

Institute for
Fiscal Studies

A lifetime perspective on the distributional and incentive effects of the tax system

Mike Brewer, Monica Costa Dias and Jonathan Shaw

Project aim

- To understand the lifecycle impact of the UK tax and transfer system on
 - Incentives
 - Decisions } To work and to accumulate human capital
 - Redistribution
 - Welfare

How?

- By exploiting a dynamic model developed at IFS for a previous project

Model: key features (1)

“Lifecycle model of female labour supply, human capital and savings”

- Focus on females
- Life in three stages
 1. Education (up to 18/21)
 - Secondary, A-levels or university (determines type of human capital)
 - While in education, choose saving
 2. Working life (18/21-59)
 - Choose labour supply {0, PT, FT} and saving
 3. Retirement (60-69)
 - Retirement and end of life deterministic at ages 60 and 69 respectively
 - Choose saving

Model: key features (2)

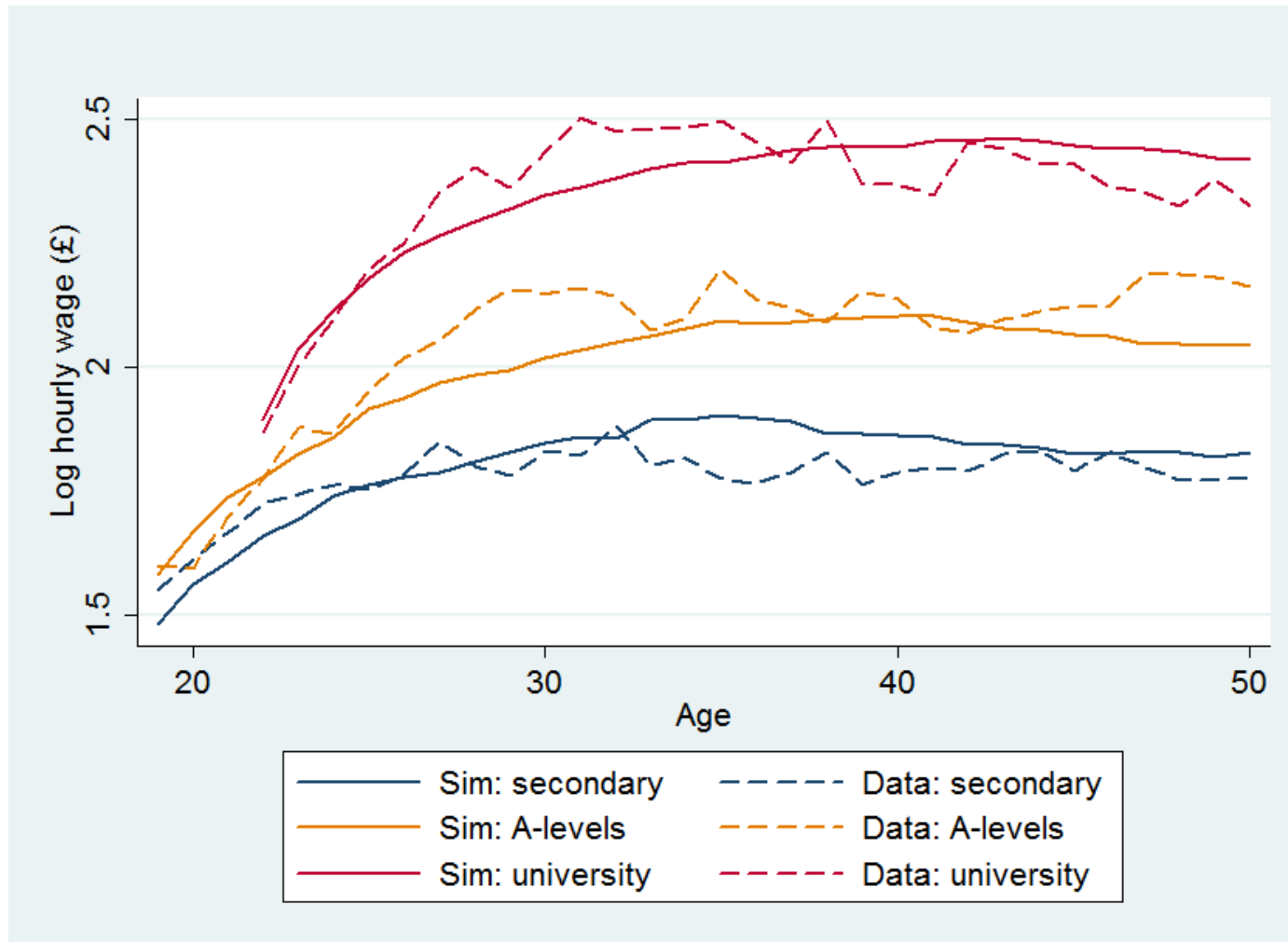
- Heterogeneous individuals
 - Start of life: preferences for work/study, ability, initial wealth
 - During life: family formation, productivity (health)
- Uncertainty faced by individuals
 - Productivity (health)
 - Family dynamics: partnering/separation, child bearing
 - Partner employment and income
- Personal insurance mechanisms: human capital and savings

Model: key features (3)

- Individual decisions conditioned by market failures
 - Insurance market
 - Credit market
- Role for policy
 - Redistribution: *ex-ante* inequality and permanent productivity shocks
 - Mutualising risk: incomplete markets
 - Facilitating life-cycle transfers
- Detailed UK personal tax and benefit system

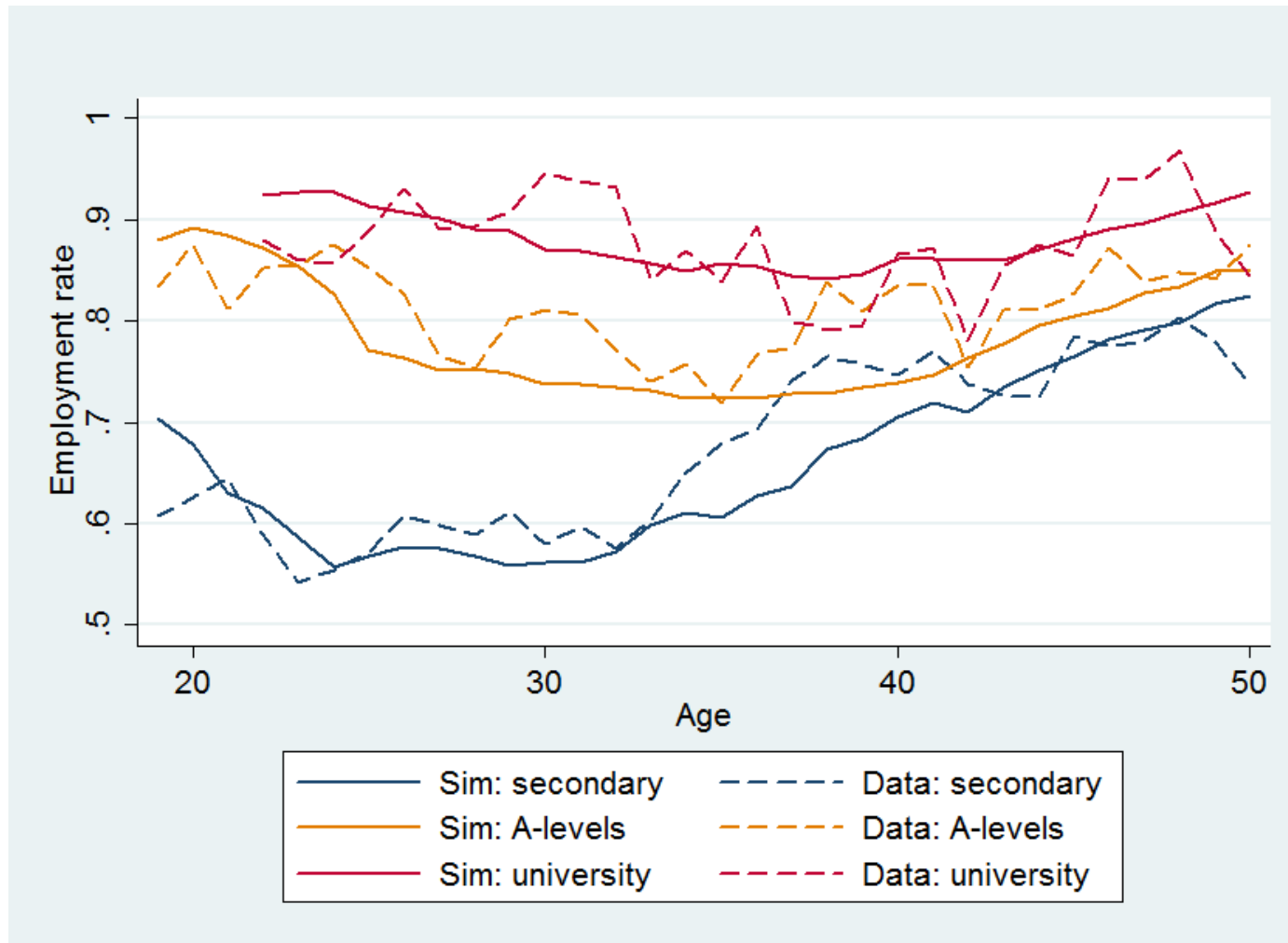
Model fit

Log hourly wage over the lifecycle by education level



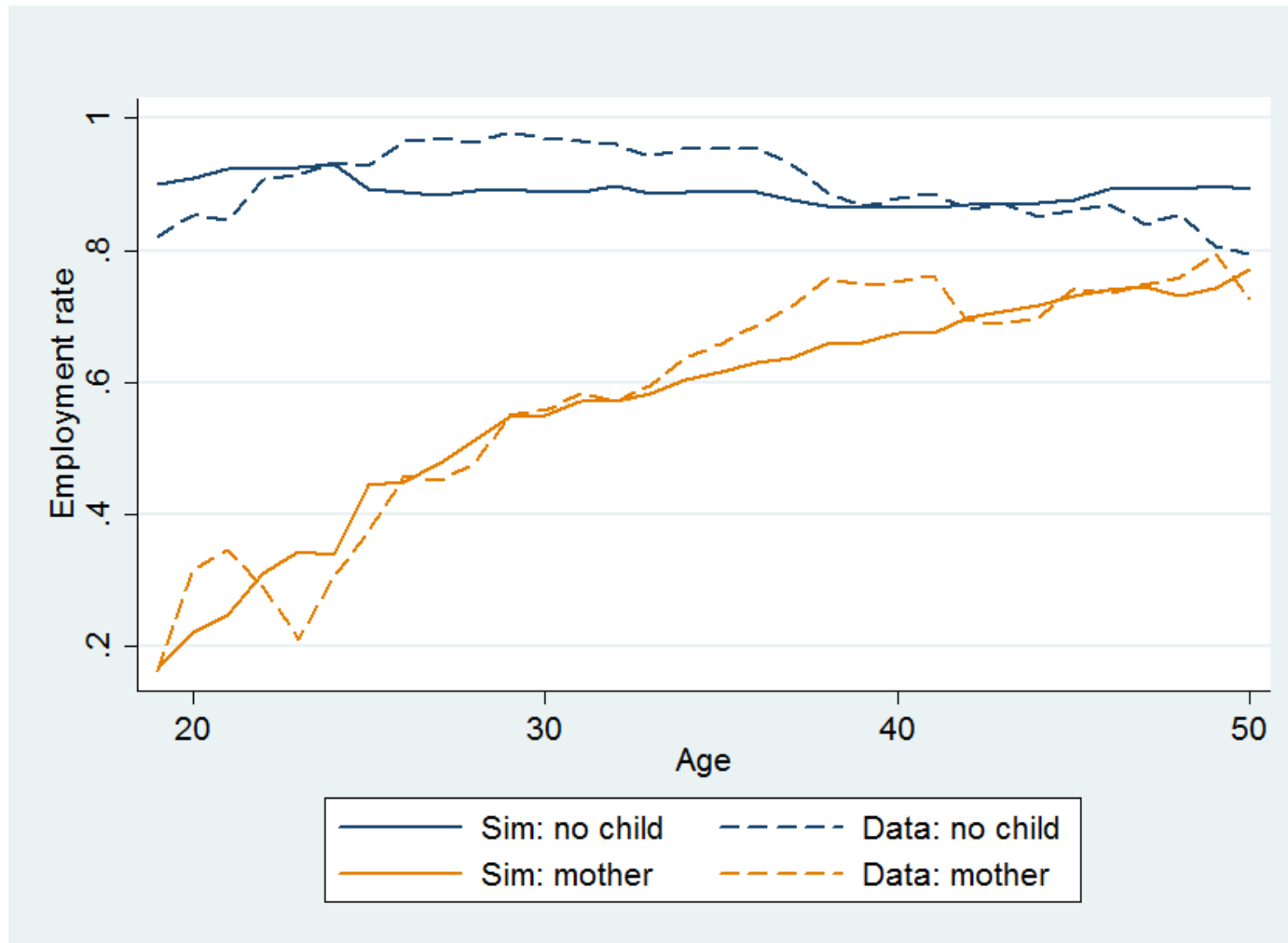
Model fit

Employment rate over the lifecycle by education level



Model fit

Employment rate over the lifecycle by presence of child



Model fit

Impact of WFTC reform on employment

Combined effect of WFTC and other reforms between 1999 and 2002

	Our model	BBS (2005)	FRK (2009)	BDSS (2006)
Lone mothers	+4.4%	+3.6%		+3.7%
Women in couples				
All	-2.0%		+0.7%	-0.4%
Partner working	-3.0%	-0.1%	+0.1 to +0.6%	
Partner not working	+4.1%	+2.6%	+3.1%	

BBS (2005) = Blundell, Brewer and Shephard (2005); reduced form estimate

FRK (2009) = Francesconi, rainer and van der Klaauw (2009); reduced form estimate

BDSS (2006) = Brewer, Duncan, Shephard and Suarez (2006); static structural estimate

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This project: questions about current tax system

1. How do financial work incentives change over lifecycle?
 - Build on previous “snapshot” studies of METR and PTR
 - Describe distributions of METR and PTR by age and other factors
2. How does “forward-looking PTR” change over lifecycle?
 - New measure of incentive to work
 - Also study effective taxation on returns to education decisions
3. How is tax burden distributed over the lifecycle and population?
 - Lifecycle tax burden and its distribution across life periods
 - Distribution of lifecycle tax burden over population and relation to history of family composition, education and initial family background
 - Implied level of lifecycle redistribution of current UK tax system

Preliminary illustrative results

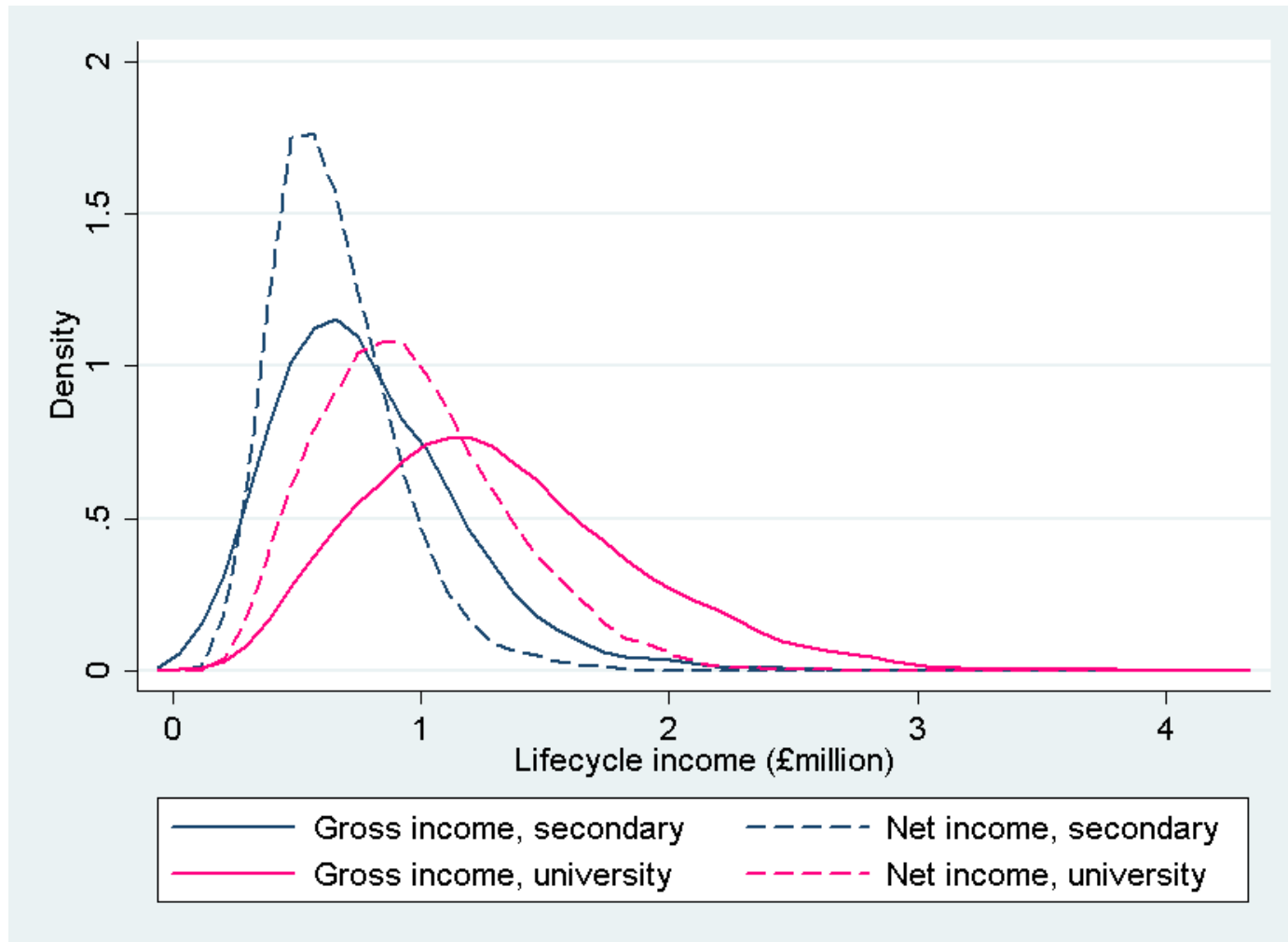
Cross-section and lifecycle inequality

90:10 ratio for gross and net income under 1999 (pre-WFTC) regime

	Data: Cross-section		Model: Cross-section		Model: Lifecycle	
	Gross	Net	Gross	Net	Gross	Net
All	-	5.4	-	5.1	3.6	2.7
Secondary	-	5.1	-	5.2	3.6	2.6
A-levels	13.0	5.1	10.5	5.0	3.5	2.8
University	5.4	4.2	4.9	4.4	3.2	2.9

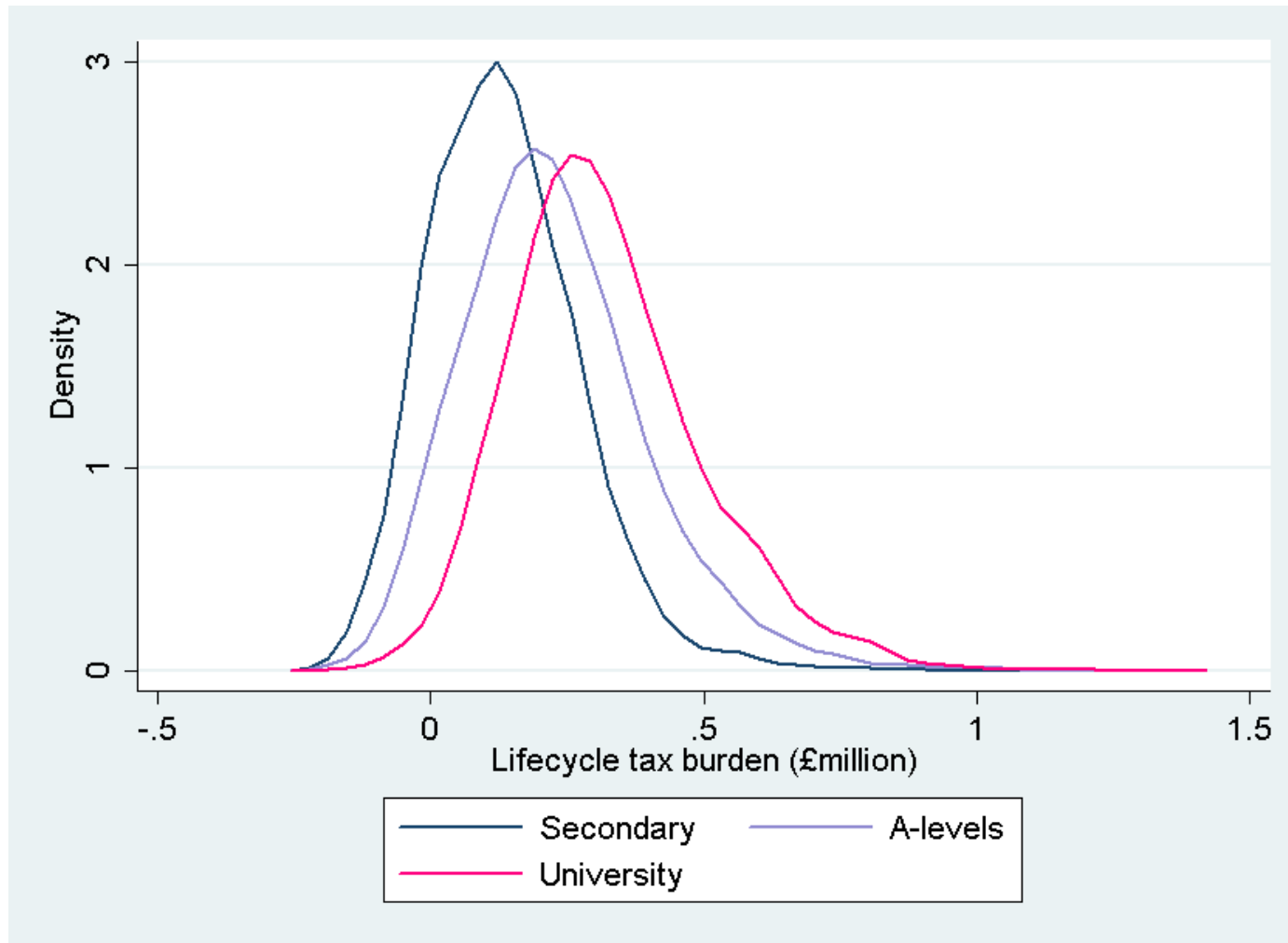
Preliminary illustrative results

Distribution of lifecycle income by education



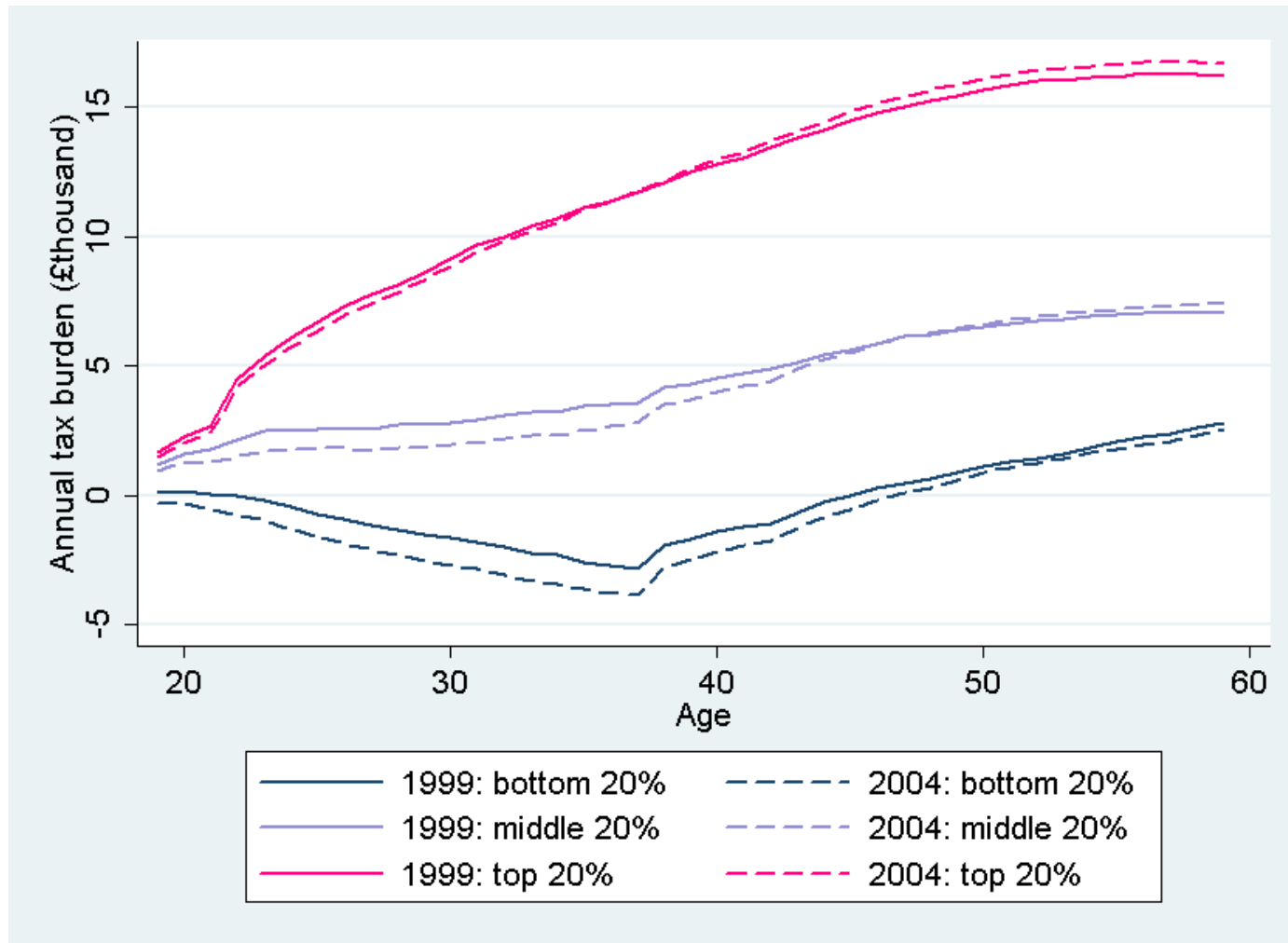
Preliminary illustrative results

Distribution of lifecycle tax burden by education



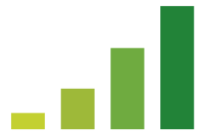
Preliminary illustrative results

Annual tax burden across the life-cycle: mothers, 1999 vs 2004



This project: questions involving reforms

1. What are the effects of the current tax system relative to a revenue-neutral proportional income tax?
 - Effect on dispersion of lifetime income (holding decisions constant)
 - How different individuals respond to policy incentives
 - Impact on value and riskiness of human capital investments
2. How do small departures from current tax system affect the income distribution and incentives to work and invest in human capital?
 - Previous project focused on effect of tax credit reforms
 - Here: alternative policy experiments
 - Marginal changes to income tax rates and allowances
 - Making WTC assessed on individual earnings
 - Means-testing child benefit
 - Restricting IS to families with children of certain ages
 - We'd like your input



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