Empirical Evidence and Tax Reform

MAE Lecture, UCLA

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University College London and Institute for Fiscal Studies

Slide Presentation

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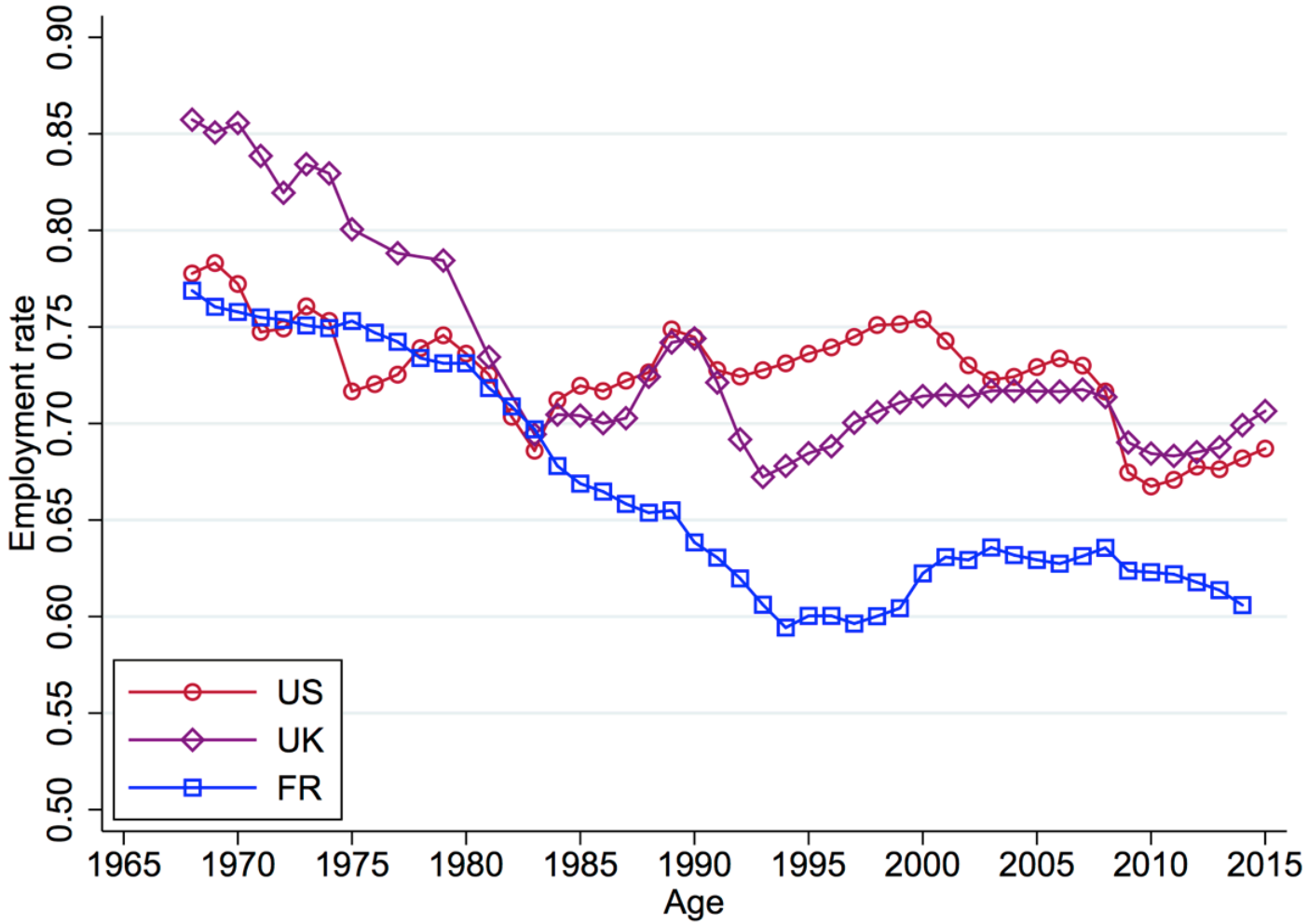
Empirical Evidence and Tax Reform

- 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 prospects for the labour market and inclusive growth. Some of the key challenges:
  - falling real earnings for low skilled,
  - inequality at the top.
- But first a few facts to set the scene….

Male Employment: US, UK and FR



Notes: Employment Aged 16-74.

Source: Blundell, Bozio and Laroque (2016)

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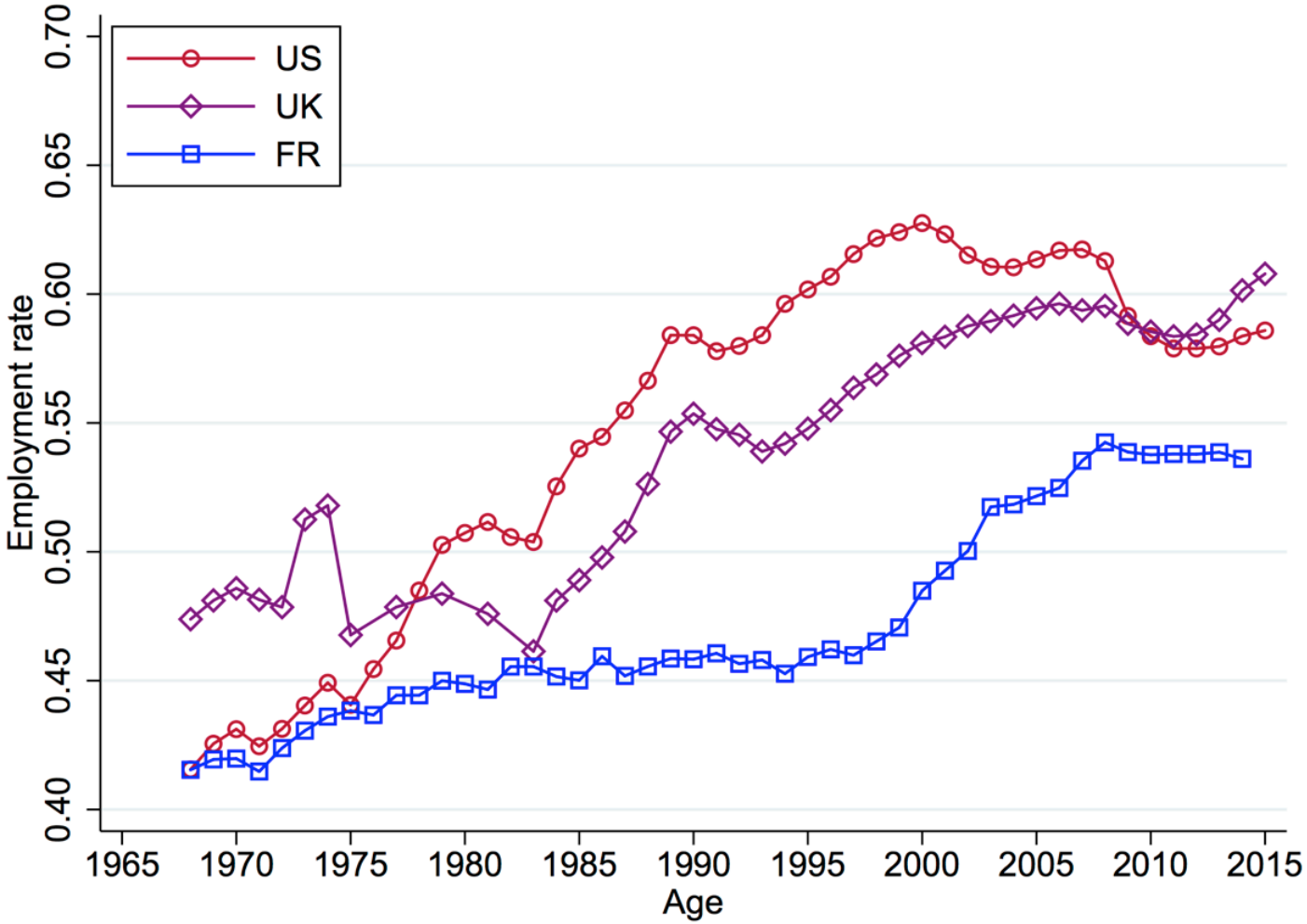
Female Employment: US, UK and FR



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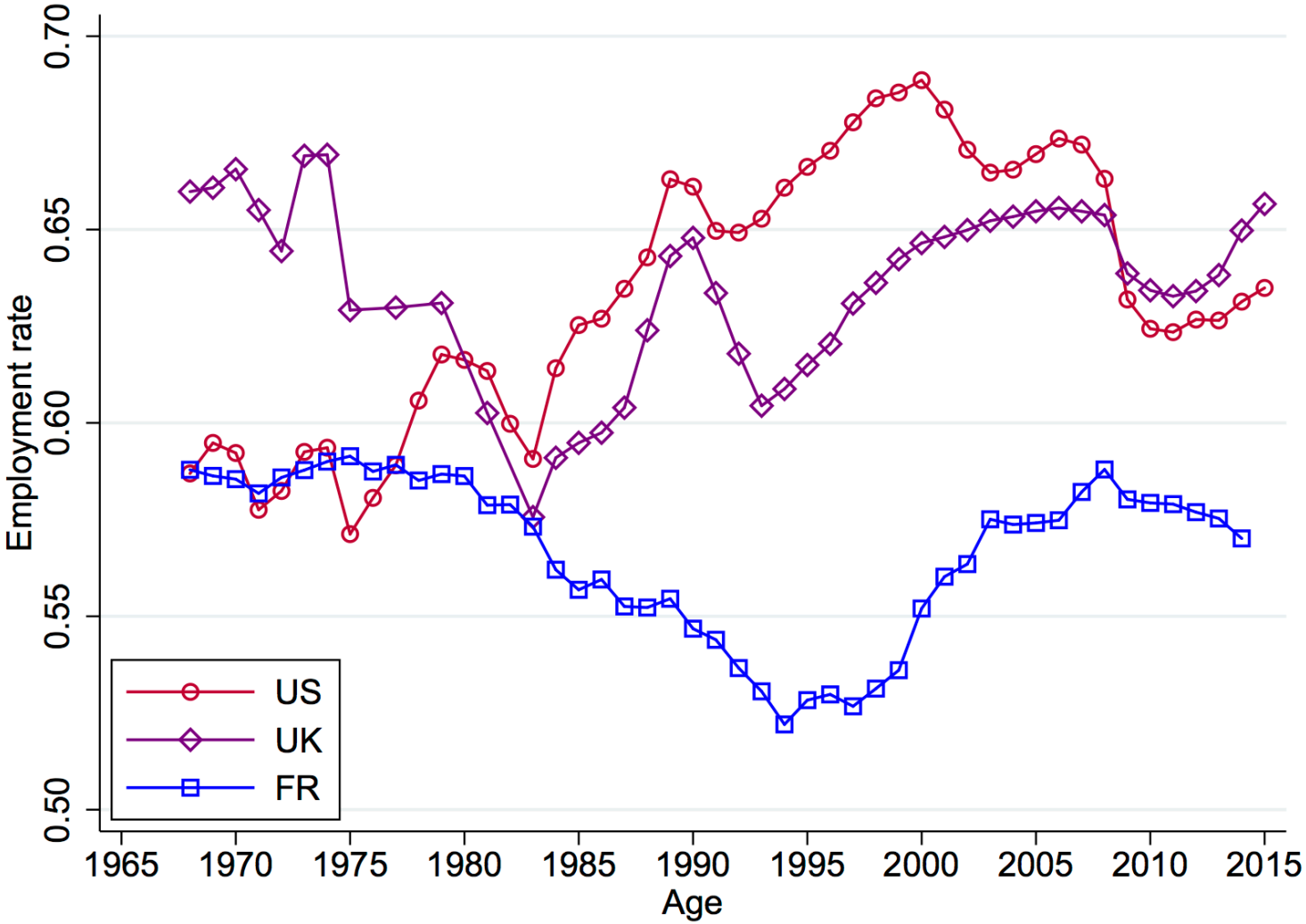
Employment Rate: US, UK and FR



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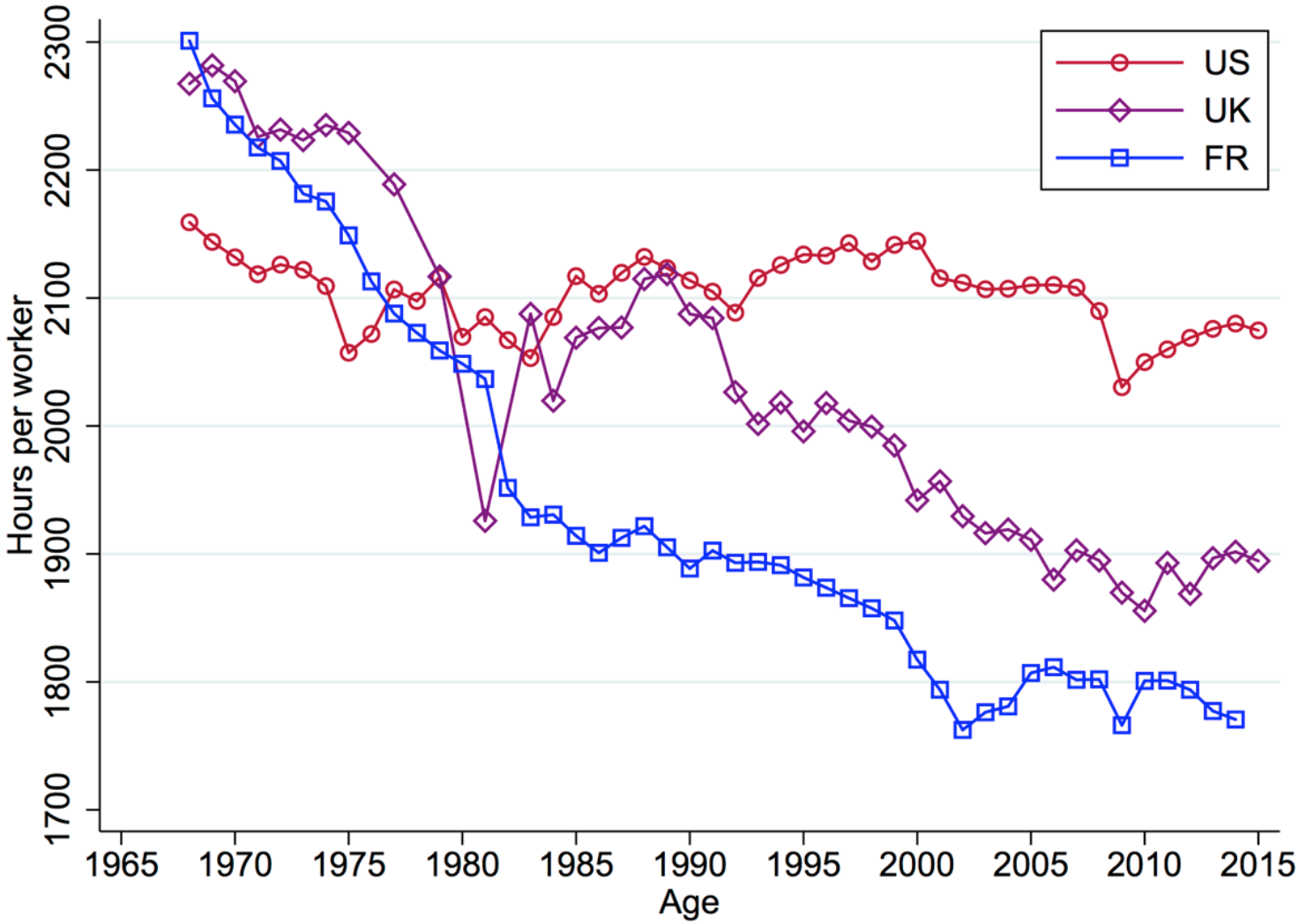
Male Annual Hours per Worker: US, UK and FR



Source: Blundell, Bozio and Laroque (2016)

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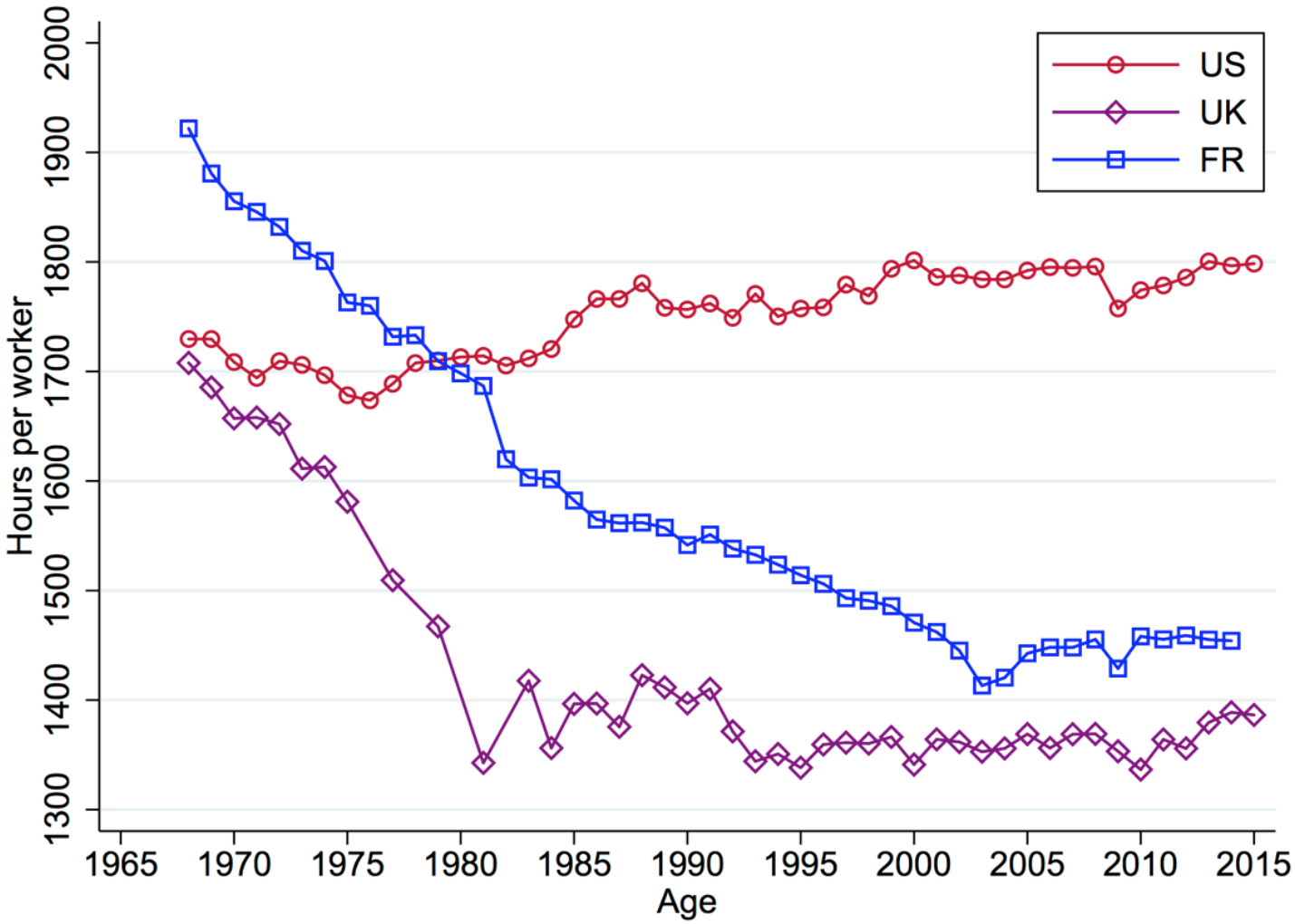
Female Annual Hours per Worker: US, UK and FR



Source: Blundell, Bozio and Laroque (2016)

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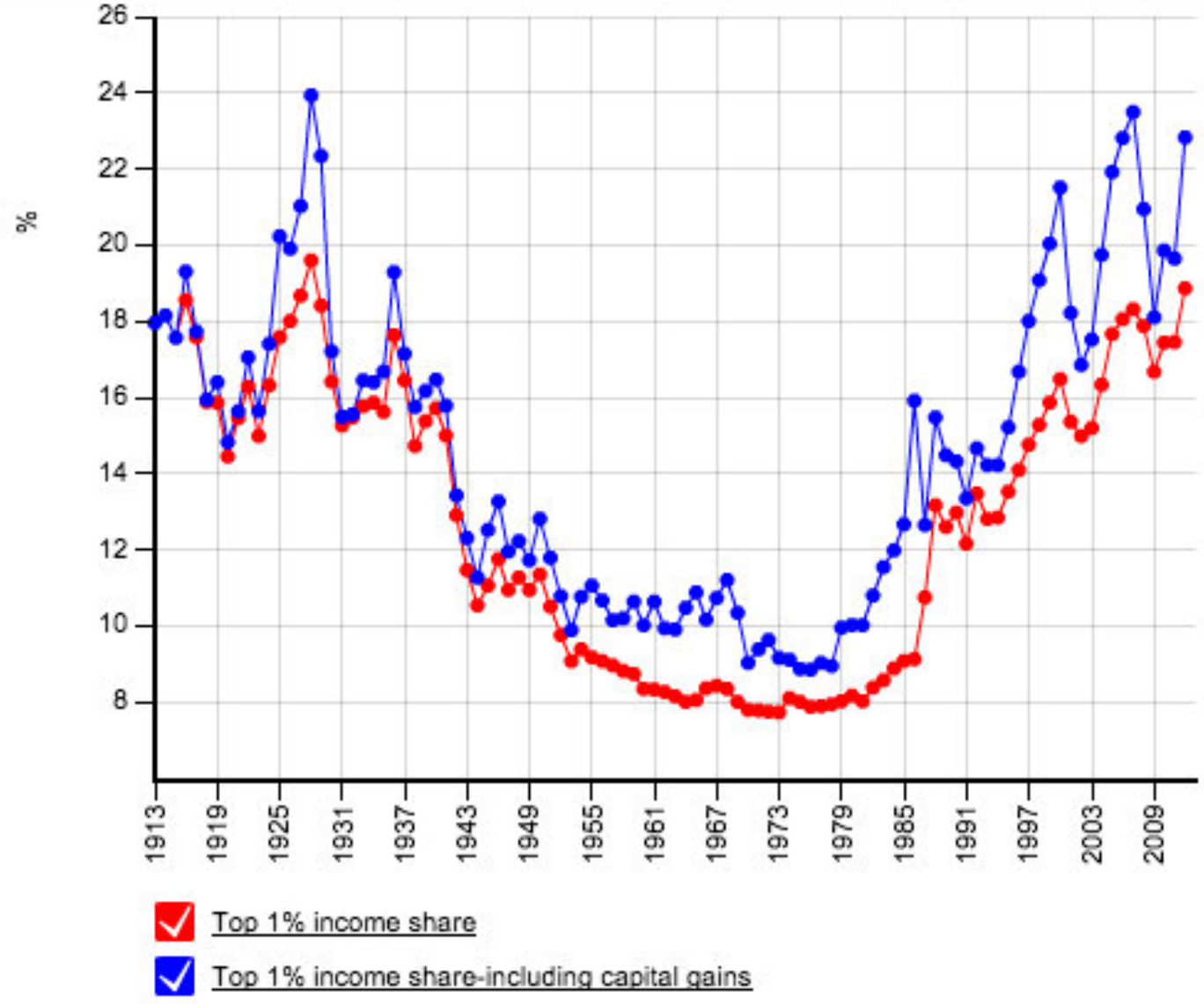
Top Income Shares in the US



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

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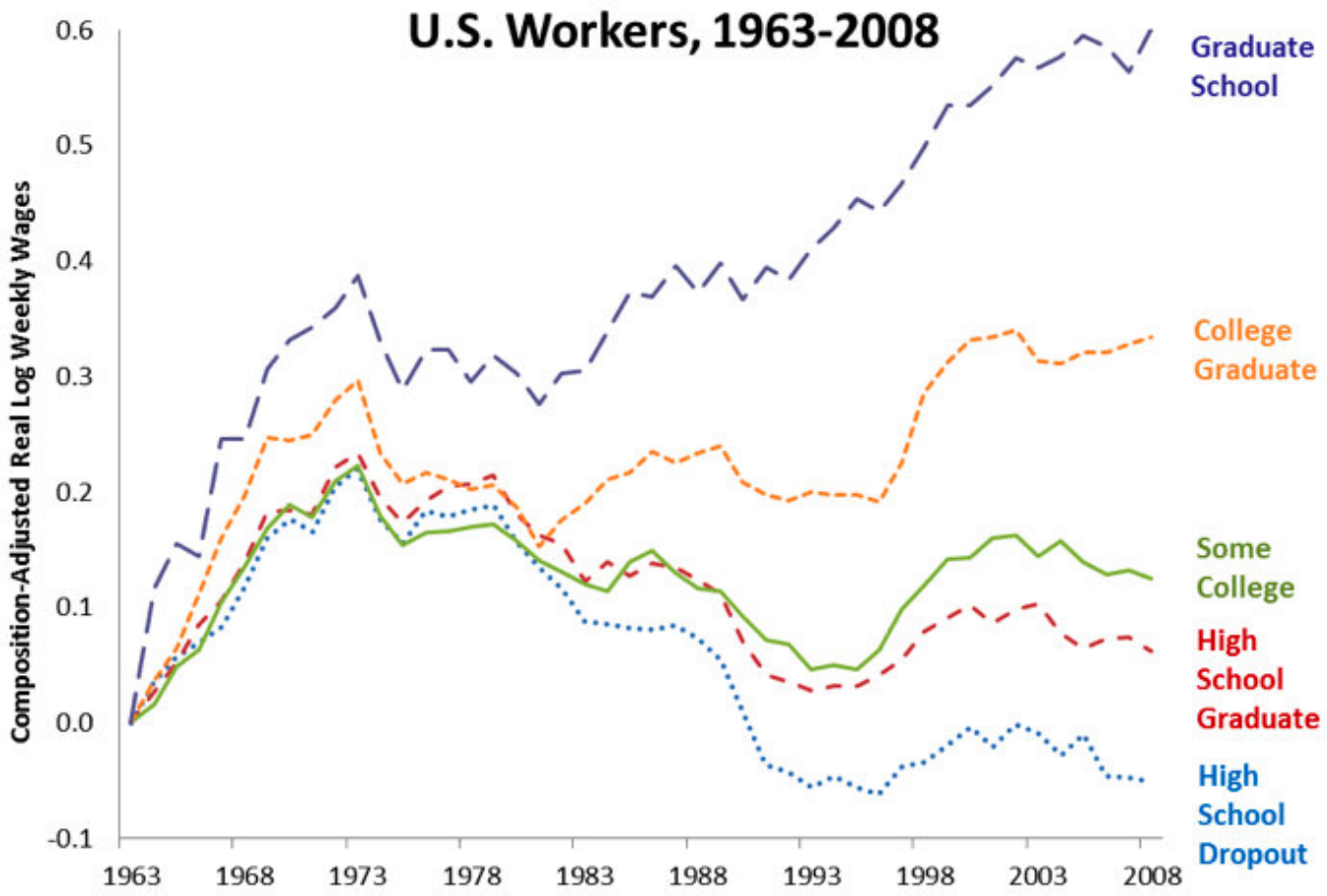
Changes in Wages for Full-Time Men in US



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

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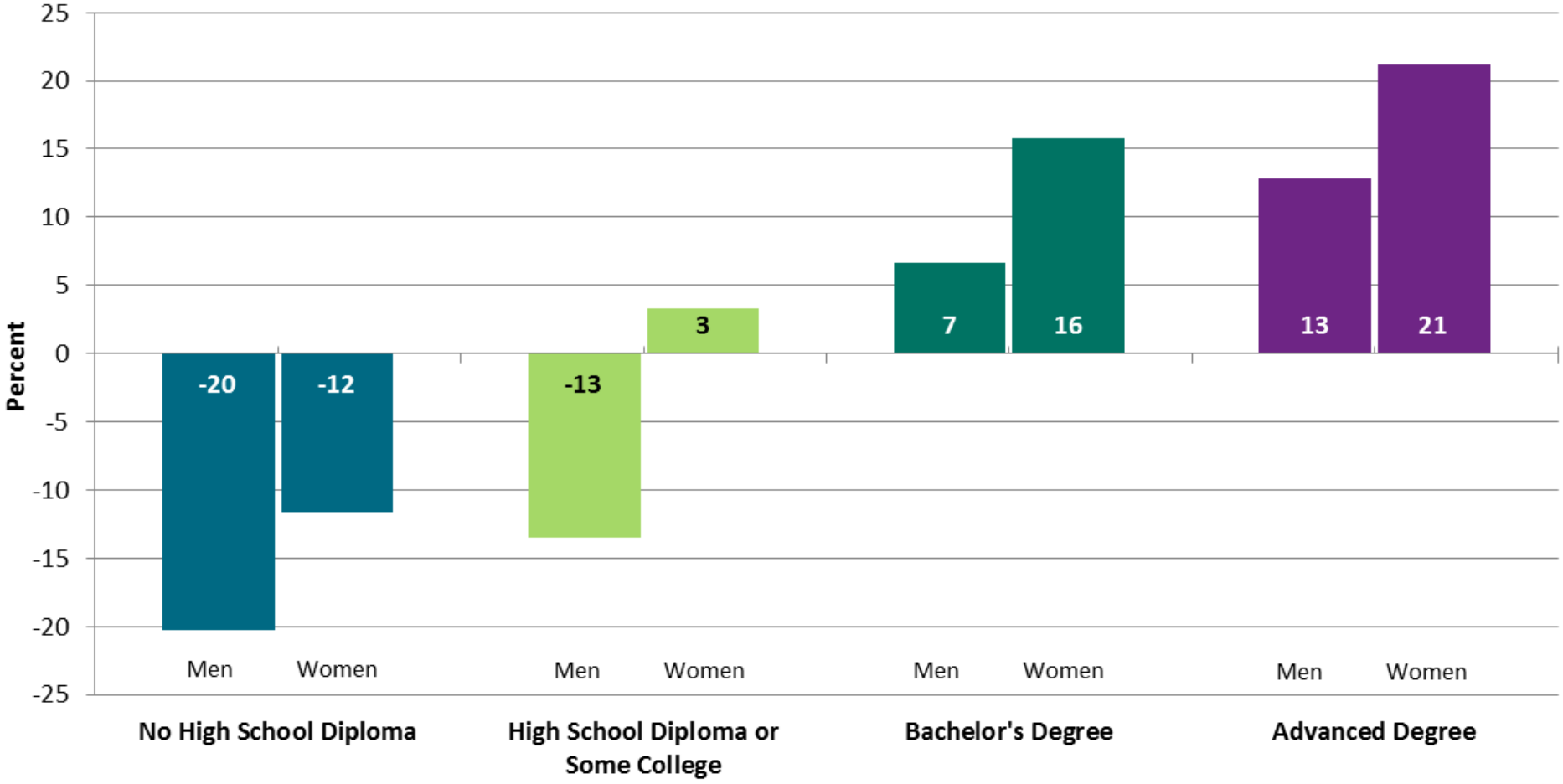
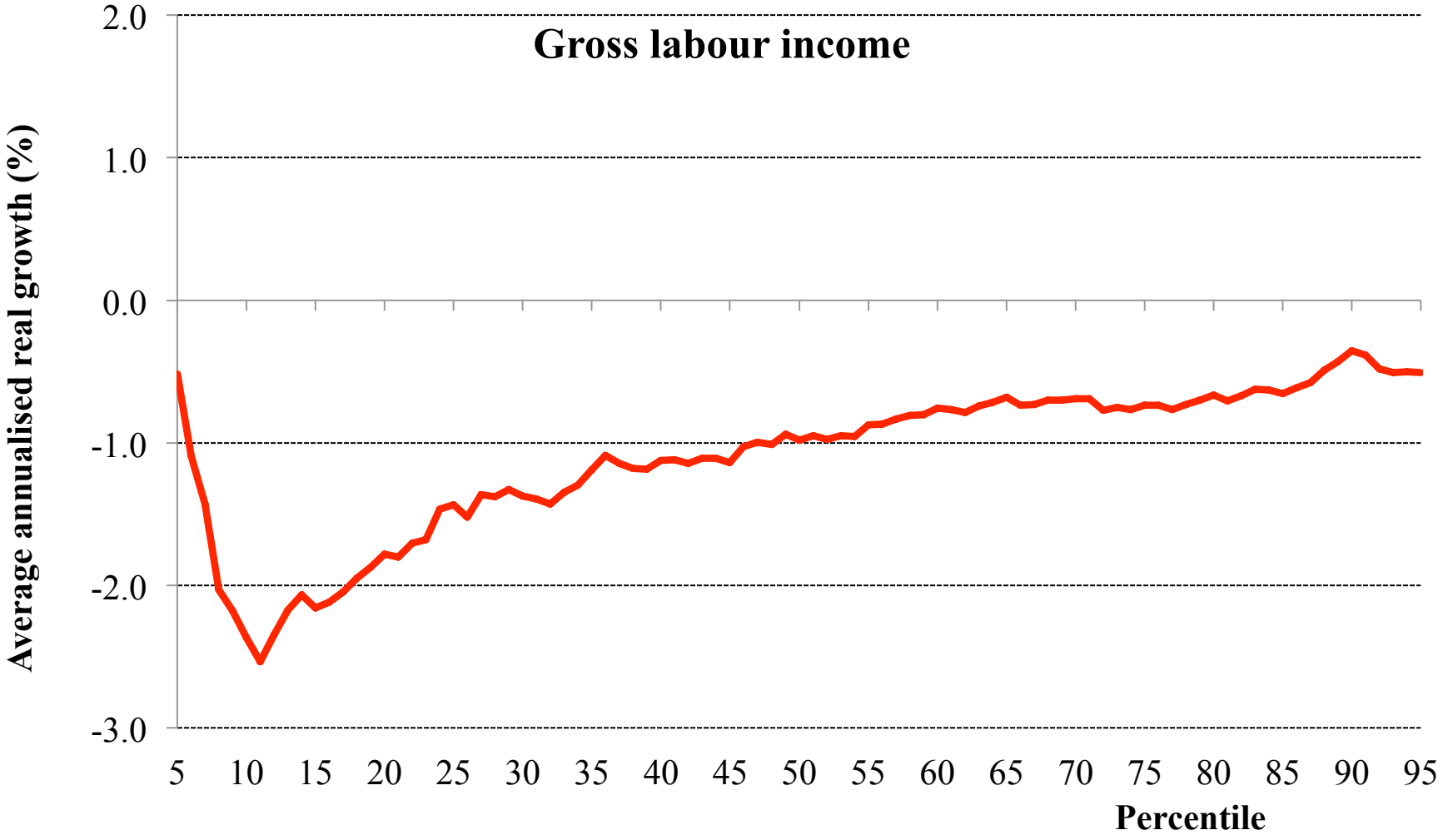
Percent Change in Median Real Earnings for Men and Women from 1990-2013, for US by Education



Source: Hershbein and Kearney (2015)

Household 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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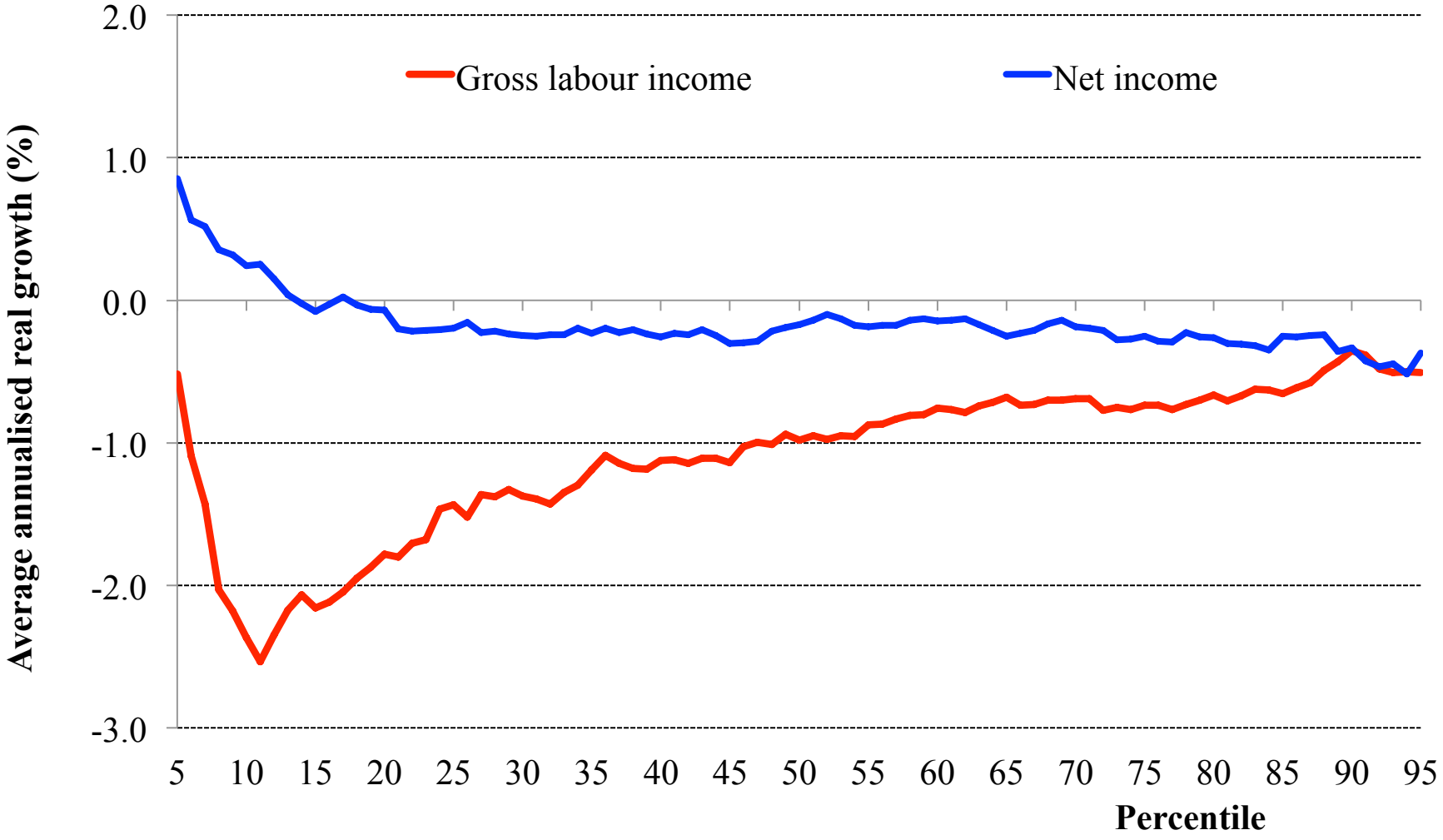

Notes: Includes self employment income and self employed households.
Family Resources Survey. All income measures are equivalised.
Source: Belfield, Blundell, Cribb, Hood and Joyce (2016)

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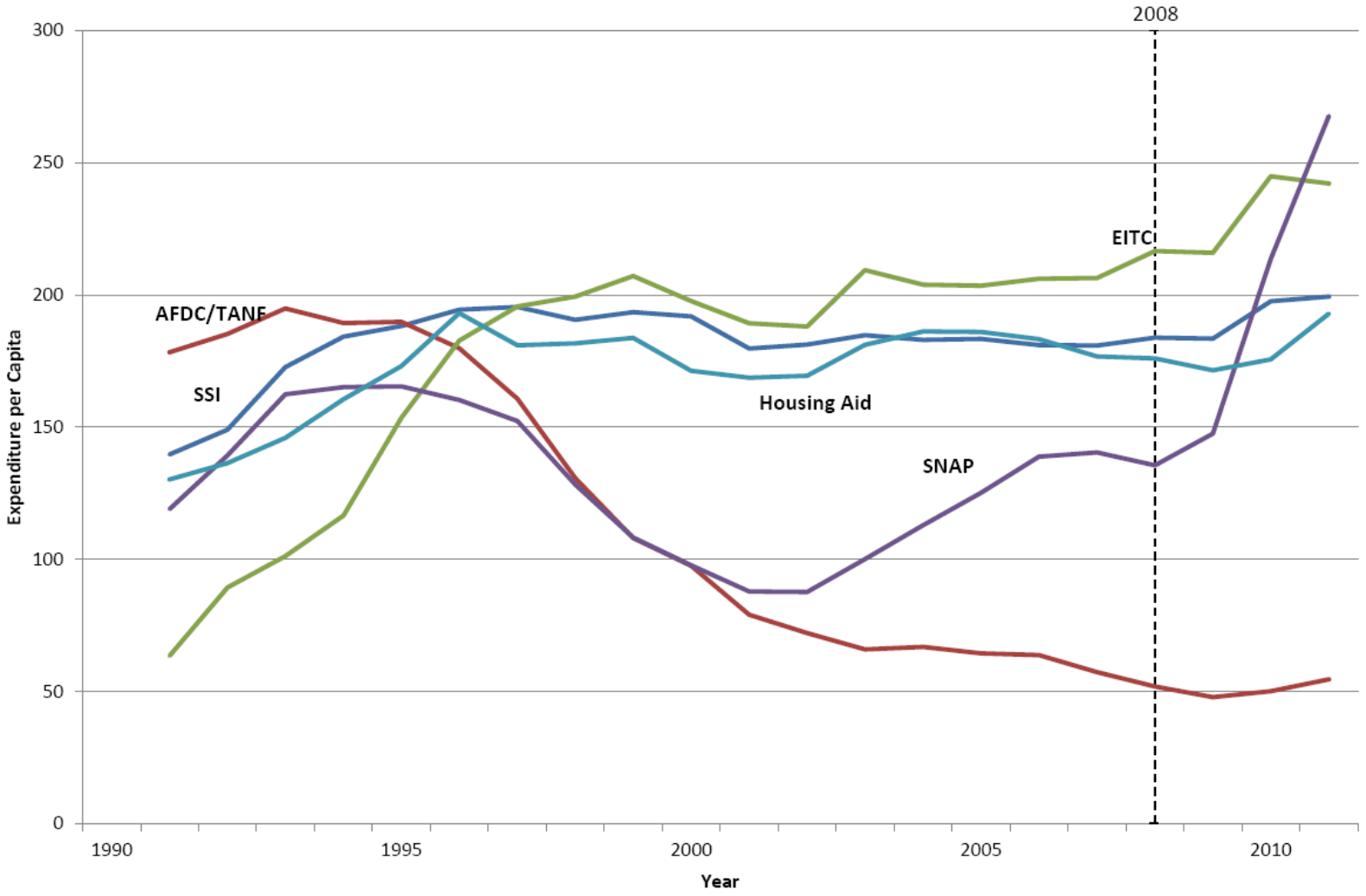
Expenditure per Capita on Non-Medicaid Means Tested Programs, US 1990-2010 (real 2009 dollars)



Source: Moffitt (2013)

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Ask two general questions:

- What are the key margins where we might expect tax/ welfare reform to have most impact on earnings, employment growth and inequality?
- How has this changed since the great recession?

1. Use this lecture to develop the empirical foundations for tax design and reform.
2. Overview of main issues and prospects with current tax systems.
3. Use the *Mirrlees Review* as a running example =>

The Mirrlees Review – briefly!

- An integrated picture of tax design and reform,
  - published by OUP, available *open access* at http://www.ifs.org.uk/mirrleesReview
- Comprehensive review of tax reform, drawing on:
  - new evidence, new theory, a new economic environment.
- Recognising the tax system does many things
  - it raises revenue for public goods, it redistributes across people and 'insures' individuals and families against adverse shocks,…
  - and it should do these as efficiently as possible.
- View the tax system as a whole
  - earnings and direct tax; welfare benefits and tax-credits; savings, capital and corporate taxation, ..
- Aimed at developed open economies
  - UK, US, France, Germany, Spain, Holland, Korea, NZ, Japan,…

The Mirrlees Review
Reforming the Tax System for the 21st Century

Chairman: James Mirrlees (Nobel Laureate)

Tim Besley (LSE & Sticerd)

Richard Blundell (IFS & UCL)

Malcolm Gammie QC (One Essex Court)

James Poterba (MIT & NBER)

Two volumes: '*Dimensions of Tax Design*' and '*Tax by Design*':

- In this talk I draw on four "spin-off" studies:
  - 'Labour Supply and the Extensive Margin'*; AER* 2011
  - 'Optimal Taxation of Low Income Families'*; REStudies* 2012
  - 'Two Decades of Inequality: the role of earnings and redistribution' *Economica* 2016
  - 'Labour Supply, Human Capital and Tax Reform'*; Ecta* 2016
  - at my homepage http://www.ucl.ac.uk/~uctp39a/

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Generic issues with the structure of tax and welfare systems

- Do not work as a *system*
  - Lack of joining up between welfare benefits, personal taxes social security, and corporate taxes.
- Are not *neutral* where they should be
  - Inconsistent indirect taxes and savings taxes; a corporate tax system that favours debt over equity.
- Are not well designed where they should deviate from neutrality
  - A mass of different tax rates on carbon and failure to price congestion properly.
- Do not achieve *progressivity* efficiently
  - Taxes and welfare benefits damage work incentives more than necessary.

How should we assemble the empirical foundations for tax policy (re)design?

- Consider the role of evidence under five headings:

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

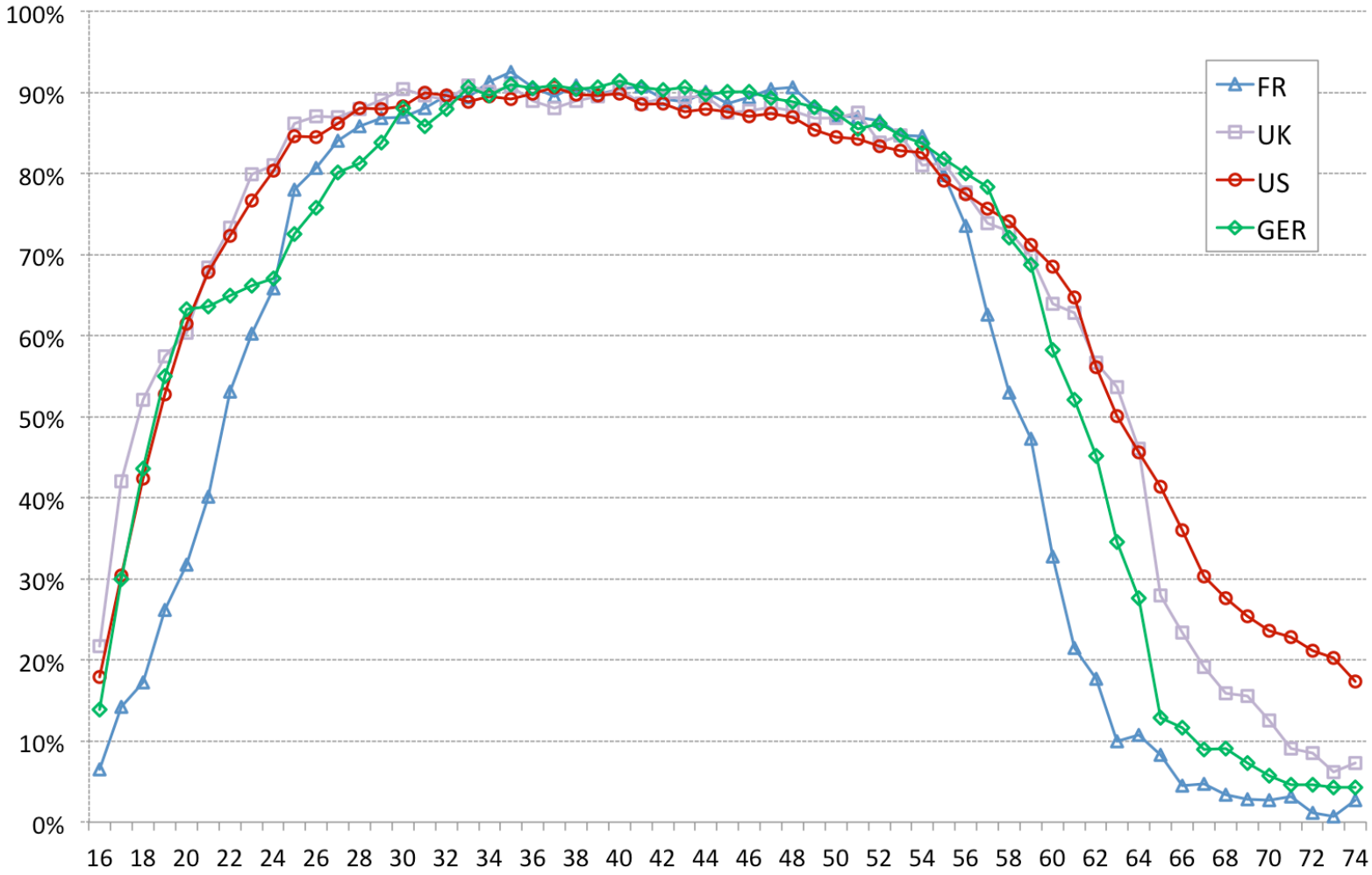
- Use these "5 steps" to build an empirically based agenda for tax reform

1. Key margins of adjustment to reform

- A ‘descriptive’ analysis of the key aspects of observed behaviour
  - the key facts!
- Where is it that individuals, families and firms are most likely to respond?
  - focus here on earnings and the impact of taxes on labour supply and human capital
  - e.g. the margins of labour market adjustment.

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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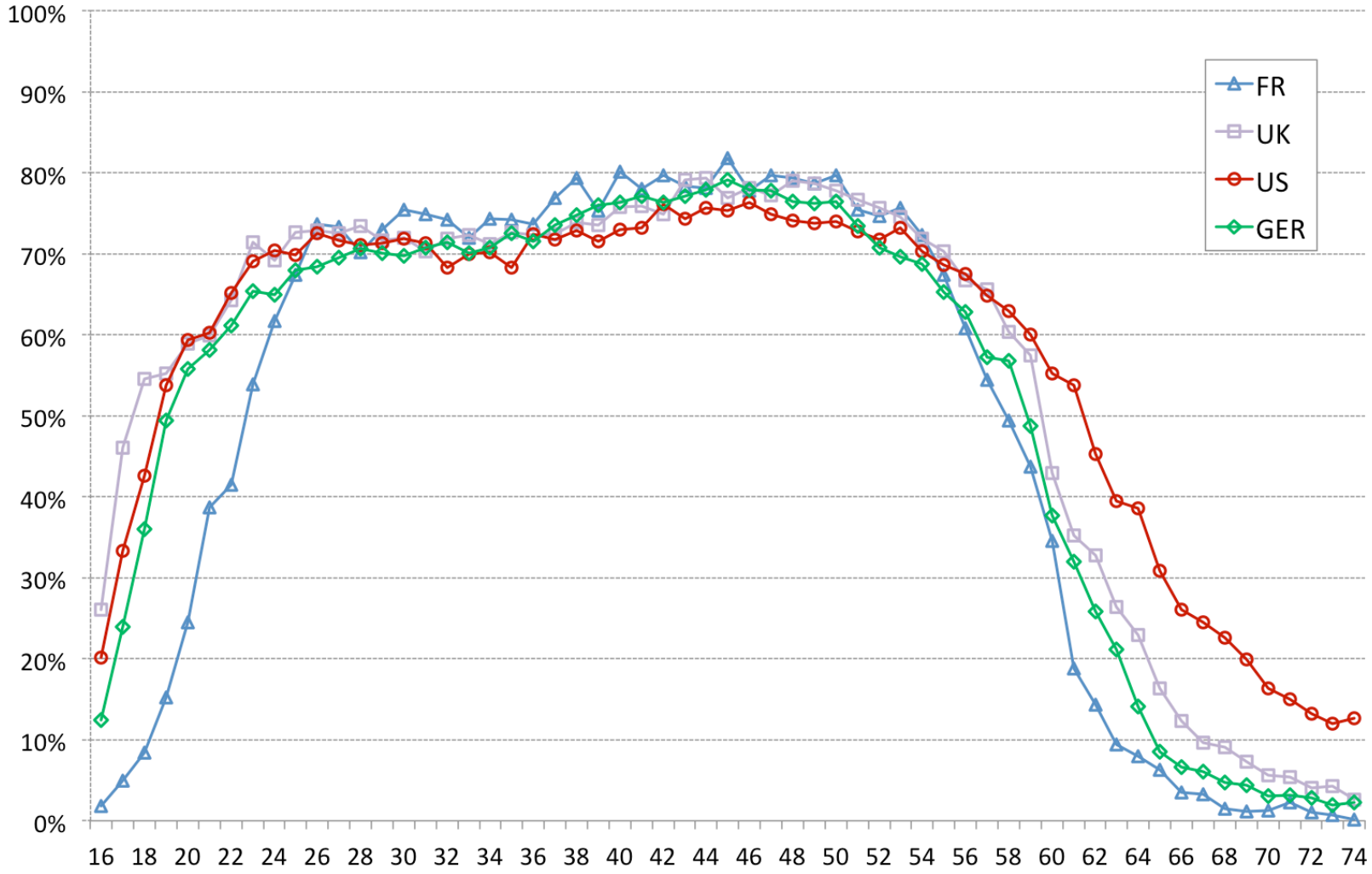
and for women …..

Female Employment by age



Blundell, Bozio, Laroque and Peichl (2014)

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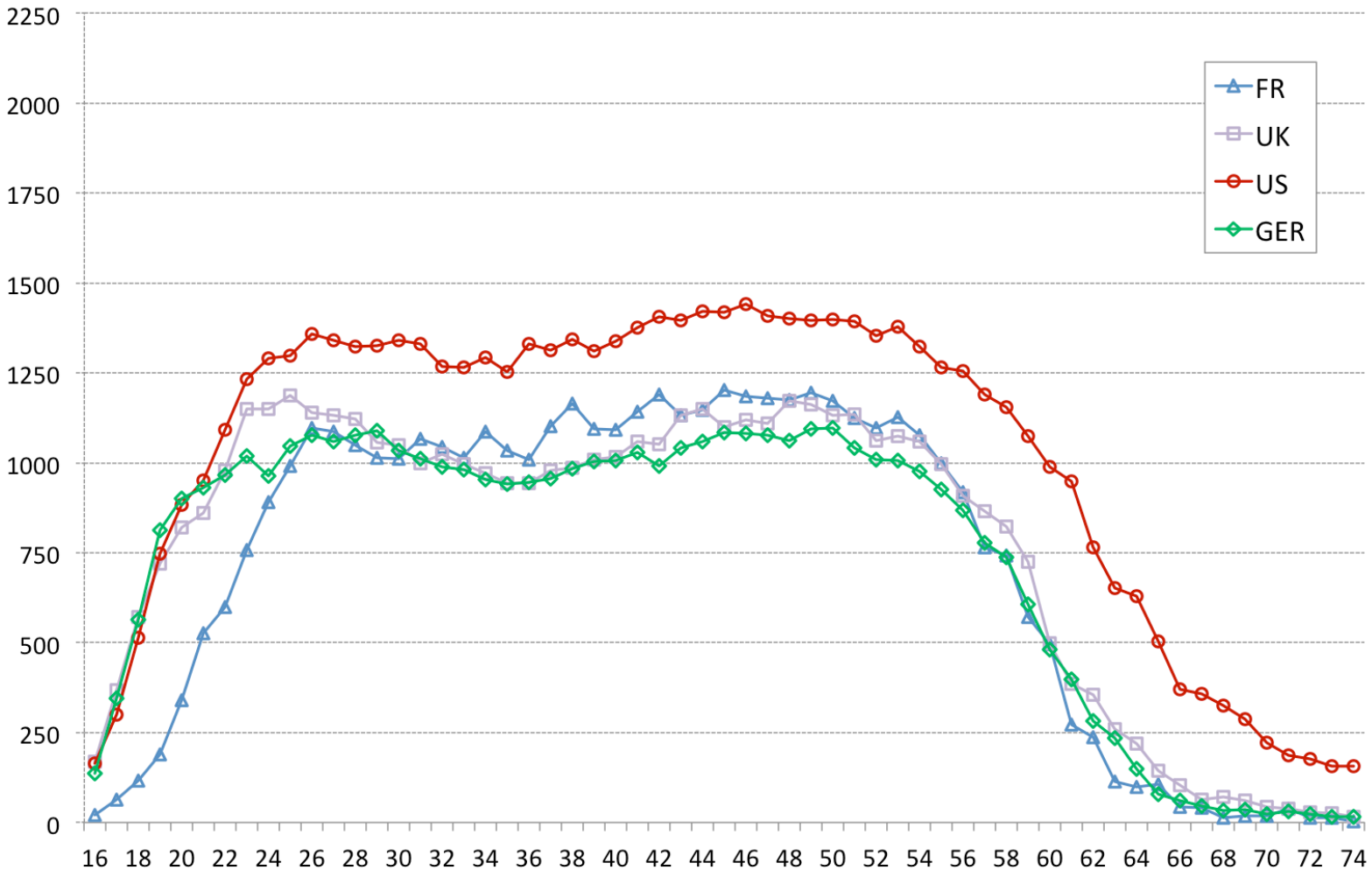
- It's not all the extensive margin
  - intensive and extensive margins both matter
  - and they matter in different ways by age and demographic groups
- Female hours?

Female Hours by age



Blundell, Bozio, Laroque and Peichl (2014)

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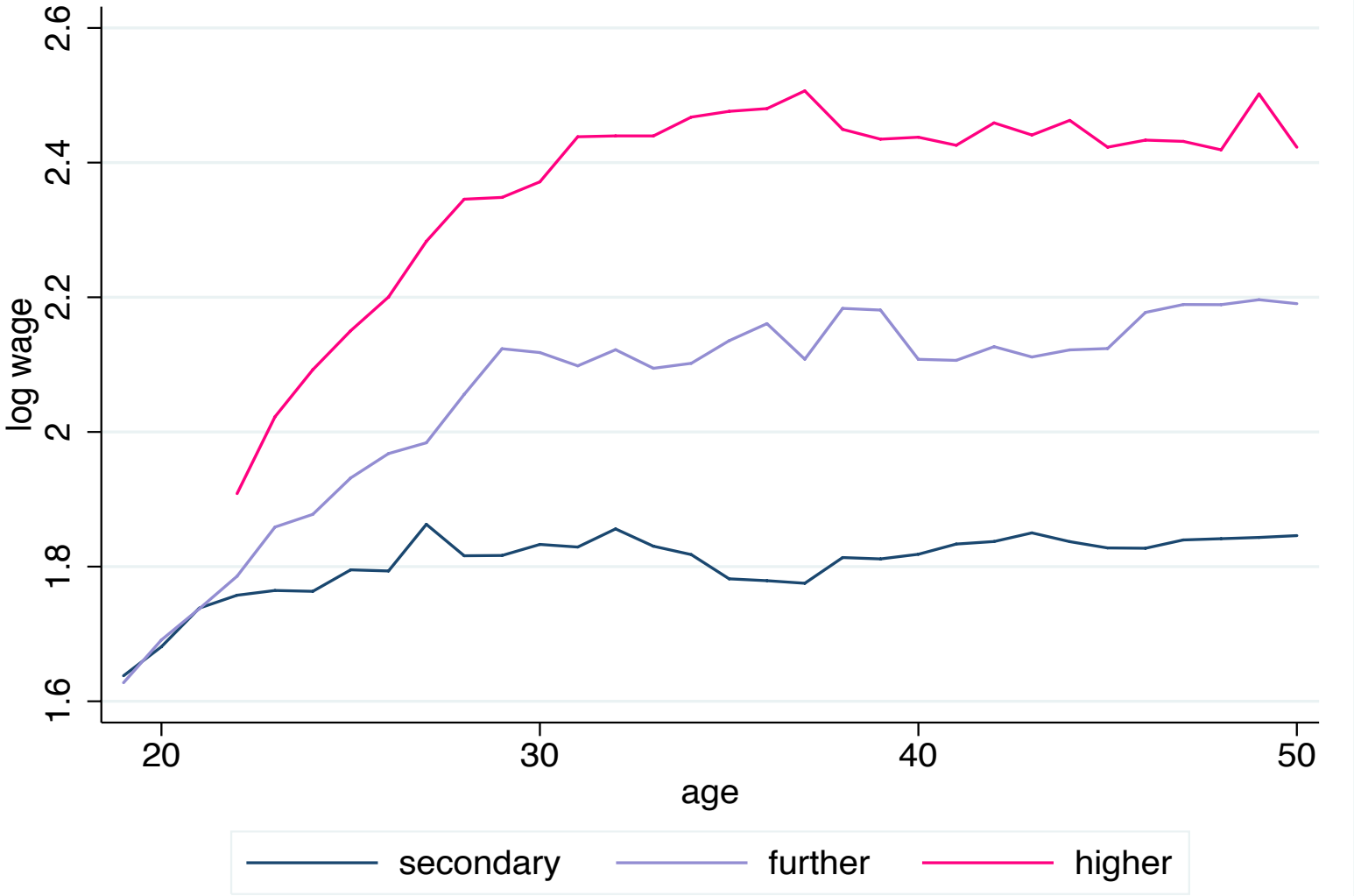
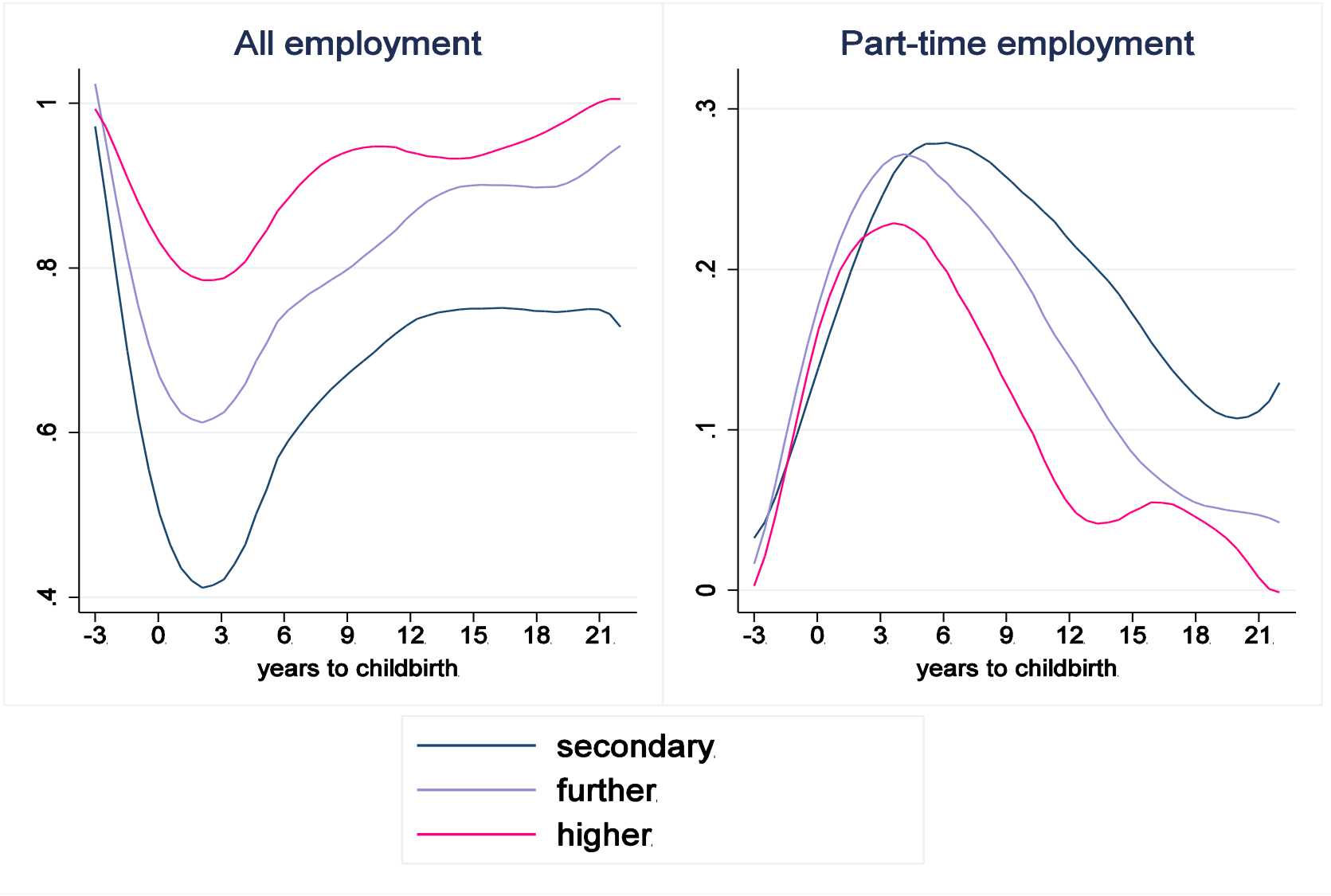
Wage profiles by education and age –Women

- 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

Summary briefly… key facts

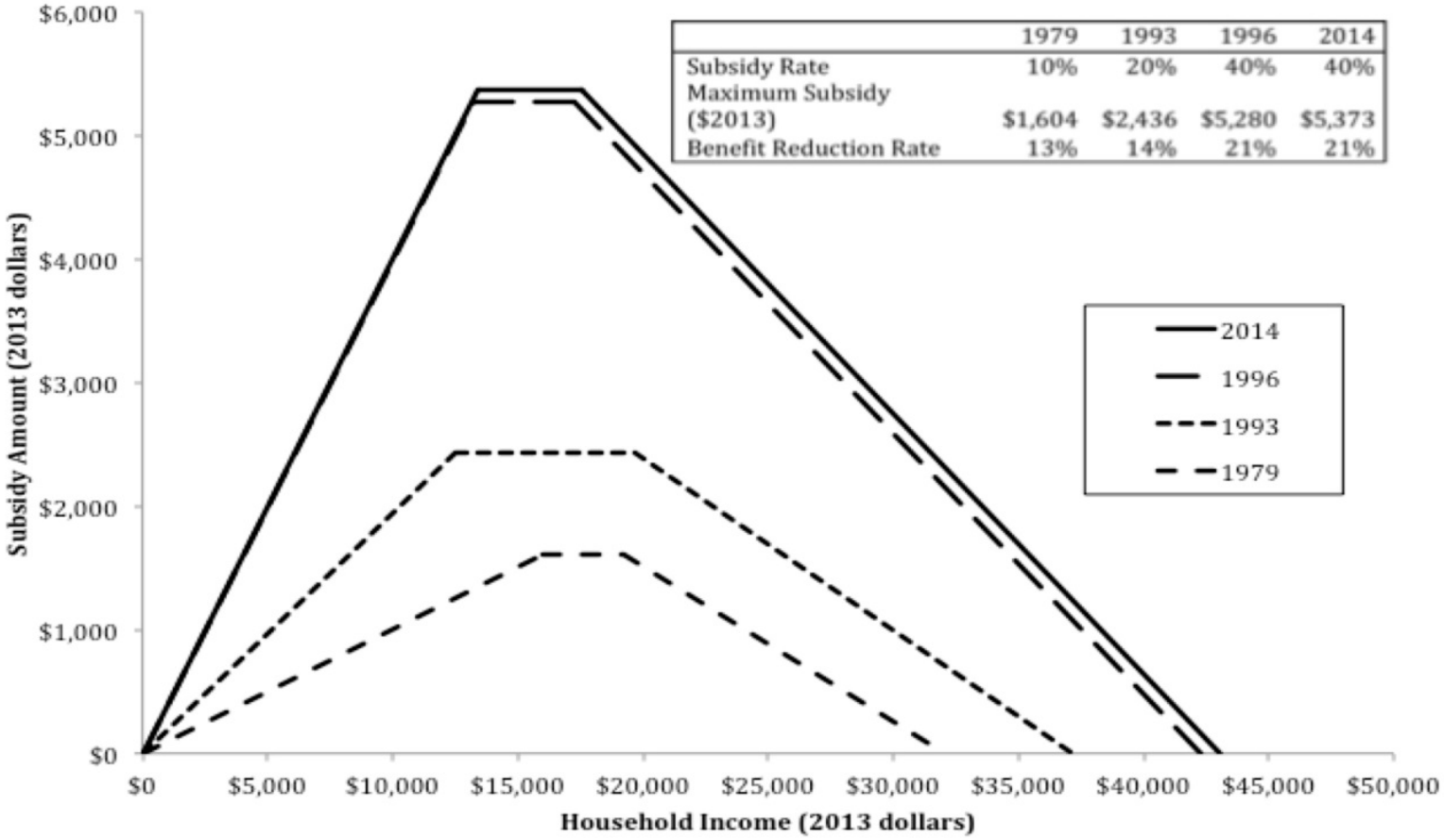
- A lifetime view of employment, earnings and hours
  - important differences at the extensive and intensive margins (key in the design of tax credits),
  - accentuated at particular ages and particular demographic groups (conditional policies?),
  - with higher attachment to the labor market for higher educated, where career length matters.
- Wages grow stronger and longer over the lifetime for higher educated
  - human capital accumulation during work is appears to be strongly complementary with education.
  - human capital accumulation appears essential to explain employment and wage profiles for those with more education.

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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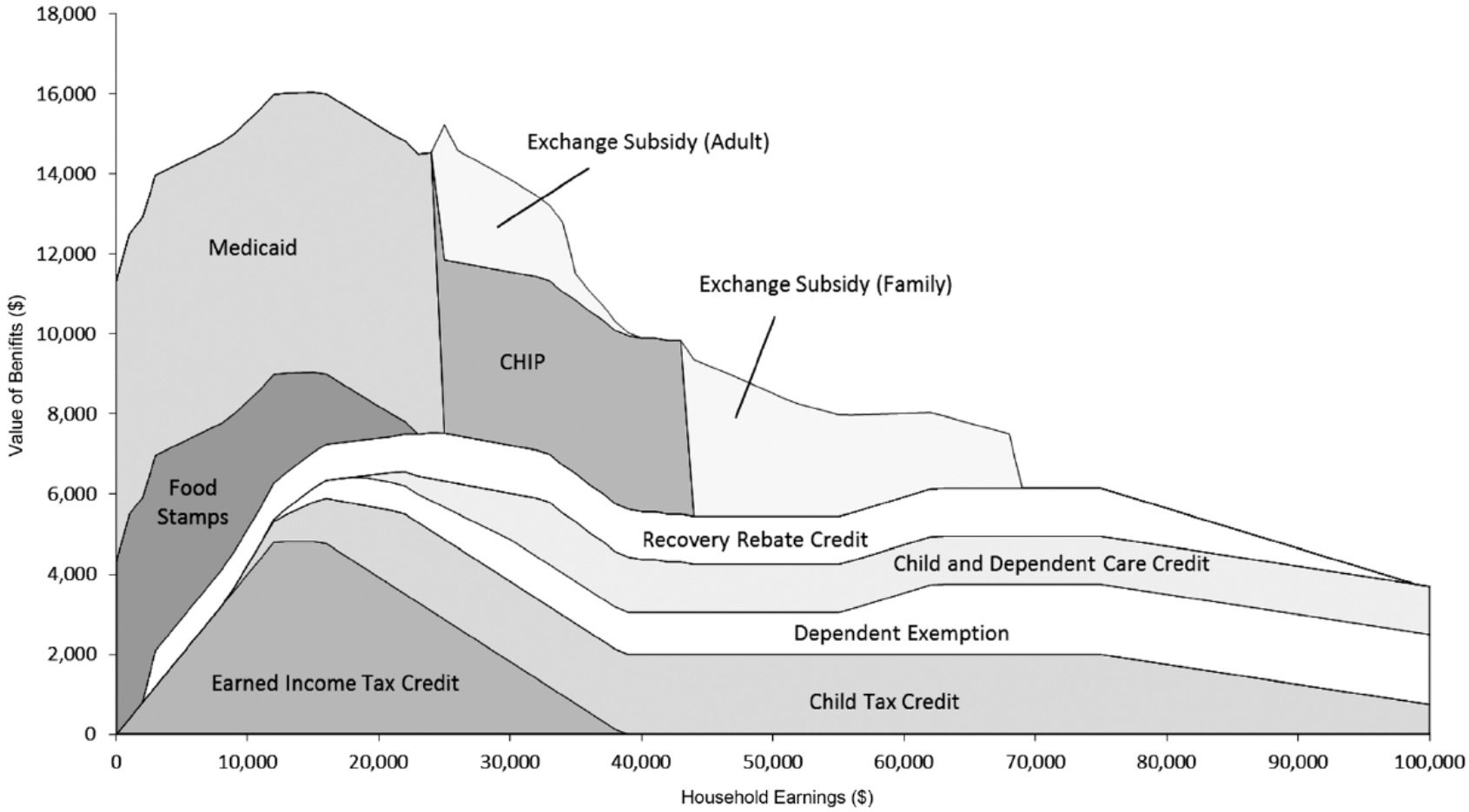
Universally Available Tax and Transfer Benefits

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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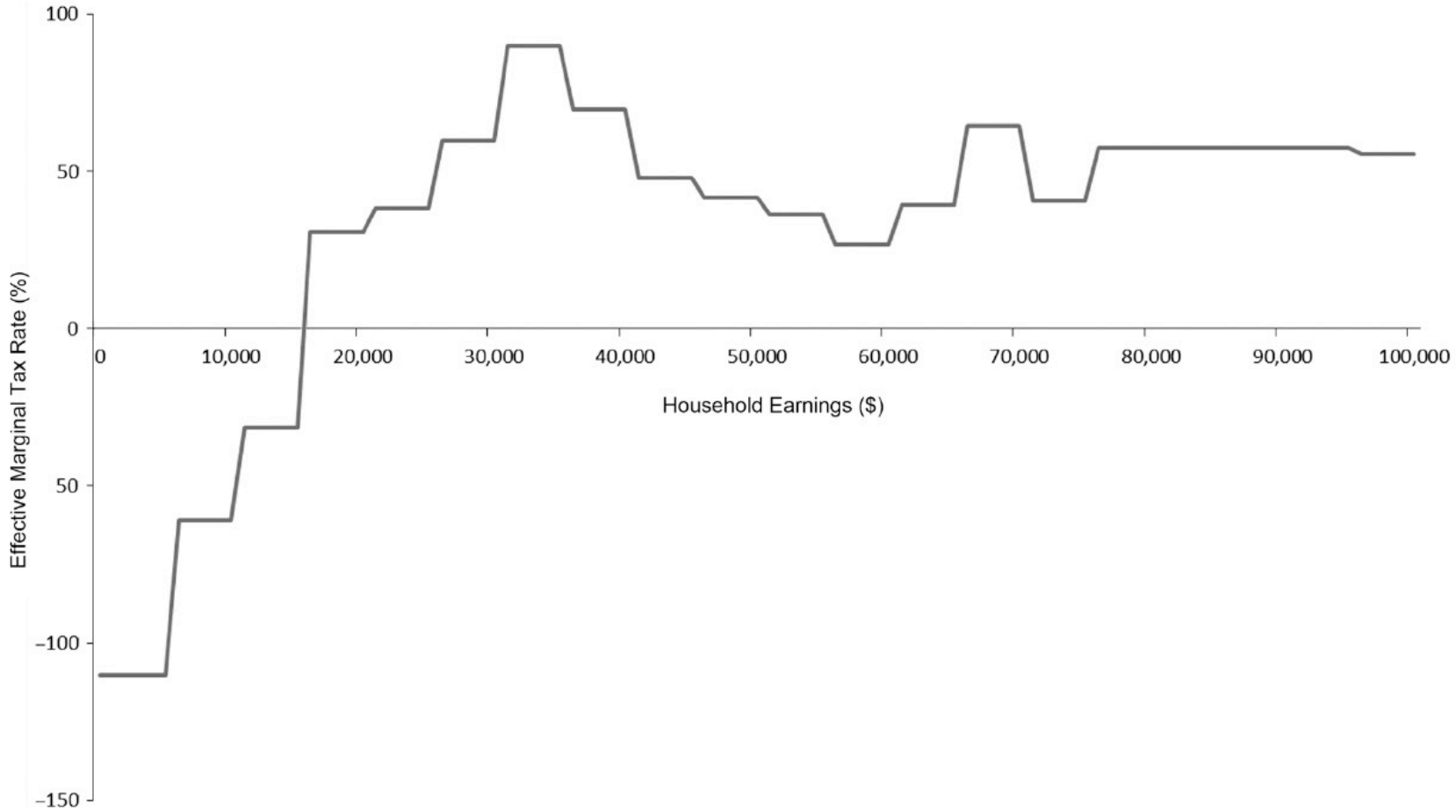
Effective Marginal Tax Rates

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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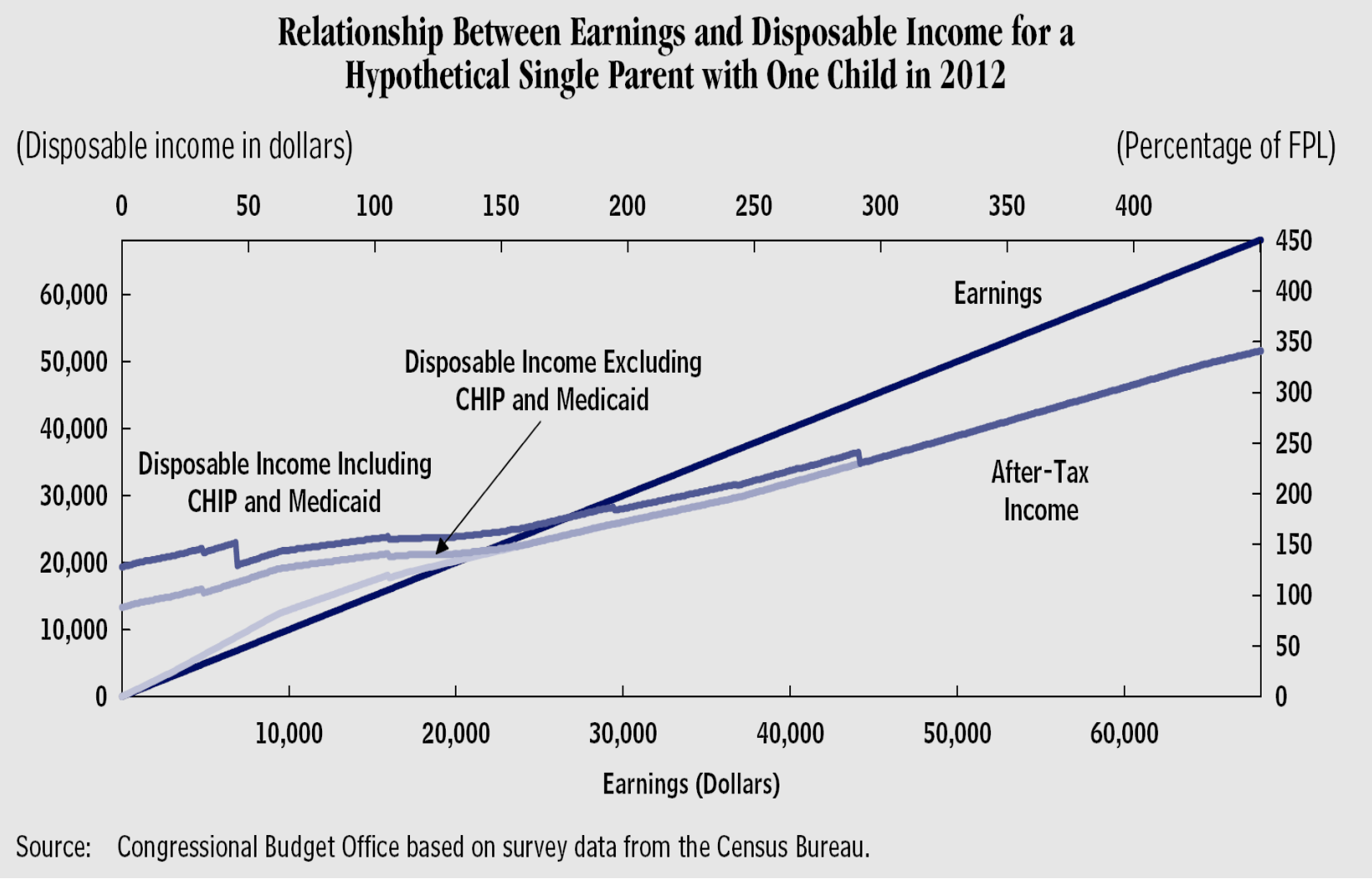
Budget Constraint for Single Parent: US 2012



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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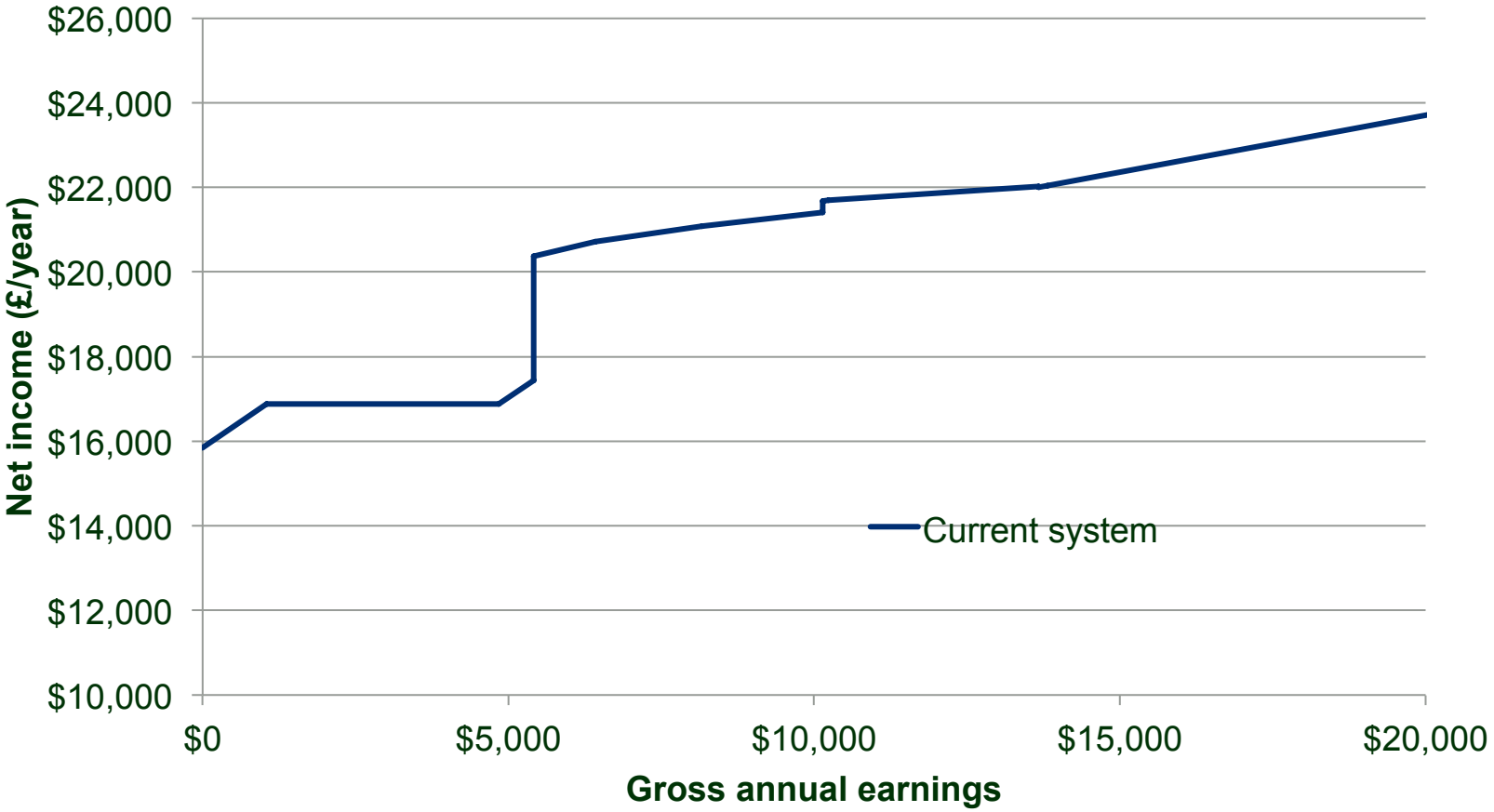
Budget Constraint for Single Parent: UK 2012



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

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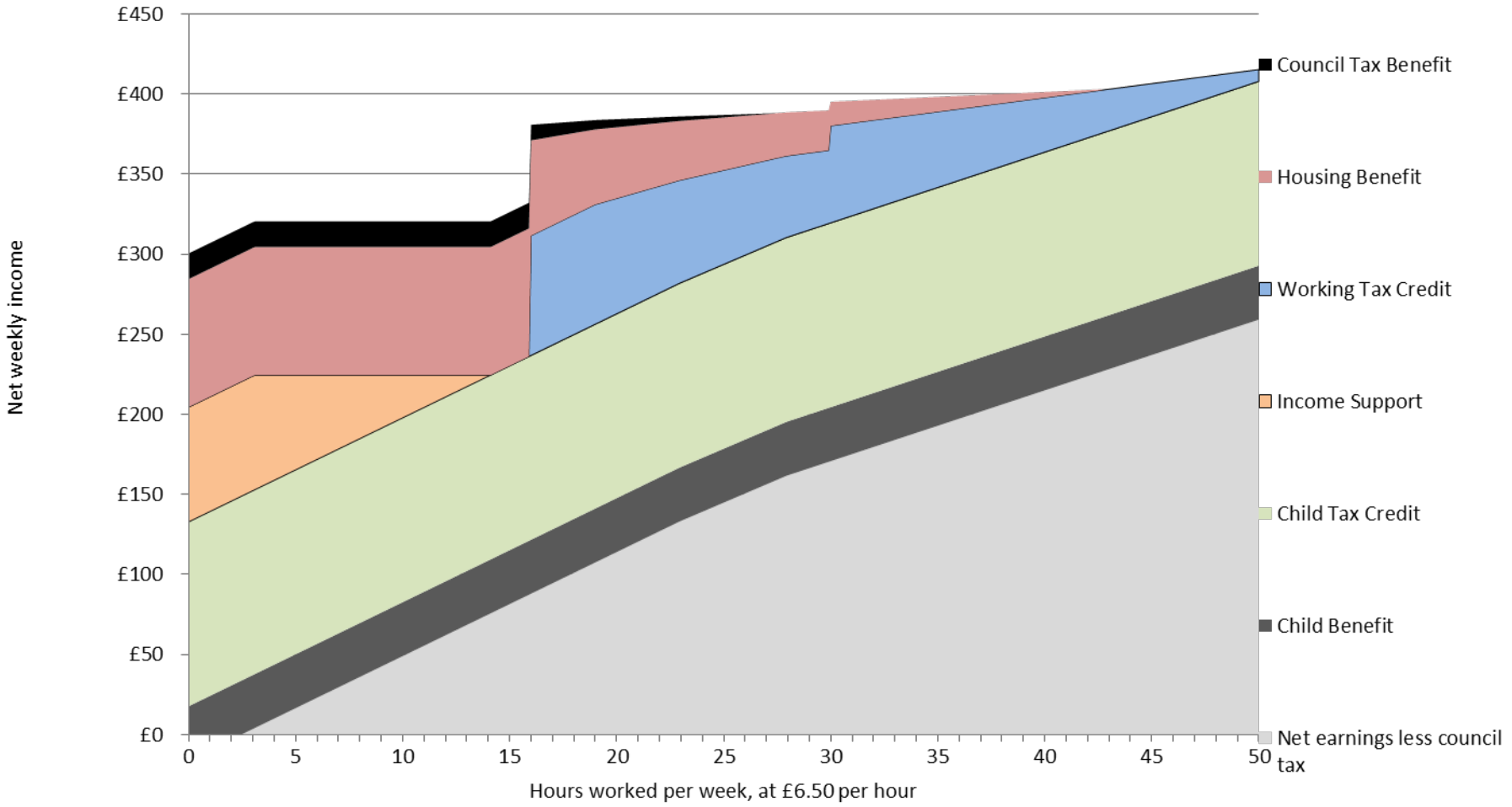

Notes: wage £6.50/hr, 2 children, no other income, £80/wk rent. Ignores council tax and rebates

Source: Mirrlees Review

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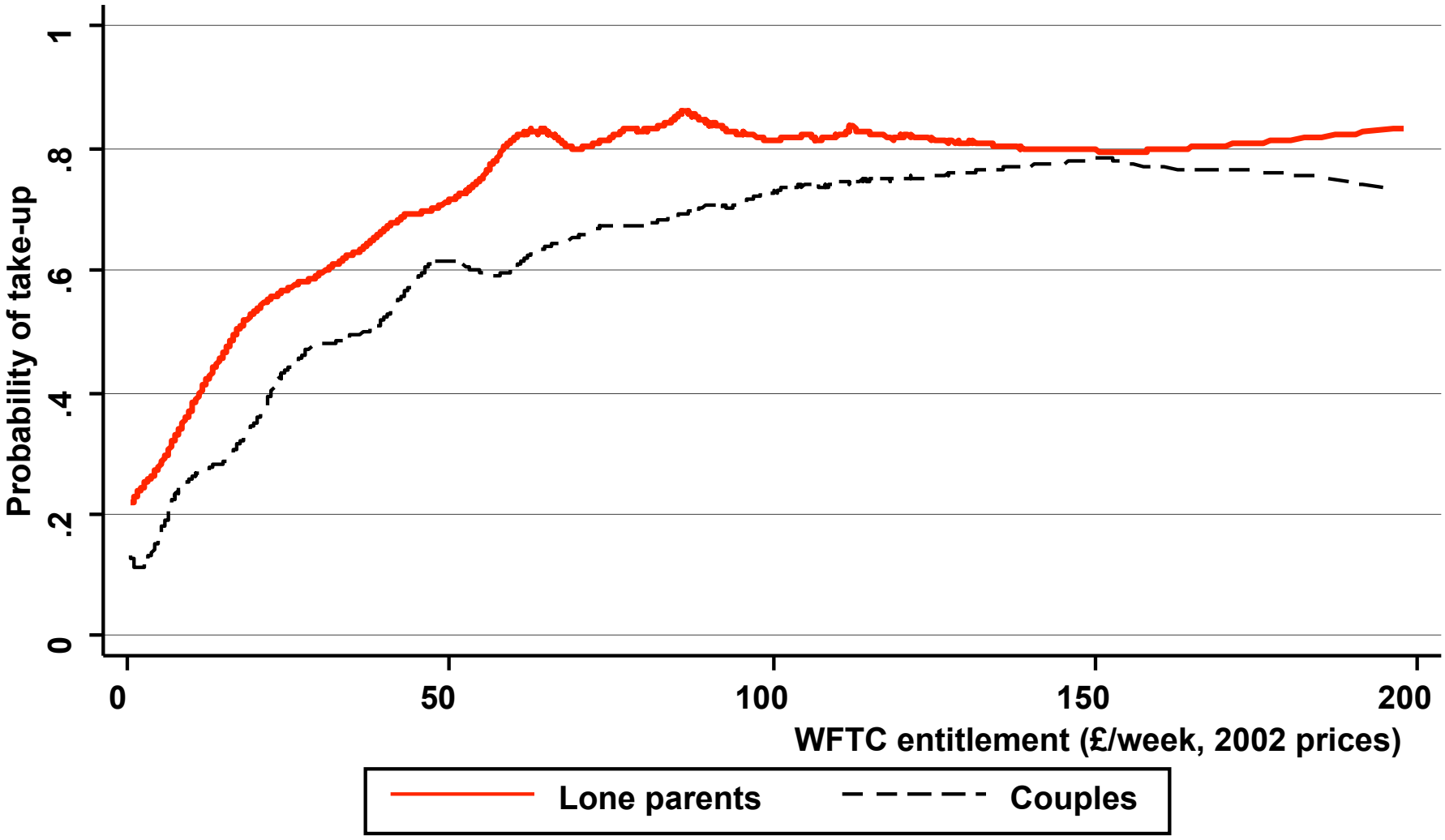
Effective tax rates on lower incomes…..

- 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 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?
  - Take-up, information and stigma
  - ‘Bunching’ at kink points

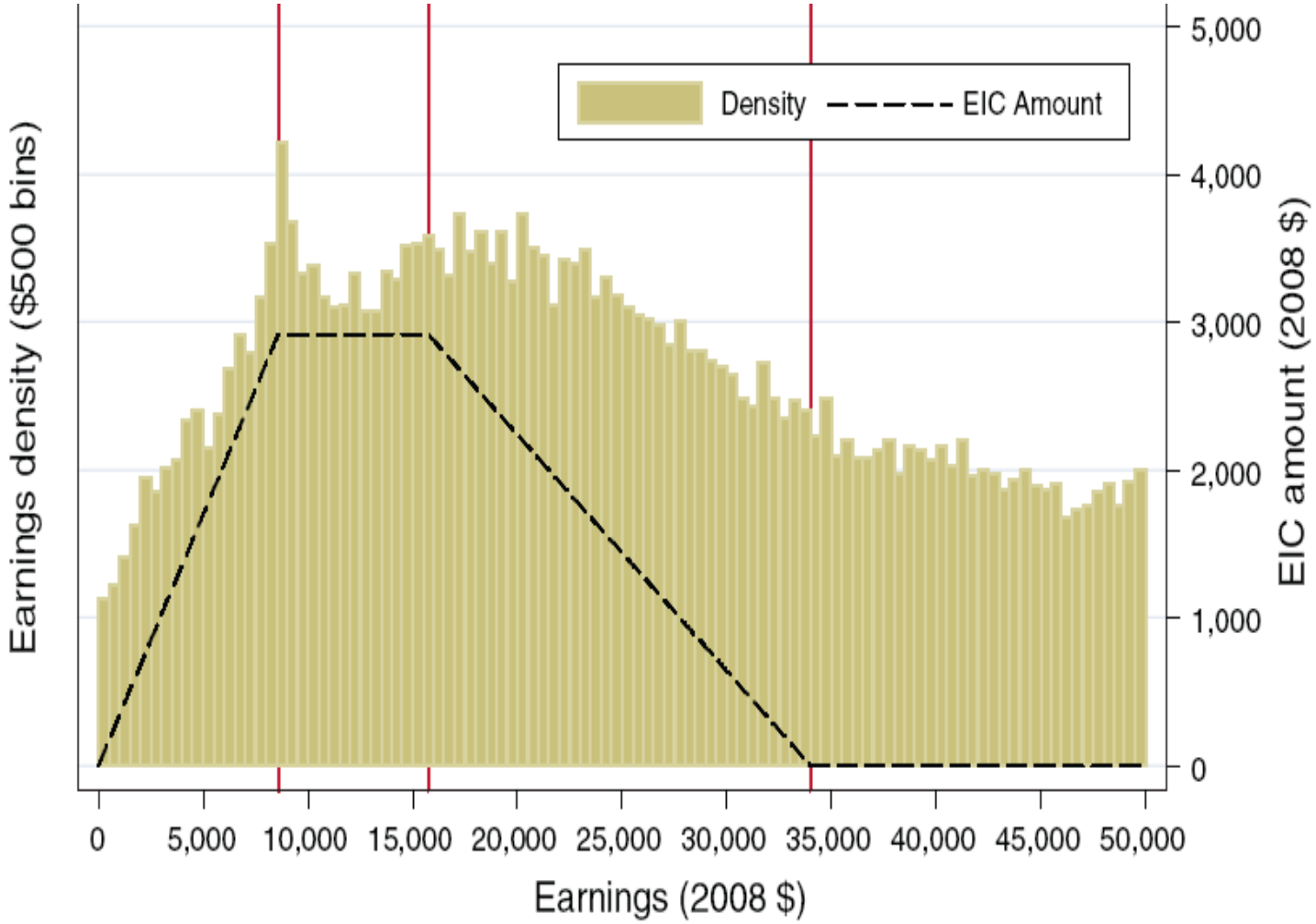
Variation in tax-credit ‘take-up’ with value of entitlement



Source: Mirrlees Review (2011)

Bunching at Tax Kinks and the EITC

One child families: US



Source: Saez (2010)

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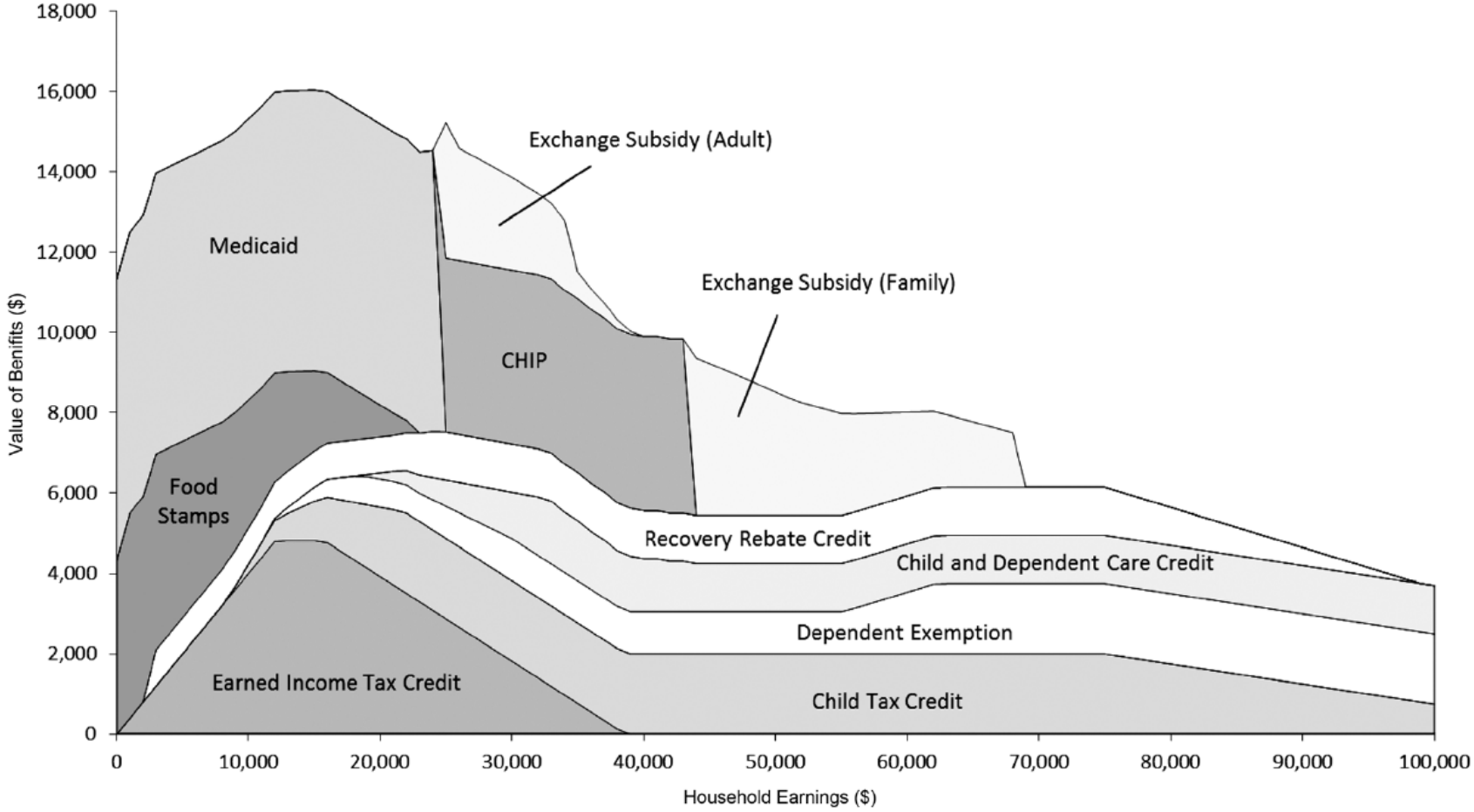

Source: Urban Institute (NTJ, Dec 2012).
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Bunching at Tax Kinks and the EITC

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Source: Saez (2010)

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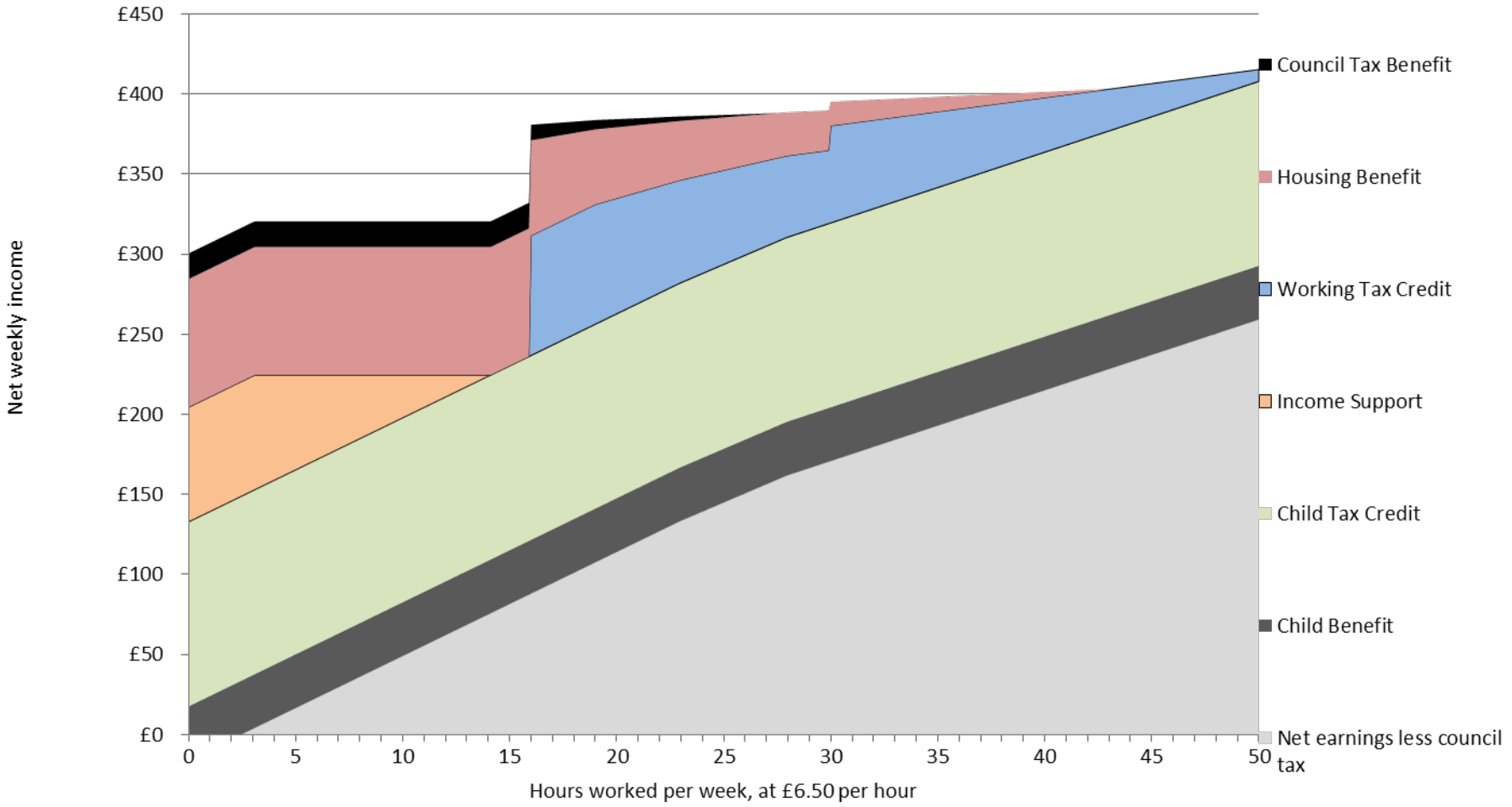

Notes: wage £6.50/hr, 2 children, no other income, £80/wk rent. Ignores council tax and rebates

Source: Mirrlees Review

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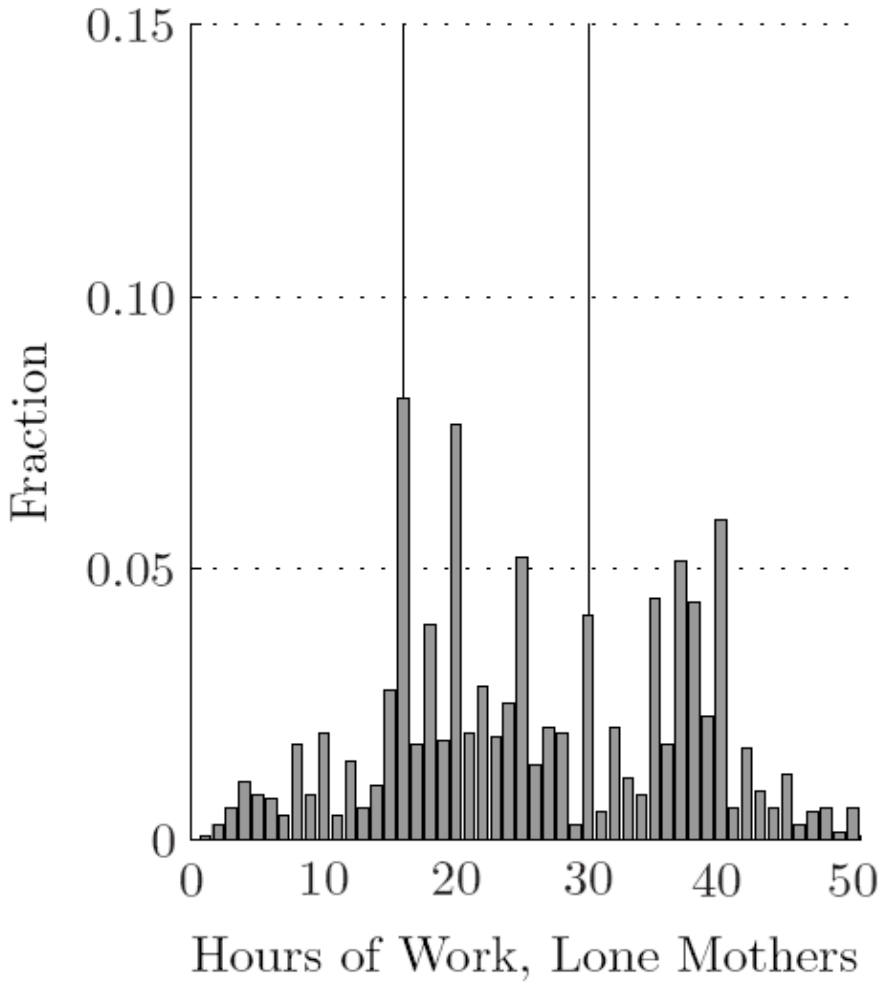
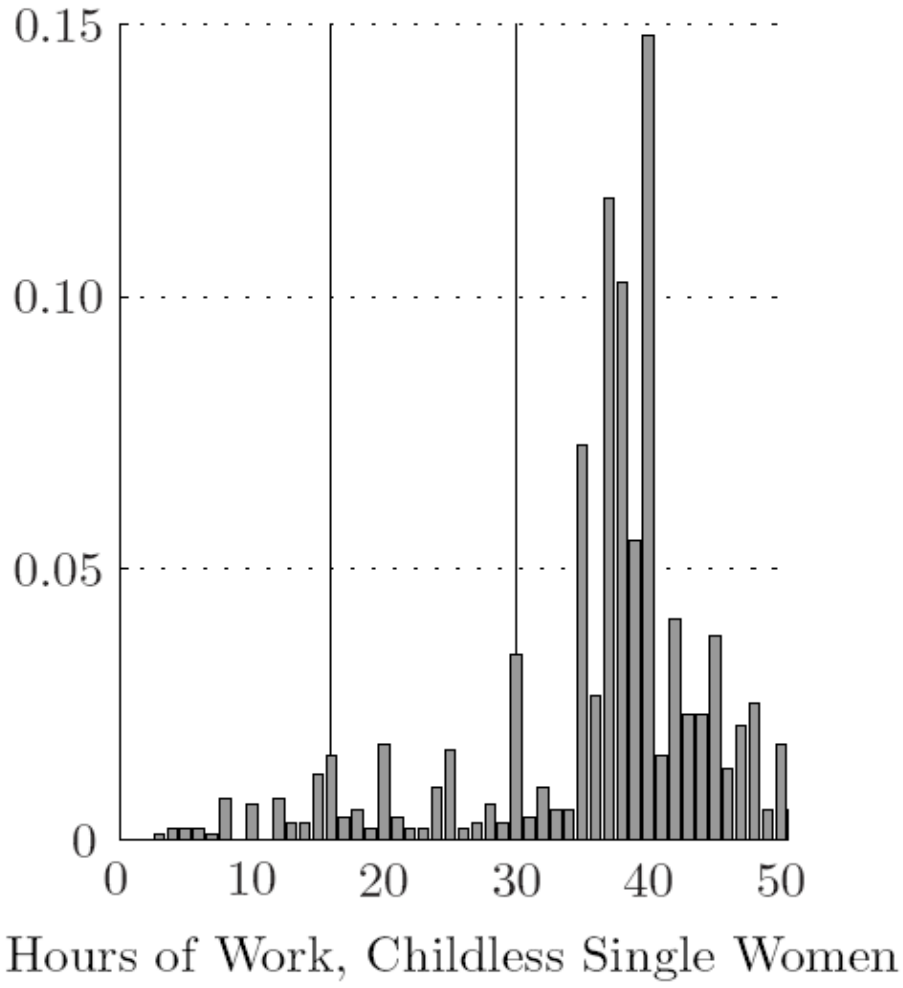
Are these hours rules salient?

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





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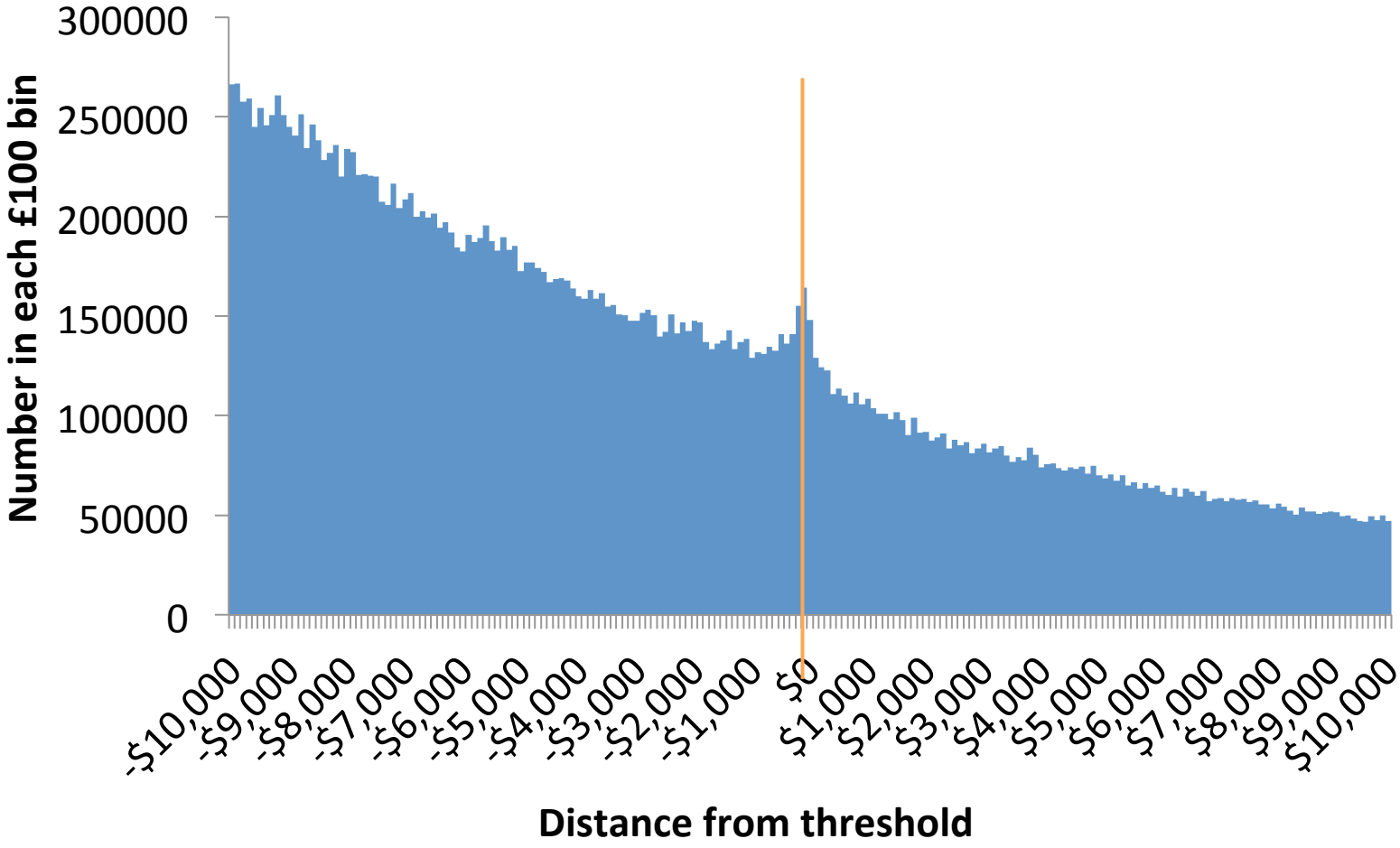
Bunching at the higher rate threshold, UK 2007–08



Source: Mirrlees Review

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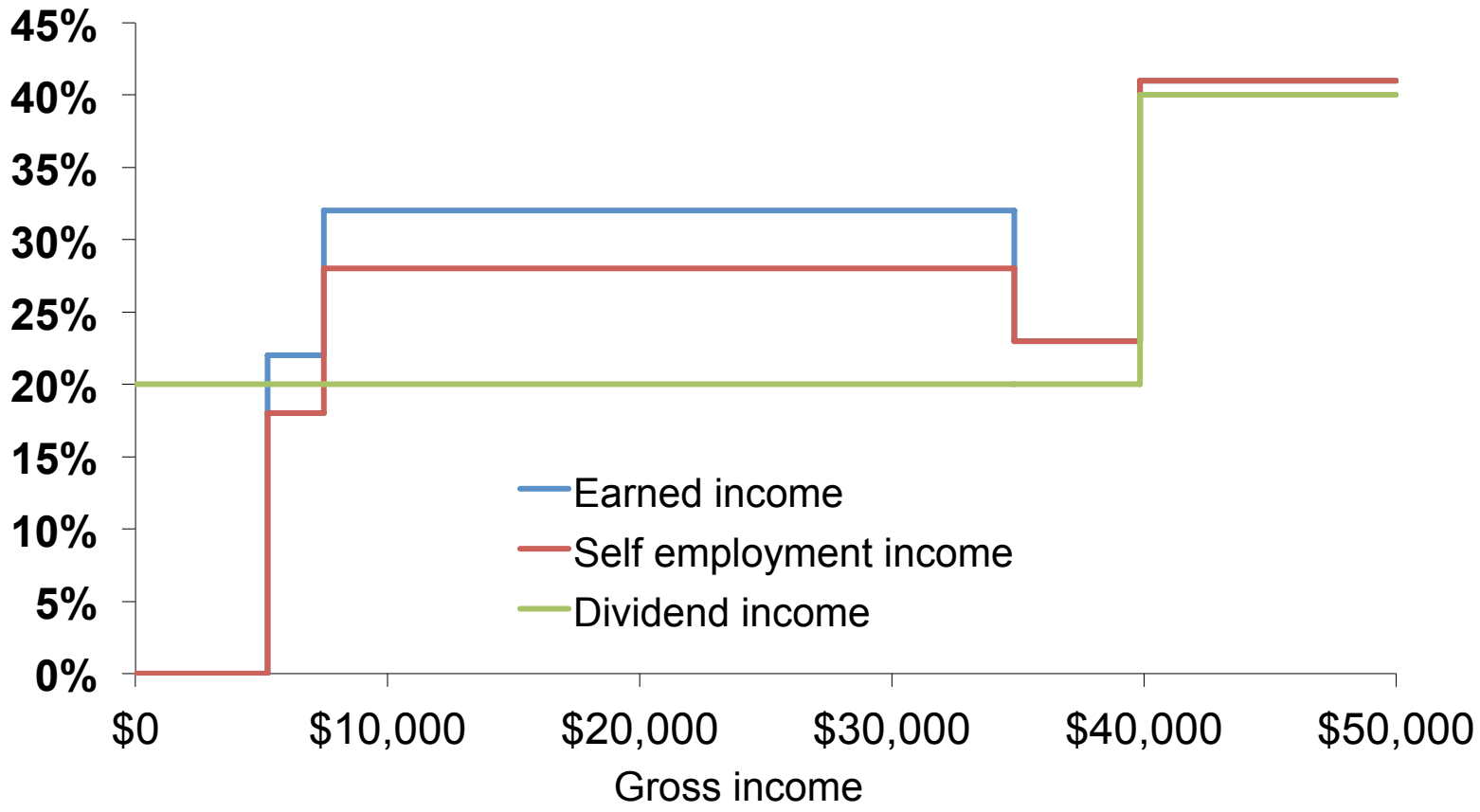
Marginal tax rates by income level, UK 2007–08



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

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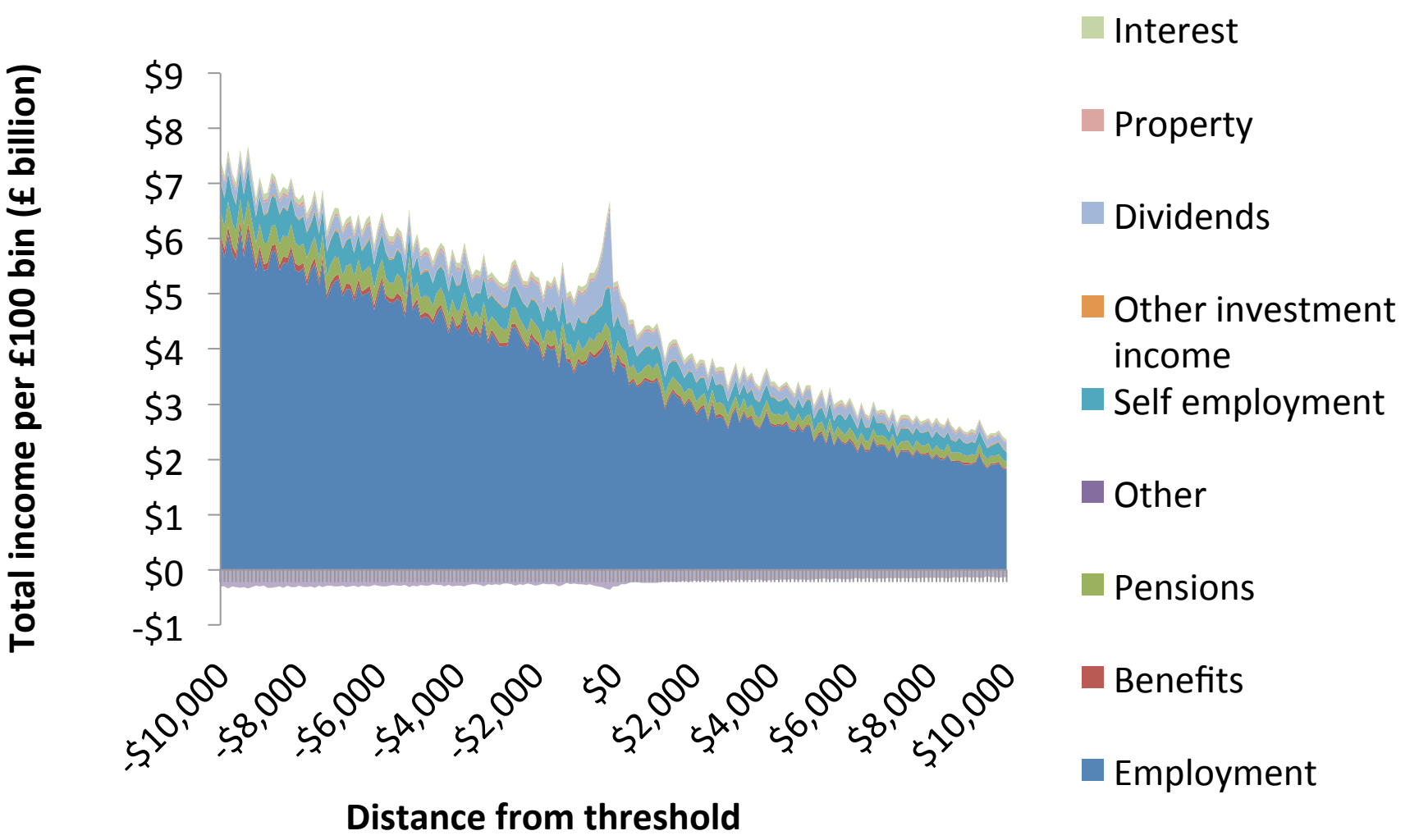
Composition of income around the higher rate tax threshold



=> measure taxable income elasticity

Source: Mirrlees Review

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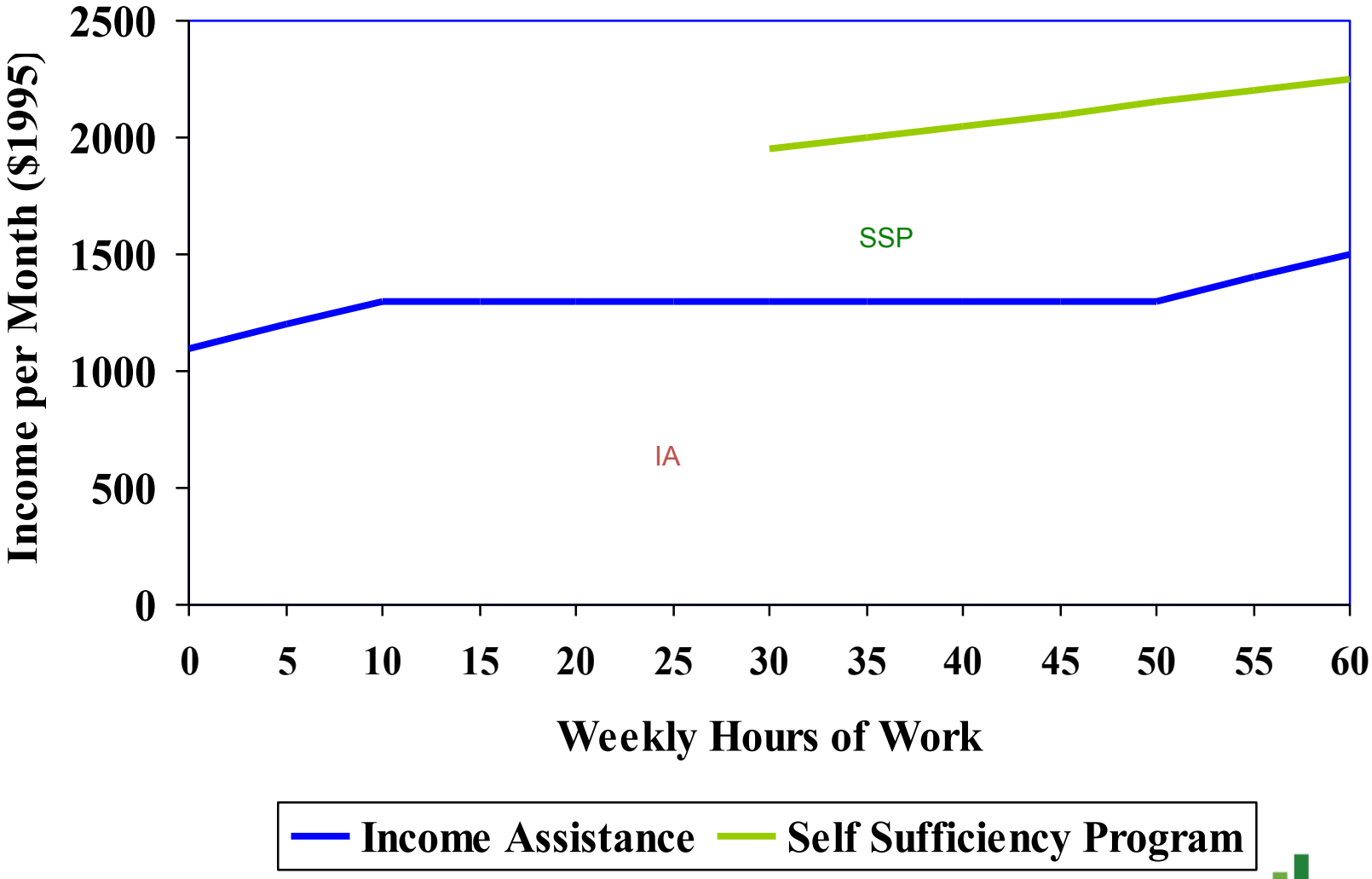
4. Evidence on the size of responses

- This is where the rigorous *microeconometric* analysis of causality comes into play.
- 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 a the pay-offs and constraints faced by individuals and families
     - comprehensive in scope and allow *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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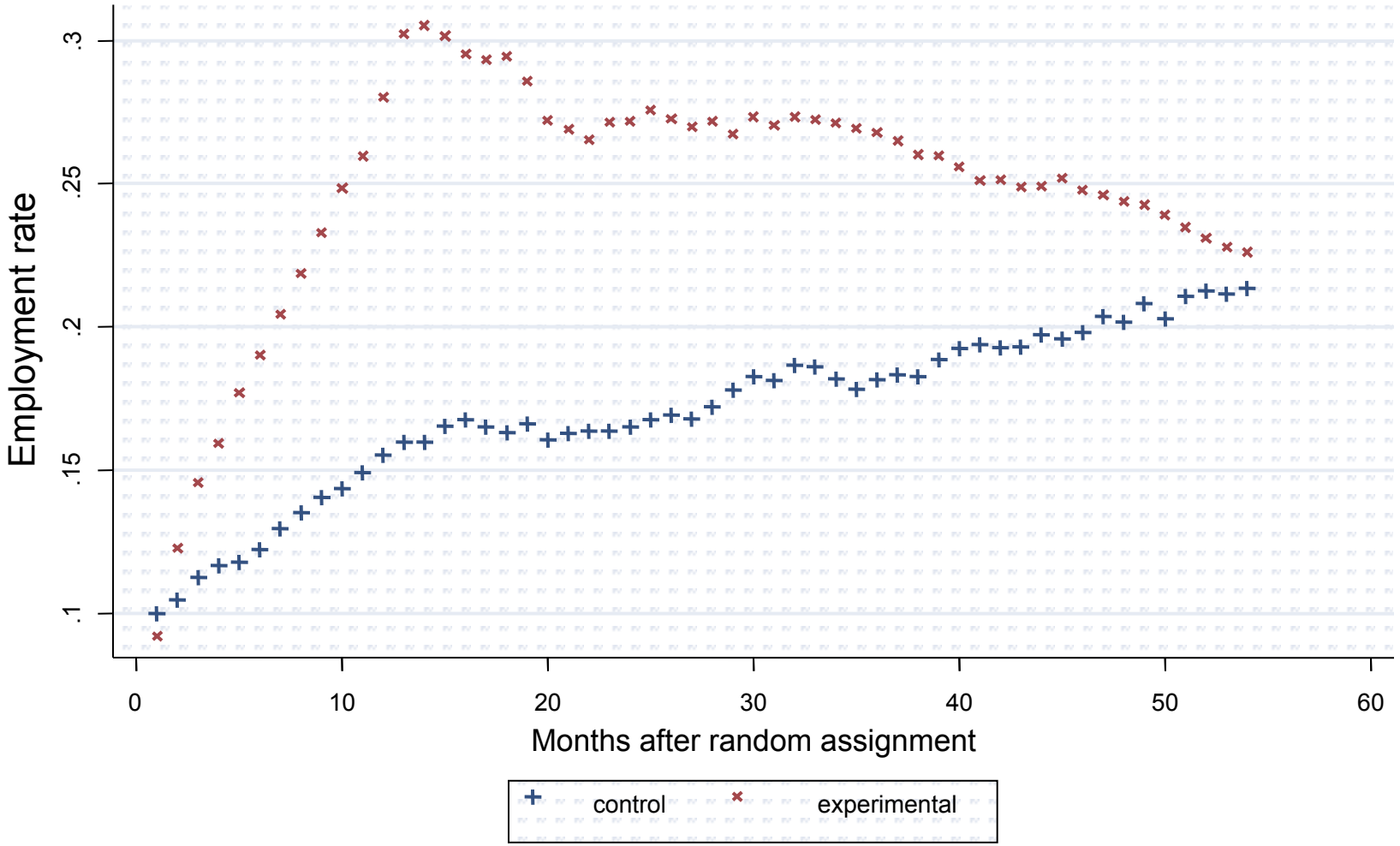
SSP: Employment Rate by months after RA



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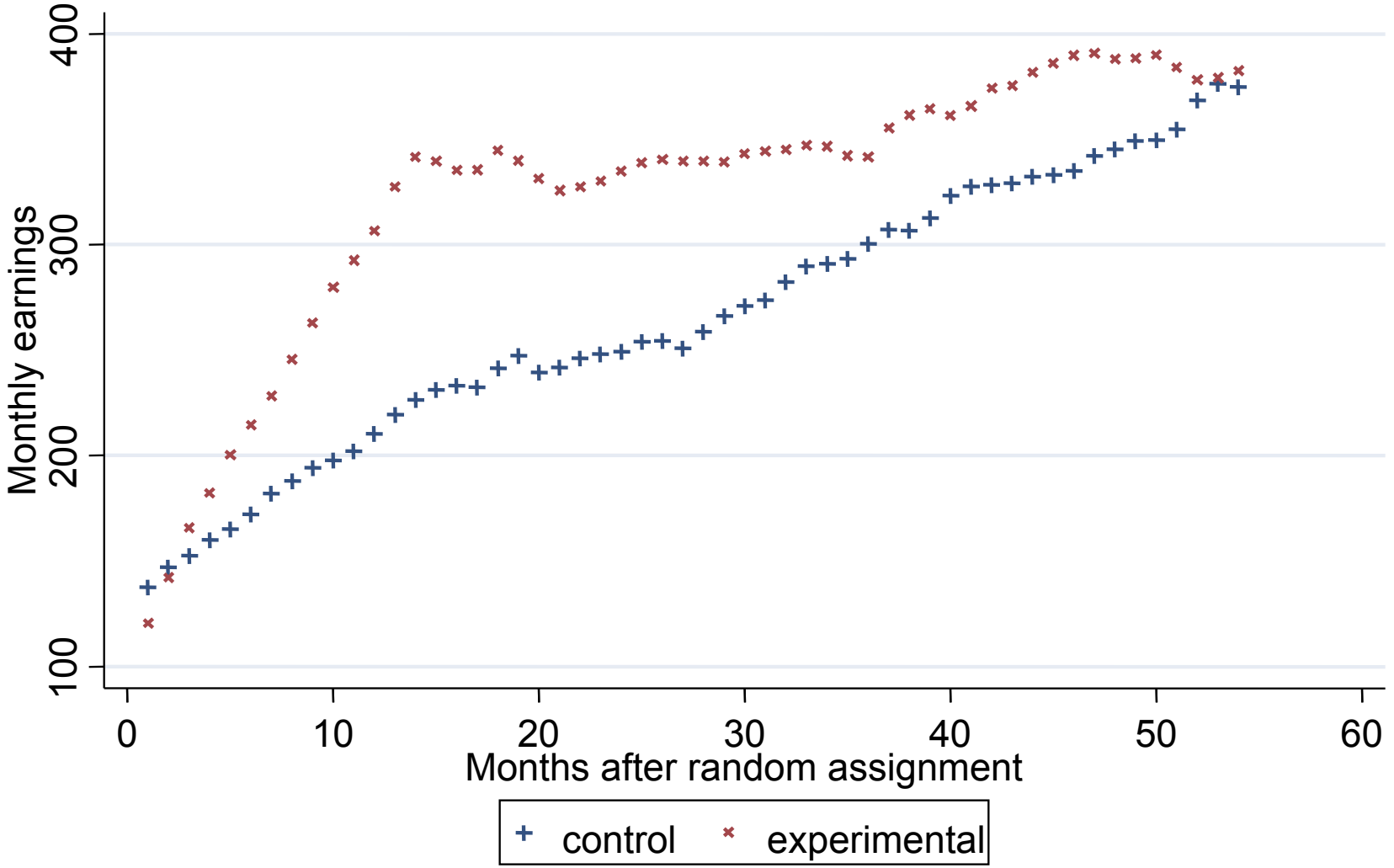

Blundell and Moffitt (2010)

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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

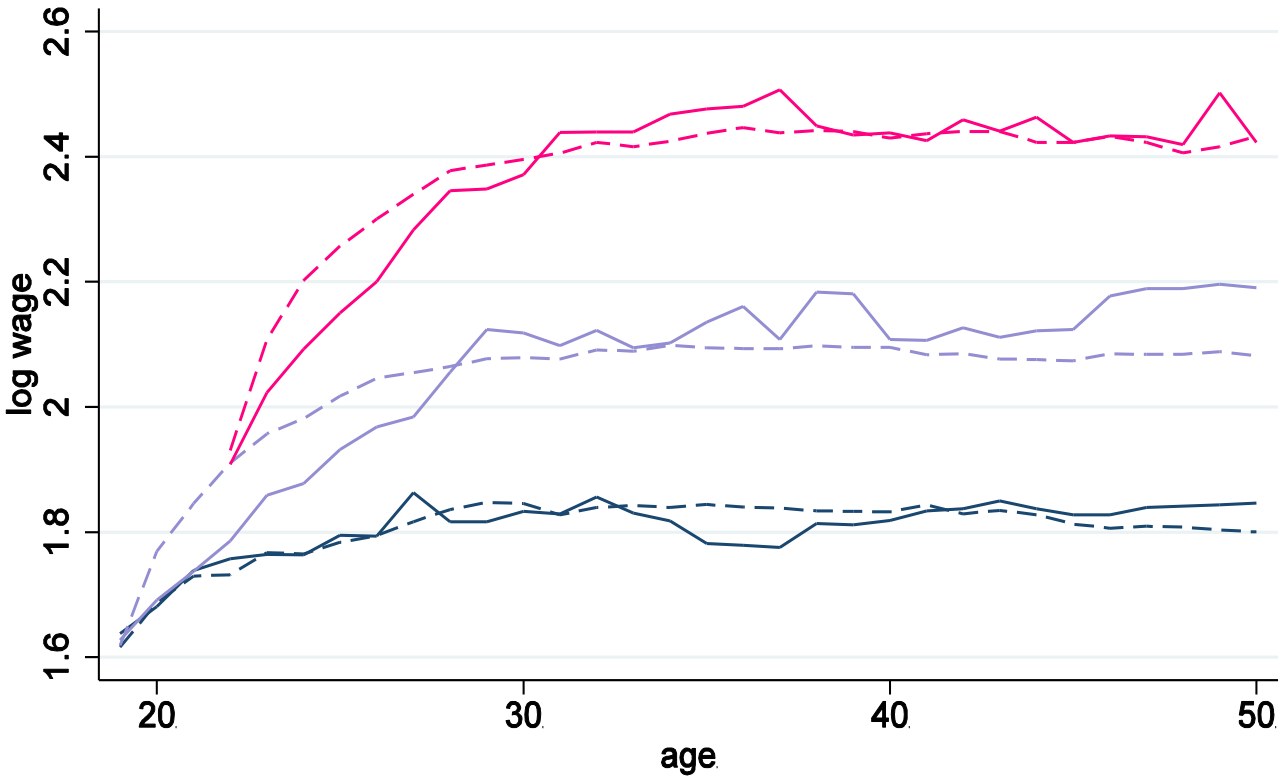
$$exp_{is,t} = (1-\delta_s)exp_{is,t-1} + FT_{ist} + \theta_{PT}PT_{ist}$$

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

- 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).

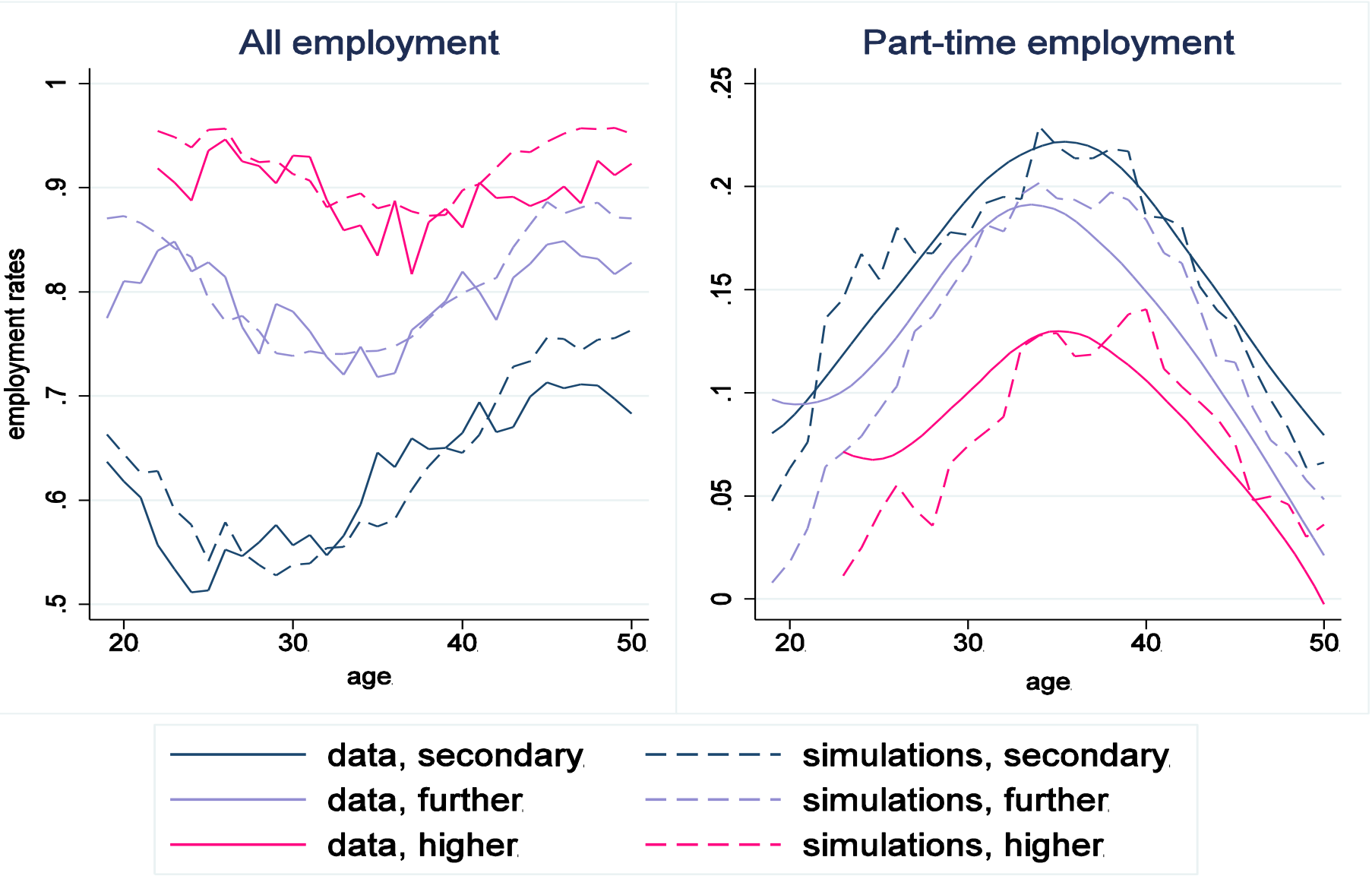
Wages by education and age - a structural model



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

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

Women's employment – a structural model



Source: Blundell, Dias, Meghir and Shaw (2016)

Findings: Younger Workers

- Employment and hours
  - substitution effects are generally larger than income effects
- and, especially for low earners,
  - responses are larger at the extensive margin—employment
  - than at the intensive margin—hours of work.
- These responses are largest for
  - women where the youngest child is young school-age.
- For college educated
  - labour supply elasticities appear low at young ages.

Why is this evidence important for tax reform/design?

- A ‘large’ extensive elasticity can ‘turn around’ the impact of declining social weights (Saez, Laroque) in the ‘Mirrlees’ optimal tax formula
  - implying a higher transfer to low wage workers than those out of work,
  - a role for earned income tax credits.
- Significant differences in responses by age and demographic type, suggesting ‘conditional’ EITCs
  - parents with school age children,
  - people aged 55-70.
    - see Blundell and Shephard (REStudies, 2012).

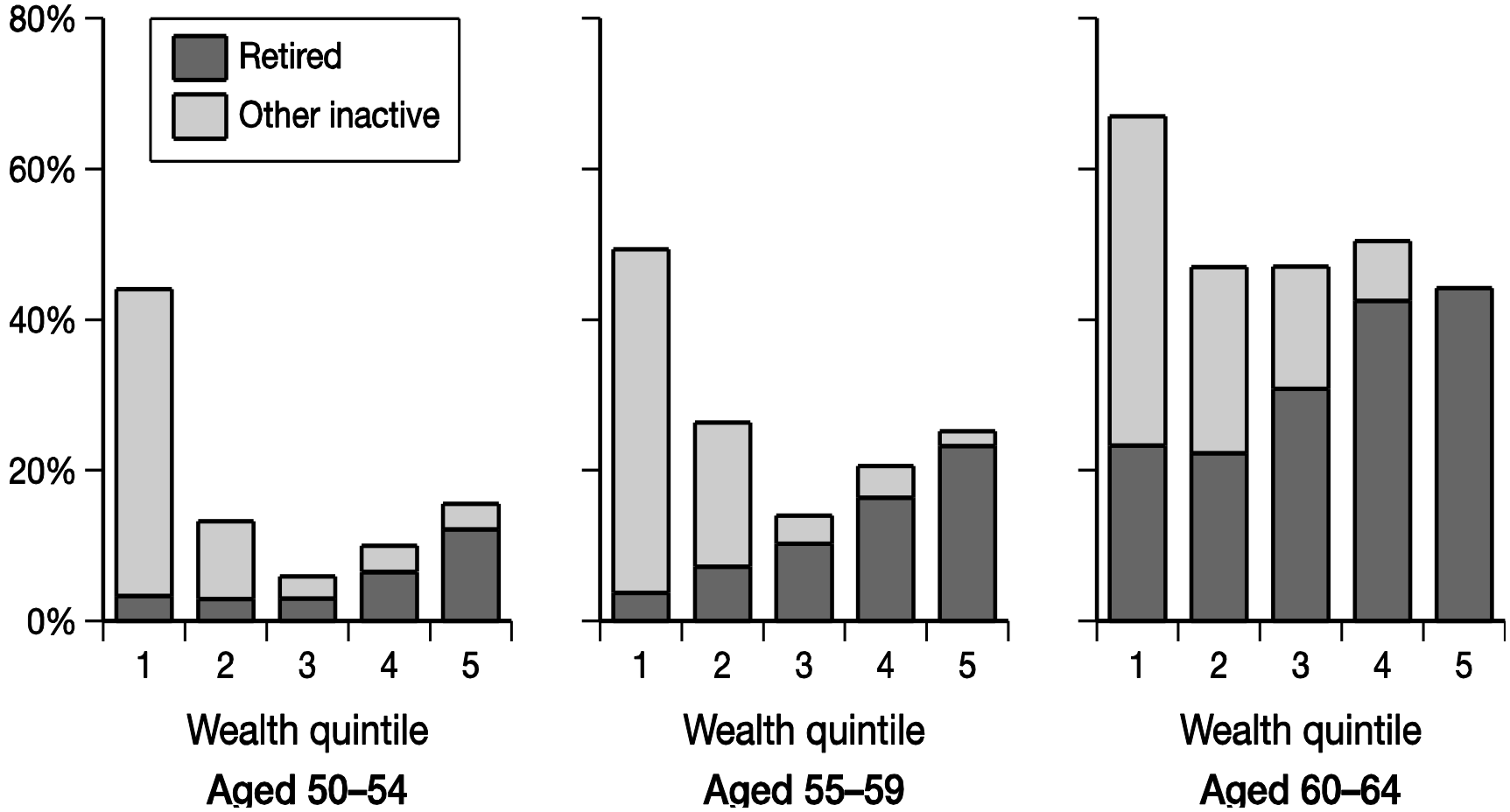
Human capital

- 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 career choice, career length and retirement;
  - in turn, retirement policies effect human capital incentives.

Older workers…

- 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 educated are 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, *ELSA*

UK early retirement and inactivity by age and wealth quintile



Note: Wealth quintiles are defined within each five-year age group.
Source: Sample of men from the English Longitudinal Study of Ageing.

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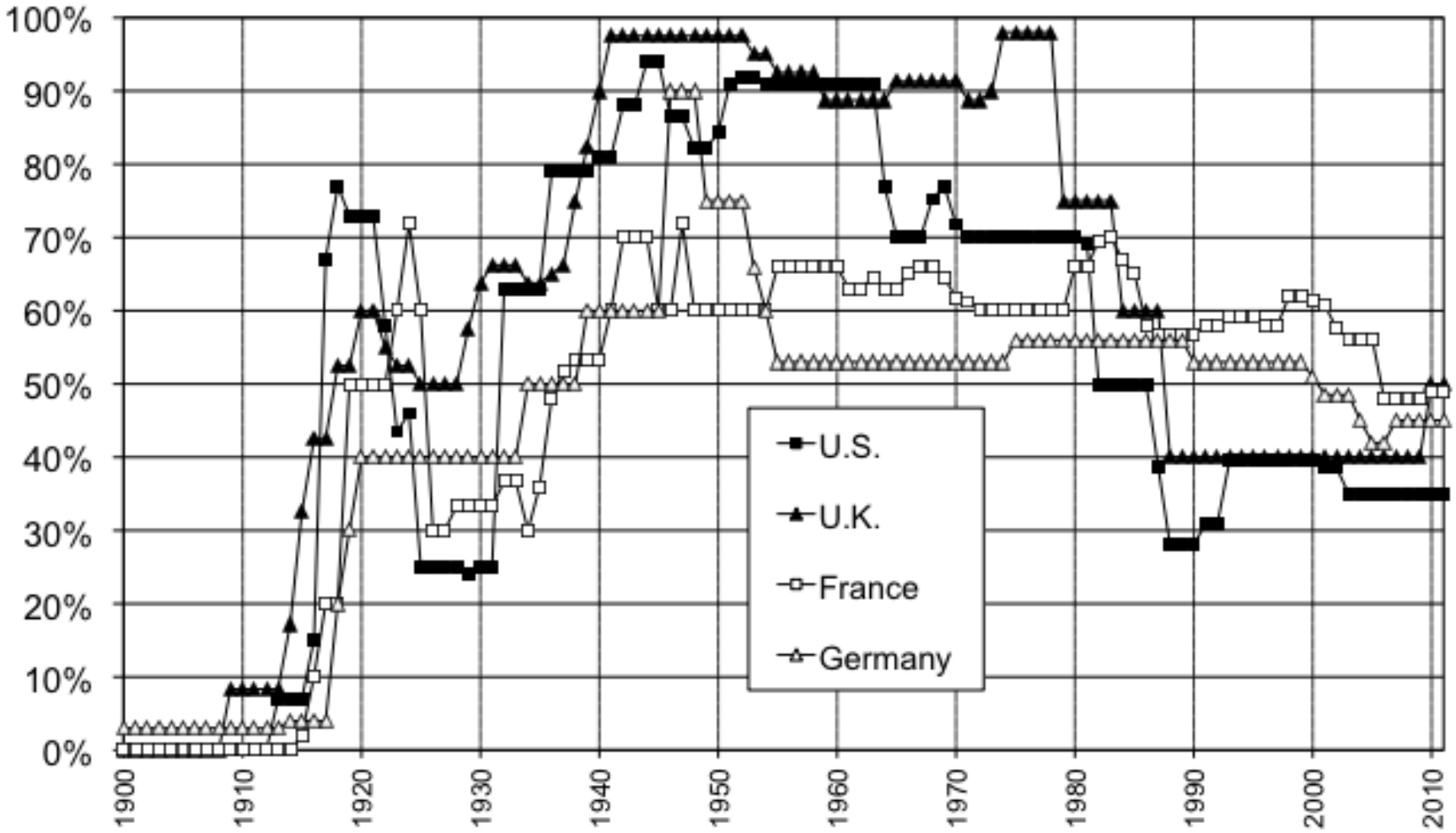
For top income earners, and self-employed, we typically consider the '*taxable income elasticity*'

- Captures *additional* avoidance and tax shifting responses
  - the 'elasticity' can be expected to fall as the *tax base* broadens
- As Slemrod and Kopczuk (2002) note: '*When personal tax rates on ordinary income rise, evasion may increase, businesses may shift to corporate form, there may be a rise in deductible activities, and individuals may rearrange their portfolios and compensation packages to receive more income as tax-preferred capital gains.* ***These responses to higher taxes, and all others, will show up in declines in taxable income****, and there is a growing body of evidence, that, at least for high-income individuals, the elasticity of taxable income to the marginal tax rate is substantial.*'

The History of Top Tax Rates



Top Marginal Income Tax Rates, 1900-2011

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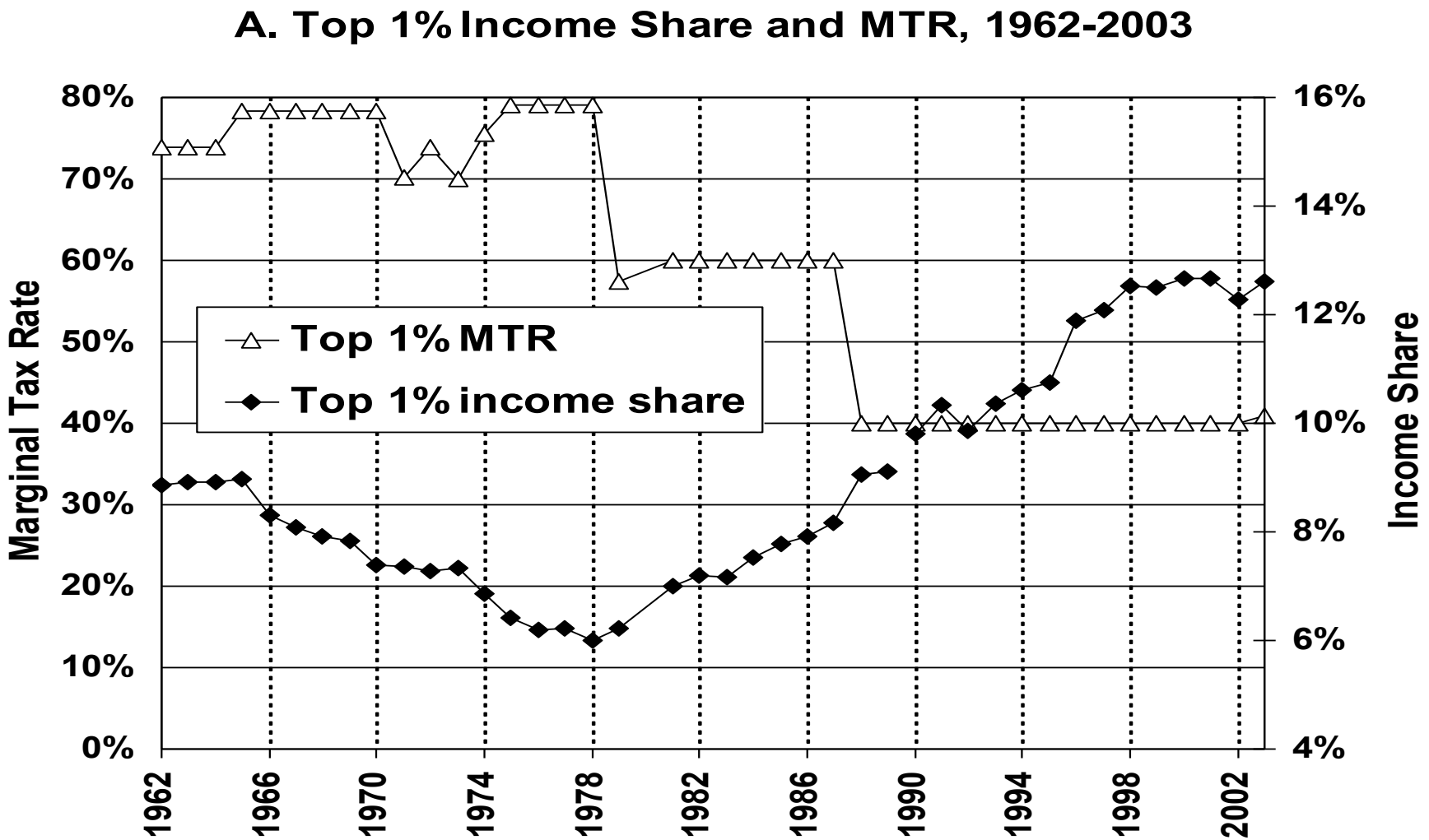
Making use of the '*taxable income elasticity*'

- 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 $a \approx 1.67$ from the empirical distribution in the UK.
- Estimate $e \approx 0.46$ from the evolution of top incomes in tax return data. But difficult to identify and precisely estimate.

Top incomes and taxable income elasticities



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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

Note also the key relationship between the size of elasticity and the tax base (Slemrod and Kopczuk, 2002)

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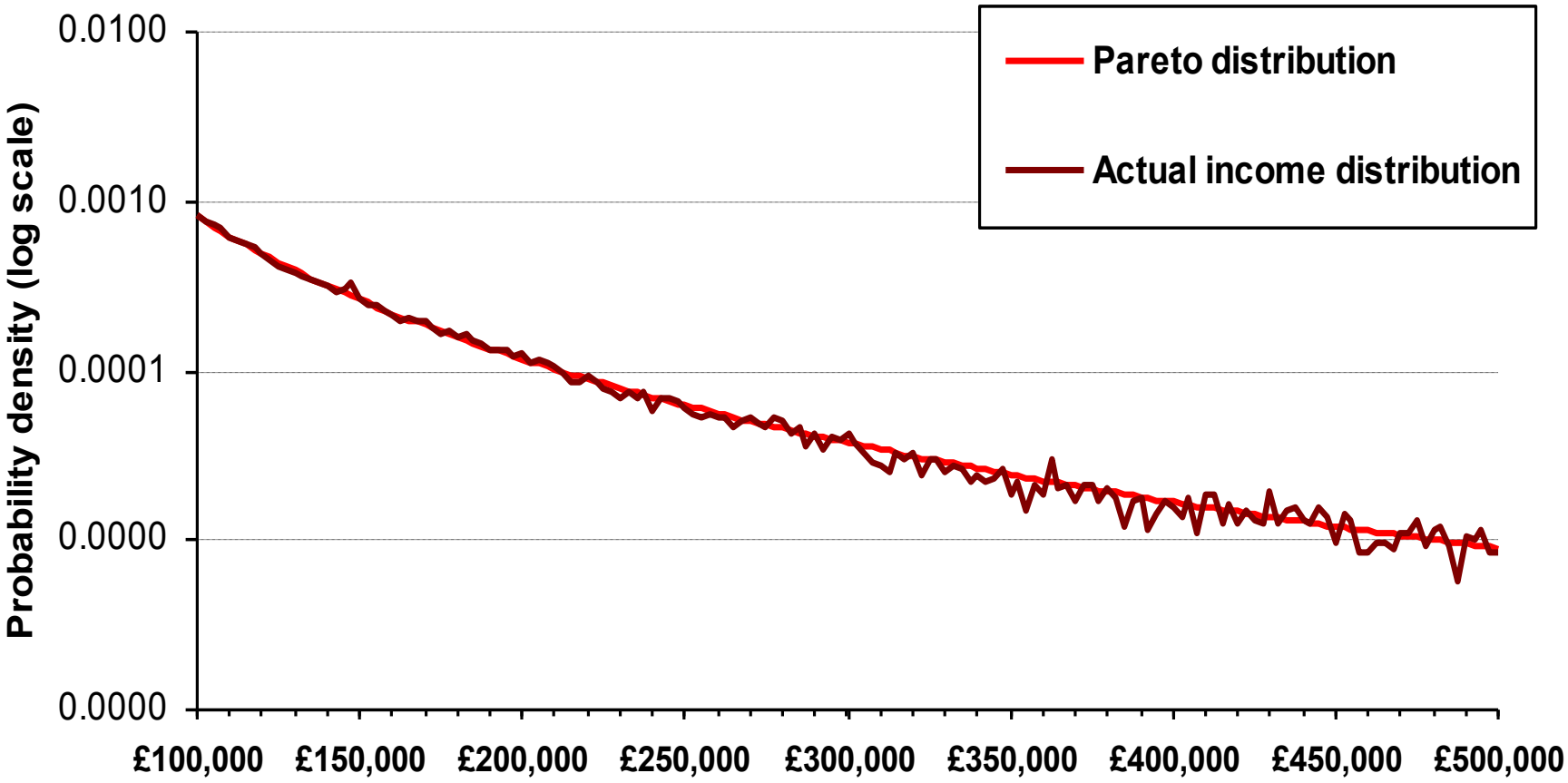
The Pareto distribution and the income distribution



- 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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5. Some 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 personal taxes at the top without tax base reform
    - 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?

- Human capital and mobility
  - 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?
  - minimum wage? – proven useful at the very bottom but does not to solve low productivity growth or inclusion.
  - can we re-think vocation education, non-cognitive skills?
  - early years investment? - kids of low educated parents are key.
- Efficient re-design of tax/benefit system
  - 'universal tax credit' plus?
  - well designed contribution based social insurance?
  - capital and housing tax reform?….

Empirical Evidence and Tax Reform

That's it for now!

The role of evidence in tax policy reform……

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 efficient redesign of tax policy

– references to specific studies listed on my website and at:

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