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The German Socio-Economic Panel Study

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Women's Noncognitive Skills and Transition to Employment after Childbirth

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Motivation & Background

- The aim of the paper is to investigate the effect of mothers' noncognitive traits on the time until return to employment after first childbirth
- The duration of non-participation after childbearing matters because long periods of non-employment cause a loss in human capital and future wages. Previous literature on mothers' transition to employment after childbearing mainly focuses on institutional factors such as parental leave schemes and tax regimes (e.g. Burgess et al. 2008; Gutierrez 2005; Ondrich et al. 2003)
- Another very recent strand of economic studies found that noncognitive skills (= traits other than cognitive ability) play an important role in economic and social success such as educational attainment (Blomeyer et al. 2009, Coleman/DeLeire 2003, Heckman et al. 2006), (un-) employment probability (Heckman et al. 2006, Uhlendorff 2004, Wichert/Pohlmeier 2010), and earnings (Andrisani 1977, 1981, Cebi 2007, Heckman/Rubinstein 2001, Heckman et al. 2006, Heineck/Anger 2010, Osborne Groves 2005).
- Heckman et al. (2006) found that noncognitive skills have a larger influence on employment probability than cognitive skills and that this pattern is more pronounced for women than for men. This might be related to the work-family trade-off, which many women face. Noncognitive traits might play an important role in the behavior towards this trade-off.

The concepts of noncognitive traits:

1) Locus of Control (LOC):

Degree to which an individuals perceives that success or failure depends from his own behavior or attributes (*internal* LOC) versus depending on luck or powerful others (*external* LOC) (Rotter 1966)

→ Expected effect on transition to employment: through effect on investment decision in human capital: Persons with a more internal LOC expect higher returns to work experience and thus tend to enter employment earlier after childbirth than individuals with a more external LOC (following Coleman/DeLeire's (2003) model of schooling decisions and LOC

2) Big Five personality traits:

Widely used in personality psychology, concept according to which a personality can be described by the five dimensions (John/Srivastava 1999, McCrae/Costa Jr 1996, 1999)

Neuroticism (vs. emotional stability): how one experiences strong pos/neg emotions: ability to cope with stress, worry a lot, get frustrated and nervous easily

→ expected effect: (1) less prepared to cope with family-work conflict → late return (2) if neuroticism leads to high work commitment (even over-commitment) (Vearing/Mak, 2007) → early return

Openness to experience: needy for changes and novelty, active imagination, come up with new ideas

→ expected effect: (1) appreciate experience with first child, activities other than employment; Wichert/Pohlmeier (2010) find neg eff on fem lab force part → late return (2) appreciate employment bringing diversity in life, open to non-traditional family organization → early return

Conscientiousness: how deal with problems: do things thoroughly, be organized, hard working, ambitious.

→ expected effect: (1) toward job: W&P 2010 find pos eff on fem lab force part → early return (2) toward child → prefer maternal care → late return

Extraversion: how one behaves among others: outgoing, talkative, sociable

→ expected effect: enjoy soc contact brought by empl, W&P 2010 find pos eff on FLFP → early return

Agreeableness: harmony seeking, altruistic, have a forgiving nature, be considerate and kind to others

→ expected effect: altruistic towards spouse (resign from own career ambitions), avoid work-family conflict, adopt to social norms → late return

Data & Method

Data source

- German Socio-Economic Panel Study (SOEP)
- Sample: women who had first child between 1992 and 2007 and who did not enter unemployment or education after childbirth
- Monthly employment status from childbirth (fourth month after) until return to employment or censoring
- N = 906 individuals (23,736 person-month observations)
- No. of spells (months) per individual: Min: 1, Max: 182
- 680 (75%) transitions into employment (mean no. of spells: 21)
- 226 (25%) censorings (mean no. of spells: 42)

Covariates:

Noncognitive skill variables:

Average of standardized item scores, surveyed in 2005

	Mean	Std. dev.
LOC (high=external)	-0.033	0.602
Neuroticism	-0.008	0.741
Openness	-0.017	0.785
Conscientiousness	0.012	0.746
Extraversion	0.021	0.795
Agreeableness	0.000	0.709

Control variables:

age at first birth, age squared, education, labor market experience (in years) prior to childbirth, log of other household income, partner status, whether other adults live in household, eastern (vs. western) Germany, migration background, health, whether the women has a second child within four years after the first birth, whether the women has a third child within six years after first birth, birth cohort dummies (for childbirth), log of hourly wage prior to childbirth (only in the employed sample)

Method

Discrete survival model with a discrete mixture distribution to summarize unobserved heterogeneity (Heckman/Singer 1984).

Discrete semiparametric proportional hazard (in complementary log-log form):

$$h(j,X) = 1 - \exp[-\exp(\gamma_k D_k + \beta' X)]$$

To allow for unobserved heterogeneity: two types of individuals differing by the intercept β_0:

$$h_1(j,X) = 1 - \exp\left[-\exp(\gamma_k D_k + \beta_{01} + \beta' X)\right]$$

$$h_2(j,X) = 1 - \exp\left[-\exp(\gamma_k D_k + \beta_{02} + \beta' X)\right]$$

The likelihood contribution of a person with spell length j is

$$L = \pi L_1 + (1-\pi) L_2,$$

where

$$L_1 = \left(\frac{h_1(j.X)}{1-h_1(j,X)}\right)^c \prod_{m=1}^{j} [1-h_1(m,X)]$$

$$L_2 = \left(\frac{h_2(j.X)}{1-h_2(j,X)}\right)^c \prod_{m=1}^{j} [1-h_2(m,X)],$$

where π is the probability of belonging to type 1 and c is the censoring indicator

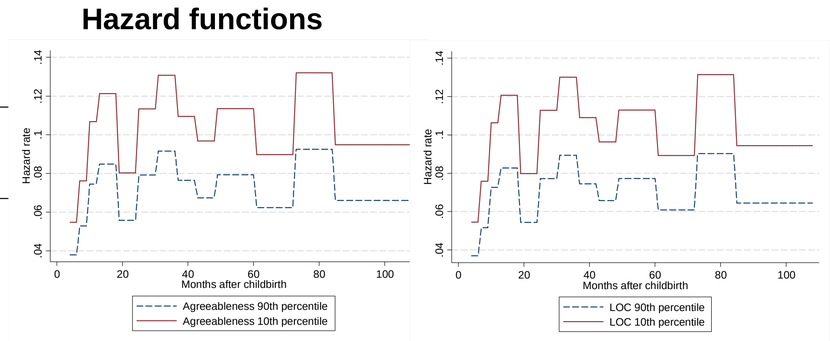
Results & Conclusions

Discrete hazard estimation of transition to employment

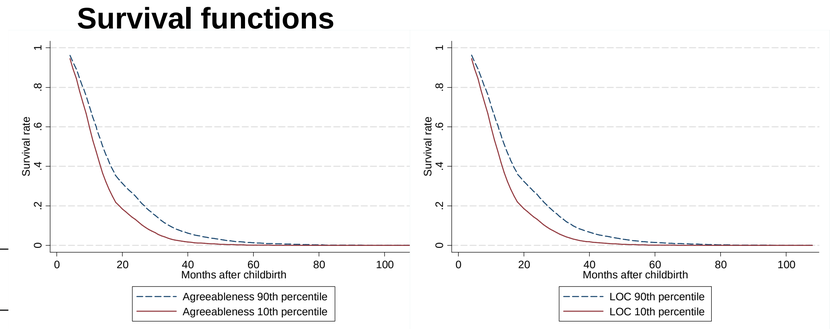
	(1) Full sample	(2) Employed sample	(3) Employed sample
LOC	**-0.084**	**-0.296****	**-0.257****
	(0.243)	(0.001)	(0.004)
Neuroticism	0.053	0.041	0.050
	(0.377)	(0.591)	(0.522)
Openness	-0.015	-0.056	-0.033
	(0.806)	(0.441)	(0.639)
Conscientiousness	0.102	0.083	0.084
	(0.102)	(0.264)	(0.352)
Extraversion	**0.105+**	0.100	0.094
	(0.060)	(0.108)	(0.133)
Agreeableness	**-0.170***	**-0.192***	**-0.207****
	(0.011)	(0.012)	(0.008)
Prior wage (log)	no	no	yes
Other controls	yes	yes	yes
Individuals	906	666	666
Person-month obs	23736	15122	15122

Note: Standard errors in parentheses. + p<0.10, * p<0.05, ** p<0.01.

Hazard functions



Survival functions



Note: Mean level in all other characteristics but LOC/Agreeableness. Step pattern of hazard function due to non-parametric baseline hazard with inclusion of dummies for groups of months

Robustness tests:

- Take into account employment type (civil servant, self-employed, white-collar worker, blue-collar worker) and employment hours (full-time, part-time, marginal hours) prior to childbirth
- Only period within three years after childbirth and only women employed on a permanent basis prior to childbirth (because of the legal right to return to the previous position)
- LOC 1999 used instead of LOC 2005 and reducing the sample to women who have first child after 1999 (in order to have the LOC measured before childbirth)
- Take into account partners' noncognitive traits (because of potential assortative mating)

Conclusions

→ As expected, women with a more external LOC return to employment later: lower hazard rate, higher survival rate

→ Agreeableness is also associated with returning to employment later

→ No direct policy implication but important to understand mechanisms before designing policy measures. Also: Noncognitive skills highly influenced by educational and familial surrounding in childhood and adolescence.