

Biased Wage Expectations and Female Labor Supply

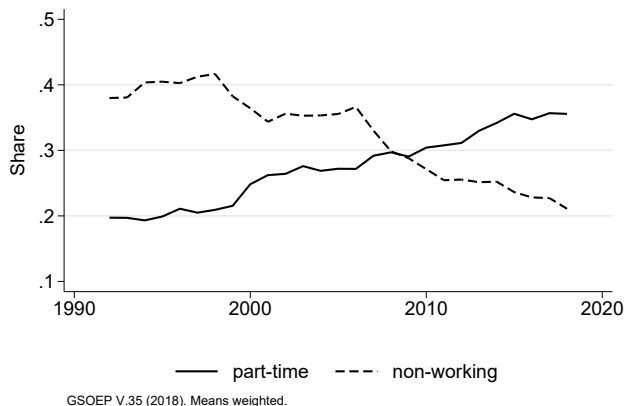
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Section 1

Motivation

Female part-time employment in Germany



- Rising female part-time employment (GER: 36%; OECD: 25%)

Part-time penalty over the life course



- Lower wage growth over the life-cycle for part-time employees
- Return to part-time experience only around 15% of full-time value
(e.g. Blundell et al., 2016; Adda, Dustmann, and Stevens, 2017)
- Implications for gender gap in life-time earnings and pension claims
(e.g. Cortés and Pan, 2019; Frericks et al., 2009; Goldin, 2014, Blau and Kahn, 2017)

Research questions

- 1 Do women have rational expectations about returns to experience in part-time and full-time employment and about the part-time penalty?
- 2 How do expectations about the part-time penalty affect employment choices and earnings over the life-cycle?
- 3 How can policy address adverse effects of biased expectations and increase female full-time employment and lifetime earnings?

Contribution

- We design counterfactual survey questions in the Socio-Economic Panel Innovation Sample (SOEP-IS) to elicit expected wage trajectories
 - ▶ Derive expected returns to experience in part-time and full-time work in within subject design
- We contrast expected returns to experience with realised returns to experience to test for biased expectations;
 - ▶ We control for endogeneity and selection using control functions which use variation in the tax and transfer system over time
- We develop a structural life-cycle model of female employment allowing for biased expectations regarding human capital accumulation in part-time (prelim)
 - ▶ Quantify the implications of biased expectations for employment outcomes and lifetime earnings
 - ▶ Evaluate policy reforms that address adverse effects of biased expectations

Findings

- ➊ Expected returns to experience in part-time and full-time work do not differ; women do not expect part-time penalty in experience
 - ▶ Women expect that an additional year of experience, both as a part-time and a full-time employee, increases wages by about 1.5%
- ➋ Empirical evidence for sizable part-time penalty in experience
 - ▶ Returns to experience in part-time employment are not different from zero; returns to full-time experience are close to 1.5% per year.
- ➌ Structural estimation: biased expectations have important implication for employment choices
- ➍ Policy simulation:
 - ▶ De-biasing reduces part-time employment, increases full-time employment and non-employment: no effect on lifetime earnings.
 - ▶ In-work tax credits for full-time employment have a positive effect on employment and lifetime earnings.

Literature

- Importance of beliefs for decisions and biased beliefs: Manski (2004), Zafar and Kuchler, Delavande and Zafar (2019) and Wiswall and Zafar (2021)
- Structural models of female employment with human capital accumulation in part time and full time employment: Blundell et al. (2016) and Adda et al. (2017) - period experience accumulation in part-time only around 15% of full-time value
- Structural models that relax assumption about rational expectations and time consistent behavior: Fang and Silverman (2009) and Chan (2017), Schneider (2017)
- Female employment and wage formation and gender gaps on the labor market: e.g. Manning and Petrongolo (2008), Goldin (2014) Blau and Kahn (2017)

Section 2

Data

Data - German Socio-Economic Panel (GSOEP)

Two surveys with a common set of socio-demographic variables, representative of German households

SOEP-Core → estimate part-time penalty free of endogeneity/selection

- occup. biographies, employment, earnings, health, satisfaction etc.
- waves 1992-2018, $N=92,198$ women-year observations, about $\bar{n} = 3,500$ obs per period.
- exploit panel dimension between 2007 - 2018 to estimate structural model

SOEP-IS → identify beliefs about experience accumulation process

- selected SOEP-Core questions & additional innovative content Ex.
- innovative module 'Earnings', waves 2016-2018, $N=473$ women-year obs.
- perceived/expected wage growth in full- and (!) part-time over next 10y

Descriptives and balancing

Sample: Females 20-60, excl. civil servants, self-employed, in training, military/community service or marginal employment.

Section 3

Expected Returns to Experience

Beliefs elicitation SOEP-IS

- Elicit expected wage trajectories in full-time ($>32\text{h/week}$) and part-time ($>5\text{h}$ and $<32\text{h/week}$) employment
- Individuals first report their expected monthly earnings in their current employment state - part-time or full-time employment, respectively - in one, two, and 10 years
- Second, they provide the same information for the counterfactual scenario: part-time employed individuals report expectations about the development of earnings in full-time employment, and full-time individuals in part-time employment
- 8 data points for each survey participant
- We use this data to quantify the implied expected returns to part-time and full-time experience

SOEP-IS Survey questions

Example: Question 1 to a woman that is currently employed full-time

Current working hours:

Suppose you continue to work full-time in the coming years, regardless of whether you are actually planning a work reduction or anything similar. Please think about full-time jobs that you can perform with your qualification. If, in reality, you are planning to reduce your workload, please still assume for the moment that you continue to work full-time in the next years.

What do you think is your gross monthly income ...

- in one year?
- in 2 years?
- in 10 years?

Probabilistic add-on (I)

SOEP-IS Survey questions (cont'd)

Example: Question 2, counterfactual question to a woman that is currently employed full-time

Hypothetical working hours:

Please imagine you were to switch to a part-time job from now on, working 20 hours per week. Please only consider part-time jobs that you could carry out with your current level of qualification.

- What gross monthly income do you expect to earn when working part-time at 20 hours per week? Probabilistic add-on (II)

Now suppose that you continue to work part-time in the coming years, working 20 hours per week.

What do you think is your gross monthly income ...

- in one year?
- in 2 years?
- in 10 years?

Probabilistic add-on (III)

Expected wage growth by demographics RP

Table: Expected wage growth in part-time and full-time employment (in %)

	1 year			2 year			10 year		
	Full-time	Part-time	p-val	Full-time	Part-time	p-val	Full-time	Part-time	p-val
All Females	2.82	4.05	0.23	6.03	10.63	0.01	19.18	25.94	0.00
Employment status									
Full-Time	4.28	4.31	0.98	8.26	11.73	0.24	23.71	25.77	0.54
Part-Time	1.60	3.84	0.05	4.16	9.71	0.00	15.38	26.08	0.00
Education									
Low	2.22	3.24	0.72	5.48	7.88	0.53	18.95	20.14	0.83
Medium	2.05	3.14	0.29	5.30	8.45	0.04	17.60	25.23	0.01
High	5.11	6.81	0.56	8.19	17.48	0.07	23.49	30.00	0.16
Income									
Low (<P25)	2.09	5.78	0.14	6.36	13.10	0.08	19.84	32.86	0.10
Medium (P25-P75)	3.21	3.40	0.85	6.31	9.07	0.08	20.20	25.53	0.05
High (>P75)	2.59	4.05	0.58	5.25	11.86	0.15	16.66	21.56	0.19
Age									
< 35 years	5.60	4.35	0.41	10.76	14.60	0.21	27.67	34.33	0.24
35-45 years	1.87	6.56	0.07	4.55	14.71	0.02	16.58	28.23	0.01
> 45 years	1.46	2.16	0.59	3.63	5.03	0.31	14.81	18.36	0.10

Notes: SOEP-IS (2016-2018).

Identification of the expected returns to experience

$$\log(Ew_{it}) = \alpha + \eta PT_{it} + \zeta \log(E_{it}^{Full}) + \beta \log(E_{it}^{Part}) + X_i \gamma + \mu_i + \epsilon_{itp} \quad (1)$$

- Ew_{it} expected hourly wage
- PT_{it} part-time scenario dummy
- $E_{it}^{Part} = \{0, 1, 2, 10\}$ part-time experience in years
- $E_{it}^{Full} \{0, 1, 2, 10\}$ full-time experience in years
- $t = 1 \dots T$ survey year,
- μ_i individual fixed effects
- X socio-demographic and job-related controls¹

¹ part-time status, age, age sq., tenure, tenure sq., years of education, past unemployment, public sector indicator, firm size, region, nationality, marital status, number of children

Estimated expected returns to experience by education

Estimating (1) by education using SOEP-IS yields

Table: Expected annual returns to full-time and part-time experience

	Total (1)	Low education (2)	Medium education (3)	High education (4)
Log experience in full-time	0.079*** (0.006)	0.082*** (0.013)	0.078*** (0.007)	0.080*** (0.015)
Log experience in part-time	0.092*** (0.008)	0.083*** (0.011)	0.089*** (0.010)	0.104*** (0.013)
Difference part-/full-time	0.013* (0.007)	0.001 (0.013)	0.011 (0.010)	0.024* (0.012)
N	1,926	182	1,281	463

Notes: SOEP Innovation Sample (2016-2018). Unbalanced panel. Dep. Var. = Expected log gross hourly wage. Fixed Effects regressions excluding $t=0$. Standard errors clustered at the person-level * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

- individuals expect similar returns to experience in part-time and full-time
- no expected part-time penalty

Estimated expected returns to experience: Robustness

- Linear specification
 - ▶ The returns of an additional year of part-time and full-time experience vary between 1.4%-1.9% and the difference between the experience effects is not significant at the 5% level.
- Real versus nominal
 - ▶ Findings do not change when we adjust the wage expectations for price increases and focus on real instead of nominal wages
- Hourly wages
 - ▶ Expected returns to experience in part-time and in full-time employment are not different when using information on hourly wages.

Section 4

Realised Returns to Experience

Realised returns to experience in SOEP-Core

- SOEP-Core survey: tracks wages, hours, experience, occupation, education, family status over time
- We seek to uncover causal evidence about realised returns to experience
- Wage equation which is comparable to the specification for expected wages:

$$\log \omega_{it} = \alpha + \eta PT_{it} + \zeta \log E_{it}^{Full} + \beta \log E_{it}^{Part} + X_i \gamma + \mu_i + \epsilon_{it}, \quad (2)$$

- ω realized hourly wage
- PT_{it} indicator for part-time employment in the current period
- E_{it}^{Full} experience in full-time job (>32h/week) in years
- E_{it}^{Part} experience in part-time job (>5h and <32h/week) in years
- X socio-demographic and job-related controls²
- μ_i individual fixed effects

² age, age sq., tenure, tenure sq., years of education, past unemployment, public sector indicator, firm size, region, nationality, marital status, number of children

Realised returns to experience: selection

- To identify the realised returns to experience we control for fixed effects and account for selection using a control function approach.
 - ▶ selection into employment (λ^e)
 - ▶ selection into employment state (λ^h)
 - ▶ endogeneity of experience in part-time (λ^p)
 - ▶ endogeneity of experience in full-time employment (λ^f)
- To construct control functions we exploit variation in the tax and transfer system over time
 - ▶ reforms to income taxation in 1996 and between 2000-2004
 - ▶ labor market reforms (Hartz reforms) between 2003-2005
 - ▶ parental leave reform in 2007
- Instruments
 - ▶ simulated out-of-work income, income in part-time employment and income in full-time employment
 - ▶ income varies over time due to reforms in the tax and transfer system
 - ▶ number and age of children, male earnings

Realised returns to experience: control functions

$$\log \omega_{it} = \alpha + \eta PT_{it} + \zeta \log E_{it}^{Full} + \beta \log E_{it}^{Part} + X_i \gamma + \mu_i + \lambda^e + \lambda^h + \lambda^f + \lambda^p + \epsilon_{it} \quad (3)$$

- ω hourly wage
- PT_{it} indicator for part-time employment in the current period
- E_{it}^{Full} experience in full-time job (>32h/week) in years
- E_{it}^{Part} experience in part-time job (>5h and <32h/week) in years
- μ_i individual fixed effects
- λ^x control functions

Estimation results SOEP-Core

Table: Returns to Full-Time and Part-Time Experience

	Low Education			Medium Education			High Education		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Log experience in full-time	0.067*** (0.011)	0.058*** (0.012)	0.050*** (0.010)	0.116*** (0.009)	0.111*** (0.010)	0.120*** (0.006)	0.147*** (0.011)	0.136*** (0.011)	0.124*** (0.010)
Log experience in part-time	0.037*** (0.007)	0.035*** (0.009)	0.019*** (0.006)	0.032*** (0.004)	0.034*** (0.005)	0.015*** (0.004)	0.042*** (0.007)	0.038*** (0.009)	0.020*** (0.006)
Part-time employed	0.041*** (0.011)	0.047*** (0.011)	0.039*** (0.010)	0.043*** (0.007)	0.050*** (0.007)	0.047*** (0.006)	0.042*** (0.010)	0.043*** (0.010)	0.058*** (0.010)
e		-0.045* (0.026)	-0.062*** (0.022)		-0.059*** (0.023)	-0.076*** (0.019)		-0.117*** (0.039)	-0.162*** (0.034)
h		-0.053** (0.026)	-0.020 (0.022)		-0.030* (0.018)	-0.027** (0.013)		0.018 (0.026)	-0.006 (0.024)
f		0.006 (0.004)	0.007** (0.003)		0.005 (0.003)	0.007*** (0.002)		0.018*** (0.006)	0.025*** (0.005)
p		0.005 (0.004)	0.007** (0.003)		0.003 (0.003)	0.006** (0.003)		0.017*** (0.006)	0.023*** (0.005)
Constant	2.275*** (0.030)	2.374*** (0.040)	2.447*** (0.028)	2.360*** (0.022)	2.422*** (0.027)	2.471*** (0.018)	2.560*** (0.027)	2.614*** (0.031)	2.705*** (0.029)
Prob > F ($\ln E^{Full} = \ln E^{Part}$)	0.0302	0.1331	0.0167	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
N	15,875	15,875	23,696	31,991	31,991	48,534	12,990	12,990	19,968

Estimated returns to experience: Robustness

- Linear specification and quadratic specifications
 - ▶ The realized returns to full-time experience are larger than the returns to part-time experience. Returns to part-time experience are either not significant or very small in magnitude.
 - ▶ F-test on the equality of the returns to full- and part-time experience is rejected for all education groups

Section 5

Structural Analysis (prelim)

Outline of model components

Structural model with biased beliefs:

- Lifecycle and choice set:
 - ▶ $age_t : 22, \dots, 50$
 - ▶ education level as initial condition
 - ▶ choice variables: $I_t \in \{O, P, F\}$
 - ▶ budget constraint- tax and welfare system
 - ▶ Period 2007-2018
- Unobserved heterogeneity:
 - ▶ $\theta = (\theta_p, \theta_f)$ - utility cost of work by individual type
- Exogenous model components:
 - ▶ childbirth, marriage and divorce, male wages
- Beliefs:
 - ▶ enter the wage equation
 - ▶ perceived experience accumulation in part-time allowed to differ from true experience accumulation process

Structural equations: Utility function

Flow utility:

$$u(c_t, l_t; \theta) = \frac{c_t^\mu}{\mu} \exp \begin{cases} 0, & \text{if } l_t = O, \\ Z' \beta_P + \theta_P, & \text{if } l_t = P, \\ Z' \beta_F + \theta_F, & \text{if } l_t = F, \end{cases} \quad (4)$$

- c_t - consumption
- $l_t \in \{0, P, F\}$ - female labor supply
- μ - risk aversion, inter-temporal substitution
- $\theta = (\theta_P, \theta_F)$ - utility cost of work
- Z - presence of children, children-in-age-group dummies (0-2, 3-5, 6-10, older 10), presence of a partner, partner working indicator

Structural Equations: Budget constraint

Households maximize the value function to the following budget constraint

$$c_t = h_t w_t + m_t \tilde{w}_t - T(h_t, X_t) + CB - CC$$

Structural equations: Female market wage equation

$$\ln w_t = \gamma_{s,0} + \gamma_{s,F} \ln(e_F) + \gamma_{s,P} \ln(e_P) + \xi_t \quad (5)$$

where

- $\ln w_t$ - hourly wage rate
- ξ_t - i.i.d. transitory shock
- e_F - full-time experience measured in years
- e_P - part-time experience measured in years
- $s \in \{\text{low, middle, high}\}$ - level of education

Beliefs in the female perceived wage equation

Recall: True return for part-time experience

$$\gamma_{s,P} \quad (6)$$

Expected return for part-time experience

$$\bar{\gamma}_{s,P} = \alpha_s \cdot \gamma_{s,P} \quad (7)$$

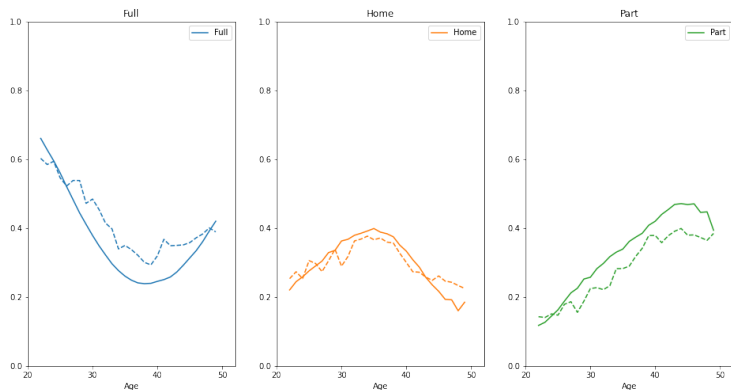
where α governs the degree of bias given by the ratio of the elicited beliefs and the estimated structural parameters:

$$\alpha_s = (\zeta_s / \beta_s) / (\gamma_{s,F} / \gamma_{s,P}). \quad (8)$$

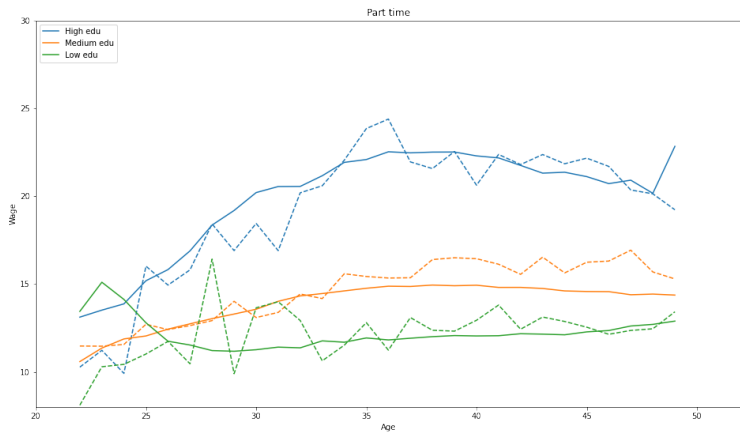
Structural estimation and counterfactuals results (prelim.)

- Model estimated using Simulated Method of Moments:
 - ▶ Use estimate of beliefs bias from SOEP-IS regression to construct moment for α
 - ▶ Construct moments from SOEP to estimate remaining parameters
- Preliminary Results
 - ▶ Part-time penalty coefficient about 10% of full time work: estimate comparable to previous literature and in line with estimate in the control function
 - ▶ Returns to experience increase with education
 - ▶ Expectation bias sizable and significant
 - ▶ Expectation bias lower for low educated

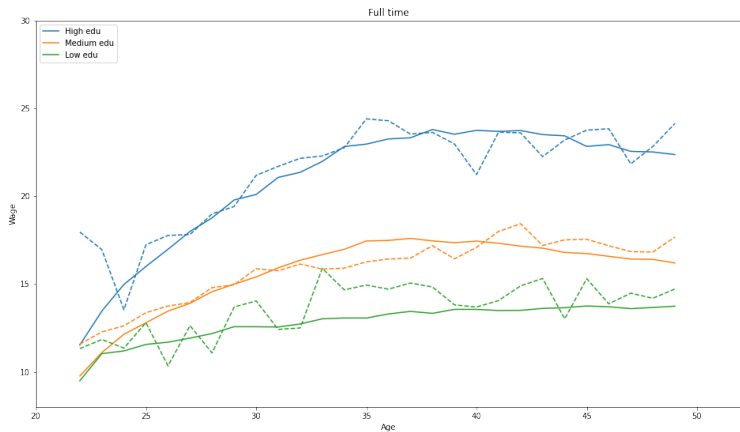
In Sample Fit: Employment



In Sample Fit: Wages - Part time



In Sample Fit: Wages - Full time



Validation of the model

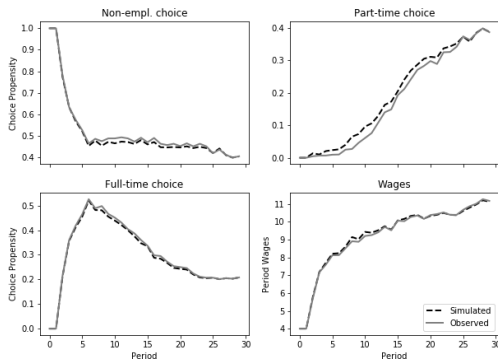
- We plan to validate the model using the parental leave reform in 2007
 - ▶ Before 2007 parental leave benefits were not related to previous earnings and income-tested.
 - ▶ Several reduced form studies show causal employment effects of the reform (e.g. Geyer et al. 2015)
 - ▶ Based on the estimated model we simulate employment effects of the rules before 2007 which are not part of the estimation period

Counterfactual simulations

- ① Information treatment to de-bias individual expectations:
- ② De-bias and policy reforms targeting working incentive:
 - ▶ In-work tax credits conditional on full-time employment
 - ▶ Individual taxation
 - ▶ Subsidised promotions for part-time workers to increase returns to part-time work

Counterfactual simulation: De-bias

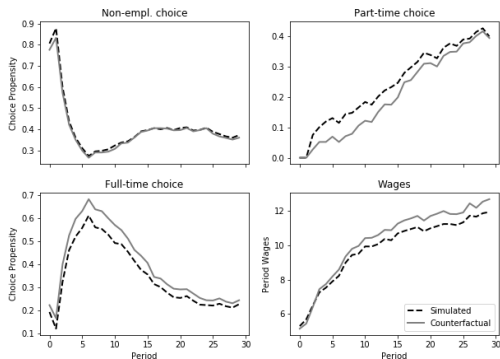
→ De-bias



- More individuals work full-time: human capital \uparrow , wages \uparrow
- Increase in unemployment: human capital \downarrow , wages \downarrow

Counterfactual simulation: in-work tax credit

→ De-bias and in-work tax credit conditional on full-time employment



- average drop of the propensity to choose part-time work 3.8%
- in-work tax credit ensures transitions to full-time employment

Section 6

Conclusion

Conclusion

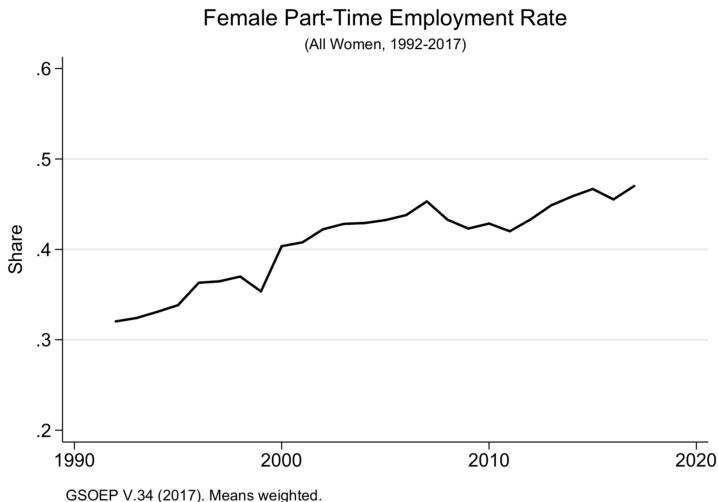
In this paper we combine expectation about returns to experience, historical labor market data, and a structural life-cycle model to quantify the role of biased expectations for female labor supply and for public policy

- Expected returns to experience in part-time and full-time work do not differ; no expected part-time penalty
- Reduced form evidence for part-time penalty over the life-cycle for females in Germany
- Introduce biased expectations in a structural model
- De-biasing reduces propensity of part-time choice over all periods.
- To increase lifetime earnings policies need to stimulate full-time work in addition

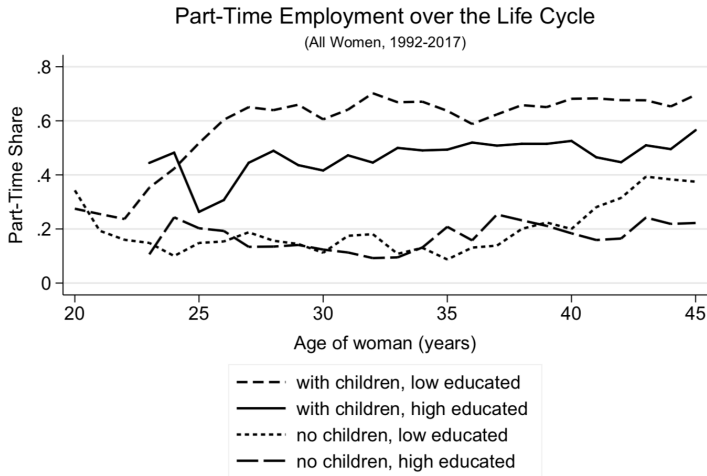
Thank you!

Female part-time employment in Germany

- Size and trend of female part-time employment in Germany



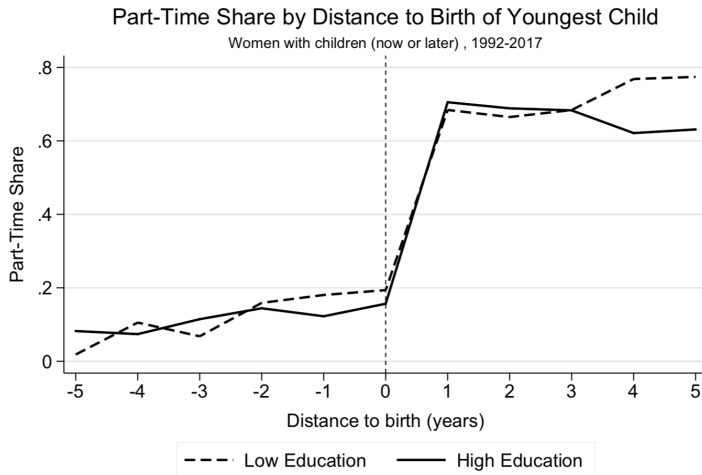
Part-time shares by presence of children



GSOEP V.34 (2017). Means weighted.

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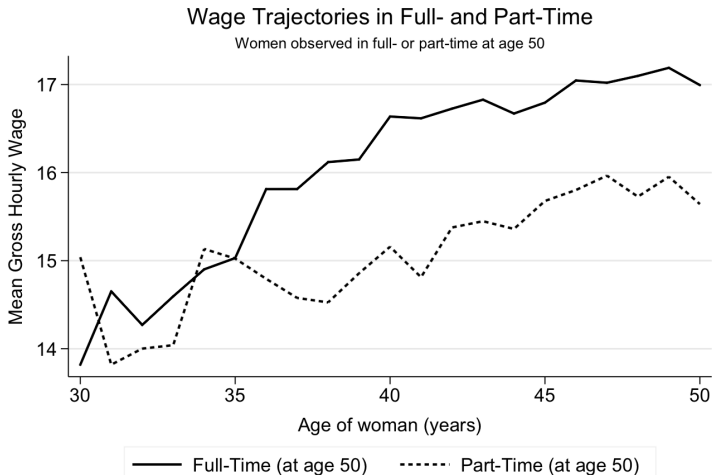
Part-time share after first child



GSOEP V.34 (2017). Means weighted.

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Part-time penalty over the life-cycle



GSOEP V.34 (2017). Own calculations. N=3185 at age 50. Pooled sample 1992-2017.

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Previous innovative modules SOEP-IS

Examples:

- internalized gender stereotypes
- day reconstruction method (DRM)
- job pref's and willingness to accept job offer
- overconfidence in different life domains
- grit and entrepreneurship
- sickness presentism
- perceived discrimination
- expected financial market earnings
- epigenetic markers of stress
- separating systematic measurement error components using MTMM in longitudinal studies

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Sample and socio-demographics wave 2016

	Total			Fulltime			Parttime		
	Core	IS	p-value (Δ)	Core	IS	p-value (Δ)	Core	IS	p-value (Δ)
Fulltime	0.47	0.49	0.66	1.00	1.00	.	0.00	0.00	.
Real Gross Hourly Wage	15.74	16.25	0.36	17.17	18.14	0.33	14.35	15.53	0.06
Actual Working Hrs.	31.62	30.90	0.42	41.70	42.76	0.06	22.43	25.18	0.00
Contractual Hrs.	29.66	28.72	0.23	38.30	39.27	0.01	21.37	22.76	0.07
Age	43.56	42.02	0.03	42.21	42.04	0.89	45.53	44.88	0.48
East Germany	0.17	0.15	0.23	0.20	0.19	0.76	0.15	0.16	0.89
Married	0.56	0.64	0.00	0.41	0.51	0.03	0.66	0.79	0.00
Children	0.35	0.34	0.72	0.18	0.14	0.23	0.41	0.44	0.49
German Nationality	0.79	0.77	0.49	0.84	0.84	0.94	0.80	0.79	0.96
Years of Education	12.25	12.24	0.92	12.72	12.72	0.98	12.03	12.24	0.22
Tenure	9.64	9.72	0.89	10.36	10.22	0.89	8.99	10.11	0.18
Firm: Public Sector	0.25	0.28	0.36	0.25	0.27	0.70	0.25	0.29	0.25
Firm: Large Firm	0.47	0.48	0.86	0.52	0.54	0.68	0.42	0.46	0.47
N	10,000	441		2,559	138		3,868	148	

Note: All estimates weighted.

Table: Socio-Demographic Characteristics (SOEP Core vs. SOEP IS, 2016)

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Sample and socio-demographics wave 2017

	Total			Fulltime			Parttime		
	Core	IS	p-value (Δ)	Core	IS	p-value (Δ)	Core	IS	p-value (Δ)
Fulltime	0.46	0.44	0.69	1.00	1.00	.	0.00	0.00	.
Real Gross Hourly Wage	15.98	16.00	0.98	17.41	16.72	0.38	14.67	16.62	0.06
Actual Working Hrs.	31.27	29.88	0.21	41.57	42.16	0.33	22.34	24.88	0.05
Contractual Hrs.	29.43	27.72	0.09	38.49	38.68	0.70	21.16	22.42	0.24
Age	43.69	41.57	0.01	42.38	42.31	0.97	45.30	43.65	0.21
East Germany	0.16	0.14	0.21	0.21	0.26	0.26	0.14	0.09	0.17
Married	0.57	0.66	0.00	0.40	0.44	0.49	0.67	0.74	0.12
Children	0.35	0.39	0.36	0.18	0.17	0.82	0.41	0.38	0.58
German Nationality	0.79	0.74	0.23	0.84	0.91	0.08	0.80	0.69	0.10
Years of Education	12.29	12.24	0.73	12.69	12.63	0.77	12.12	12.35	0.40
Tenure	9.63	8.63	0.17	10.19	10.58	0.76	9.16	8.01	0.24
Firm: Public Sector	0.26	0.27	0.64	0.26	0.32	0.25	0.25	0.30	0.43
Firm: Large Firm	0.50	0.50	0.98	0.56	0.55	0.87	0.45	0.56	0.07
N	11,324	303		2,920	93		4,321	101	

Note: All estimates weighted.

Table: Socio-Demographic Characteristics (SOEP Core vs. SOEP IS, 2017)

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Probabilistic add-on questions (I)

Current working hours: Future income

Probability lower income

How likely do you think it is that, in one year³, your full-time (*part-time*) job yields a gross income of *less* than $X-20\%$ per month?

Probability higher income

How likely do you think it is that, in one year⁴, your full-time (*part-time*) job yields a gross income of *more* than $X+20\%$ per month?

Please report your answer in percent. 0% means that you consider it impossible, 100% means that you are certain. You can use the percent values in between to graduate your answer.

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³ ... in 2 years/ ... in 10 years

⁴ ... in 2 years/ ... in 10 years

Probabilistic add-on questions (II)

Hypothetical working hours: Today

Probability lower income

How likely do you think it is that a part-time (*full-time*) position at 20 (40) hours per week yields a gross income of *less* than $X-20\%$ per month?

Probability higher income

How likely do you think it is that a part-time (*full-time*) position at 20 (40) hours per week yields a gross income of *more* than $X+20\%$ per month?

Please report your answer in percent. 0% means that you consider it impossible, 100% means that you are certain. You can use the percent values in between to graduate your answer.

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Probabilistic add-on questions (III)

Hypothetical working hours: Future income

Probability lower income

How likely do you think it is that, in one year⁵, your part-time (*full-time*) job yields a gross income of *less* than $X-20\%$ per month?

Probability higher income

How likely do you think it is that, in one year⁶, your part-time (*full-time*) job yields a gross income of *more* than $X+20\%$ per month?

Please report your answer in percent. 0% means that you consider it impossible, 100% means that you are certain. You can use the percent values in between to graduate your answer.

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⁵ ... in 2 years/ ... in 10 years

⁶ ... in 2 years/ ... in 10 years

Robustness and power analysis

- key findings are robust to: probabilistic questions as outcomes, non-parametric specifications to experience, price adjusted wages
- next: confirm results when asking for hourly wages instead of monthly earnings

Table: Expected Wage Growth: Power Analysis

	1 year			2 year			10 year		
	Full-time	Part-time	E(PT) s.t.< FT	Full-time	Part-time	E(PT) s.t.< FT	Full-time	Part-time	E(PT) s.t.< FT
All Females	3.32	4.39	-0.00	6.82	9.71	2.38	20.68	25.27	13.10
Employment									
Full-Time	5.06	4.68	-0.53	9.41	10.12	2.38	26.34	25.69	14.64
Part-Time	1.73	4.13	-2.06	4.47	9.33	-1.09	15.54	24.88	5.75
Education									
Low	4.53	2.97	-7.08	7.80	7.93	-5.86	19.37	20.94	1.74
Medium	2.64	3.65	-0.73	6.06	8.33	1.55	19.06	24.36	10.41
High	5.15	7.74	-5.24	9.06	15.50	-5.17	27.14	30.64	5.88
Age									
< 35 years	6.57	4.73	0.89	12.24	14.90	2.52	29.29	36.51	11.22
35-45 years	1.97	7.49	-6.56	5.27	11.99	-5.21	18.21	26.83	3.03
> 45 years	2.03	2.27	-1.92	4.25	4.93	0.19	16.60	17.00	8.96
Region									
East	2.00	3.47	-4.30	5.49	6.66	-2.41	17.32	18.64	5.32
West	3.58	4.57	-0.20	7.08	10.30	2.00	21.34	26.56	12.60

Notes: SOEP-IS (2016-2017). Balanced panel (N=233 observations). We report expected growth in hourly wages (in %), calculated in relation to observed hourly wage in the base period. E(PT) s.t.<FT reports the value of expected part-time wage growth we would need to observe to give significantly lower wage growth than in full-time, given sample size and a power of 0.8.

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First Stage: Employment

Table 5: First stage - Employment

	Low Education	Medium Education	High Education
Simulated income (non employment)	0.143***	0.220***	0.282***
One child	-0.168***	-0.454***	-0.464***
Two children	-0.511***	-0.684***	-0.668***
Three or more children	-1.08***	-1.151***	-1.079***
Number of observations	51,250	68,833	24,886
χ^2	25.22	70.65	52.21
p-value	0.000	0.000	0.000

Notes: *p|0.1, **p|0.05, ***p|0.01 SOEP v35, estimated by Probit. Sample includes women who work and who do not work. All models include a dummy for east Germany.

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First Stage: Part-time work

Table 6: First stage - Part-time work

	Low Education	Medium Education	High Education
Residuals of Fulltime Work	-0.066	-0.238***	0.036
Difference FT- to PT-Residuals	1.164***	0.598***	0.929***
Age	0.136**	0.373***	0.358***
Age ²	-0.004***	-0.010***	-0.009***
Age ³	0.000***	0.000***	0.000***
Age of Oldest Child			
2 or less	0.037	0.006	-0.968***
3 to 5	-0.517***	-0.459***	-0.306***
6 to 10	-0.453***	-0.388***	-0.334***
11 to 17	-0.287***	-0.344***	-0.247***
Age of Youngest Child			
2 or less	-1.165***	-1.456***	-1.310***
3 to 5	-1.200***	-1.438***	-1.180***
6 to 10	-1.040***	-1.228***	-0.884***
11 to 17	-0.644***	-0.814***	-0.505***
N	25,002	47,155	18,472
χ^2	993.32	2960.67	752.63
p-value	0.000	0.000	0.000

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First Stage: Full-time experience

Table 7: First stage - Fulltime experience

	Low Education	Medium Education	High Education
Residuals Fulltime	0.625	-0.221	0.434
Difference FT- to PT-Residuals	10.369***	4.875***	6.486***
Age	2.023***	3.040***	3.473***
Age ²	-0.033***	-0.058***	-0.067***
Age ³	0.000***	0.000***	0.001***
Age of Oldest Child			
2 or less	-0.363	0.672	-0.545
3 to 5	-0.871*	-0.219	-0.883**
6 to 10	-1.486***	-1.427***	1.891***
11 to 17	-3.005***	-2.932***	-2.758***
Age of Youngest Child			
2 or less	-1.033***	-1.754***	-1.907***
3 to 5	-1.827***	-2.630***	-2.571***
6 to 10	-2.643***	-3.318***	-3.143***
11 to 17	-3.529***	-4.150***	-3.285***
N	24320	45844	16507
F-statistic	252.37	586.00	351.13
p-value	0.000	0.000	0.000

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First Stage: Part-time experience

	Low Education	Medium Education	High Education
Residuals Fulltime	0.925**	0.610***	0.008
Difference FT- to PT-Residuals	-4.670***	-2.304***	-3.550***
Age	-0.476*	-1.225***	-1.807***
Age ²	0.014*	0.033***	0.046***
Age ³	-0.000	-0.000***	-0.000***
Age of Oldest Child			
2 or less	0.037	-0.942**	0.895
3 to 5	0.391	-0.308*	0.409
6 to 10	0.419**	0.376***	0.634***
11 to 17	0.757***	0.897***	1.205***
Age of Youngest Child			
2 or less	0.334	0.600***	0.501**
3 to 5	0.448**	0.932***	1.113***
6 to 10	0.990***	1.649***	1.625***
11 to 17	1.591***	2.383***	1.869***
N	24320	45844	16507
F-statistic	145.42	319.92	54.77
p-value	0.000	0.000	0.000

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