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INCOME INEQUALITY, TAXATION AND THE ECONOMICS OF THE HOUSEHOLD

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Introduction

Income inequality - considerable attention following literature on top percentile income shares – e.g.Piketty (2001, 2003).

Studies draw on tax return statistics.

Advantage: avoid top-end coding limitations of survey data.

Issue: unit of analysis?

Tax base varies across countries: individual vs. household.

Question exposes fundamental dilemma underlying the large literature on inequality.

Introduction

Conceptually: concerned with inequality in living standards across a set of individuals.

Empirically: measure inequality based on household data for income and consumption where data set includes:

single individuals, single parents, and couple households with or without children and with one or two earners.

Widely believed that studies drawing on survey data can address the unit of analysis issue. Not true.

Introduction

Accepted approach: construct indices defined on income or consumption deflated by an equivalence scale to take account of:

(i) Household size and age composition

(ii) Supposed scale economies

Recent study using Australian data:

Australian Productivity Commission (2018) Report.

Title: *Rising inequality? A stocktake of the evidence*.

Finds “little to no evidence” of a rise in inequality since 2007/8.

Approach can be shown to yield misleading results

Introduction

Two major problems:

(i) Inadequate (implicit) model of the household: underlying model fails to capture important differences across household types and variation in type over the life cycle.

(ii) Household surveys: Missing data on key variables - necessitates assumptions that are rarely acknowledged but can impact dramatically on results.

Problems are especially severe for couple households.

Data indicate high degree of heterogeneity in second earner labour supply at a given primary income, reflecting variation in allocation of time to producing goods and services within the household.

Focus of this paper - the couple household

Introduction

Key mistaken assumption:

Standard of living increases monotonically with household income.

Sets to zero the (untaxed) value of household goods and services produced by second earner using time that could alternatively be spent earning (taxed) market income. Why is this a problem?

- High degree of heterogeneity in second earner labour supply at a given primary income.
- Contribution of home production to household's living standard may vary inversely with total money income.

A single earner household may be better off than a two-earner household working twice the hours to earn same or higher income.

Overview of paper

- **Section 2** presents a formal model of the couple household which recognises the contribution of market and home produced goods and services to a household's standard of living. Begins with overview of the economics of the household.

- **Section 3** illustrates empirically how standard approach can yield household living standard rankings that are misleading and, as the basis for tax policy, can lend support to reforms that increase inequality – both overall and in terms of gender – with longer term negative consequences for the economy.

- **Section 4** shows that similar concerns arise when we consider couple households over their entire life cycle.

- **Section 5** concludes.

2 Model of the household

Since early 1980's - large growth in literature on the economics of the household.

Early papers include Nash Bargaining models in Manser and Brown (1980) and McElroy and Horney (1981) and the household production and trade model in Apps (1982).

(For surveys see Apps and Rees (2009), Bergstrom (1999) and Browning et al. (2014).

Since Apps and Rees (1988) and Chiappori (1988), which defined the household as consisting of individuals with their own utility functions, focus shifted towards "collective" vs. "unitary" distinction.

Missing data

Importantly, collective vs. unitary focus has highlighted the limitations of survey data in identifying the intra-household "sharing rule" due to missing information on income and consumption shares of partners and dependent children.

However, literature has largely failed to recognise that the couple is a small economy in which partners can engage in intra-household production and exchange at an implicit price determined by outside opportunities.

As a consequence many serious limitations of the data remain unacknowledged.

Missing data

Surveys report hours of market work and earnings - used to compute a market wage as a measure of market productivity.

- No matching data for computing home productivity.
- Information on "quality" of leisure is missing.
- No information on "scale economies", the precise form of which is often not specified beyond the banal adage that "two can live as cheaply as one".
- Data required for identification of preferences are missing.

Assumptions inevitably enter but are not always acknowledged.

As a consequence, policy can be based not on evidence but on ideology which, if made explicit, would be widely rejected.

Theoretical model

Couple household - a small economy.

Each partner divides time between market labour supply, *l*, the production of a household good, *z*, consumed by both partners, and leisure, *L*, defined as consumption of own time.

Production side: linear homogeneous (LH) production function

$$z_h = f(k_{1h}a_{1h}, k_{2h}a_{2h}, q_h b_h) \qquad h = 1, 2, \ldots, H$$

a_i: individual *i's* time input with productivity k_i into household production, $i = 1, 2$.

b_h: bought in market good (bought in child care hours) of quality q_h with a price, p_h, that may vary across households.

Theoretical model

Cost min: choose time allocations, a_{ih}, b_h efficiently by:

$$Min \sum w_{ih} a_{ih} + p_h b_h \quad \text{s.t. } z_h \geq f(k_{1h} a_{1h}, k_{2h} a_{2h}, q_h b_h)$$

Soln. yields input demand functions

$$a_{ih} = a_{ih}(w_{1h}, w_{2h}, p_h, q_h, k_{1h}, k_{2h}) \quad i=1,2$$

$$b_h = b_h(w_{1h}, w_{2h}, p_h, q_h, k_{1h}, k_{2h})$$

Similarly for labour supply and leisure demand functions, l_{ih} and L_{ih}.

Important assumption: no lump sum transfers within household

Theoretical model

Individual time constraints: $l_{ih} = T - a_{ih} - L_{ih}$ (T = total time)

Individual utility functions: $u_{ih} = u(x_{ih}, z_{ih}, L_{ih})$

Implicit price of household good, c_h, is a function of w_{ih}, q_h, k_{ih}, p_h.

Full income constraint for *i* is

$$x_{ih} + c_h z_{ih} + w_{ih} L_{ih} \leq w_{ih} T \quad i=1,2$$

(Note: cost of b_h fully captured in c_h by LH assumption)

i's indirect utility function is:

$$v_{ih} = v_{ih}(w_{1h}, w_{2h}, p_h, q_h, k_{1h}, k_{2h})$$

NB: **Basis for discussion of inequality:**

Functions $u(x_{ih}, z_{ih}, L_{ih})$ and $v_{ih}(w_{1h}, w_{2h}, p_h, q_h, k_{1h}, k_{2h})$

Empirical implications

Given available data, values of x_{ih} and z_{ih} are non-observable.

Time use studies give information on leisure time but not “quality”.

Can see that a measure of individual consumption given by $\sum x_{ih} / e_h$, where e_h is a more or less arbitrary "equivalising factor" to capture household size, composition and possible "economies of scale", may be a misleading measure of wellbeing of individuals in a household for two reasons:

1. May bear no relationship to actual (unobservable) values of x_{ih}
2. Does not capture values of z_{ih} and L_{ih} .

Empirical implications

Why is it accepted practice to measure inequality on joint income?

Possible explanation: Assumption of co-monotonicity of utility and income holds in standard individual model of consumption choice.

Cannot hold for couple households because joint income is given by

$$Y_h = \sum w_{ih} l_{ih}(w_{1h}, w_{2h}, p_h, q_h, k_{1h}, k_{2h})$$

Eg., a rise in the primary wage as we move through the population may cause a large increase in demand for z_h causing second earner labour supply to fall and, in turn, for Y_h to fall.

Variation in p_h is recognised to create second earner labour supply heterogeneity across households with same primary earnings.

Empirical implications

Across household heterogeneity in second earnings due to heterogeneity in second earner time allocations creates breakdown of co-monotonicity between household incomes and utilities.

As a consequence, household income fails to take account of the fact that work in the household can create value that is comparable to amount of income the second earner would bring into the household, net of taxes and work-related costs.

Basing analysis of inequality on household income, or equivalised income, implicitly sets the value of work in the household to zero.

Empirical implications

Why not explicitly adopt an alternative assumption that would be much closer to reality?

Households with the same primary incomes and similar hours of work (i.e., “in-work” households) have approx. equal utility levels because the values of the contributions of the second earners, whether derived from one or both of household production and market labour supply, are approximately equal.

Under this assumption we have co-monotonicity between *primary incomes* and household living standards, so that a welfare ranking on primary income is an observable, more reliable index for use in inequality measurement and public policy.

We present an empirical analysis based on this assumption.

3. Inequality across “in-work” couples

Data: “in-work” couple households are drawn from ABS Household Expenditure Surveys (HES) files for 2003-04, 2009-10 and 2015-16.

Changes in the distribution of living standards across each six year period are assumed to match changes in primary earner incomes.

In effect, analysis controls for second earner labour supply and, in turn, for variation in household production of goods and services as substitutes for market goods, at a given primary and second wage across couple income units.

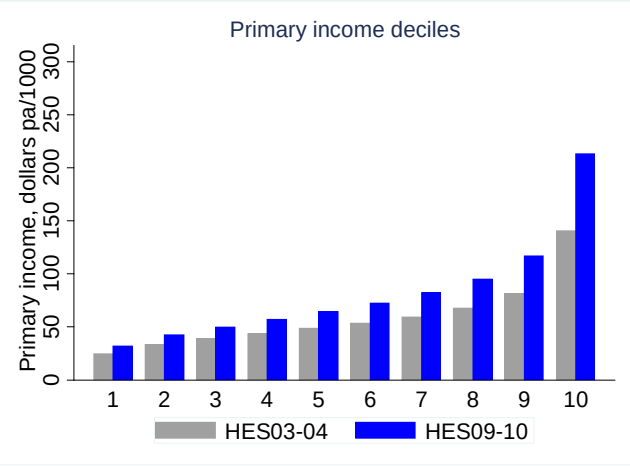
Results are contrasted with those derived under the assumption that the value of home production is zero.

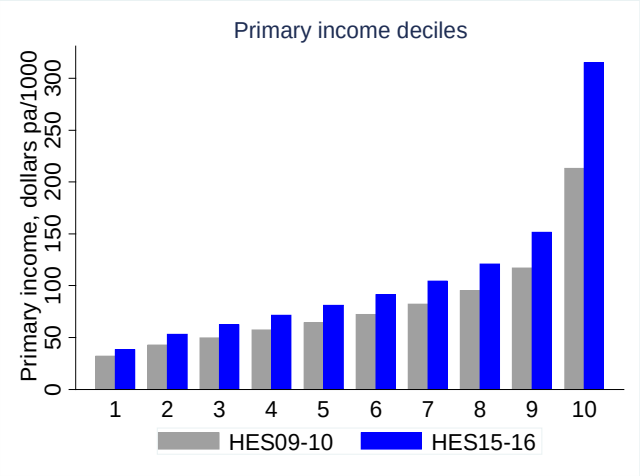
Evidence on inequality

Table 1 Nominal primary incomes: 2003-04, 2009-10 and 2015-16

Decile	1	2	3	4	5	6	7	8	9	10
2003-04$	24785	33546	38875	43639	48489	53518	59397	67813	81656	140490
2009-10$	31865	42657	49633	57170	64326	72373	82298	95064	116990	213190
2015-16$	37999	52988	62189	71488	81092	91356	104490	120830	151390	315220

Inequality rose significantly across both periods. Gini Coefficients: **0.2955**, **0.3315** and **0.3659**.

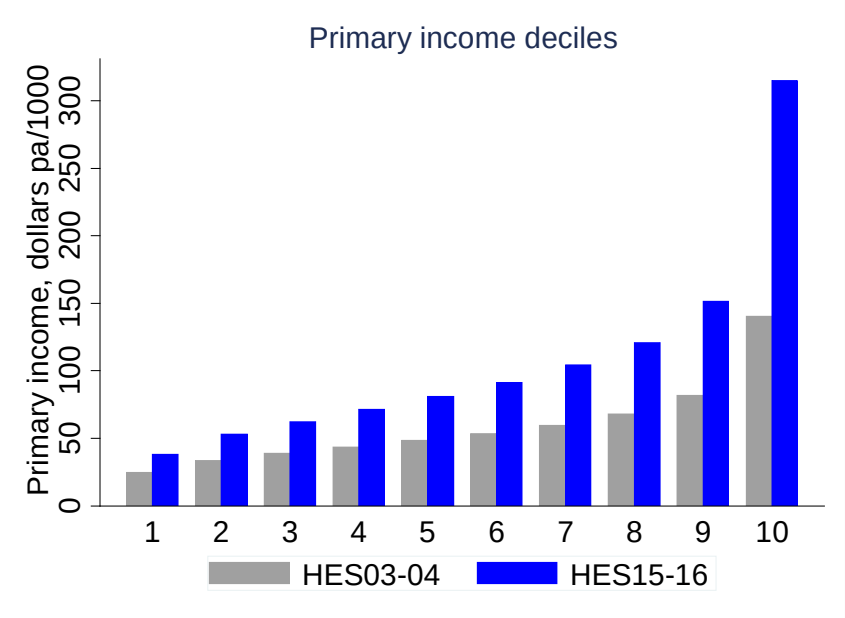




2003-04 and 2015-16

Table 2 % Change: 2003-04 to 2009-10 and 2009-10 to 2015-16

Decile	1	2	3	4	5	6	7	8	9	10
03-04/09-10	28.57	27.16	27.67	31.00	32.66	35.23	38.56	40.18	43.27	52.17
09-10/15-16	19.25	24.22	25.30	25.04	26.06	26.23	26.97	27.10	29.40	47.86



Rise in nominal primary incomes: **53.31%** in decile 1 and **124.37%** in decile 10

Decile	1	2	3	4	5	6	7	8	9	10
%	53.31	57.96	59.97	63.82	67.24	70.70	75.92	78.18	85.40	124.37

We observe the following

(i) Inequality rose across each of two six-year periods. While percentage rise in top decile is greater in first period than in second, at 52.17% and 47.86%, respectively, the percentage gains across deciles 1 to 9 in second period are lower. Gini Coefficient rose from 0.2955 to 0.3315 and to 0.3659.

(ii) Primary incomes rise slowly across each distribution until towards the top decile. Mean income in decile 10 approaches twice that of decile 9.

(i) conflicts with Productivity Commission's findings based on equivalised incomes.

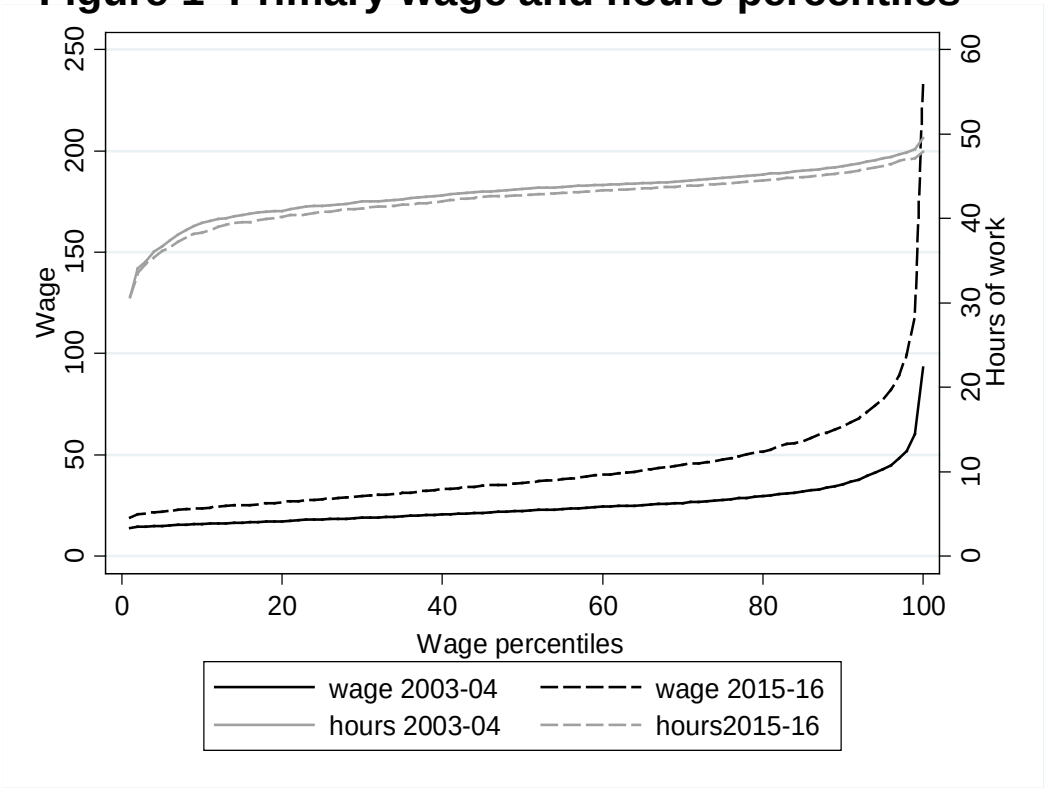
(ii) shape of profile reflects findings on top income shares.

Percentile wage and hours profiles

(ii) Informative to view 2003-04 and 2015-16 primary wage and hours of percentile profiles (Andrienko, Apps and Rees, 2016).

- Wage rate profile rises slowly and is virtually linear up to the 80th percentile and then turn sharply upwards, reflecting high levels of top incomes.
- Hours are relatively flat beyond the 10th percentile.

Figure 1 Primary wage and hours percentiles



Ranking errors

Given flatness of wage and earnings profiles up tp 90th percentile, together with small rise in average hours, can expect a welfare ranking defined on money income or consumption to vary dramatically with changes in second earner labour supply.

Visually evident from primary wage profile - a low wage single income household at 20th percentile will be re-ranked towards the 80th percentile when 2nd earner goes to work for same income.

Extent of re-ranking for a given demographic group will depend on degree of heterogeneity in second earner hours at a given primary income and second wage.

Ranking errors

Can illustrate very simply.

Rank income units in HES 2015-16 sample by primary income.

Next, split records in each quintile into two subsamples according to median second hours. Each quintile will contain:

- 50% of H1 couples with 2nd hours at or below the median
- 50% of H2 couples with 2nd hours above the median

Wide gap between H1 and H2 quintile data means for earnings due to heterogeneity in 2nd hours at a given primary income.

H1 & H2 earnings and hours

Table 3a Primary income quintiles, 2015-16

Primary income quintiles	1	2	3	4	5	All
1. Primary income $pa	45481	66838	86250	112724	233203	108875
2. H1 second income $pa	6603	18259	19714	23675	31173	19523
3. H2 second income $pa	32384	47873	58568	71730	89587	59682
4. H1 second hrs/wk	3.27	12.14	11.34	11.22	9.09	9.46
5. H2 second hrs/wk	34.54	41.65	41.50	42.00	39.97	39.79

H1 overall average 2nd income is $19,523 and hours, 9.46/wk.
H2 overall average 2nd income is $59,682 and hours, 39.9/wk.

H1 & H2 household incomes

Table 3b Household income quintiles, 2015-16

H'hold income quintiles	1	2	3	4	5	All
5. Household income $pa	58289	95385	124121	162509	304082	148906

Upper income limit of quintile 1 is $57,512 and the lower income limit of quintiles 4 is $96,824.

A single income couple earning $50,000 will move from quintile 1 to quintile 4 if second partner goes out to work for same income.

Single earner household earning $100,000 for working 40 hours/wk and a two-earner household working a total of 80 hours/wk for same income assumed to have same standard of living.

Kids vs. no kids

Standard objection: household income fails to adjust for demographic variation and scale economies.

Could argue that gap between average market hours reflects choices by couples with and without dependent children

- adjusting for demographics would give a different result.

Argument is not supported by the data - evident when we rank families in a sample with the same number of dependent children by equivalised income.

Select families with kids 0 - 14

Select subsample of couples with 2 dependent children aged 0 - 14 years from HES 2015-16 sample.

Rank by primary income and split records into H1 and H2 subsamples.

Table 4 reports quintile data means for primary incomes and H1 and H2 second incomes and hours. Degree of heterogeneity in second hours closely matches results in Table 3.

Table 4 Primary income quintiles, 2015-16

Primary income quintiles	1	2	3	4	5	All
1. Primary income $pa	48556	72670	93236	120795	243922	154494
2. H1 2nd income $pa	11411	12768	11636	2199	31753	17728
3. H2 2nd income $pa	31359	45070	56322	68084	101270	60350
4. H1 second hrs/wk	6.58	7.60	5.58	9.52	10.94	8.08
5. H2 second hrs/wk	34.76	36.95	36.31	35.73	39.30	36.63

Kids 0 - 14

Table 5: Given all households have same number of dependent children, potential for high degree of error in a welfare ranking defined on household/equivalised income is evident from gap between H1 and H2 quintile data means.

Table 5 Household income ranking

Quintile	1	2	3	4	5	All
H'hold income $pa	63436	95708	126420	166270	318120	154490
H1: primary income	57295	83237	110270	140102	277687	114987
H2: primary income	45594	62450	81042	103267	213830	116390

Upper limit of quintile 1 is $83,200. Lower limit of quintile 4 is $142,640. A single earner family in quintile 1 with an income of $75,000 will be re-ranked to quintile 4 if second partner goes out to work for same income. Much of additional income may be spent on bought-in child care and related goods and services previously produced at home.

Kids 0-14

Table 6: Shows re-ranking by equivalised income.

Row 1: data means of equivalised income – PC's scale:

1 point for first adult; 0.5 points for each additional person aged over 14; 0.3 points for each child aged 0 – 14.

Rows 2 and 3 compare % distribution of H1 and H2 within each quintile.

Table 6 Equivalised income (=household income/2.1) quintiles, 2015-16

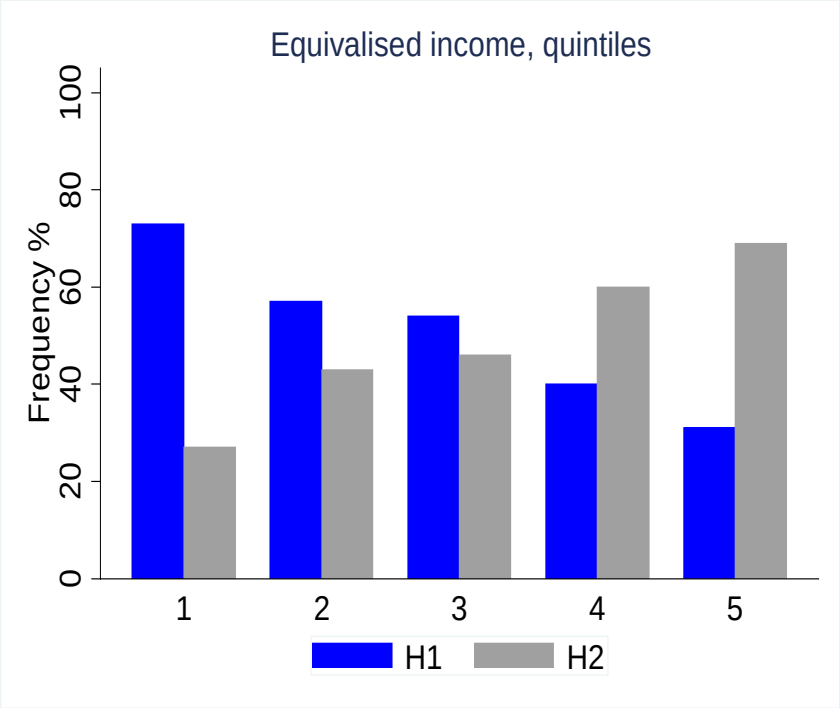
Quintile	1	2	3	4	5	All
Equiv. income $pa	30207	45575	60200	79177	151492	73566
H1: quintile split %	73	57	54	40	31	50
H2: quintile split %	27	42	46	60	69	50

Reranking of H1 & H2 by equiv. income

Figure 2: Tendency toward polarisation of H1 and H2.

- due in part to relatively flat primary wage profile up to 80th percentile, as shown in Figure 1.

Figure 2 Re-ranking by equivalised household income



% female primary earners

Rise in female labour supply and, in turn, in % female primary earners.

Table 7: 3.27 percentage point increase overall. Largest gain in quintile 1 followed by quintiles 2, 3 and 4. Change in quintile 5 is negative.

Top quintile dominated by male primary earners. Decline from 11.67% to 11.17% suggests it has become increasingly so over time. Consistent with evidence on rising top income shares.

Table 7 %female primary earners by primary income quintiles: 2003-04 & 2015-16

Quintile	1	2	3	4	5	Overall
1. 2003-04 %	28.46	22.95	23.08	17.44	11.67	20.72
2. 2015-16 %	33.96	28.77	26.08	19.97	11.17	23.99
3. % Change	5.50	5.82	3.00	2.53	0.50	3.27

Rising female labour supply

Potential misinterpretation of impact on overall inequality

View that overall inequality increases with rising female/second earner incomes as more women enter the workforce reflects the ranking errors associated with equivalised household income indicated in Figure 2.

When income and wage profiles match those in Figures 1 and 3, low wage couples will be shifted towards the middle and upper percentiles of equivalised income as their earnings rise with the entry of the 2nd partner into the workforce. The overall distribution of equivalised income can appear to be significantly more unequal.

3 Implications for tax design

Ranking errors of the kind illustrated in Figure 2 provide support for joint taxation or, as in Australia, “quasi-joint” taxation introduced by replacing universal family payments with joint income-targeted payments.

System supported on assumption that contribution of the stay-at-home partner to a household’s standard of living is zero.

Under Australian system a second earner in a family with a primary income of less than average annual earnings can face MTRs that are well above the top rate. As her earnings approach that of the primary earner she can lose over half her income in tax, with little left to pay for child care in a highly priced and highly price variable market.

Optimal family taxation

Apps and Rees (2018): compares joint and individual taxation.

Illustrates well established efficiency losses under joint taxation (Rosen (1977) and Boskin and Sheshinski (1983)) and less widely recognised limits to redistribution imposed by such a system.

Model is nested within general model set out in Section 2.

Shows that progressive individual taxation with same tax structure for all (**not** gender-based taxation) significantly welfare-dominates joint taxation as tax base

Optimal family taxation

Reasons:

Individual taxation separates primary earners with low elasticities from second earners with high elasticities rather than pooling them as in joint taxation

Removes income-splitting advantage so that high primary earners face higher tax rates since can’t avoid taxes by reducing second earner’s labour supply through switch to untaxed household production

Optimal family taxation

Empirical specification. Production function takes CES form:

$$z_h = \gamma[(\beta(k_{2h}a_{2h})^{\rho_h} + (1 - \beta)(q_h b_h)^{\rho_h}]\,)^{1/\rho_h}$$

Time constraint: $b_h = l_{2h}$: *Must replace home care with bought in care*.

Household unitary utility function: $u_h = x_h - (y_{1h}/w_{1h})^{\alpha_1} + z_h^{\alpha_2}$
Second earner's leisure time is set to a constant.

Max a SWF of the form $[\sum u_h^{1-\pi}]^{1/(1-\pi)}$ with π the inequality aversion parameter.

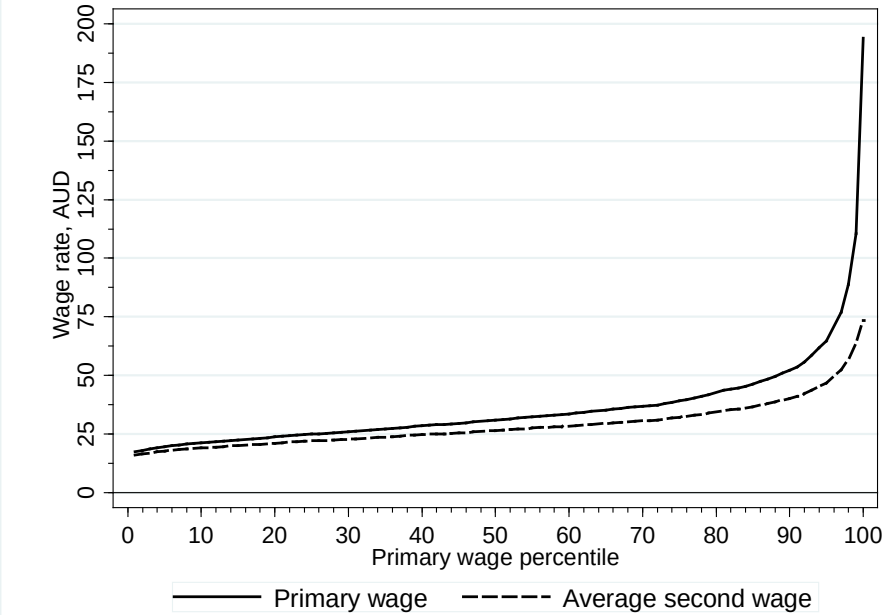
Heterogeneity driven by variations in p_h

A model of optimal family taxation

Select sample with a child aged 0 – 9, primary earner aged 25 to 59 years and works min. of 25 hours/wk.

First, construct primary wage distribution profile, then a second profile for average second wage at each primary wage percentile.

Figure 3 Percentile wage distributions



Optimal family taxation

Smoothed profile of primary hours is relatively flat, rising only slightly across the primary wage distribution, with average of around 8 hours/day for a five day working week.

Smoothed profile of second hours tends to rise across the middle percentiles and then decline towards the top.

High degree of heterogeneity at a given primary and second wage.

We split sample into H1 and H2 subsamples according to median second hours across the primary wage distribution.

Av. H1 and H2 hrs approx: 1.5 hrs and 7.5 hrs.

Parameter values, together with p_h, selected to generate labour supplies that approx. H1 and H2 average hours.

A model of optimal family taxation

Solve for optimal tax parameters under joint and individual taxation for a two-bracket piecewise linear system.

Table 8 Joint vs. individual taxation: Child care price variation: ±0.25, with $\rho = 0.7$

π	Tax system	τ_1, t_1	τ_2, t_2	α, a	Bkt[a]	SW	H1 hr[b]	H2 hr[c]
0.3	Joint	0.07	0.19	7876	97	223061	1.67	7.20
	Individual	0.05	0.48	8885	95	224236	1.80	7.41
0.5	Joint	0.11	0.22	11796	97	4539888	1.44	6,79
	Individual	0.06	0.53	11639	87	4574157	1.73	7.31

Individual taxation is consistently welfare superior to joint taxation

Far more progressive MTR scale is optimal – can achieve a higher degree of redistribution at a lower efficiency cost.

Optimal family taxation

Why these results are important:

- Since 1960's – fall in fertility as women gained control of their fertility - reflects aim to escape low paid jobs post young children by working longer pre-children.
- Joint taxation - reinforces wage gap effects of labour market discrimination and its impact on work choices
- undermines future tax base for public funding of education, child care, health and infrastructure.
- Low fertility and low second earner labour supply creates demographic change problem across life cycle.

4. Modeling the life cycle

Recent contributions to the life cycle literature attempt to recognise couples and two-parent families.

Results claim to be relevant for public policy.

Scepticism warranted due to data limitations and model assumptions.

Explained as follows:

4.1 Standard life cycle model

4.2 The family life cycle model based on Apps and Rees (2009, 2010).

4.3 Life cycle model – a recent contribution

4.1 Standard life cycle model

Standard model - assumptions

Household treated as single individual: max's pdv of lifetime utility.

Exog. labour income stream has inverted U-shaped profile.

Perfect capital market so predict smoothed consumption profile – decoupling of consumption and income streams

Data fail to confirm prediction: consumption closely tracks income.

Extensions that aim to resolve this and other "puzzles":

- Endogenous leisure/labour supply choices
- Uncertainty: stochastic wage process
- Imperfect capital market: "liquidity constraint"
- Emphasis on precautionary saving

Outcomes of extensions

Literature which has emerged from these extensions preserves individualistic nature of the household in three ways:

1 Defines life cycle on age of “head of household”

2 Utility function of household is essentially individualistic

3. Consumption flows transformed into “as if” individual values by deflating by an equivalence scale

Additional family members represented by demographic variables as “preference shifters”.

Result is continued treatment of the household as a “black box” that fits mould of single individual.

Life cycle model – Apps and Rees (2009)

Defined in terms of family life cycle - presence and age of children:

- Phase 1: couples pre-children
- Phase 2: At least one child of pre-school age is present
- Phase 3: Children of school age or older but still dependent
- Phase 4: No dependent children and male partner aged < 60
- Phase 5: Retirement male - partner aged 60 - 79 yrs

Data: ABS 2005-06 Time Use Survey (TUS).

Life cycle time use

Based on ABS 2005-06 Time Use Survey (TUS) and HES 2015-16

ABS TUS superior to most time use surveys because two activities, labelled primary and secondary, are recorded per activity episode if there is a second activity.

Recognises importance of *joint production* in the household - gives much more accurate data on child care.

US time use surveys: now record if child is present - but still inadequate - activity not classified as involving child care as a joint product, implies underestimate of child care time and undervaluation of second earner output.

Life cycle time use (TUS 2005-06)

Table 9 Life cycle labour supplies, domestic work, child care and leisure

	Male hours			Female hours		
Phase	**Market**	**Domestic**	**Child care**	**Market**	**Domestic**	**Child care**
1	2213	718	-	1882	928	-
2	2127	815	1008	764	1654	2521
3	2103	816	355	1158	1840	807
4	1803	934	-	1078	1761	-
5	413	1265	-	238	1703	-

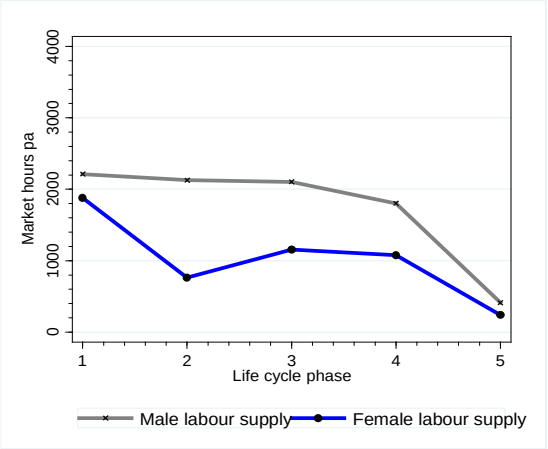
Phase 2: Fall in female labour supply

Remains low for remainder of life cycle

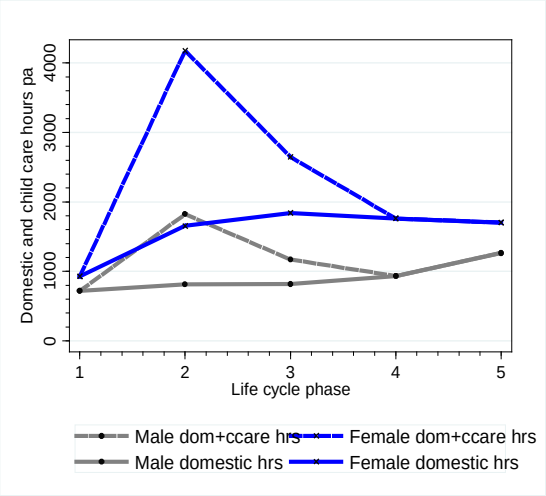
Life cycle time use (TUS 2005-06)

Figure 4a

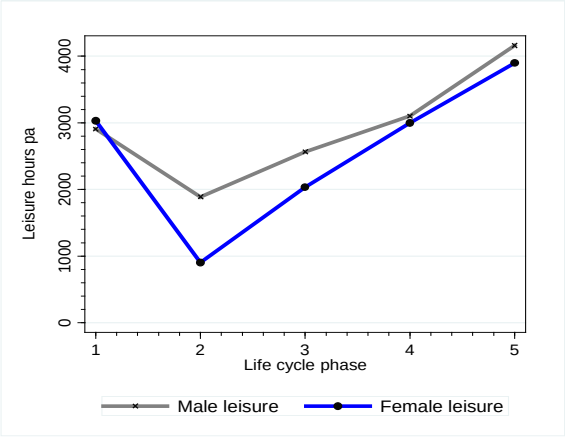
(a) Labour supplies



(b) Household production



(c) Leisures

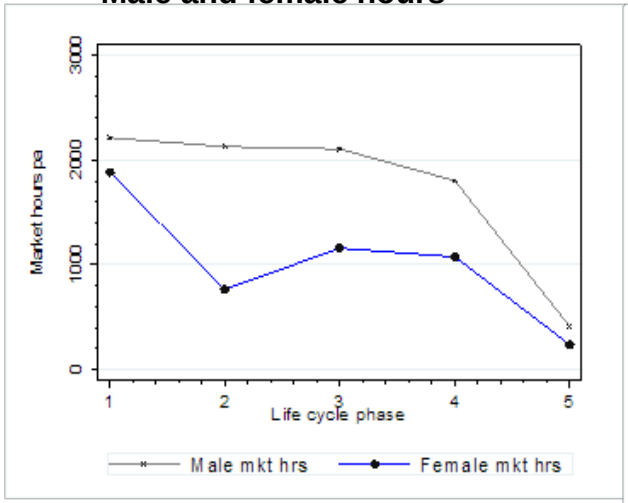


Phase 2: Dramatic fall in female leisure. Male leisure also falls.

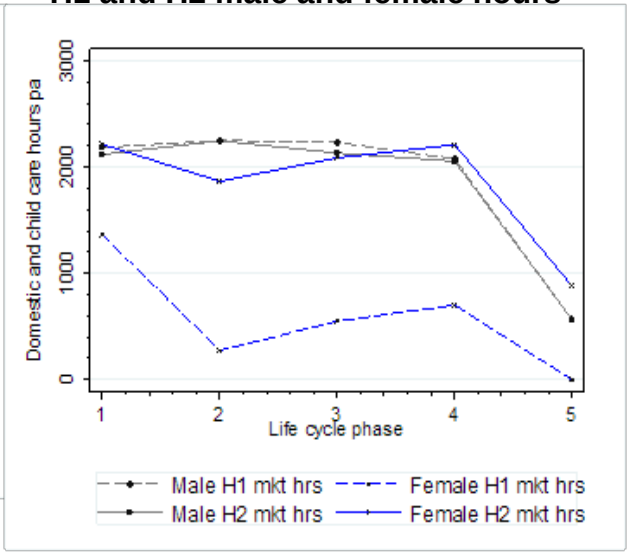
Heterogeneity (TUS 2005-06)

Figure 4b Labour supply heterogeneity (TUS 2005-06)

Male and female hours



H1 and H2 male and female hours

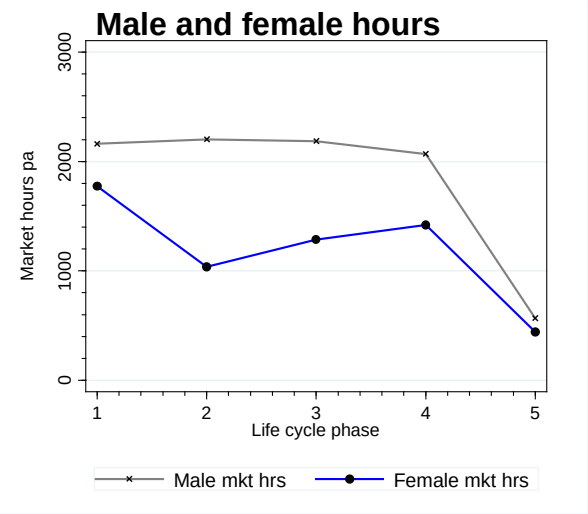


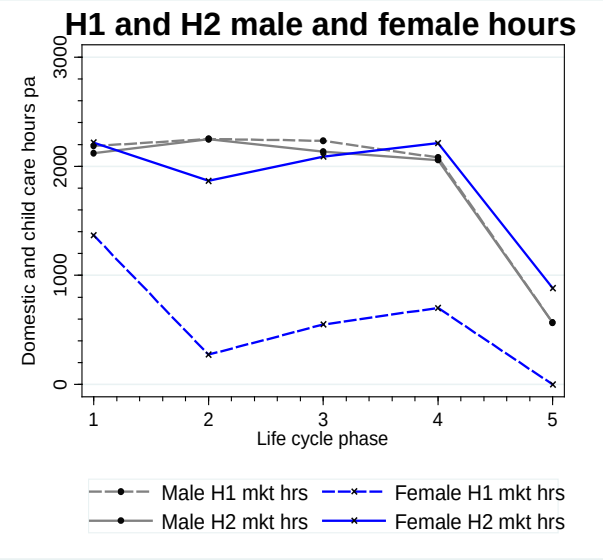
Life cycle labour supply (HES 2015-16)

Table 10 Male and female labour supplies (HES 2015-16)

	Males			Females		
Phase	Hours	H1	H2	Hours	H1	H2
1	2161	2186	2121	1772	1368	2217
2	2202	2250	2249	1036	273	1866
3	2187	2234	2135	1285	549	2089
4	2068	2080	2056	1419	701	2211
5	566	566	566	441	0	882

Figure 5 Labour supply and heterogeneity (HES 2015-16)





Employment status by gender

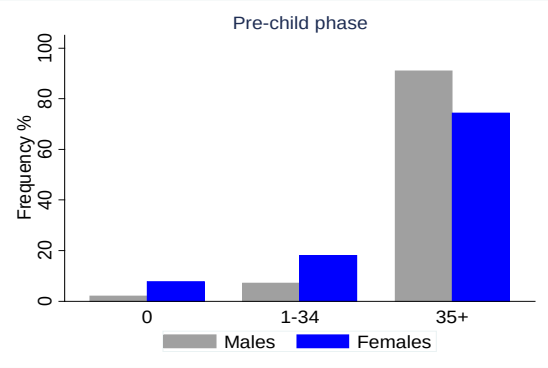
Table 11 Employment status by gender (HES 2015-16)

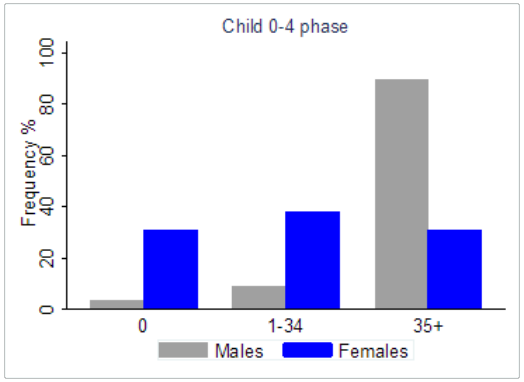
	Primary earner			Second earner		
Phase	FT%	PT%	NE%	FT%	PT%	NE%
1	90.9	7.1	2.0	74.3	18.0	7.7
2	89.8	9.1	3.6	31.0	38.2	30.8
3	88.0	8.1	3.9	35.4	45.0	19.6
4	83.3	10.6	6.1	46.9	36.8	16.3
5	19.7	10.8	69.5	12.7	17.9	69.4

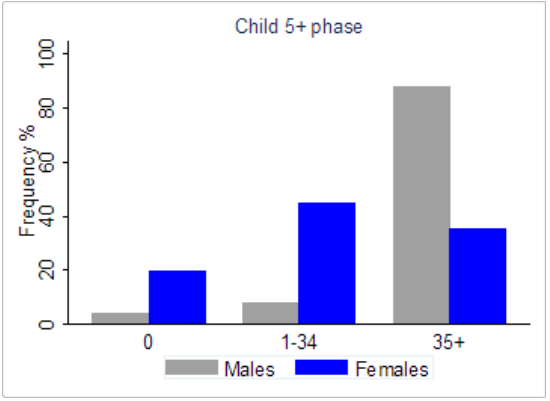
FT: 35 hours/wk and over. PT: 1 to 34 hours/wk NE: Not in employment

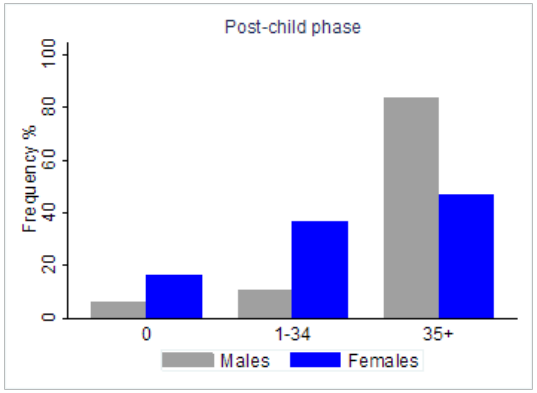
Employment status by gender (HES 2015-16)

Figure 6 Employment status by gender









Life cycle incomes

Table 12 Median incomes (HES2015-16)

Median household, male and female incomes and H1 and H2 female incomes*

Phase	Household	Male	Female	H1 Female	H2 Female
1	121975	68250	54652	42146	62002
2	114612	78572	32682	780	57512
3	126855	80574	41288	19760	60944
4	120076	72384	43316	23608	63492
5	27898	12532	5460	-	-

* Based on person record data for total current weekly income, excluding govt. pensions and benefits

Life cycle incomes and consumptions

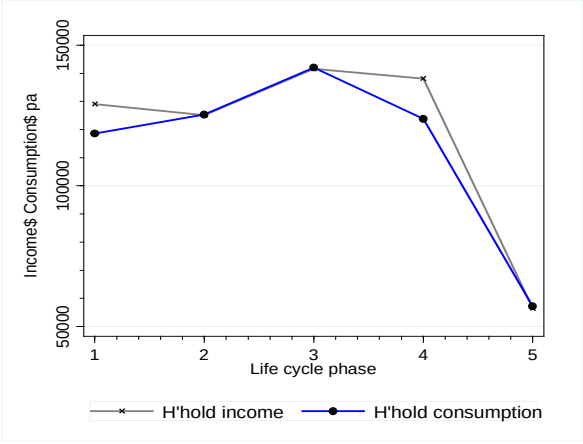
Table 13 Median incomes and consumption (HES 2015-16)

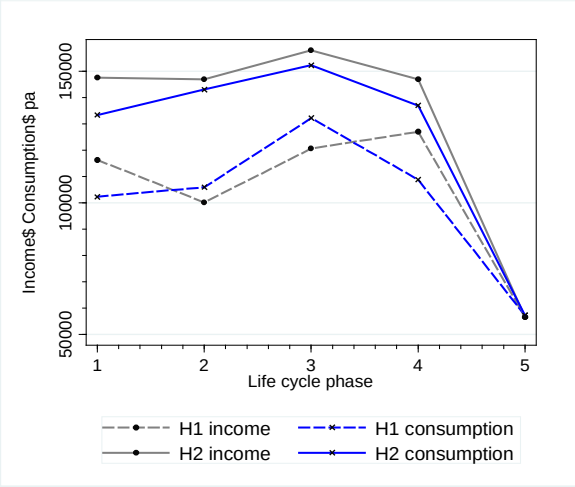
Median household income* and consumption**

Phase	Income	Consumption	H1 Income	H1 Cons	H2 Income	H2 Cons
1	129065	118566	116321	102287	147501	133332
2	125091	125324	100150	105922	146857	143052
3	141623	141990	120597	132184	157922	152260
4	138144	123792	126981	108788	146854	136923
5	56524	57200	-	-	-	-

* Total current weekly household income from all sources ** Total household expenditure

Figure 7 Median incomes and consumption (HES 2015-16)





4.3 Life cycle: recent contribution

“Children, Time Allocation and Consumption Insurance”
Blundell, Pistaferri and Saporta-Eksten, JPE (2018).

Extends standard model in an important direction.

Analyses effects of uncertainty on consumption and time use choices of couples incorporating child care (innovation in standard life cycle literature but not in other areas).

Household maximises utility function defined on equivalised total consumption, time spent by partners on leisure and child care, and preference shifters consisting first of a dummy variable for presence of child present aged 10 or less (assumed child care range) and a stochastic preference shock.

Life cycle – recent contribution

Main results:

1**. Household self insurance:** Female (second earner) labour supply plays important role in compensating for adverse shocks to male (primary earner) wage - she increases labour supply when he gets negative wage shock.

2. **Tax/transfer policy**: Presents "revenue neutral" comparison of two policies for families:

(i) increase in a universal lump sum payment to mothers

(ii) subsidy that reduces "fixed costs of work" for working mothers.

Conclusion: (i) is superior - higher social benefit due to smaller negative effect on female labour supply than (ii) which results in a significantly larger increase in female labour supply.

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Both results open to question.

Life cycle – recent contribution

How are results obtained?

"**Production function**" for child care: two parental time inputs

- does not include bought in child care time as a substitute for parental time (*o*mits b_h with time constraint $b_h = l_{2h}$).

Fails to see mother's time at work must be replaced by child care time.

Bought in child care is consumption rather than an input to z.

Net of child care costs and tax, mother's longer working hours may bring little to no extra income. Also ignores q_h, quality of child care time.

Possibility of self insurance is very limited when kids are aged 10 or less. Even for children of school age household's requirement for child care may be considerable.

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Life cycle – recent contribution

Result for 2: child benefit vs subsidy to “fixed cost of work”

- draws on PSID data on expenditure on child care and adds to consumption.

Has perverse result that reduction in child care expenditure due to a subsidy reduces consumption and therefore household utility!

American Time Use Survey (ATUS) severely limited for the measurement of child care time – records only one activity.

Reports if child is present.

Life cycle – recent contribution

Consider Table 1 (p. S92) from Blundell et al.

	Mean	P25	Median	P75
Head (Imputed)	330	299	331	360
Wife (excluding O's)	656	303	542	867

On average, father spends roughly 55 minutes and mother 1 hour and 45 minutes a day on care for children under 10.

Data does not cover time spent on "joint production", such as carrying out household tasks while looking after children.

So underestimates mother's child care time. Makes expansion of child care look easy. Relevant to both results.

Life cycle – recent contribution

Life cycle defined as follows:

All women have all their children at age 28 (so children leave the household when mother is 38), and wage shocks - positive or negative for each spouse - take place when the women are 30.

Analysis begins at age 26.

Life cycle – recent contribution

Quote from paper containg most results:

"*Increasing income in the period when children are present (through the subsidy) allows [households] to reduce savings and increase consumption in the pre-children period.*

Consistent with the direct wealth effect of the unconditional subsidy, households also increase leisure and time spent with kids at the expense of hours of work."

So in this case both labour supplies fall.

Under subsidy to fixed costs of work:

"*Unlike the unconditional subsidy, the employment subsidy has a large impact on labor supply, especially of women [.....] [It] also reduces leisure and especially time spent with kids for the wife, along with a slight reduction in labour supply and a slight increase in time spent with kids for the husband*."

Life cycle – recent contribution

Increase in child benefit → increase in consumption, leisure and child care. Since all enter positively in utility function, utility increases.

Subsidy to mothers' fixed cost of work → large increase in female labour supply. Overall leisure and child care fall and therefore utility falls.

In addition, when kids are present the fall in costs of work reduces child care expenditure which, since this is a component of consumption, means utility also falls.

Although in pre- and post-child periods consumption increases, overall result is that utility gain from the child benefit greatly exceeds that from subsidy to child costs.

Life cycle – recent contribution

Missing elements in model:

1. Missing time constraint ($b_h = l_{2h}$ as in Apps & Rees model) implies increase in female labour supply cannot reduce amount of child care.

1. Model ignores fact that this time constraint can be relaxed by buying in child care which is a variable cost depending on hours 2nd earner works rather than a fixed expenditure to be included in consumption.

2 implies not only that the consumption loss is overestimated, but analysis focuses on wrong policy alternative - should focus on a subsidy to the cost of bought in child care.

Life cycle – recent contribution

Alternative policy:

Subsidy for bought-in child care at a given market price.

Effect: a lower MTR for the wife → increase in her labour supply but no decrease in the child care output because bought-in care is a substitute for her time.

Policy is likely to increase the output of child care, since the implicit price of child care to the household falls and quality (q_h) of bought in care can rise.

There would be efficiency gains which are not present in the paper because both subsidies are lump sum and all effects are income effects.

Life cycle – recent contribution

Since 2nd earner's work decision depends on net-of-tax wage and child care costs, MTR induces dead weight loss at the margin.

Then a subsidy to child care costs reduces effective MTR and therefore deadweight losses.

This represents in effect a move from joint towards individual taxation which yields efficiency gains (cf Apps and Rees 2018).

Fehr and Ujhelyiova (2012) show for a SDGE model calibrated on German data that policy of switch from joint to individual taxation plus subsidies to child care welfare-dominates increasing child care benefit when both are revenue neutral in the usual sense.

Concluding Comments

Paper highlights importance of the following:

- Choice of a theoretical model of the household that addresses the real nature of the economics of the couple household/family rather than relying on implausible assumptions to match standard household models.

- A modelling strategy that is not constrained by existing data when these are clearly inadequate for the aims the paper purports to be pursuing.

- A theoretical approach that clarifies the data we really need in order to deal convincingly with the policy issues of interest.

Concluding comment

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