Econ 3007 Economic Policy Analysis

Reforming the Tax System Lecture I: The Taxation of Earnings

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Tax rates, tax credits and work decisions

- This lecture (and part of the next one) will analyse the impact of tax and benefit reform on work and earnings.
- It will look at the context, the impact and the design of reforms.
- It will focus on two questions:
 - How should we measure the impact of taxation on work decisions and earnings?
 - How should we assess the optimality of tax reforms?

Why re-examine earnings taxation?

- Changes in employment patterns, in earnings inequalities and in population trends
- New empirical findings on labour supply elasticities
- New insights from optimal tax design
- A need to look at the whole income tax/benefit system
 - Key chapter (in Mirrlees Review): Brewer, Saez and Shephard, <u>http://www.ifs.org.uk/mirrleesReview</u>
 - Living wage and tax credit debate.
- References at the end of the lecture slides.

Changes in the economic environment

- Changes in employment patterns
 - growth of female labour supply
 - changes in youth employment
 - changes in 'early retirement' behaviour
- Changes in population
 - growth in single person & single parent households
 - growth in migration
- growth in earnings and wealth inequalities
 - growth in top income share
 - fall in the relative earnings of low skilled men

Increased empirical knowledge

- labour supply responses for individuals and families
- at the intensive and extensive margins
 - extensive margin elasticities generally higher than intensive margin
- by age and demographic structure
 - labour supply elasticities higher for mothers with younger children and for pre-retirement adults
- taxable income elasticities
 - top of the income distribution using tax return information

The taxation of income from earnings

- Examine the way taxes and benefits impact on family income as individual earnings vary.
 - Simple tax schedules are not necessarily the best for either economic efficiency or for fairness.
- However, to be effective an earnings tax system has to be understandable to employees and employers.
 - To quote the Nobel prizewinner Herb Simon '..a wealth of information creates a poverty of attention'.
- There is a therefore a balance between complexity and a need for a transparent tax code.

Overall question: How should we assemble the empirical foundations for tax policy design?

- Consider the role of evidence under <u>five</u> 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 to build an empirically based agenda for reform
 - > an efficient redesign of tax policy....

1. Key margins of adjustment to reform

- A 'descriptive' analysis of the key aspects of observed behaviour
 - not 'causality' just the correlations in the data,
 - the key facts!
- Where is it that individuals, families and firms most likely to respond?
 - e.g. the margins of labour market adjustment.

Key margins of adjustment



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

• Blundell, Bozio, Laroque and Peichl (2014)

Total Hours for men by age – FR, UK and US 2007



Blundell, Bozio and Laroque (2011)

The taxation of income from earnings

- For women earnings are influenced by taxes and benefits not only at these margins but also when there are young children in the family.
 - for women with younger children it is not usually just an
 employment decision that is important it is also whether to
 work part-time or full-time.
- Often the employment margin is referred to as the <u>extensive</u> margin of work and the part-time or hours of work decisions more generally as the <u>intensive margin</u>.

Female Employment by age - 2007



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Blundell, Bozio, Laroque and Peichl (2014)

Female Hours by age



• Blundell, Bozio, Laroque and Peichl (2014)

Wage profiles by education and age – UK Women



• Source: Blundell, Dias, Meghir and Shaw (2013)

Women's employment - UK



• Source: Blundell, Dias, Meghir and Shaw (2013)

Women's employment after childbirth - UK



• Source: Blundell, Dias, Meghir and Shaw (2013)

Top Income Shares in the US



%

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

Changes in Wages for Full-Time Men in US



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

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



•Source: Hershbein and Kearney (2015)

Summary so far...key facts

- A lifetime view of employment and hours
 - differences 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 accumulation during work is shown to be complementary to education,
 - essential to explain employment and wage profiles for those with more education.
- Other key facts include growth of top employment incomes and consequent impact on inequality.

2. Measurement of effective incentives

- Precisely how do tax policies 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?

Marginal rates for higher earners in the UK

Income tax schedule for those aged under 65, UK 2010–11



Employer cost (£000s)

Source: Mirrlees Review (2011)

Interactions with benefits and tax credits matter: Budget Constraint for Single Parent in UK



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

Net weekly income

Universally Available Tax and Transfer Benefits in US

(Single Parent with Two Children, 2008)



•Source: Urban Institute (NTJ, Dec 2012).

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

Effective tax rates

- It is essential to assemble all the components of the tax schedule and examine the system as a whole.
- One way to achieve this and to capture the complete picture of the tax rate schedule is through the calculation of <u>effective</u> <u>marginal tax rates</u> and <u>participation tax rates</u>.
- The 'effective marginal tax rate' is the proportion of an £1 of extra earnings retained in the tax and benefit system. This will include all employer taxes and contributions as well as the full set of taxes and benefits. It typically varies widely.
- By contrast the 'participation tax rate' is the net loss, through taxes and benefits, of earnings in work relative to being out of work.

Two key concepts:

- 1. Marginal Tax Rate (MTR)
 - most relevant at the Intensive Margin
- 2. Participation Tax Rate (PTR)
 - most relevant at the Extensive Margin

In the UK:

- Income Support, HB etc., create high MTR, PTR at the very bottom
- In-work tax credits reduce MTRs and PTRs for low income workers

In-work Tax Credits:

The general form of Earned Income Tax Credits

- Credit depends on *earnings* and *number of children*:
 - <u>Phase-in:</u> credit is flat percentage of earned income or jump in at minimum hours threshold
 - <u>Flat range</u>: receive maximum credit
 - <u>Phase-out:</u> credit is phased out at a flat rate
- Credit based on *family* earnings
 - Creating 'interesting' incentives among couples

EITC Schedule in US – Single Parent Families, 2004



Larger credit, covering higher earners for families with two or more children.

The EITC and marginal tax rates more broadly

Marginal Tax Rates for Families with One Child, 2004



- Single 1-child

Source: NBER's TAXSIM model tabulation by Hoynes (2006)

Number of EITC Recipient Families (Millions)



Source: Green Book, 2004, Joint Committee on Taxation, Ways and Means Committee

In-work Credits in OECD Countries in 2001

Central position in the OECD labour market policy debate

		Approximate Maximum			
	Target	Income Increase	Phase-in	Phase-out	Hours
	group	(Euros)			criterion
Belgium ¹	Individual	440	Yes	Yes	No
Canada, Quebec ²	Families	3,150	Yes	Yes	No
Finland	Individual	290	Yes	Yes	No
France ³	Individual	230	Yes	Yes	No
Ireland ⁴	Families	2,260 or more	No	Yes	Yes
Netherlands	Individual	920	Yes	No	No
New Zealand ^{5a}	Families	7,800	No	Yes	Yes
New Zealand ^{5b}	Families	780 per child	No	Yes	Yes
UK ⁶	Families	6,150 or more	No	Yes	Yes
United States	Families	4,000	Yes	Yes	No

Source: Owens (2005), Table 3.

EITC Reforms in the US

- In the US the EITC started in 1975 as modest "work bonus"; made permanent in 1978
- Substantial expansions have taken place:
 - <u>1986 Tax Reform Act:</u> general expansion and indexed for inflation
 - <u>1990</u>: general expansion and added separate schedule for families with 2 or more children
 - <u>1993</u>: general expansion (larger expansion for families with 2 or more children) and added EITC for childless filers

EITC Benefit for Selected Tax Years

(B) Schedule for Family with 2+ Children



The Tax Credit Expansion in the UK: 2000 Reform



Eligibility criteria for WFTC

- work eligibility
 - 16 or more hours per week
- family eligibility
 - children (in full time education or younger)
- income eligibility
 - if a family's <u>net</u> income is below a certain threshold, adult credit plus age-dependent amounts for each child
 - if income is above the threshold then the amount of credit is tapered away at 55% per extra pound of net income – previously 70%

The UK and US tax credit systems compared


Earned Income Tax Credit reforms in the UK

- Sequence of Tax Credit policies:
 - FC (family credit) before 2000, expanded early in 1990s
 - WFTC (working families tax credit) reform in 2000
 - WTC (working tax credit) and CTC (child tax credit) reform in 2004
 - UC (universal credit) 2016 onwards, integration of tax credits and other benefits.....

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 and welfare benefit incentives?
 - 'Take-up' of welfare and tax credits among eligible families
 - 'Bunching' at kink points

Variation in tax credit 'take-up' with value of entitlement



Budget Constraint for Single Parent: UK



Are these hours rules salient? Single Women (aged 18-45) - 2002



Hours' distribution for lone parents, before WFTC



• Blundell and Shephard (2012)

Hours' distribution for lone parents, after WFTC



• Blundell and Shephard (2010)

Bunching at Tax Kinks Married Tax Filers: US



•Source: Saez (2010)

Bunching at Tax Kinks and the EITC One child families: US



•Source: Saez (2010)

Bunching at Tax Kinks and the EITC One child families: US



• Source: Saez (2010)

4. Evidence on the size of responses

- This is where the rigorous econometric analysis of structure and causality comes into play.
- Eclectic use of two approaches:
 - 1. Quasi-experimental/RCT/reduced form evaluations of the impact of (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 simulation, but fragile.
 - account for life-cycle facts, effective tax rates, and salience/stigma.
 - What do we need to get observed responses to match with incentives?
 - ➢ Is there a social experiment?

- Experimental design of the SSP
- Do financial incentives encourage work among low skilled lone parents?
- The aim was to encourage employment among welfare recipients, specifically single parents on welfare
 - 50% earnings supplement as a *tax credit*

- at *least 30 hours* per week job

- On *earnings up to an annual limit* of \$36000
- provided to the <u>individual, not the employer</u>, as in EITCs

Budget Constraint for a Single Parent on Minimum Wage



- well designed *social experiment*
 - great research design

Monthly Employment Rate for a Single Parent with One Child BC



Ex-post evaluation where there is no social experiment:

- Comparing work decisions of (potentially) eligible versus those who are not eligible before and after the reform
 - for example, the EITC expansion for single mothers in the US, see Eissa and Liebman (1996).
- identify average employment impact on eligibles by *assuming* a structure on *unobservables*
 - separability of errors
 - common trends across groups
 - invariance in group heterogeneity over time
 - *conditional* on a set of (matching) covariates X

Ex-post evaluation:

Abstracting from other regressors X, write the tax credit reform as a binary indicator d and employment as y

$$y_{it} = \beta + \alpha_i d_i + u_{it}$$
$$\alpha_i = \alpha_{AT} + \varepsilon_i$$
$$\alpha_{TT} = \alpha_{AT} + E(\varepsilon_i \mid d_i = 1)$$

Average (Treatment) Effect (ATE) is given by α_{AT} Average (Treatment) Effect on the Treated (ATT) is given by α_{TT}

Difference-in-Differences (DD)

Let y^T and y^C represent the mean outcomes for the treatment and comparison (non-treatment) groups, respectively. Let t=0 and t=1 represent the time period before and after policy intervention.

The difference in differences estimator is given by:

$$\alpha_{DD} = (y_{t=1}^{T} - y_{t=0}^{T}) - (y_{t=1}^{C} - y_{t=0}^{C})$$

The Common Trends and Time Invariant Composition Assumptions

Given the way we have expressed the individual and time effects, we have

$$u_{it} = \phi_i + \theta_t + \mu_{it}$$

$$E(u_{it} | d_i) = E(\phi_i | d_i) + \theta_t$$

$$E(\alpha_{DD}) = [\beta + \alpha_{TT} + E(u_{i,t=1} | d_i = 1] - [\beta + E(u_{i,t=0} | d_i = 1] - [\beta + E(u_{i,t=0} | d_i = 1] - [\beta + E(u_{i,t=1} | d_i = 0] - [\beta + E(u_{i,t=0} | d_i = 0] - [\beta + E(u_{i,t=0} | d_i = 0] = \alpha_{TT}$$

That is, the ATT is identifiable, but not the average population treatment impact.

What is missing in this simple experimental and quasi-experimental impact analyses?

- No basis for simulating policy reforms (ex-ante)
- No analysis of intensive margin (hours of work) decisions
- No basis for analysing deadweight loss and optimality of tax reforms
- No analysis of family labour supply decisions
- For this we need a model of work and hours decisions a *'structural'* model

- How should we measure labour supply?
 - Extensive margin: whether to work or not
 - Intensive margin: how much to work. Just hours? What about effort? Taxable income?
 - An individual or joint family decision?
- How should we think about the effect of taxes on labour supply?
 - Income and substitution effect
 - Summarise reaction of labour supply with elasticity measure
 (ε)
 - But many elasticity concepts: important to think about what the relevant one is (see Blundell and MaCurdy, 1999)

A static structural model of labour supply

- Consider individual *i* with characteristics v_{it} and preferences over consumption c_{it} and leisure l_{it}
- Individual problem to maximise within-period utility function
 - $U(c_{it}, l_{it}, v_{it})$ subject to budget constraint $c_{it} = \mu_{it} + w_{it} (T l_{it})$
 - where *T* is time endowment and μ_{it} non-labour income
- Under certain conditions, have interior solution for hours of work
 - Yields labour supply function $h_{it} = h^s(w_{it}, \mu_{it}, v_{it})$
 - Uncompensated (Marshallian) effect dh^s/dw measures how hours of work respond to a shift in hours worked holding μ_{it} constant
 - Uncompensated elasticity defined as $\varepsilon^u = w/h * dh^s/dw$
 - Compensated (Hicksian) effect holds utility constant instead
 - By Slutsky have $\varepsilon^{c} = \varepsilon^{u} \eta$ where $\eta = w.dh^{s}/d\mu$, the income effect

Labour supply and taxation



Introducing taxes and benefits

- With proportional taxes and means-tested benefits, problem now Max $U(c_{it}, l_{it}, v_{it})$ s.t $c_{it} = \mu_{it} + (1-\tau_t)w_{it}(T - l_{it})$
- Yields labour supply function $h_{it} = h^s[(1-\tau_t)w_{it}, \mu_{it}, v_{it}]$
 - Note labour supply now function of net rather than gross wage
 - More complicated with non-linear taxes (discuss later)
- Have possible corner solution: zero hours
 - Work only if $(1-\tau_t)w_{it} > w^* = U_l/U_c$ evaluated at h=0
 - Taxes unambiguously reduce probability of working versus $\tau_t = 0$
- But effect of taxes on hours worked unclear
 - Depends on which effect dominates: empirical question
 - Note ε^c determines distortionary costs of taxation

Labour supply and taxation



Key features of a realistic structural model *main elements:*

- budget constraint complicated tax/benefit interactions
- preferences discrete hours; flexible utility specification
- heterogeneity demographics, ethnicity, etc; unobs. het.
- fixed costs of work obs. and unobs. het.
- stigma/hassle costs take-up versus eligibility; unobs. het.
- childcare costs

- mixed-multinomial specification across discrete choices over ranges of hours.

5. How should we choose tax rates?

- Follow the 'optimal tax design' approach due to Mirrlees (1971).
- In this framework a tax schedule is chosen that will maximise social welfare and raise a required amount of revenue.
- The government cannot observe effort, only earnings.
 - So it cannot distinguish a high ability person working few hours
 from a low ability person working a large amount.
- It has to balance redistributive aims with effort incentives. If it taxes the high ability types too much they may choose to supply much less effort.
 - Thus we need to know supply elasticities.

Start with the choice of the top tax rate

- How should we tax the very rich?
- We consider the different ways in which a small increase in the top rate affects social welfare.
- We assume that this top rate applies to earnings above a given level, and we will refer to this level as the top bracket.
- There are three impacts on social welfare:
- 1. mechanical effect on tax revenue
- 2. behavioural response on tax revenue
- *3. welfare effect*, and it is a loss to society. How large is this loss depends on the redistributive tastes of the government.

- 1. With no behavioural response, increasing the top rate will increase government revenue. This is the *mechanical effect* on tax revenue, and this is a benefit to society, as the revenue can be used for government spending or higher transfers.
- 2. Increasing the top rate may also induce top bracket taxpayers to reduce their earnings (but not below the top bracket, because nothing has changed below this point) because of the substitution effect described above. This is known as the *behavioural response* on tax revenue, and it is a cost to society as tax revenues will fall.
- 3. Finally, any increase in the top rate will reduce the welfare of top bracket taxpayers. This is the *welfare effect*, and it is a loss to society. If the government values redistribution, then, for incomes above a certain level, it will consider that the marginal value of income is small. In the limit, the welfare effect will be negligible relative to the mechanical effect on tax revenue.

- Consider a reform that changes the top tax rate τ by a small amount $d\tau$
- Let *z* be the earned income being considered for taxation
- The top bracket begins at income z^*
- Assume there are *N* taxpayers in the top bracket
- 1. Mechanical effect of higher marginal tax rate on incomes above z^* :

$$dM = N[z - z^*] d\tau > 0$$

2. Behavioural effect will depend on the elasticity e – the elasticity of earnings with respect to the net of tax rate (1- τ). Reported income will be reduced by

$$dz = -e z d\tau / (1 - \tau)$$

Hence revenue will be reduced by

$$dB = -Ne z \, d\tau \, \tau \,/ \, (1 - \tau)$$

- Suppose the government gives a value of g to an extra £1 to a top tax bracket taxpayer will be strictly less than 1, since the weighted sum of welfare weights is unity.
- 3. Welfare effect of higher marginal tax rate on incomes above z^* : $dW = -g N[z - z^*] d\tau < 0$

Summing these we get

$$dM + dB + dW = N d\tau [z - z^*] [1 - g - e.a.\tau / (1 - \tau)]$$

where $a = z/(z - z^*)$.

At the optimum this has to be zero

$$\tau^* = (1-g)/(1-g+a.e)$$

There are some very nice interpretations of this simple formula

$$\tau^* = (1-g)/(1-g+a.e)$$

- 1. Note that a is a parameter of the upper tail of the Pareto distribution ($f(z) = C/z^{1+a}$). Approximately 1.67 in the recent UK data.
- 2. If g is approximately zero then

 $\tau^* = 1 / (1 + a.e)$

which is very simple to estimate if we know the taxable income elasticity.

For example if e = .5 then $\tau^* = 1 / (1 + 1.67.5) = .545$ A top tax rate of 55%.

Top incomes and taxable income elasticities



A. Top 1% Income Share and MTR, 1962-2003

• Source: MR1, UK SPI (tax return data)



B. Top 5-1% Income and MTR, 1962-2003

Source: Brewer, Saez and Shephard (Mirrlees Review)

Taxable Income Elasticities at the TopSimple Difference (top 1%)DD using top 5-1%as control

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)

Pareto distribution as an approximation to the income distribution



Pareto parameter quite accurately estimated at 1.67
=> revenue maximising tax rate for top 1% of 55%.
The taxable income elasticity *e*

- Topics for discussion:
- Has the elasticity *e* changed over time?
- Is the method for estimating *e* reliable?
- Is the Pareto distribution assumption a good one?
- How would a bargaining model change the arguments? (see Piketty, Saez and Stantcheva (CEPR DP 8675, Nov 2011)

Top tax rates and migration

• Concern that individuals move to low tax countries

- migration response is similar to an extensive response

• Optimal top tax rate with migration elasticity (m) + intensive elasticity (e) is:

 $MTR = 1/(1 + a \cdot e + m)$

- does it change in recessions?
- nature of evidence on migration elasticity 'm' is weak

What about the general tax schedule?

- How should we tax lower incomes?
- Again we consider the different ways in which a small increase in the rate at any point in the earnings distribution affects social welfare.
- We begin by allowing the tax and benefit system to be fully 'non-linear', which means that marginal tax rates at a particular point of the earnings distribution can be set to any value without altering marginal rates at other points.

What about the general tax schedule?

- The optimal MTR at any point is set so as to balance the costs and benefits from changing the MTR by a very small amount.
- As before, an increase in the MTR over a very small band of income has three effects on government tax receipts and welfare:
- 1. the *mechanical effect*
- 2. the *behavioural effect* generates a loss in tax revenue
- 3. a *welfare cost* whose size will depend upon the extent to which the government values redistribution.

The optimal marginal tax rate schedule

- For income z, denote T(z) as the tax function, H(z) as the cumulative distribution of individuals & h(z) is the density.
- The optimal tax system is characterised by a lumpsum grant given to those without earned incomes -T(0), combined with a schedule of marginal rates T'(z).
- Consider a reform that changes the marginal tax rate T'(z) by $d\tau$ in a small band of income (z, z + dz).
- 1. The reform increases taxes by $d\tau dz$ for every taxpayer above the small band, the mechanical effect is:

 $dM = (1 - H(z)).dz.d\tau$

The optimal marginal tax rate schedule

2. Those extra taxes also generate a <u>welfare cost</u>.
let G(z) be the average social value of distributing £1 uniformly among taxpayers with income above z. The welfare cost is

$$dW = dM.G(z)$$

3. The marginal tax rate increase $d\tau$ reduces earnings by $dz = -e.z.d\tau / (1 - T'(z))$

There are h(z)dz such taxpayers, hence revenue will be reduced by the behavioural effect

 $dB = -e.z.[T'(z)/(1-T'(z))] d\tau h(z).dz$

The optimal marginal tax rate schedule

At the optimum all these must sum to zero

dM + dW + dB = 0

Consequently, at the optimum

 $T'(z)/(1-T'(z))] = 1/e \cdot 1-H(z)/zh(z) \cdot (1-G(z))$

1. The optimal tax rate decreases with the elasticity *e*.

2. It is also decreasing in G(z) which measures the marginal value placed on income for individuals above z.

3. It is also decreasing in the hazard ratio zh(z)/1-H(z) which measures the thinness of the distribution.

Negative marginal tax rates?

- It is worth noting that, in this framework, negative MTRs are never optimal: if the MTR were negative in some range, then increasing it a little bit in that range would raise revenue (and lower the earnings of taxpayers in that range), but the behavioural response (which would be to work less) would also be to raise revenue, because the marginal tax rate is negative in that range.
- Therefore, this small tax rise would unambiguously increase social welfare.
- All this changes when we introduce a participation or 'intensive' margin of labour supply response.

The importance of the extensive margin

- With participation effects, the optimal tax formula changes.
- Negative tax rates become possible and can justify earned income tax credit policies.
- Labour supply estimation suggest <u>extensive</u> margin is more responsive to incentives than <u>intensive</u> margin
- High marginal tax rates at the bottom are no longer necessarily desirable and negative participation tax rates can be optimal

Notes on the extensive margin:

- If an individual decides to work he or she gets z T(z).
- If she decides not to work she will get -T(0).
- Suppose utility was simply u = c q where *c* is disposable income and *q* are costs of work.
- Cost of work are distributed with a cumulative distribution P(q|z)
- Define the elasticity of participation (extensive margin elasticity) as:

$$\eta = \frac{z - T(z) + T(0)}{P} \frac{\partial P}{\partial q}$$

 With participation effects, the optimal tax formula changes.
 Suppose we allow taxes to be different across I different earnings levels. Then the optimal structure has the form

$$\frac{T_i - T_{i-1}}{c_i - c_{i-1}} = \frac{1}{e_i h_i} \sum_{j \ge i}^{I} h_j \left[1 - g_j - \eta_j \frac{T_j - T_0}{c_j - c_0} \right].$$

- Labour supply estimation suggest <u>extensive</u> margin is more responsive to incentives than <u>intensive</u> margin
- High marginal tax rates at the bottom are no longer necessarily desirable and negative participation tax rates can be optimal (Brewer, Saez and Shephard (2012), Saez, 2002; Laroque, 2004).

A Typical 'Integrated' Optimal Schedule





Implications for Tax Reform

- Change transfer/tax rate structure to match lessons from 'new' optimal tax analysis and empirical evidence
 - in the Mirrlees Review we use a similar design framework for family labour supply and early retirement
- Key role of labour supply responses at the extensive and intensive margins
- Both matter but differ by gender, age, education and family composition
 - lone parents, married parents, pre-retirement low earners.
- Results for lone parents suggest lower marginal rates at the bottom
 - means-testing should be less aggressive
 - at least for some key groups =>

Implications for Tax Reform

- 'Life-cycle' view of taxation
 - distinguish by age of (youngest) child for mothers/parents
 - pre-retirement ages
 - effectively redistributing across the life-cycle
 - a 'life-cycle' rearrangement of tax incentives and welfare payments to match elasticities and early years investments
 - results in *Tax by Design* show significant employment and earnings increases
- Hours rules? at full time for older kids,
 - welfare gains depend on ability to monitor hours
- Dynamics and Human Capital
 - little in the way of experience effects for low-skilled,
 - complementarity with educational qualifications.

Dynamic effects on wages for low income welfare recipients?

SSP: Hourly wages by months after RA



SSP: Monthly earnings by months after RA



The SSP experiment and human capital

- Earnings and employment line up with control group after time limit is exhausted
 - Little evidence of employment enhancement or wage progression
 - Other evidence, Taber etc, show some progression but quite small
- Wages grow stronger and longer over the lifetime for higher educated
 - human capital accumulation during work is shown to be complementary to education
 - essential to explain employment and wage profiles for those with more education.

Wages by education and age – UK Women, BHPS



• Source: Blundell, Dias, Meghir and Shaw (2014)

Implications for efficient redesign of earnings taxation

- Tax and benefit systems are often unnecessarily complicated and induce too many people not to work or to work too little.
- Target work incentives where they are most effective
 - simulations in Mirrlees et al(2011) show increase in work/earnings
 - reducing means-testing and improving the flows into work for lower education mothers and maintaining work for those aged 55+.
- Integrate overlapping benefits a single integrated benefit
 - Mirrlees et al (2011) 'ifs' and 'universal credit' reforms.
- How should we think about the minimum/living wage and incidence? Rothstein (2010).
- Reduce disincentives at key margins for the educated
 - enhancing working lifetime and the career earnings profile
 - simulations in BDMS (2014) show significant on human capital.
- Limits to tax rate rises at the top without tax base reform.

The taxation of income from earnings

- Consider the role of evidence under <u>five</u> 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

Some references follow:

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