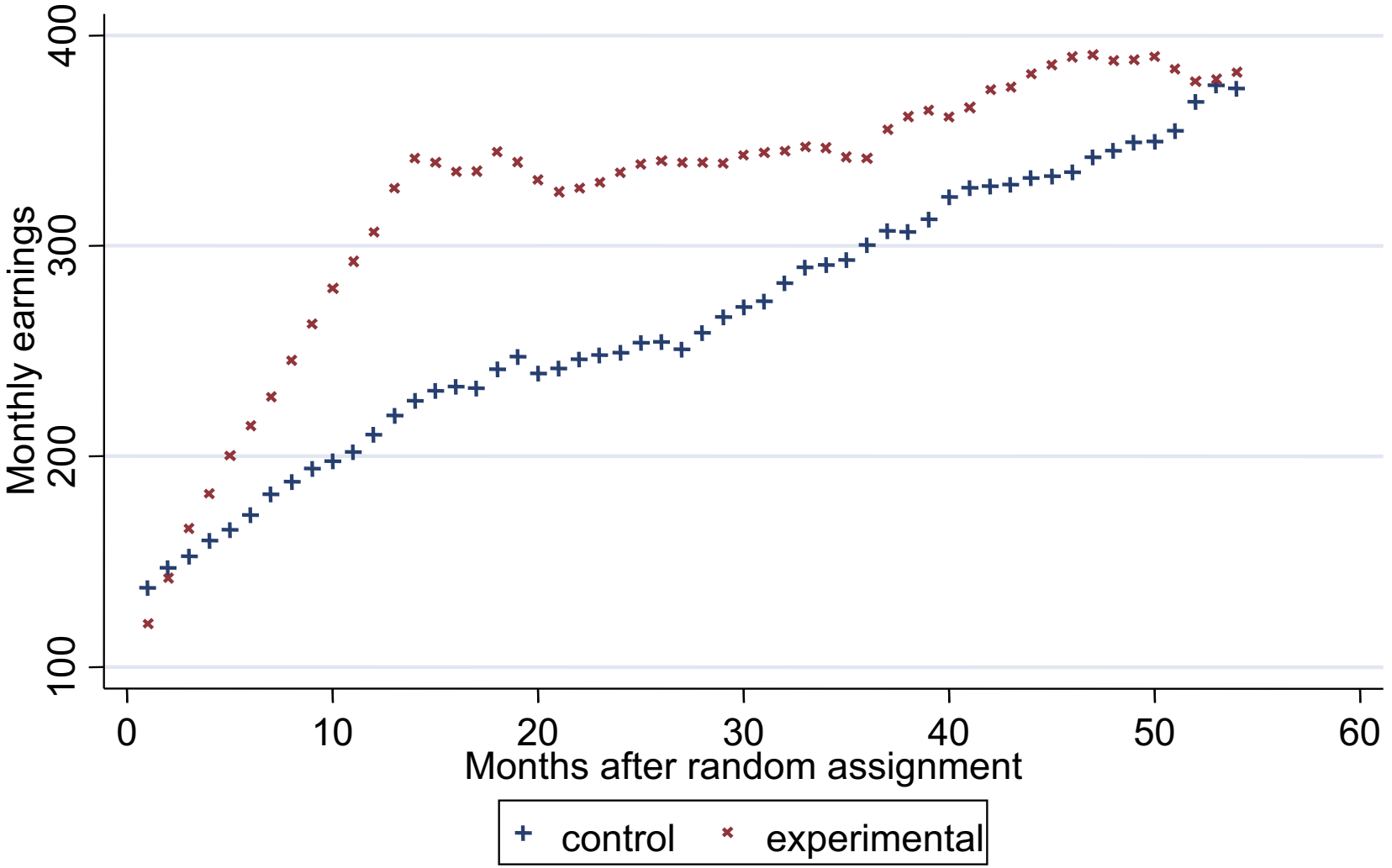
# SSP: Monthly earnings by months after RA




Blundell and Moffitt (2010)

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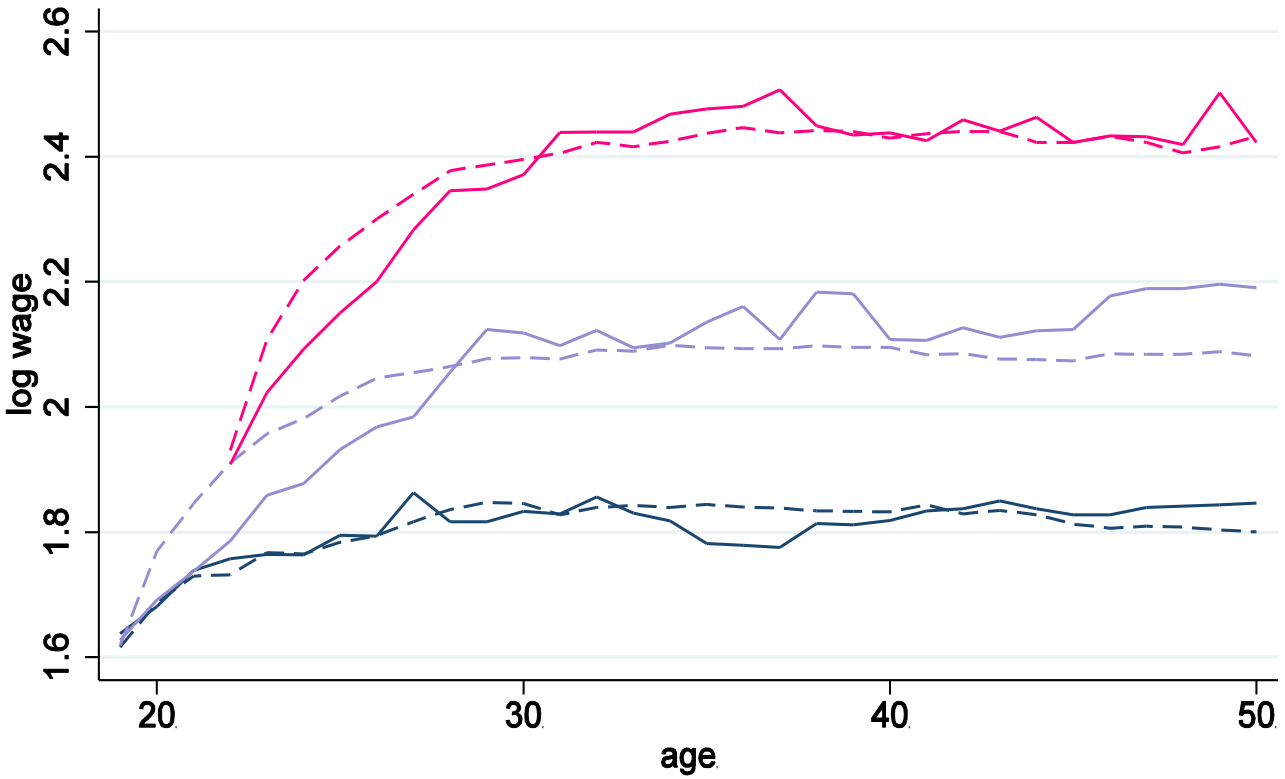
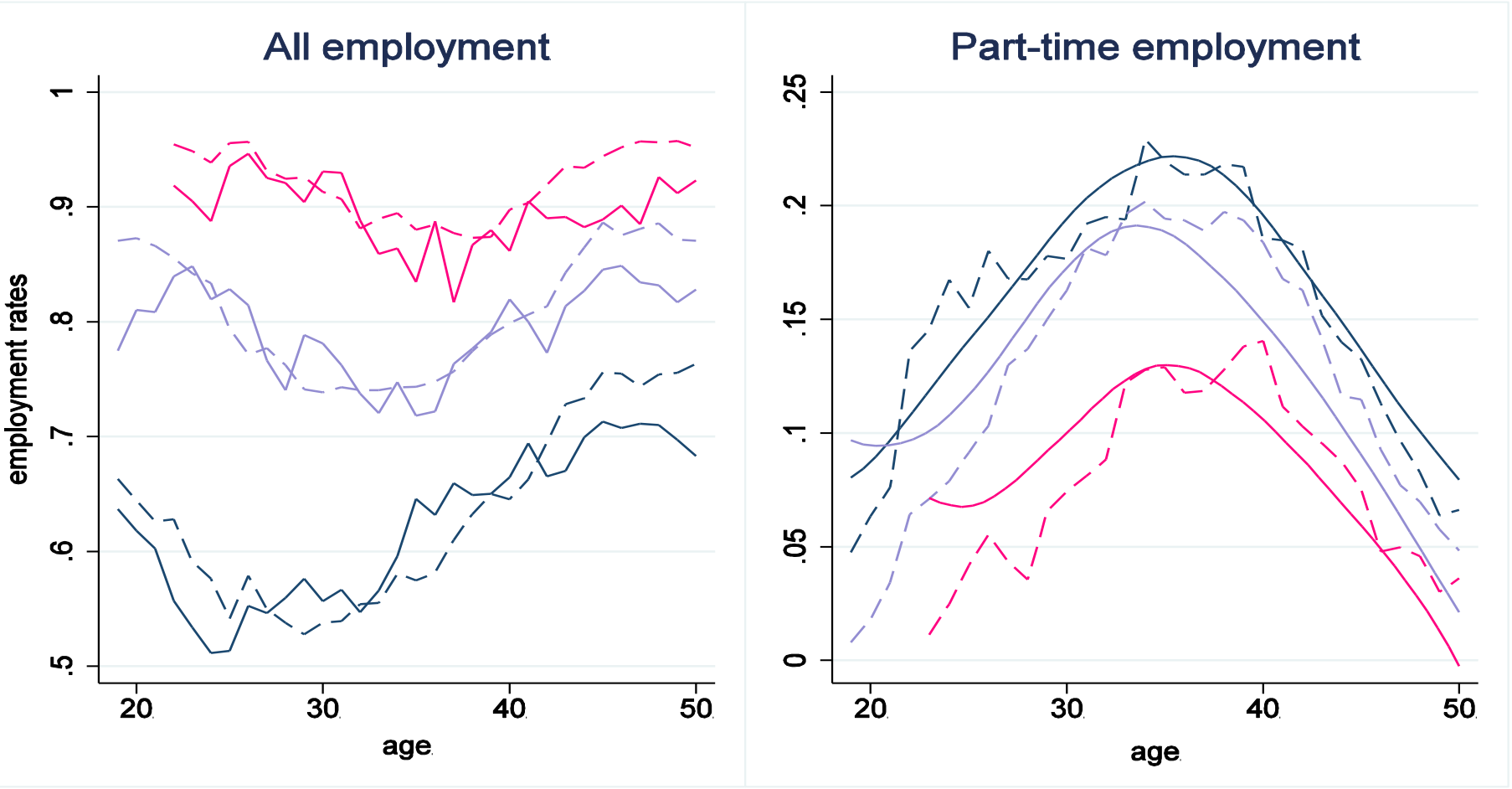
# Wages for women by education and age - a structural model




=> to match wages, employment and hours over the life-cycle it is key is to allow *complementarity* between human capital investments.

Source: Blundell, Dias, Meghir and Shaw (2016), Notes: UK BHPS

# Women's employment – a structural model




Source: Blundell, Dias, Meghir and Shaw (2016); Notes: UK BHPS.

# 5. Using this evidence for tax reform/design?

- Employment and hours responses are larger at the extensive margin (employment), than at the intensive margin (hours)
  - for low educated mothers with young school age kids.
- A 'large' extensive elasticity can 'turn around' the impact of declining social weights (Saez, Laroque) in the 'Mirrlees' optimal tax formula
  - implying an in-work transfer to low wage workers,
  - a clear role for earned income tax credits.
- Significant differences in responses by age and demographic type, suggesting 'conditional targeted' EITCs
  - parents with school age children,
  - older workers - aged 55-70.

# Older workers…

- Labor supply elasticities increase for 60+ age group for both men and women
  - labor supply is sensitive to earnings tests and actuarial unfairness in social security.
- Lower skilled are particularly responsive to incentives in disability insurance, means-tests and medical insurance
  - see *HRS* analysis by French and Jones (2013),
- Higher educated become more responsive to incentives at older working ages
  - social security, early retirement ages and wealth effects become important, HRS and *ELSA.*

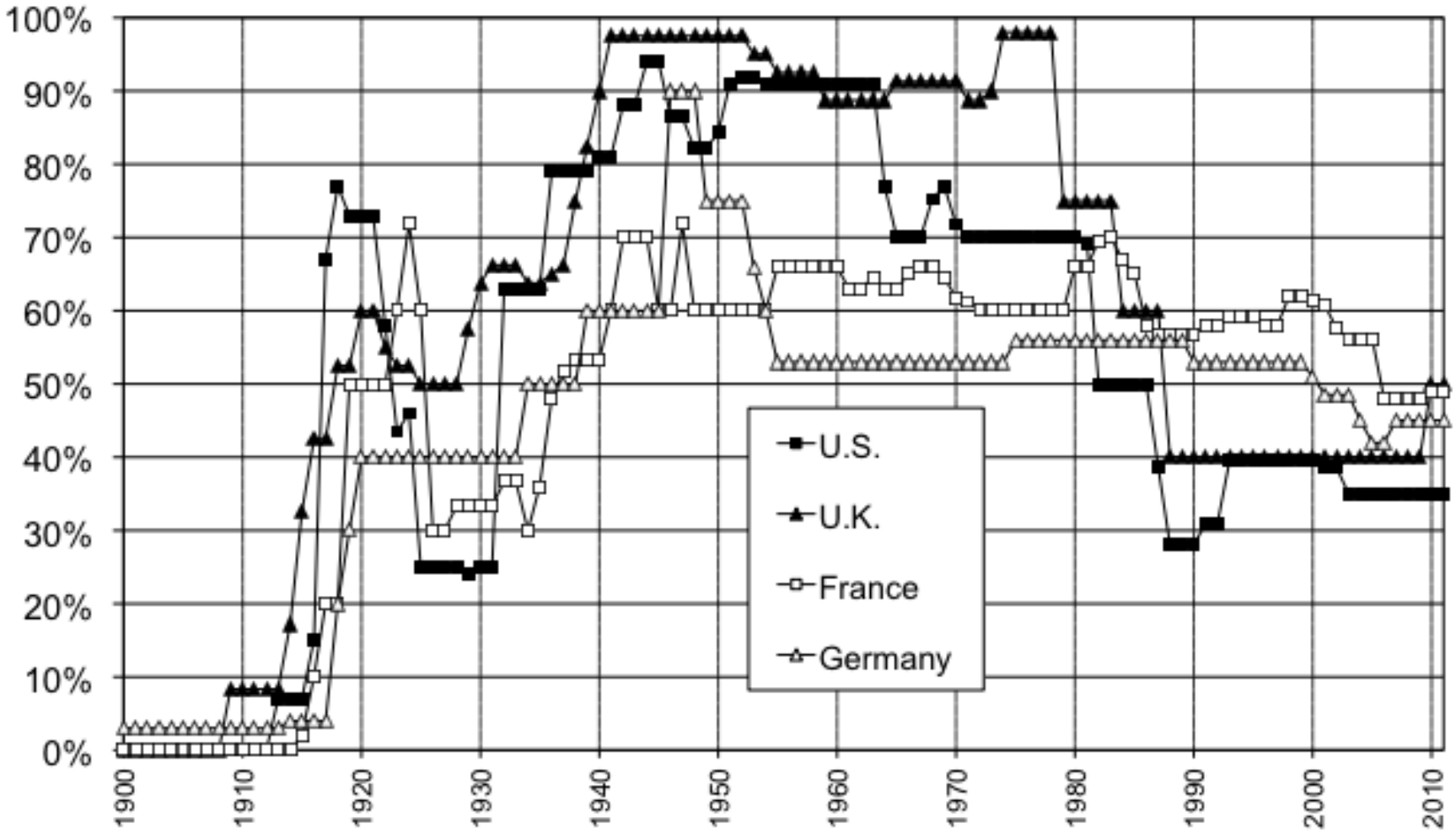
# Human capital responses

- The hourly wages of those with more education grow faster and for longer into the working life
  - formal education *strong complement* to experience capital during working life;
  - little experience pay-off/wage progression for those with low initial education, and those in part-time work.
- For *educated* young workers, employment generates valuable experience,
  - unlikely to respond to tax incentives early in career;
  - but taxes effect education choices, career choice and retirement;
  - in turn, retirement policies effect human capital incentives.

# Turning to the top 1% and top tax rates

- Consider taxable income responses capture *additional* avoidance and tax shifting responses
  - the 'elasticity' can be expected to fall as the *tax base* broadens
- As Slemrod and Kopczuk note:
  - '*When personal tax rates on ordinary income rise, businesses may shift to corporate form, there may be a rise in deductible activities, and individuals may rearrange their compensation packages to receive more income as tax-preferred capital gains. These responses to higher taxes will show up in declines in taxable income.*'

# The History of Top Tax Rates




**Top Marginal Income Tax Rates, 1900-2011**

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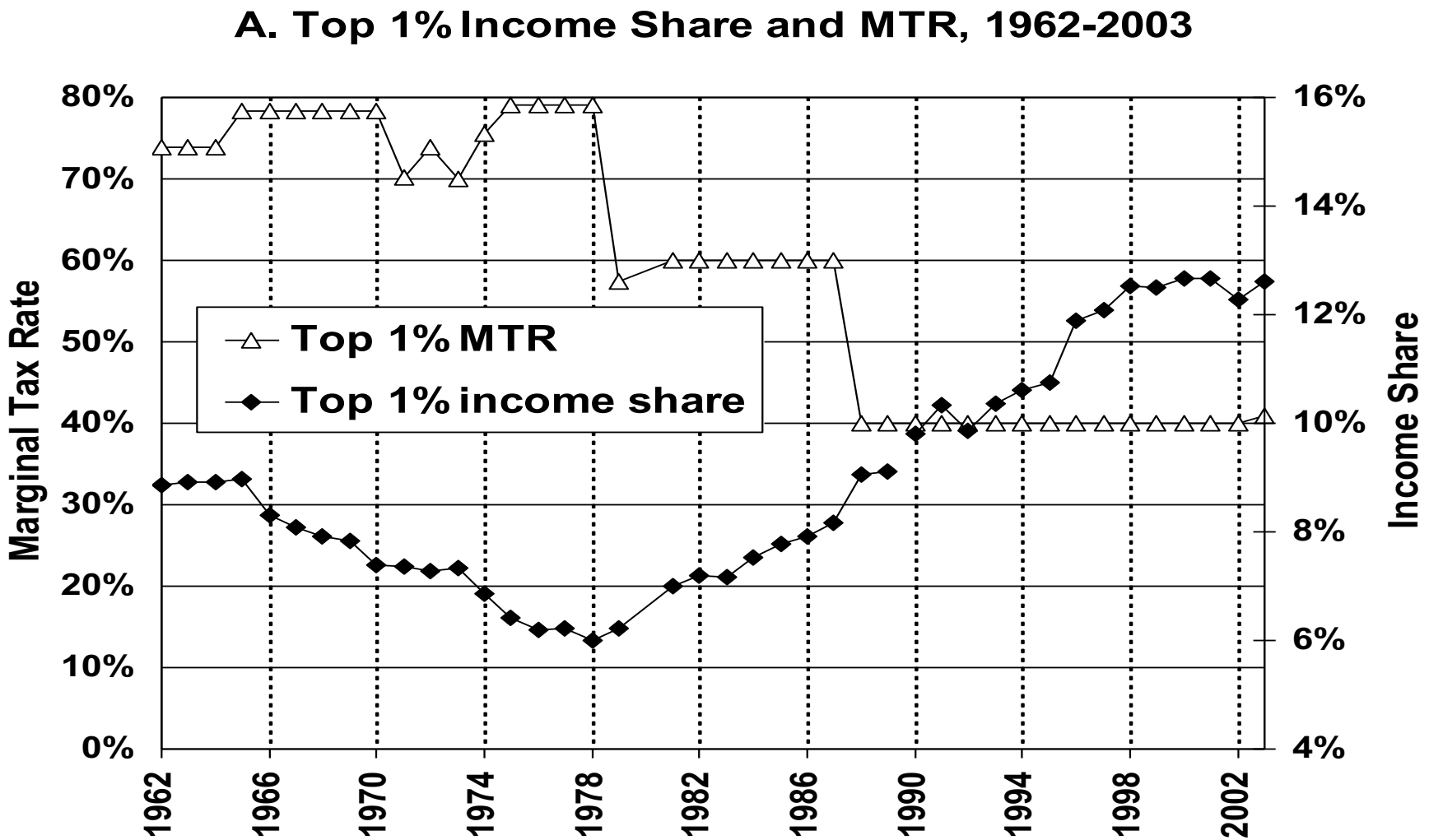
# Top incomes and taxable income elasticities – the UK

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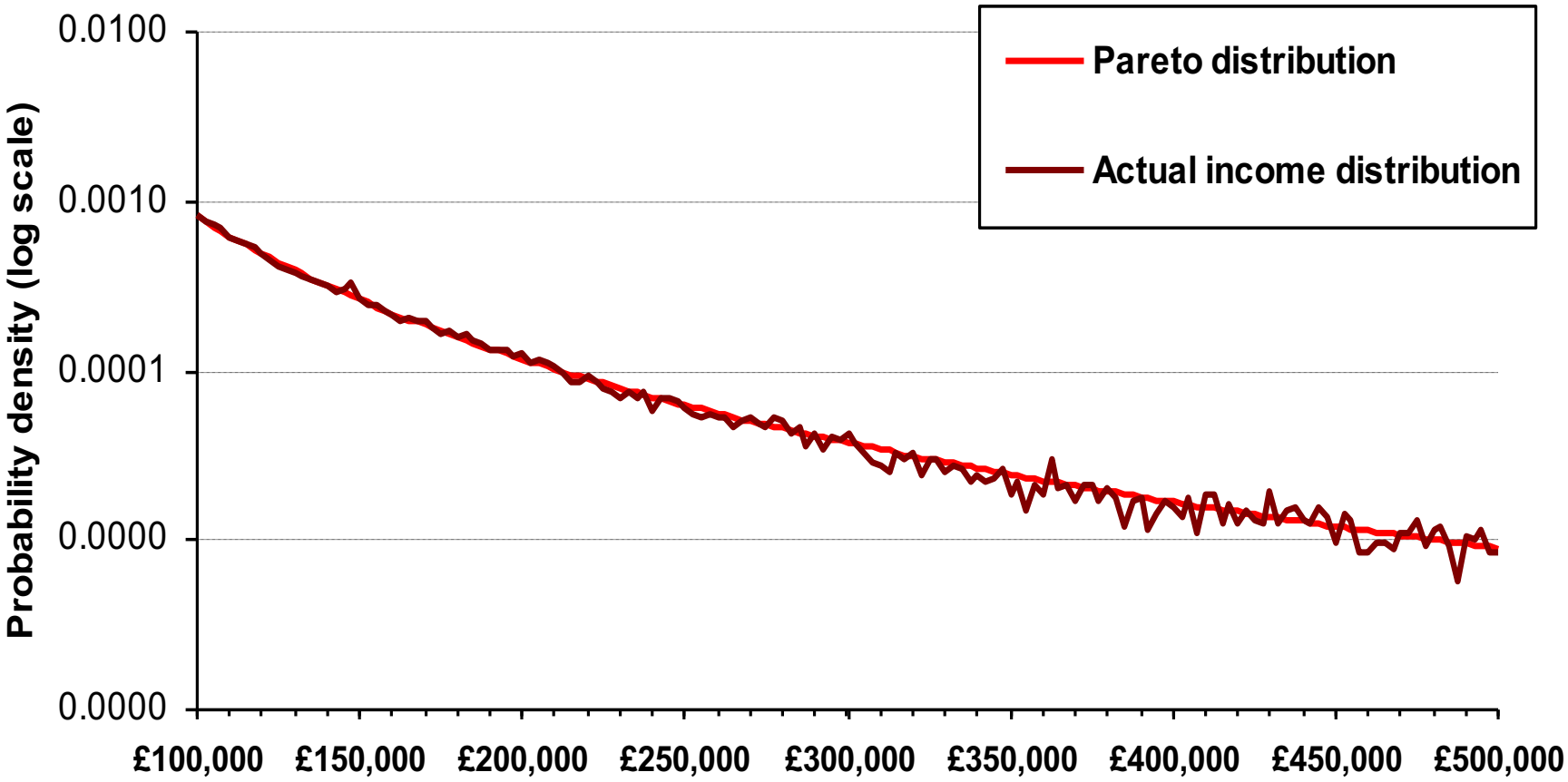
# Making use of the '*taxable income elasticity*'

- Captures additional avoidance and tax shifting responses
  - the 'elasticity' can be expected to fall as the *tax base* broadens
- For a *given tax base* we can use the elasticity to calculate the revenue maximising top tax rate (an 'optimal' top rate?)
  - $t = 1/(1 + e*a)$
  - where '$e$' is the taxable income elasticity, and
  - '$a$' is the Pareto parameter
- Estimate $e \approx 0.46$ from the evolution of top incomes in tax return data. But difficult to identify and precisely estimate.
- Estimate $a \approx 1.67$ from the empirical distribution in the UK.

# The Pareto distribution and the income distribution




- Pareto parameter quite accurately estimated at 1.67 for the UK and around 1.91 for the US; 'optimal' top tax rate for the UK of 56%.
- But is estimated elasticity '*e*' reliable? - ignores key dynamic issues.
- *See discussion in Mirrlees Review.*

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# Taxable Income Elasticities at the Top

| | Simple Difference (top 1%) | DiD using top 5-1% as controls |
|---|---|---|
| 1978 vs 1981 | 0.32 | 0.08 |
| 1986 vs 1989 | 0.38 | 0.41 |
| 1978 vs 1962 | 0.63 | 0.86 |
| 2003 vs 1978 | 0.89 | 0.64 |
| Full time series | 0.69 | 0.46 |
| | (0.12) | (0.13) |

With updated data the estimate remains in the .35 - .55 range with a central estimate of .46, but remain quite fragile – see bunching estimates for high income tax thresholds.

# Summarising the implications for redesign of tax policy

Some potential for big gains from reforms to enhance earnings and address inequality:

- focus incentives on transition to work, return to work for parents and on enhancing work incentives among older workers,
- integrate overlapping benefits - *a single integrated benefit,*
- reduce disincentives at key margins for the educated - enhancing working lifetime and the career earnings profile.

Limits to reform of taxes at the top without tax base reform

- some evidence that a significant part of tax responses have come largely from avoidance,
- align tax rates at the margin across income sources to make taxation at the top more effective; e.g. *dividends and capital gains.*

# What about policy responses for inclusive growth?

- little evidence of earnings progression for lower skilled and part-time workers
  - employment (especially part-time) is not enough!
- implications for welfare-benefit reform and expansion?
  - Integrated 'universal tax credit' plus?
  - well designed contribution based social insurance?
- minimum wage?
  - proven useful at the very bottom but does not to solve low productivity growth or inclusion.
- early years investment?
  - kids of low educated parents are the key.
- innovative firms and innovation technology?

# R&D Incentives and Innovation Policies

- Innovative and high R&D intensity firms pay higher wages
  - Returns to education can be maintained by endogenous technical change,
  - Even for lower skilled workers relative wages increase in R&D intensive firms (Aghion, Blundell and Griffith, 2017); *But* hire less low skilled workers.
- Top tax rates and innovation
  - Some evidence that incomes from innovation have enhanced top incomes in the US (Aghion, Blundell, … (2016)).
  - Big question is whether top tax rates themselves can stimulate innovation? This has turned out to be a hard problem to untangle due to increased entry barriers and rent capture, - need a balance of competition and tax policies.

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# That's it for now!

## Tax Reform and its Implications for Inequality

Donald Gilbert Memorial Lecture, Rochester

April 25th 2017

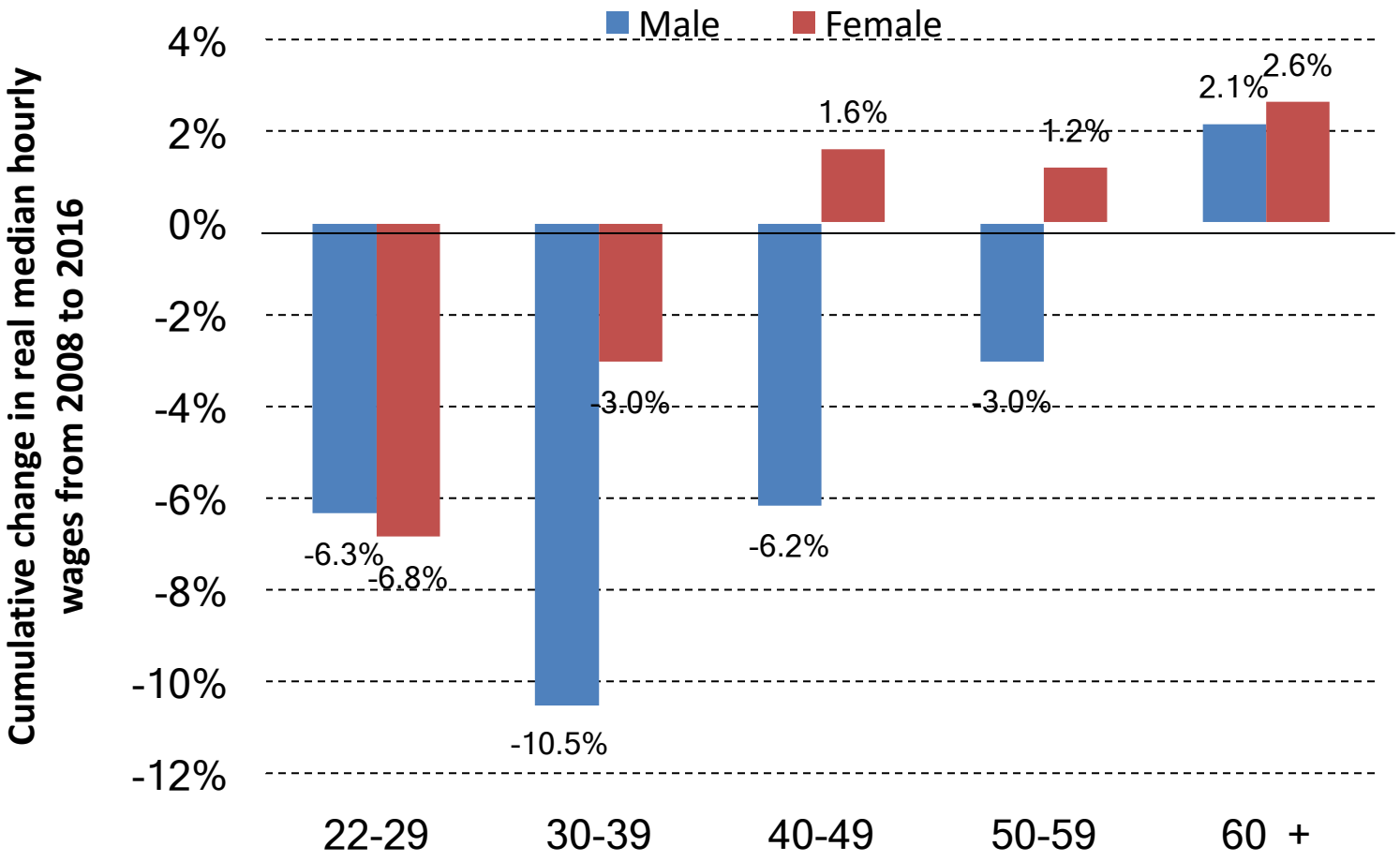
references to specific studies listed on my website and at:

http://www.ifs.org.uk/mirrleesReview

# Microeconomic policy research has become more empirical.

- Experienced a data revolution:
  - Detailed access to tax and welfare records allows incentives to be measured correctly and benefit take-up accurately modelled.
  - Administrative panel data also allows us to see what adjusts, when, and for whom.
  - Linked with surveys and field experiments this is a powerful tool for research and a persuasive tool for practical policy reform.
- Use this lecture to think through how we should use evidence in tax design:

# Younger age groups saw the largest falls in median hourly wages (UK)




Source: Blundell and Ziliak (2017), Notes: CPS.

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# Wages and employment - a structural model

Consider women '*i*', age '*t*', schooling '*s*'.

- Model wages over the life-cycle: (log wage equation)

$$\ln w_{ist} = W_{st} + \gamma_s \ln(1+exp_{ist}) + v_{ist} + \varepsilon_{ist}$$

where

$$exp_{is,t} = (1-\delta_s)exp_{is,t-1} + FT_{ist} + \theta_{PT}PT_{ist}$$

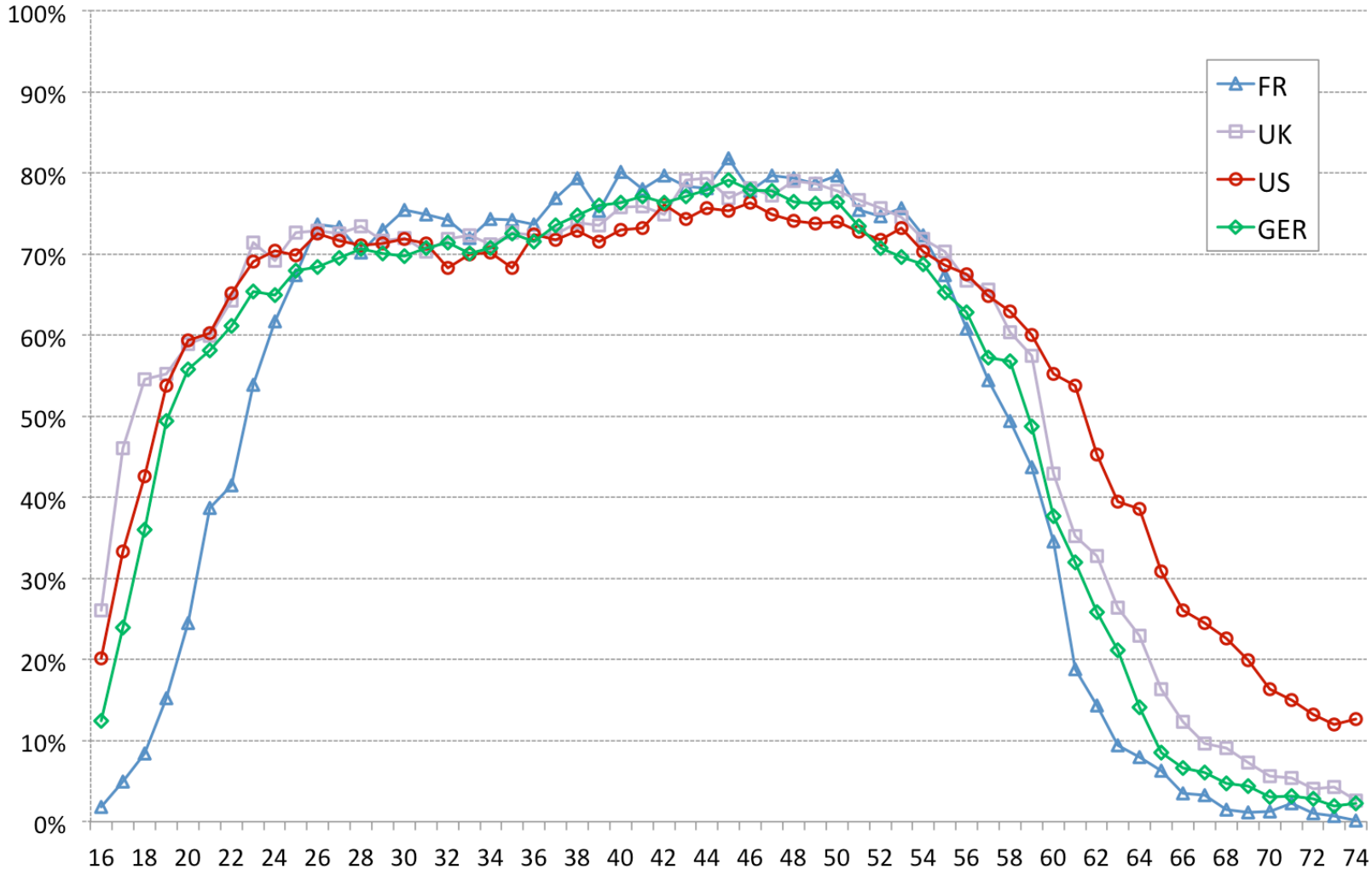
$$v_{ist} = \rho_s v_{is,t-1} + \eta_{ist}$$

- Model employment and part-time work over the life-cycle:
  - Depend on wages and human capital,
  - Depend on children and marriage,
  - Trade-off between redistribution and insurance is key.

  - see Blundell, Dias, Meghir and Shaw (Ecta, 2016).

# and for women …..

## Female Employment by age




Blundell, Bozio, Laroque and Peichl (2014)

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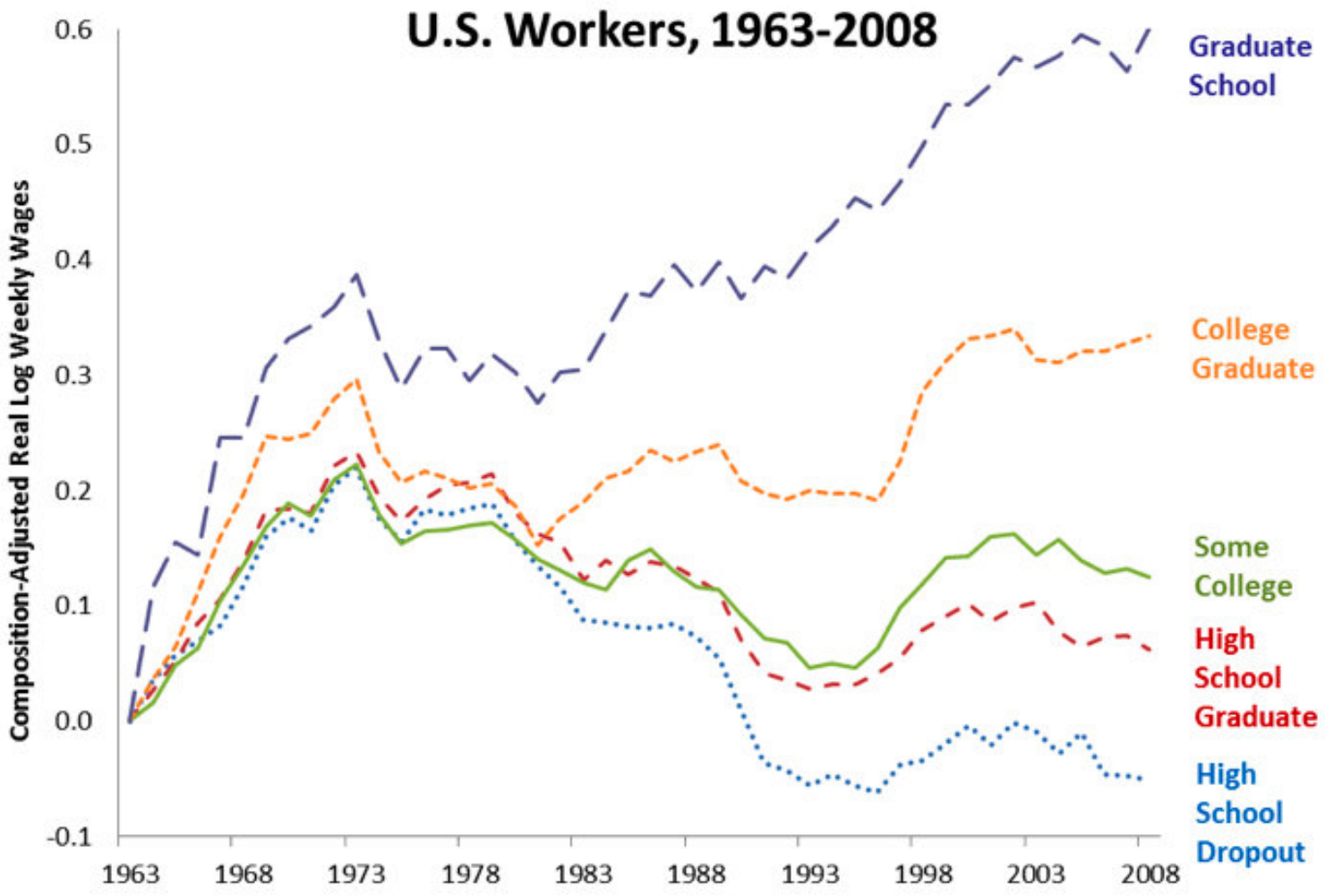
# Changes in Wages for Full-Time Men in US




Source: Acemoglu and Autor (2011), Notes: Composition adjusted, CPS.

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