HOW DO FAMILIES DEAL WITH ADVERSE LABOUR MARKET CONDITIONS?
CHILDREN, FAMILY TIME-USE AND CONSUMPTION SMOOTHING

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- The research is motivated by two key features of the labour market:
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  - growing overall earnings inequality.

- Here I will look at implications for consumption, labour supply and time-use allocations within families.

- I will also briefly examine the impact of deteriorating economic outcomes for young adults on family living arrangements.

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We ask how time spent with children affect labor supply elasticities and consumption insurance mechanisms.

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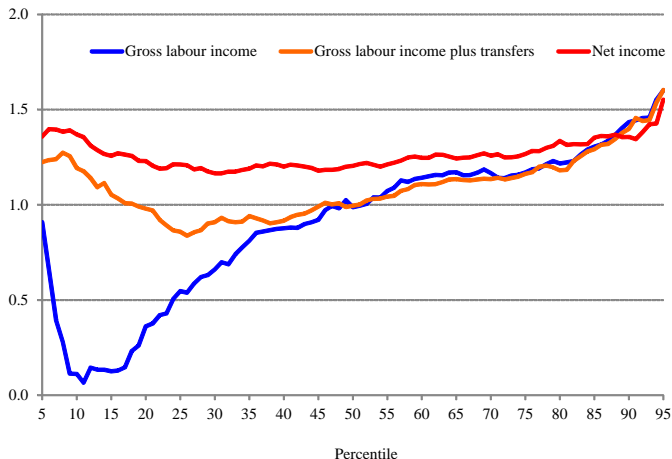**It's team work!** **To set the scene, some background descriptives....**

Weekly earnings and hourly wage growth, men and women, UK 1994–95 to 2014–15
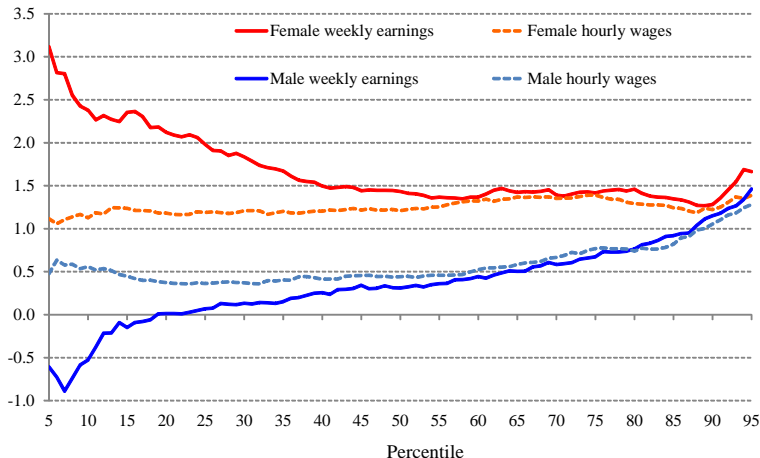
Notes: Average annualised real growth (%).
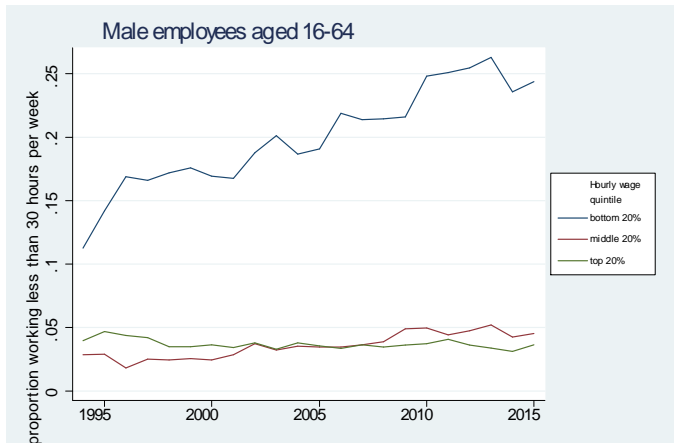Source: Belfield, Blundell, Cribb, Hood and Joyce (2016)

Household income growth for working households, UK 1994–95 to 2014–15

Notes: Average annualised real growth (%).
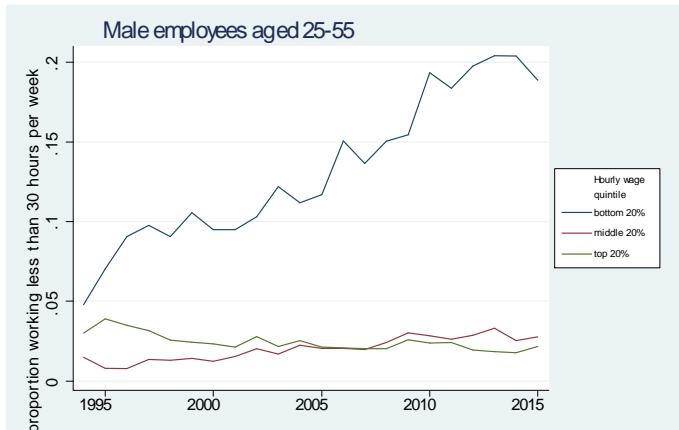Source: Belfield, Blundell, Cribb, Hood and Joyce (2016)

Proportion of Men Working Less than 30 hours per week, UK 1994–95 to 2014–15

Male employees aged 16-64

Proportion of Men Working Less than 30 hours per week, UK 1994–95 to 2014–15

Male employees aged 25-55

Earnings Change by Education and Gender, US
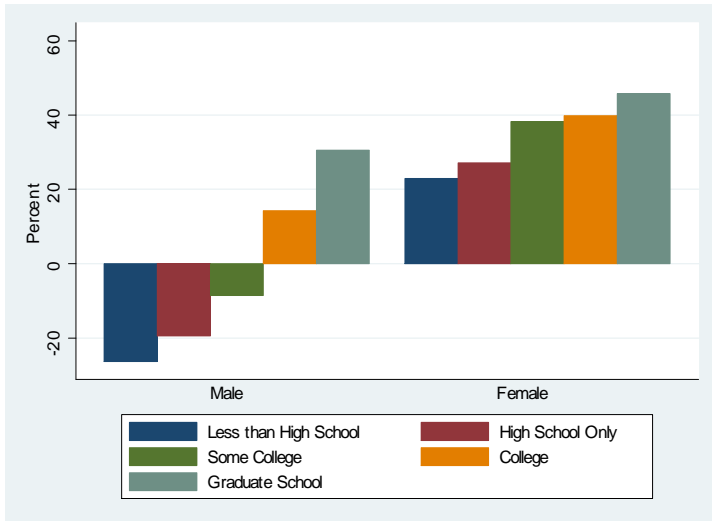
Notes: CPS, real median earnings 1976-2014, Ages 25-55;
Source: Blundell, Norris-Keiller and Ziliak (2017)

Male Median Real Wages by Education in the US
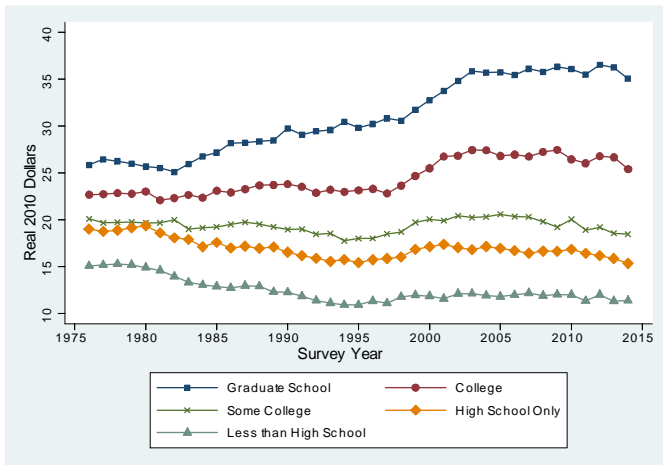
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Male Median Real Wages by Education and Race in the US
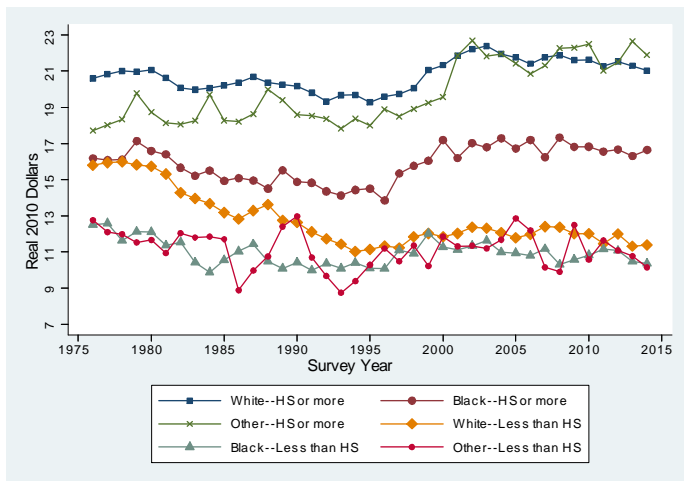
Notes: CPS, Men Ages 25-55;
Source: Blundell, Norris-Keiller and Ziliak (2017)

Expenditure per Capita, Non-Medicaid Means Tested Programs, US.
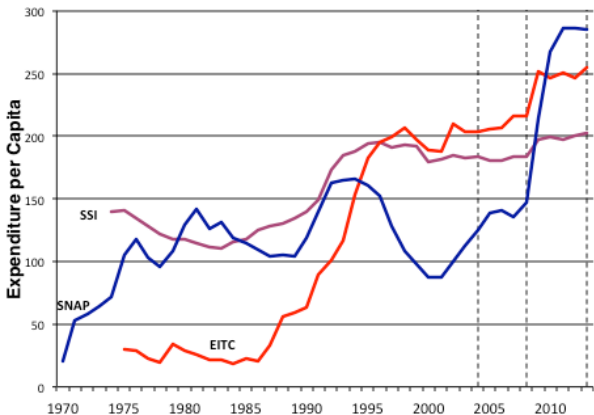
Source: Moffitt (2016); SNAP, EITC and SSI, [note AFDC/TANF].

Male Real Wages Inequality by Birth Cohort and Age in the US
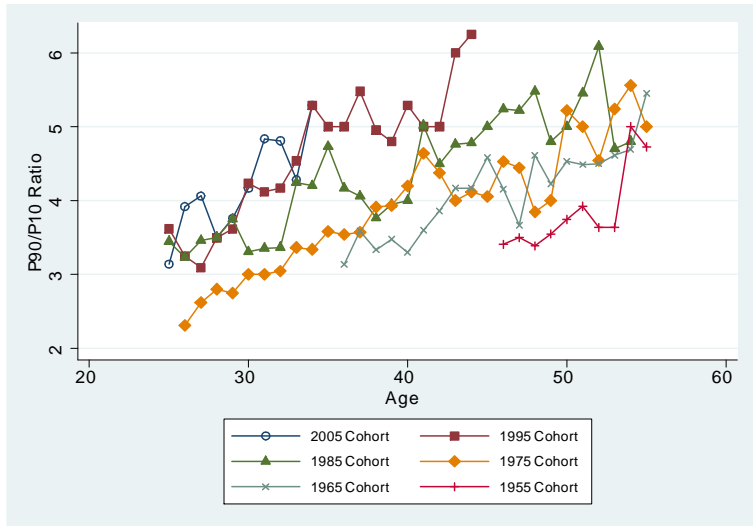
Notes: CPS FTFY workers aged 25-55;
Source: Blundell, Norris-Keiller and Ziliak (2017)

Consumption inequality by age and birth cohort (UK)
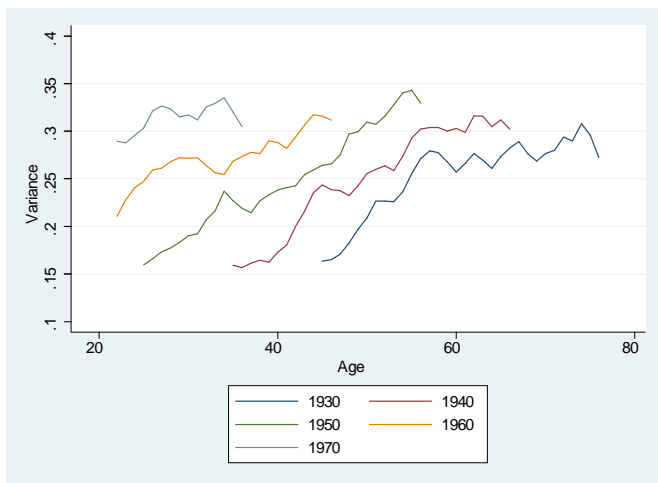
Notes: Variance (log); Source: Blundell, O'Dea and Joyce (2016).

Co-residence Patterns by Age and Time in Britain

Notes: BHPS-USoc.
Source: Blundell, Etheridge and Crossley (2017).

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FRAMEWORK FOR ANALYSIS

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  - Self-insurance (i.e., savings),

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  - Family networks, transfers and co-residence.

- The aim is to develop a longitudinal/panel data modelling approach for uncovering the role of these 'mechanisms',
  - during working life,
  - primarily among families with children.

DATA SOURCES

- In this research we use various sources of:
  - household longitudinal data, e.g. PSID, BHPS, USoc.
  - population register data, e.g. Norwegian Register Data.
  - (often) combined with other cross-section surveys, e.g. FES, ATUS.

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- For example, in this talk, I will focus mostly on work using the new PSID data (1999-2015) for the US:
  - more comprehensive consumption measure,
  - relatively good quality earnings, hours, asset data,
  - but time-use outside labour supply is poorly measured,
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- Also look at responses in family living arrangements,
  - return to *Understanding Society* and *BHPS* for this!
- Start with the analysis of family labour supply and consumption responses to idiosyncratic earnings shocks.
- Then incorporate family time-use and the impact on mother's time with children.

MODELLING EARNINGS DYNAMICS.....

- The panel data dynamics of earnings can usefully be described through two latent components:
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- For each worker in a family we allow persistent and transitory earnings shocks. The distributions of these shocks differ by age, gender, cohort, education and region.

MODELLING WAGE GROWTH IN FAMILIES

- Assume the log of real wage of earner $j = \{1, 2\}$ at age t can be written as:

$$
\begin{aligned}
\log W_{j,t} &= X'_{j,t}\beta^j_W + F_{j,t} + u_{j,t} \\
F_{j,t} &= F_{j,t-1} + v_{j,t}
\end{aligned}
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- For earner $j = \{1, 2\}$, wage growth is then given by:

$$\Delta \log W_{i,j,t} = \Delta X'_{i,j,t}\beta_j + \underbrace{\Delta u_{i,j,t}}_{\text{Trans.shock}} + \underbrace{v_{i,j,t}}_{\text{Perm.shock.}}$$

- The shocks vary with age and cohort, and can be correlated across spouses.

IDENTIFICATION (WAGE PARAMETERS)

From:

$$\Delta w_{i,j,t} = \Delta u_{i,j,t} + v_{i,j,t}$$

where $w_{it} = \log W_{i,j,t} - X'_{i,j,t}\beta_j$. It follows that the variance-covariance structure has the form:

$$
\begin{aligned}
\sigma^2_{u_j} &= -E\left(\Delta w_{i,j,t}\Delta w_{i,j,t+1}\right) \\
\sigma^2_{v_j} &= E\left(\Delta w_{i,j,t}\left(\Delta w_{i,j,t+1} + \Delta w_{i,j,t} + \Delta w_{i,j,t-1}\right)\right) \\
\sigma_{u_j u_{-j}} &= -E\left(\Delta w_{i,j,t}\Delta w_{i,-j,t+1}\right) \\
\sigma_{v_j v_{-j}} &= E\left(\Delta w_{i,j,t}\left(\Delta w_{i,-j,t+1} + \Delta w_{i,-j,t} + \Delta w_{i,-j,t-1}\right)\right)
\end{aligned}
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- Estimated wage process in the PSID:
  - $\sigma^2_{u_1} = 0.0275, \sigma^2_{u_2} = 0.0125, \sigma^2_{v_1} = 0.0303, \sigma^2_{v_2} = 0.0382$.
  - Cross-spouse wage correlations are small and positive, see BPS (2016). Allow to vary by age, region and education. Detailed work on birth cohorts in the Norwegian Population panel data.
  - No insurance here!

ASSORTATIVE MATCHING AND PREFERENCE COMPLEMENTARITIES

- Allow for correlated shocks to spouses *individual wages*
  - assortative matching (and data) suggests positive correlation,
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- 'Frisch' complements but 'Marshallian' substitutes!
  - even with correlated wages and complementary preferences, the framework allows a **persistent** (Marshallian) decline in one spouse earnings to induce an increase earnings of the other to maintain consumption.
  - $\implies$ might love to spend time together but have to eat!

PANEL DATA TRANSMISSION PARAMETER APPROACH

For example, for a couple, the impact of a persistent shock to his wages will depend on:

- preferences and constraints over family labour supply and consumption, also on

- the net assets the family can draw on, and

- how important his earnings are in the human capital of the family ....

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We develop a panel data model the transmission of transitory and persistent shocks from earnings through to family labour supply and consumption.....

- then look at impact on time with children.

PANEL DATA TRANSMISSION PARAMETER APPROACH

- Relate shocks to wages to changes in family labour supply (working hours) and consumption behaviour, BPS (2016)

$$
\begin{pmatrix} \Delta h_{1,t} \\ \Delta h_{2,t} \\ \Delta c_t \end{pmatrix} \simeq \Theta X + \begin{pmatrix} \kappa_{h_1,u_1} & 0 & \kappa_{h_1,v_1} & \kappa_{h_1,v_2} \\ 0 & \kappa_{h_2,u_2} & \kappa_{h_2,v_1} & \kappa_{h_2,v_2} \\ 0 & 0 & \kappa_{c,v_1} & \kappa_{c,v_2} \end{pmatrix} \begin{pmatrix} \Delta u_{1,t} \\ \Delta u_{2,t} \\ v_{1,t} \\ v_{2,t} \end{pmatrix}
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\kappa_{c,v_j} &= (1 - \pi_{i,t})\, s_{i,j,t} \frac{\eta_{c,p} \left(1 + \eta_{h_j,w_j} \right)}{\eta_{c,p} + \quad (1 - \pi_{i,t})\, \overline{\eta_{h,w}}}
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\kappa_{c,v_j} = (1 - \pi_{i,t}) \, s_{i,j,t} \frac{\eta_{c,p} \left(1 + \eta_{h_j,w_j}\right)}{\eta_{c,p} + (1 - \pi_{i,t}) \, \overline{\eta_{h,w}}}
$$

$$
\pi_{i,t} \approx \frac{\text{Assets}_{i,t}}{\text{Assets}_{i,t} + \text{Human Wealth}_{i,t}}
$$

- Relate shocks to wages to changes in family labour supply (working hours) and consumption behaviour, BPS (2016)

$$
\begin{pmatrix} \Delta h_{1,t} \\ \Delta h_{2,t} \\ \Delta c_t \end{pmatrix} \simeq \Theta X + \begin{pmatrix} \kappa_{h_1,u_1} & 0 & \kappa_{h_1,v_1} & \kappa_{h_1,v_2} \\ 0 & \kappa_{h_2,u_2} & \kappa_{h_2,v_1} & \kappa_{h_2,v_2} \\ 0 & 0 & \kappa_{c,v_1} & \kappa_{c,v_2} \end{pmatrix} \begin{pmatrix} \Delta u_{1,t} \\ \Delta u_{2,t} \\ v_{1,t} \\ v_{2,t} \end{pmatrix}
$$

$$
\kappa_{h_j,u_j} = \eta_{h_j,w_j} \rightarrow [\text{Frisch}] \qquad \kappa_{h_j,v_j} \rightarrow [\text{Marshall}] \qquad \kappa_{h_j,v_{-j}} \rightarrow [\text{AWE}]
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$$

$$
s_{i,j,t} \approx \frac{\text{Human Wealth}_{i,j,t}}{\text{Human Wealth}_{i,t}}
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PANEL DATA TRANSMISSION PARAMETER APPROACH

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$$

$$
\eta_{c,p} \rightarrow \text{Consumption EIS}
$$

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$$\overline{\eta_{h,w}} = s_{i,j,t} \eta_{h_j,w_j} + s_{i,-j,t} \eta_{h_{-j},w_{-j}}$$

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$$

$$
\beta \rightarrow \text{External insurance (networks, etc.)}
$$

CONSUMPTION SMOOTHING

Extent of consumption 'smoothing' w.r.t. j's permanent wage shock:

$$\kappa_{c,v_j} = (1 - \beta)(1 - \pi_{i,t}) s_{i,j,t} \frac{\eta_{c,p}\left(1 + \eta_{h_j,w_j}\right)}{\eta_{c,p} + (1 - \beta)(1 - \pi_{i,t})\overline{\eta_{h,w}}}$$

- increases with $\pi_{i,t}$ (accumulated assets allow better insurance of shocks)
- increases with β (outside insurance allows more smoothing)
- declines with $s_{i,j,t}$ (j's earnings play heavier weight)
- declines with $\eta_{c,p}$ (consumers more tolerant of intertemporal fluctuations in consumption)
- increases with $\eta_{h_{-j},w_{-j}}$ ("added worker" effect).

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Estimate on couples in the household panel data from the PSID 1998-2014 using a nonlinear moment estimator.

	1998	2000	2002	2004	2006	2008	All years	All years
Sample				Only Working Males				All Married
Consumption								Males
Total	28,447	32,994	36,482	42,873	49,165	44,995	39,257	38,733
Non durable Cons.	6,907	7,870	7,906	8,929	10,002	9,392	8,552	8,490
Food at home	5,489	5,818	5,961	6,307	6,673	6,734	6,165	6,104
Gasoline	1,419	2,052	1,945	2,622	3,328	2,657	2,339	2,318
Services	21,540	25,124	28,576	33,944	39,163	35,603	30,705	30,243
Food out	2,034	2,270	2,377	2,582	5,040	2,601	2,816	2,737
Health ins.	1,011	1,257	1,450	1,720	1,882	2,110	1,572	1,550
Health serv.	894	1,044	1,138	1,433	1,610	1,765	1,317	1,308
Utilities	2,284	2,653	2,705	4,683	5,085	5,632	3,856	3,823
Transportation	3,204	3,786	4,681	3,893	4,026	3,783	3,896	3,826
Education	2,105	2,414	2,592	2,719	2,866	2,802	2,589	2,523
Child care	594	651	687	724	724	917	714	677
Home ins.	429	479	554	619	687	716	581	574
Rent (or rent eq.)	8,984	10,570	12,392	15,571	17,241	15,276	13,366	13,225
Observations	1,717	1,753	1,740	1,727	1,751	1,791	10,479	11,638

Notes: PSID data, 1999-2009 waves. Baseline sample is married couples with working male aged 30-57. SEO sample excluded.

Missing values in consumption sub-categories treated as zeros. Match with NIPA

	1998	2000	2002	2004	2006	2008	All years	All years
Sample	Only Working Males							All Married
Assets (Medians)								Males
Total	177,000 [179,100]	205,000	231,000	271,000 [262,100]	305,000	270,000	240,000	233,000
Housing and RE	120,000 [127,300]	140,000	165,000	200,000 [196,700]	225,000	200,000	170,000	165,000
Financial assets	38,000 [33,400]	40,000	41,000	41,000 [41,200]	45,300	40,000	40,300	40,000
Total debt	55,000 [51,600]	64,000	78,000	89,000 [84,400]	100,000	107,928	78,500	74,000
Mortgage	50,000	59,000	70,000	80,000	90,000	98,000	70,000	66,182
Total net worth	100,000	117,000	125,000	149,000	170,000	121,000	127,000	125,000
Primary earner								
Participation rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95
Earnings|Work	55,709	61,927	63,440	67,748	74,233	78,414	67,008	66,068
Hours|Work	2,371	2,326	2,322	2,313	2,309	2,176	2,302	2,293
Secondary earner								
Participation rate	0.79	0.80	0.80	0.79	0.80	0.79	0.80	0.79
Earnings|Work	26,017	28,447	31,661	34,203	36,723	40,517	32,988	33,485
Hours|Work	1,676	1,693	1,707	1,717	1,668	1,667	1,688	1,699
Observations	1,717	1,753	1,740	1,727	1,751	1,791	10,479	11,638

Notes: PSID data, 1999-2009 waves. Baseline sample: married couples with working male aged 30-57. SEO sample excluded.

Missing values in assets sub-categories treated as zeros. Values in square brackets are from the SCF (couples sample). Asset

statistics use sample weights.
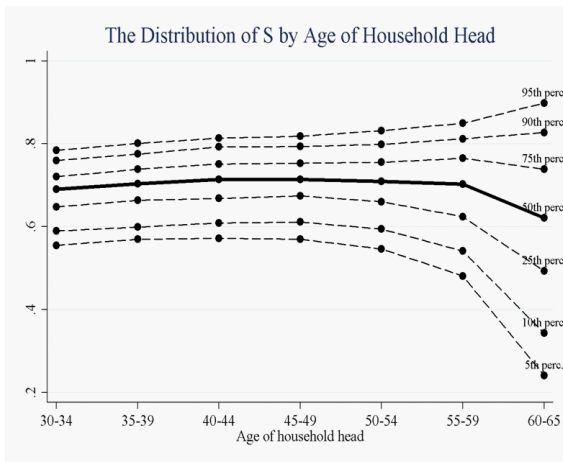
The share of his human wealth by age

$$s_{i,t} \approx \frac{\text{Human Wealth}_{male,i,t}}{\text{Human Wealth}_{i,t}}$$
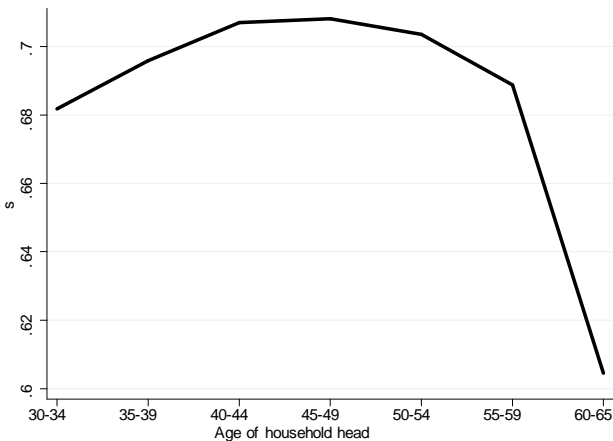
Notes: PSID couples. Source: Blundell, Pistaferri and Saporta-Eksten (2016)
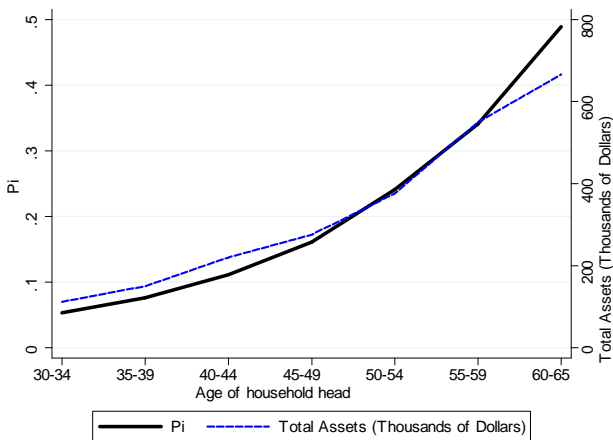
The distribution of his human wealth by age

$$s_{i,t} \approx \frac{\text{Human Wealth}_{male,i,t}}{\text{Human Wealth}_{i,t}}:$$

The Distribution of S by Age of Household Head

Source: Blundell, Pistaferri and Saporta-Eksten (2016)

The share of assets to human wealth by age

$$\pi_{i,t} \approx \frac{\text{Assets}_{i,t}}{\text{Assets}_{i,t} + \text{Human Wealth}_{i,t}}$$
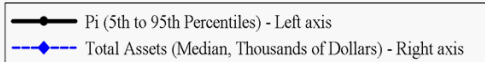

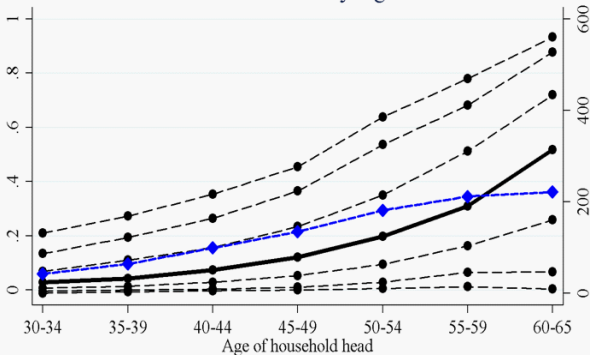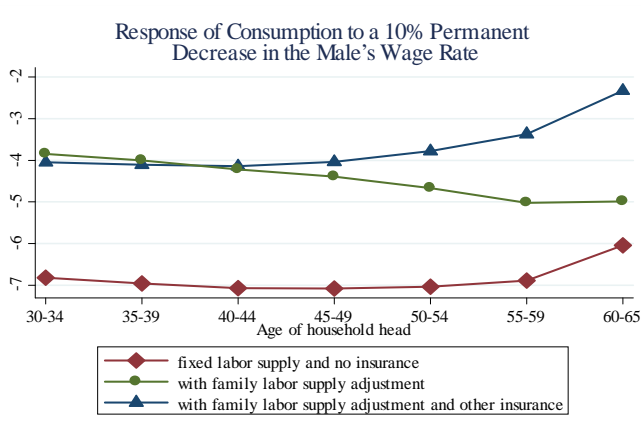Source: Blundell, Pistaferri and Saporta-Eksten (2016)

The Distribution of assets to human wealth by age

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The Distribution of Pi and Assets by Age of Household Head

Legend:
- Pi (5th to 95th Percentiles) - Left axis
- Total Assets (Median, Thousands of Dollars) - Right axis

x-axis: Age of household head

Household consumption responses to an adverse persistent shock to husband's real wages

Response of Consumption to a 10% Permanent Decrease in the Male's Wage Rate

Legend:
- fixed labor supply and no insurance
- with family labor supply adjustment
- with family labor supply adjustment and other insurance

Notes: Average response. Source: Blundell, Pistaferri and Saporta-Eksten (2016)

Household consumption responses to an adverse persistent shock to husband's real wages

Consumption Response to a -10% Permanent Shock to Head's Wages (κ_3)
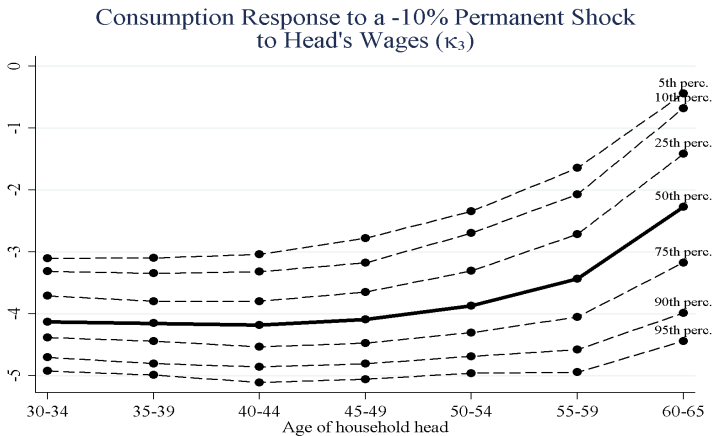
Notes: Distribution of responses.
Source: Blundell, Pistaferri and Saporta-Eksten (2016)

IMPLICATIONS....

- Suggests that family labor supply is a key mechanism for 'insuring' unexpected shocks,
    - especially for younger families and for those with limited access to assets,
    - leisure time turns out to be a 'Frisch' complement but a 'Marshallian' substitute.

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  - SNAP (Food Stamps) and EITC dominate with family labor supply responses making up the difference.

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- For lowest income quintile: consumption declines on average by only 2.6%,
  - SNAP (Food Stamps) and EITC dominate with family labor supply responses making up the difference.

- Overall, once family labor supply, assets and taxes/benefits are accounted for, there is little evidence for additional insurance.

- But where do these working hours adjustments come from?

- Time-use data (ATUS) allows us to unpack what's going on.

IMPLICATIONS FOR FAMILY TIME-USE ALLOCATIONS WITH CHILDREN

- Time-use data (ATUS) allows us to unpack what's going on.

- A tension between the desire of spouses to spend leisure time with each other, and the specialization in care of children,
  - complementarity in leisure but specialization in childcare,
  - family labor supply flips between being substitutes to being complements as the child ages...

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  - complementarity in leisure but specialization in childcare,
  - family labor supply flips between being substitutes to being complements as the child ages...

- A neat and simple household production model of time-use works a treat!
  - it is mother's time with children that takes a hit...
  - men do little to take up the slack.

STRATEGY FOR INCORPORATING TIME-USE

1. Extend the life-cycle model of family labour supply and consumption to incorporate home production function,
   - inputs of family time-use that depend on the number and ages of children.

2. Use data on time use, wage, consumption, income, labour supply and assets,
   - *combining* the PSID, ATUS & CEX to estimate the model.

3. Estimate the elasticities of family labour supply and multiple time-use goods w.r.t changes/shocks in parents earnings.

4. Draw implications of presence of young children for family hours elasticities *and* responses wage shocks.

- Note: the model and estimation details are found in Blundell, Pistaferri and Saporta-Eksten (2017).

	(1) mean	(2) p25	(3) median	(4) p75
Non-zero childcare time (head)	0.69			
Non-zero childcare time (wife)	0.91			
childcare annual hours (head) inc. 0s	320	0	195	498
childcare annual hours (wife) inc. 0s	709	260	585	1,023
childcare annual hours (head) exc. 0s	466	182	355	628
childcare annual hours (wife) exc. 0s	778	347	650	1,070

Notes: ATUS data from 2003-2014 for the sample of married couples, wife aged 25-65 with youngest child aged 10 or less.

DESCRIPTIVES OF CONSUMPTION, LEISURE AND WAGES IN THE PSID

	(1)	(2)	(3)	(4)
	mean	p25	median	p75
Total Consumption (exc. durables)	40,997	26,237	35,654	49,307
'Leisure' of husband	2,178	1,664	2,080	2,337
'Leisure' of wife	2,822	2,144	2,520	3,817
Hours of husband	2,011	1,835	2,080	2,500
Hours of wife	1,349	347	1,645	2,016
Hourly wage of husband	31.3	15.2	22.6	34.8
Hourly wage of wife	21.3	11.4	17.3	26.3

Notes: PSID data from 1999-2013 PSID waves, for the sample of married couples, wife aged 25-65 with youngest child aged 10 or

less. Consumption and wages in 2010 prices. Leisure is calculated assuming total hours is 4160 (5*16*52).

DECOMPOSING CONSUMPTION SMOOTHING

- Counterfactual consumption response to a male's permanent wage decline (10%) in three key components:
  - insurance via family labour supply,
  - insurance through taxes and benefits, and
  - insurance through savings.

- Female response to spouse's permanent wage:
  - leisure complementarity,
  - wealth effect,
  - time-use with children.

- We illustrate these channels by decomposing the average simulated counterfactual response to a permanent shock for a young family (male aged 35).

WHAT DOES A 10% PERMANENT REDUCTION IN HUSBAND'S HOURLY WAGE LOOK LIKE?

	Husband	Wife
Consumption:	-4.3%	

	Husband	Wife
Earner's average share of pre-tax earnings:	0.67	0.33
Earner's pre-tax earnings response:	-10.4%	+3.0%
Hours	-0.6%	+4.8%
Leisure	+0.7%	-1.4%
Parental time	+0.6%	-5.1%

Notes: ATUS and PSID, for a sample of working husbands and wives, working at least 80 hours per year. Based on the regressions run at age 35 in the model.
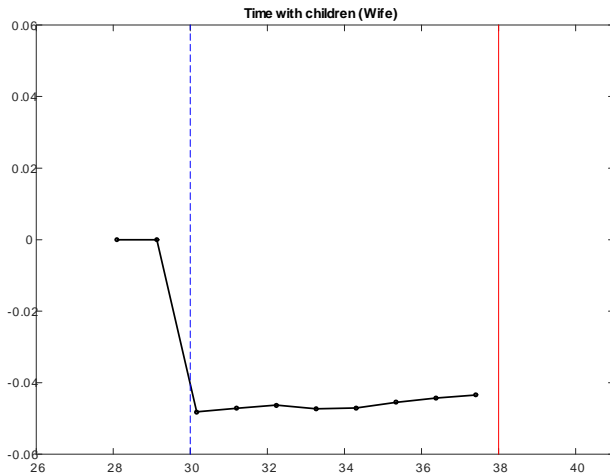Source: Blundell, Pistaferri and Saporta-Eksten (2017)

Mother's labor supply response to a persistent adverse shock (10%) to husband's earnings

Hours and employment (Wife)
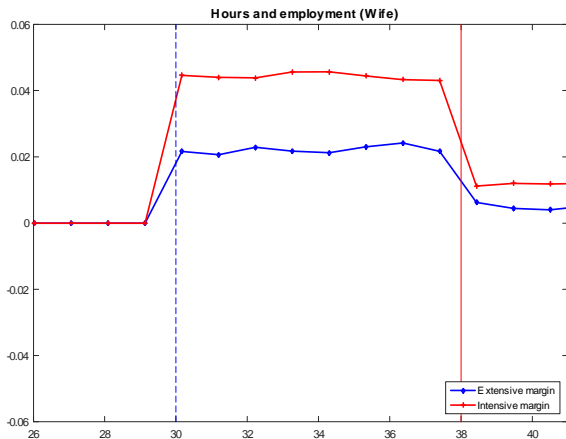
Notes: ATUS and PSID; Source: Blundell, Pistaferri and Saporta-Eksten (2017)

Mother's time with children response to a persistent adverse shock to husband's earnings

Time with children (Wife)

Notes: ATUS and PSID; Source: Blundell, Pistaferri and Saporta-Eksten (2017)
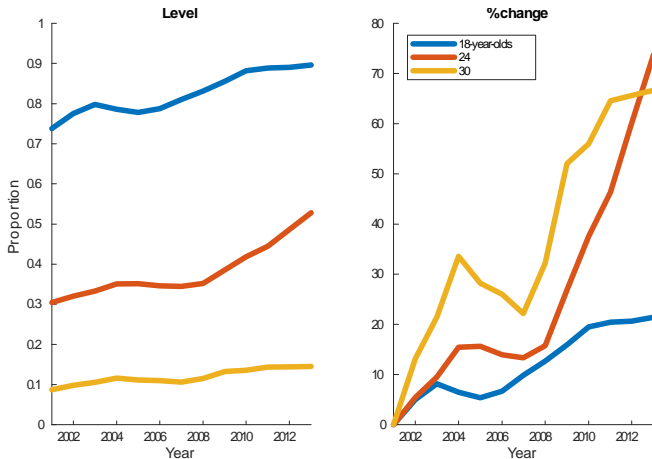
GATHERING UP THE RESULTS

- Developed a life-cycle panel data framework to examine some of the key sources of 'consumption smoothing' in response to unexpected changes (shocks) to labour market earnings.
- The results suggest that family labor supply is a key mechanism for 'insuring' unexpected shocks,
  - especially for younger families and for those with limited access to assets,
- The response of time spent with children to permanent wage shocks is important for understanding insurance from labor supply,
  - it is mother's time with children that takes a hit...
  - men do little to take up the slack.
- A natural next step: study the implications for children outcomes and on family structure.

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    - men do little to take up the slack.

- A natural next step: study the implications for children outcomes and on family structure.
- End by briefly returning to new work on the impact on co-residency patterns of decline in earnings, especially young low educated men.....

Increasing Co-residence Patterns by Age and Time in UK

Notes: BHPS-USoc.
Source: Blundell, Etheridge and Crossley (2017).

THE ROLE OF INTERGENERATIONAL CO-RESIDENCE

Younger workers, especially young men, have experienced deteriorating labour market outcomes compared to previous cohorts.

- $\implies$ rates of co-residence of young adults with parents have increased.

Preliminary results show this reflects a valuable source of insurance across generations.

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Estimating the value of this insurance is challenging:

- typically we do not observe direct transfers or measures of well-being,
- need to understand how income is shared, relative to the income earned when not living together (living with your mother).

THE ROLE OF INTERGENERATIONAL CO-RESIDENCE

- In this new work we combine USoc data on financial satisfaction with expenditure data from the FES to estimate:
  - sharing rules,
  - scale economies, and
  - direct well-being.

- The analysis shows that the insurance is driven by both a sizable transfer to children, and moderate economies of scale,
  - see Blundell, Etheridge and Crossley (2017).

WRAPPING-UP

- This research has been driven by two key motivating issues:
    - falling male real earnings, especially low skilled young men,
    - growing earnings inequality.
- The aim is to explore the mechanisms families use to accommodate adverse changes in earnings, to see how successful are tax/welfare systems and to suggest how policies could be better designed.
- The work suggests that family labor supply is an important mechanism for 'insuring' unexpected earnings shocks,
    - especially for younger families and for those with limited assets,
- The response of time spent with children to permanent wage shocks is important for understanding insurance from labor supply,
    - it is mother's time with children that takes a hit...
- Co-residency of young adults with their parents has also become a key insurance mechanism for young singles.

That's it for now!

How do Families Deal with Adverse Labour Market Conditions?

Understanding Society Conference 2017

Essex University

Richard Blundell

UCL & IFS

July 2017