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Abstract

This paper investigates the relationship between income satisfaction of adult children and their relative economic status, using data from the German Socio-Economic Panel and income rank as an indicator of status. The results show that children appear to compare their actual economic status with that of their parents, deriving large satisfaction gains from an income rank that is higher than that of their parents. The effect is asymmetric with regard to parents, as these seem not to be influenced by their children's income rank.

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1 Introduction

The empirical relationship between income and reported life satisfaction has spurred a large recent literature in economics (see Clark et al., 2008, for a review). A key finding of previous studies is that income rank is more important for life satisfaction than actual level of income (Clark and Oswald, 1996; Easterlin, 2001; Ferrer-i-Carbonell, 2005; Luttmer, 2005; Di Tella, Haisken-De New and MacCulloch, 2006; Brown et al., 2007; D'Ambrosio and Frick, 2007). Individuals appear to derive utility from status, and income status is defined in comparisons to income of others in a reference group. Paducci's (1968) Range Frequency Theory provides a psychological underpinning for this effect.

The purpose of the present article is to take the argument one step further and ask whether utility derived from status is relative as well, in the sense that each person has a reference point in the status distribution, such that positive deviations in own status from that norm, i.e. an income rank above the reference rank, carry an extra benefit in terms of increased satisfaction.

This idea is analysed in the context of inter-family linkages in income satisfaction over two successive generations. For the child generation, such a second-order status effect can mean that income satisfaction does not only depend on own income rank, but also on parental income rank. This will be the case if children use their parents status as a benchmark when deciding on their aspirations for an appropriate status. As a consequence, the effect of own rank for a child's income evaluation is moderated by parental rank.

The relative status hypothesis is tested using data from the German Socio-Economic Panel, 2000-2004. The data allow us to relate income satisfaction of adult children, who have moved out of the parental household and live now independently, to their own income rank and to the income rank of their parents. The evidence supports the notion that children compare their rank to that of their parents. For a given own rank, there is a substantial extra increase in income satisfaction if own rank exceeds that of parents. This finding is robust to a number of alternative specifications, including fixed effects modeling and rank comparisons based on both parents or fathers only. The effect is not reciprocal, however. For parents, only own income rank matters for income satisfaction, and there is no relative status effect from comparisons with their children's

income rank.

The paper contributes to a small recent literature in economics that studies the transmission of values and attitudes from parents to children (for example Dohmen, Falk, Huffman and Sunde, 2006; Baron, Cobb-Clark and Erkal, 2008). One possible interpretation of the relative status finding is that it reflects standard of living norms acquired during childhood. McBride (2004) documents the importance of standard of living comparisons for financial satisfaction using a different approach.

2   Data

The dataset used in this study is drawn from five waves (2000 to 2004) of the German Socio-Economic Panel (GSOEP). The GSOEP is a representative annual panel survey of private households in Germany, and it includes a wide range of socio-economic and demographic characteristics on all household members (see Burkhauser, Butrica, Daly, and Lillard, 2001, for details). The key strength of this data set is that it provides information on extended families. In our case, the relevant extended family consists of a child household and a parent household. In many instances, the full survey instrument is applied to both households and this information can then be linked.

As the GSOEP initially consisted of a random sample of households in West Germany, there was practically no chance that two such linked households would be observed in the data, and even in that extremely unlikely case, one would not know about it. However, over time, the sample was extended to include households of all those persons, who were at first part of one of the original households but later moved out to form a separate, independent household. Such new households could result from divorce or separation or, more important for our analysis, from a child growing up and moving out.

Clearly, following up on these children requires both information on the location of the new household, as well as their willingness to participate in the survey, two conditions that were met in many but certainly not all of the cases. The number of such linkable parent-child observations was very low initially (the GSOEP was started in 1984) but has increased over recent years. In 2000, for example, there were 1,118 parent households that could be matched to at least one child

household. The final sample was obtained after a number of selection steps. Most importantly, we exclude children under the age of 20, as well as parents who are above the age of 65 or retired. In the end, we have a sample of 4472 child-year observations and of 5364 parent-year observations.

For each person and year, we observe income satisfaction (as response to the question "How satisfied are you with your income at present?" given on an eleven-point scale from 0 to 10 where 0 means "completely dissatisfied" and 10 means "completely satisfied"), a health indicator, age, education, gender, employment and marital status, as well as own income. Income is disposable household level income from all sources, including transfers. To construct the status variable, we control for life-cycle effects by regressing household equivalent income on a second-order age polynomial. The adjusted logarithmic income rank is then the residual rank for children and parents.

— Insert Table 1 about here —

Descriptive statistics for selected variables, for parents and children, are reported in Table 1. The average income satisfaction, on the 0-10 scale, is 6.1 for children and 6.0 for both parents. Average income of parents is about 28 percent higher than that of children. The age difference is on average 24 years, which is thus the average age of the parents at the time of birth of these children. Cohort and life-cycle effects are also reflected in marital rates and education levels: while parents have substantially higher marital rates, their education levels (measured in years of schooling) trails that of their children by more than a year. All these differences are statistically significant. Finally, in both samples, the proportion of person-years observations with a higher income rank than their intrafamiliar comparison person is about one half.

3   Results

The empirical results shown in Table 2-4 are based on two regression models for income satisfaction. In a first model, income satisfaction is modeled as a function of own income rank and an indicator whether or not the own rank is higher or lower than the reference rank (this is for

children the rank of their parents, and for parents the rank of their children):

$$IS_{it} = \beta_0 + \beta_1 \log own\ rank_{it} + \beta_2\ own\ rank\ higher_{it} + \gamma x_{it} + \alpha_i + u_{it} \tag{1}$$

Further control variables include age, gender, health status, household size, *etc.* Individual-specific unobserved factors are summarized in α, while u captures time-varying unobserved heterogeneity. The key parameter of interest is β_2, the satisfaction bonus that materializes if own status exceeds reference status. The parameters of the model can be estimated by pooled OLS. If unobserved individual-specific traits influencing income satisfaction are related to the regressors (for instance, children who are intrinsically less satisfied with their income and therefore value a given rank lower, might work harder to improve their economic status and be more likely to have a higher rank than their parents) the fixed effects within estimator is preferable.

A second model relaxes the strong discretization of (1) by introducing a model with a spline, where the effect of *own rank*$_{it}$ has different slopes below and above the reference rank:

$$IS_{it} = \beta_0 + \beta_1 \log own\ rank_{it} + \beta_2 \log parental\ rank_{it} \tag{2}$$

$$+\beta_3(\log own\ rank_{it} - \log parental\ rank_{it}) \times own\ rank\ higher_{it} + \gamma x_{it} + \alpha_i + u_{it}$$

Thus, for a given parental rank, the effect of a one percent increase in own rank leads to an increase in reported satisfaction of β_1 if own rank is lower than the parents', and of $\beta_1 + \beta_3$ if own rank is higher. The absence of a relative status effect would then mean that β_3 is equal to zero which can be tested using standard procedures.

— Insert Table 2 about here —

Tables 2 and 3 display results for children. Table 2 uses both parents to define reference status whereas Table 3 uses the father only. In each table, the first two columns show the pooled OLS results, whereas the last two columns provide the fixed effects estimates. We only show the coefficients on the status variables, together with robust standard errors. The own rank effect is substantial. The β_1 coefficient of 0.774 translates into an elasticity of 0.13 (evaluated at the mean satisfaction of 6).

There is consistent evidence that relative status effects play a role. The estimated coefficient of *own rank higher*$_{it}$ in column (1) is positive, indicating that children with higher relative

status than their parents are more satisfied with a given own income on average. This finding is corroborated in column (2) of Table 2, where it can be seen that the estimated effect of having a higher rank than ones' parents increases the happiness gains from a marginal increase in logarithmic own rank by more than 50%, from 0.65 to 1.1 points on the 11-point satisfaction scale (from 0.58 to 0.91 points based on the fixed effects results). The main effect of parental income rank is positive, meaning that children's income satisfaction is positively affected by parental status.

— Insert Table 3 about here —

So far parental income rank was constructed using both parents, i.e., the rank of the parents if they live in the same household, the average rank of mother and father if they don't live in the same household, or the rank of the sole parent if only one of them is present in the data. As a robustness check, we test whether the results are confirmed when only fathers' income rank is used. This reduces the number of observations to 2853 (1017 individuals).

The results reported in Table 3 are qualitatively the same, but quantitatively strenghtened. For instance, the satisfaction derived from an increase in own rank is now almost doubled if own rank surpasses the father's (Column 4). These regressions might be interpreted as evidence suggesting that fathers are (perceived as) the 'head of the household' to which children mainly compare themselves to when they establish their reference level. This seems to hold for sons as well as daughters, as the estimated coefficient of the gender indicator is small and insignificant. Separate regressions by gender (not reported) also confirm that there is no difference between sons and daughters.

Finally, we test whether the effect is symmetric for parents. For this analysis we run the same regressions on the parents dataset. In this case, the units of observation are the parents and the hypothesized comparison is to the (average) logarithmic income rank of their children. The results are summarized in Table 4.

— Insert Table 4 about here —

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In this case, we find conflicting evidence between the two estimation techniques. While the results from the pooled OLS regressions are similar in nature to the prior estimates, the effects of having higher rank than one's children is virtually zero when the models are estimated with the fixed effects estimator. Furthermore, the effect of children's rank for given own rank is also close to zero and insignificant. Since unobserved individual-specific characteristics are most likely to be correlated with the observed regressors – a Hausman test rejects to null of no correlation – we view the fixed effects estimates as the preferred ones over the pooled OLS results.

Under this interpretation, the effect of children's rank on parental satisfaction does not reflect a true comparison effect, but stems from correlation between parent-specific traits and both children and parent income ranking. The overestimation of both coefficients, the one corresponding to mean children income rank and the coefficient on the difference of own rank to children rank, implies that the correlation between α_i and own rank is positive, as is the correlation between α_i and children rank, but that the former is stronger than the latter. A possible interpretation is that α_i captures values and attitudes toward work, income, material goods, *etc.*, which, on the one hand, influence own income directly, and, on the other hand, are passed on to some degree to the offspring. Another possibility is that α_i as driven by parental wealth, which is correlated with parental income (rank) is well as with children's, but presumably more strongly with the former than with the latter.

Thus, centering on the fixed effects estimates, the hypothesis of no relative status effect for parents can not be rejected, suggesting that while the effect of own rank is similar for parents and for children, parents seem not to compare their position in the income ranking to that of their children.

4 Conclusions

This paper contributes to the literature on status and satisfaction. We hypothesised that the effect of status has a relative component as well, depending on a reference status level, and offered the "laboratory" taking place within intergenerational relationships as a natural setting for testing this proposition.

The test was implemented using data from the German Socio-Economic Panel for the years 2000 to 2004, by connecting observations from parents with observations from their adult children that moved out of the household. We constructed age-adjusted equivalence income ranks and evaluated the effect of own income rank on income satisfaction for given parental rank. Being above the parental rank was *ceteris paribus* accompanied by large and significant satisfaction gains. There is no evidence, however, that parents evaluate their status relative to their children's.

Our findings suggest that immediate family background is an important qualifier of marginal satisfaction gains from status and that research in this area is well advised to study satisfaction within a broader familiar perspective from which it appears to be indissociable.

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Table 1: Descriptive statistics of selected variables

	Children		Parents	
Variable	Mean	Std. Dev.	Mean	Std. Dev.
Income satisfaction	6.03	2.24	6.0	2.23
Log. household income	8.10	0.55	8.38	0.51
Own rank higher	0.52	0.49	0.50	0.48
Log. household size	0.72	0.53	0.87	0.38
Age	28.82	4.75	53.23	5.57
Education	12.33	2.4	11.53	2.46
Bad health	2.21	0.78	2.85	0.86
Female	0.55	0.5	0.58	0.49
Unemployed	0.07	0.25	0.13	0.33
Self-employed	0.04	0.19	0.04	0.18
Married	0.41	0.49	0.85	0.35
Number of persons	1510		1827	
Number of person-years	4472		5364	

Source: German Socio-Economic Panel 2000-2004.

Notes: Income satisfaction is the answer to the question: "How satisfied are you with your household income?" 0 stands for completely dissatisfied, 10 for completely satisfied. *Own rank higher* is a binary variable equaling one for children (parents) when their own income rank is higher than that of their parents (children). Income ranks are the rank of the age-adjusted distribution of equivalized log household income, where this last is log household income weighted by the square root of log household size. *Log. household size* is the logarithm of the number of individuals living in the household. *Education* is measured in years. *Bad health* is self-assessed health condition (1-5) with higher values denoting worse health. *Female, unemployed, self-employed* and *married* are binary indicator variables.

Table 2: Relative log-income-rank and income satisfaction (N=4472)

Variable	Pooled OLS		Fixed Effects	
	(1)	(2)	(3)	(4)
Log. own inc. rank	0.774***	0.648***	0.602***	0.579***
	(0.052)	(0.057)	(0.046)	(0.049)
Log parental inc. rank		0.453***		0.318***
		(0.102)		(0.096)
Own rank higher	0.122		0.272***	
	(0.082)		(0.086)	
Difference in log. inc. ranks		0.527***		0.336***
× Own rank higher		(0.121)		(0.105)
F-stat.	47.6	45.5	30.5	28.473
P-value	0.000	0.000	0.000	0.000

Source: German Socio-Economic Panel 2000-2004.

Notes: Significance levels: * 10%, ** 5% *** 1%; Robust standard errors in parentheses; The dependent variable is the respondents' *income satisfaction*. *Own rank higher* is a binary indicator variable equal to one if own rank is above the rank of the comparison individual. *Difference in log. inc. ranks × Own rank higher* measures the difference between the logarithmic income ranks of children and parents if *Own rank higher* is equal to one. Columns (1) and (2) have been estimated by pooled OLS, using standard errors adjusted for clustering at the individual level. Columns (3) and (4) have been estimated by OLS using the within transformation. All models include controls for log. household size, health, age, education, gender, employment and marital status, and the data wave.

Table 3: Relative log-income-rank and income satisfaction – Comparison to fathers (N=2853)

| | Pooled OLS | | Fixed Effects | |
Variable	(1)	(2)	(3)	(4)
Log. own inc. rank	0.726***	0.577***	0.547***	0.526***
	(0.058)	(0.063)	(0.076)	(0.082)
Log parental inc. rank		0.548***		0.335**
		(0.122)		(0.133)
Own rank higher	0.070		0.344***	
	(0.099)		(0.113)	
Difference in log. inc. ranks		0.663***		0.466***
× Own rank higher		(0.141)		(0.153)
F-stat.	32.2	32.4	11.8	12.100
P-value	0.000	0.000	0.000	0.000

Source: German Socio-Economic Panel 2000-2004.
Notes: See Table 2.

Table 4: Relative log-income-rank and income satisfaction – Comparison to children (N=5364)

| | Pooled OLS | | Fixed Effects | |
Variable	(1)	(2)	(3)	(4)
Log own inc. rank	0.916***	0.778***	0.417***	0.417***
	(0.049)	(0.056)	(0.058)	(0.063)
Mean log. child inc. rank		0.439***		0.011
		(0.086)		(0.090)
Own rank higher	0.091		-0.004	
	(0.077)		(0.070)	
Difference in log. inc. ranks		0.517***		-0.005
× Own rank higher		(0.106)		(0.103)
F-stat.	86.3	86.1	19.7	18.510
P-value of F-test	0.000	0.000	0.000	0.000

Source: German Socio-Economic Panel 2000-2004.
Notes: See Table 2.

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