Motherhood Penalty in Consumption

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Abstract

We examine how labor market gender disparities following childbirth relate to long-run intra-household consumption inequality. A novel survey we implemented in the German Socio-Economic Panel shows that women less educated than their partners are more likely to face child-related career disruptions and receive fewer household resources, underscoring the role of marriage market sorting in intra-household decision-making. However, even controlling for partners' relative education, female career disruptions are associated with higher male consumption. This suggests that childbirth can generate gender disparities not only in labor market outcomes but also in long-term consumption—an overlooked dimension of the "motherhood penalty".

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1 Introduction

While gender gaps in labor market outcomes have narrowed in the developed world, children are the primary driver of remaining gender disparities (Kleven et al., 2025). Relative to men, women experience a "motherhood penalty": They are more likely to reduce their labor supply or enter lower-paid family-friendly occupations after having children.[1] While this labor market inequality may be concerning, how this translates to welfare inequality is less clear: These decisions, typically made within the household, may reflect efficient specialization, with one partner focusing more on market work while the other—typically the woman—assumes a greater share of household responsibilities (Lafortune and Low, 2023).

Assessing the full extent of the motherhood penalty thus necessitates moving beyond labor market outcomes and examining whether the birth of a child impacts the intra-household allocation of consumption—a fundamental outcome to assess gender inequality and welfare. In this note, we provide the first empirical investigation of the link between the arrival of a child, any associated career disruptions, and the split of consumption within the household.

The problem at hand is challenging along several dimensions. First, the intra-household allocation of consumption is typically not observed in the data.[2] Therefore, identification of the sharing rule requires strong assumptions on household preferences, assignability of consumption goods to household members, or availability of distribution factors which impact bargaining power.[3] Second, consumption and labor market data typically cannot be linked at the household level, inhibiting our understanding of the relationship between them. Finally, some nuanced labor market responses to childbirth—such as increased demand for flexibility—are typically not observed in administrative or household data (Goldin, 2014).

To overcome these limitations, we designed and implemented a novel survey as part of the German Socio-Economic Panel Innovation Sample (GSOEP-IS). Our survey has two unique

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[1]This motherhood penalty has been broadly documented in previous literature; some examples include Waldfogel (1997); Angelov et al. (2016); Kleven et al. (2019); Goldin and Katz (2008); Lundborg et al. (2017).

[2]Exceptions include the Danish Household Expenditure Survey (1999–2005); the Dutch LISS Panel, which reports individual consumption for a limited set of goods; and the Japanese Panel Survey of Consumers, which provides only aggregate member-specific spending.

[3]An extensive body of research advanced the identification of the sharing rule in collective models, including seminal work by Chiappori (1988, 1992) and further contributions by Chiappori et al. (2002); Blundell et al. (2005); Dunbar et al. (2013); Cherchye et al. (2015); Chiappori et al. (2018); Voena (2015); Reynoso (2024) and Chiappori et al. (2024).

features: First, it assesses the intra-household allocation of consumption across a wide range of categories of goods and services; and second, it collects retroactive data on the nature of labor market responses following childbirth. These features enable us to provide new evidence of a link between the motherhood penalty in labor market outcomes and the intra-household allocation of consumption in the long run.

We show that, on average, women are ten times more likely than men to experience a career disruption after becoming a parent. These differences are more pronounced when the wife is relatively less educated than the husband. In these households, men are more likely to receive a larger share of consumption. Together, both patterns suggest a role for the marriage market sorting in shaping bargaining and hence, intra-household decision-making. Importantly, though, even after conditioning for the partner's relative education, we document a positive association between children-related career disruption for women, and the share of consumption for men over the long-term. This suggests that while bargaining power stemming from spouses' education differences shapes both labor market outcomes and consumption inequality, the arrival of a child may have an additional direct effect on the intra-household allocation of resources—an overlooked aspect of the motherhood penalty.

2   Novel Survey Data

The GSOEP-IS, a representative household survey of the German population, started in 2011 to enable researchers to collect innovative data. As part of the GSOEP-IS 2019, we developed and implemented a novel survey, "Family-Work Trade-Offs" (henceforth, FWT), which consists of two modules: one on intra-household consumption and one on children-related career changes.[4]

The first module collects data on how consumption is split within the household, both on aggregate and for each of 16 detailed consumption categories, including durable and non-durable goods, as well as services. The possible responses are qualitative in nature: individuals indicate whether consumption is allocated "more for myself," "more for my

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[4]The full questionnaire and documentation from our survey can be found here: https://www.diw.de/documents/publikationen/73/diw_01.c.927671.de/diw_ssp1357.pdf. Our survey was repeated in 2022, the two modules were asked to different respondents and thus cannot be linked. Therefore, we restrict our analysis to the 2019 wave.

partner," or "about equal." The list of consumption categories can be found in Figure 1.[5]

The second module on career changes associated with child-rearing collects detailed retroactive data on whether and how individuals' work situations changed after they became parents. Respondents select options from a pre-determined set of potential career changes, including: "Changed jobs," "Temporarily stopped working," "Permanently quit," "Entered a training program," "Started working," "Stayed in the same job," or "Didn't work before becoming a parent and stayed out of work." To summarize these changes, we classify each career change as disruptive or non-disruptive, and construct indicators that capture whether individuals experienced "any career disruption." We consider the following changes as disruptions: "Temporarily stopped working," "Permanently quit," and "Stayed out of the labor force." A follow-up question includes more detailed information on labor market changes, such as promotions, changes in wages, changes in hours worked, flexibility, and commuting distance.[6] Using these, we construct a second definition of career disruption which further considers receiving a lower wage, working fewer hours, switching to a more flexible job, or working closer to home as disruptions.[7]

Our sample consists of 704 individuals in 430 heterosexual married and cohabiting couples who report that they live with a partner, and thus answer the consumption module.[8] Of these, 421 individuals from 263 different households report having any children, a precondition to answer the career changes module. For a further subset of 338 of individuals in 190 of households, full demographic information on both partners is available, even when only one partner responds to FWT.

Table 1 reports summary statistics for our sample as we impose these restrictions sequentially. Our sample is representative of the German population: our respondents are on average 54-55 years old, 24% have a college degree, and 60% (421 of 704) have any children.

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[5]The full module can be found in the FWT documentation (Questions 1 and 2).

[6]The complete set of questions can be found in Question 6A and 6B in the FWT documentation.

[7]Our main analysis uses the first definition of career disruptions, as it is unclear whether changes in flexibility or commuting distance constitute disruptions or help prevent more severe ones, such as labor force exit. However, we show in Appendix A that our results are robust to using the second definition, based on more detailed changes in labor market outcomes.

[8]Note that in some cases only one partner within a household responded to the FWT survey, and so, the number of individuals in our sample is less than twice the number of households.

Table 1: Mean Summary Statistics for FWT Sample

	(1) With Partner	(2) + Any Children	(3) + Demographics
Age (Yrs)	55.08	53.59	53.88
West Germany	0.79	0.75	0.74
HS or lower secondary	0.55	0.54	0.57
Vocational/technical	0.18	0.19	0.18
College plus	0.24	0.24	0.24
Employed	0.50	0.55	0.55
Male	0.50	0.49	0.50
Yrs since first birth	–	26.31	25.79
Individuals	704	421	338
% Female	*0.50*	*0.51*	*0.50*
Households	430	236	190

Notes: Column (1) includes individuals who live with a partner and respond to the consumption module. The sample in Column (2) includes the subset that further report having any children, and hence, respond also to the child-related career changes module. Column (3) includes individuals who not only respond to both modules, but for whom demographic information is available for both partners. Age and years since first birth are measured in 2019.
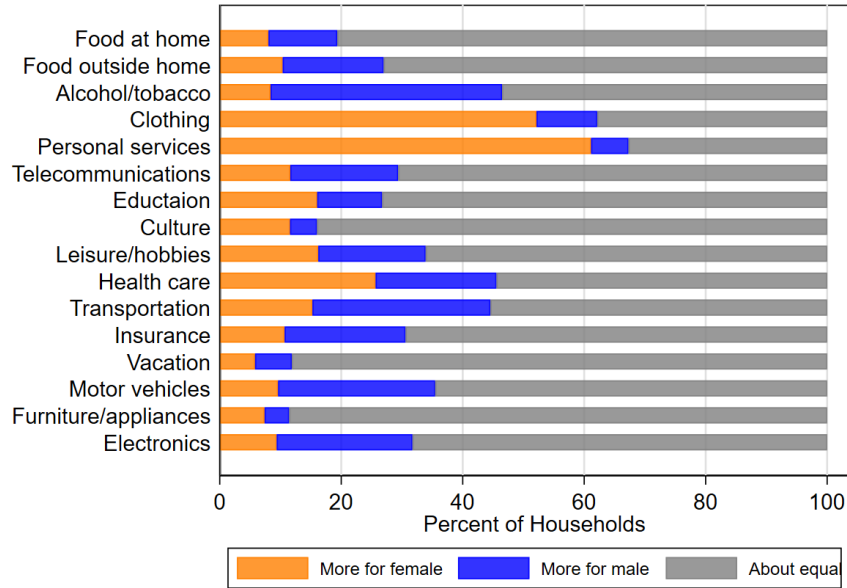
3 Empirical Results

3.1 Intra-Household Consumption Inequality

We start by investigating how consumption is split between spouses: On average, 16% of households report higher consumption for the female partner, while 10% report a higher share of resources for the male partner (see the first row of Table A.1, Panel A). Figure 1 shows substantial heterogeneity across categories: Women tend to get relatively more consumption in clothing and personal services, while men get more consumption in electronics, motor vehicles and alcohol/tobacco.

We find that the consumption allocation is systematically related to marriage market sorting on education. If relative spousal education is a distribution factor, an increase in female relative education increases their bargaining power, which shifts the allocation of consumption toward women (Browning et al., 2014). We illustrate this in Figure 2.A: the probability that women receive a strictly higher share of the household resources sharply increase when women are weakly more educated than their male partners. For these households, women are 9-10 percentage points more likely to have higher consumption, while they are only 2 percentage

Figure 1: Intra-Household Split of Consumption Across Categories

points more likely to receive higher consumption than men when the male spouse is more educated. We present additional details on the allocation of resources for different type of couples in Table A.1 (Panel A). Table A.1 (Panel B) shows that the results are qualitatively similar when we consider the number of categories in which either the female or the male partner receive higher consumption.[9] Overall, our findings are consistent with a large body of literature that rejects a unitary model of household behavior in favor of a collective model, with the relative bargaining position of spouses affecting intra-household decision-making (Attanasio and Lechene, 2014; Duflo, 2000).

3.2   Children-Related Career Changes

Panel C of Table A.1 shows a striking gender disparity in career disruptions following childbirth: 62% of women and only 6% of men report a career disruption. We show in Figure 2.B that these patterns are associated with marriage market sorting, with the gender gap narrowing as the female partner's relative education increases. However, even in couples in

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[9]Our results are also robust when we use male consumption responses as the default (see Table A.2, Panels A and B, in Appendix A.

Figure 2: Marriage Market Sorting and (A.) Consumption Allocations and (B.) Career Disruptions
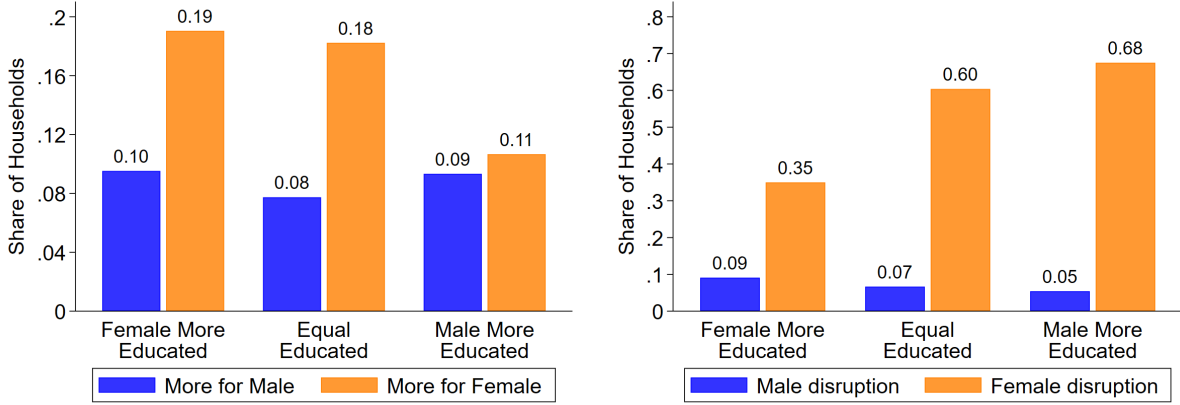
Notes: We split our analysis sample in three groups, depending on whether the female partner is more educated, equally educated, or less educated than the male partner. The education categories are displayed in Table 1. For each group, the left panel plots the share of households that report a higher consumption share for either the male of the female partner. The right panel plots the share of households in which either the male or the female partner report a career disruption after the birth of the child, based on our first definition of career disruptions from Section 2. A detailed analysis of these patterns, as well as sample definitions, can be found in Table A.1 in Appendix A.

which the female partner is more educated than their male partner, women are 26 percentage points more likely than men to experience a career disruption. Our results are robust to using our alternative definition of career disruptions described in Section 2 (see Table A.2, Panel C, in Appendix A).

3.3   Linking Intra-Household Consumption Inequality and Career Disruptions

We now turn to the link between intra-household consumption inequality and career disruptions—our primary contribution.[10] To explore this link, we regress for a household i, different measures capturing the intra-household allocation of consumption on an indicator of whether the female partner experienced a career disruption after having children, based on the model:

$$(\text{Intra-HH Cons. Split})_i = \alpha + \beta(\text{Female Career Disruption})_i + \Gamma X_i + \epsilon_i \qquad (1)$$

The dependent variable, "Intra-HH Cons. Split," refers to two outcome measures used in separate regressions: (i) an indicator for who receives more overall consumption (female,

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[10]As highlighted above, the career changes reported in our survey are retrospective, referring to the period around childbirth, while the consumption data is from 2019. On average, childbirth occurred 26 years prior for respondents in our sample. As a result, we can only examine long-term effects of career disruption on intra-household resource allocation, potentially understating the full extent of this relationship.

male, or equal), and (ii) a count of the number of categories in which the female or male partner receives more, or consumption is equal. Our independent variable of interest, "Female Career Disruption" is an indicator of whether the female partner experienced a career disruption, as defined in Section 3.2. The vector X further controls for age group, region, and education level of the spouses, as well as for the relative education of the spouses (i.e., wife more educated, husband more educated, or equal education). The latter aims to capture differences in underlying bargaining power, which may affect both whether women experience a child-related career disruption and her share of consumption.

Table 2: Regression of Household Consumption on Female Career Disruption

Panel A: Indicator for Overall Consumption

	More for Female (1)	More for Male (2)	About Equal (3)
Female Career Disruption	0.029	0.113***	-0.109
	(0.059)	(0.036)	(0.067)
Observations	176	176	176
Mean dep. var	0.15	0.08	0.76

Panel B: Count of Consumption Categories

	More for Female (1)	More for Male (2)	About Equal (3)
Female Career Disruption	0.398	1.062**	-0.995*
	(0.365)	(0.412)	(0.565)
Observations	176	176	176
Mean dep. var	2.76	2.50	10.11

Notes: Panel A reports estimates of β from equation (1) when the outcome is an indicator for the split of overall consumption. Panel B reports estimates of β when the outcome is the number of categories in which the female or male partner receive more consumption or split consumption equally (see Figure 1 for the categories). Relative to Table 1, we lose 14 of the 190 households with demographic information on both spouses, because the female partner does not answer the career disruptions module. Regressions are at the household level and control for region (East vs. West), birth cohort, partners' education level, and relative education. Robust standard errors are in parentheses. * (p<0.1), ** (p<0.05), *** (p<0.01).

The results reported in Panel A of Table 2 show that households in which women experience a career disruption are 11 percentage points more likely to report higher consumption for the male partner (column 2), with goes hand by hand with a lower probability of reporting similar consumption for both spouses (column 3). Similarly, Panel B shows that when women experience a career disruption, the male partner gets higher consumption in approximately one additional category, mirroring the reduction in the number of categories in which both

partners consume a similar amount.[11]

As shown in Figure 2, marital sorting on education is related to both intra-household consumption inequality and the likelihood that either partner experiences a child related career disruption. Importantly, however, the results in Table 2 suggest that even after controlling for the relative education of spouses—a proxy for relative bargaining power—child-related career disruptions remain correlated with future consumption allocations. In particular, we find that female career disruptions are strongly associated with an increased likelihood that men have strictly higher consumption than women. Thus, child-rearing may lead to not only gender disparities in the labor market, but also in intra-household consumption. We argue that the latter is the welfare-relevant metric (as in Lise and Seitz, 2011) through which women experience a child-related penalty—a channel absent from prior studies.

4   Conclusion

Using novel survey data on children-related career disruptions and intra-household consumption, we find evidence of a link between labor market penalties for women and a higher long-term allocation of consumption towards men. One hypothesis is that marriage market sorting shapes both labor market outcomes and the intra-household allocation of resources: Women who are relatively less educated than their husbands have less bargaining power and, as a consequence, have both more career disruptions around childbirth and lower consumption shares. However, the positive correlation between female career disruptions and male consumption persists even after controlling for the relative spousal education, a proxy for underlying bargaining power. This suggests that career disruptions associated with child-rearing may directly affect spouses' relative resource allocations. Such an interpretation implies that, relative to men, women experience a motherhood penalty not only in earnings, but also in consumption, the most relevant metric to think about welfare. While our data does not allow us to press on whether the link between child-related career disruptions and consumption inequality is causal, our results suggest that assessing the full extent of child-related penalties would require to consider consumption inequality. With this goal in

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[11]Table A.3 in Appendix A shows qualitatively similar results when we use male consumption responses, while Table A.4 shows robustness to our alternative definition of career disruptions discussed in Section 2.

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mind, further data collection on intra-household consumption is a promising avenue for future research.

Acknowledgments

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A   Additional Results

Figure A.1: Intra-Household Split of Consumption Across Categories (Male Responses)
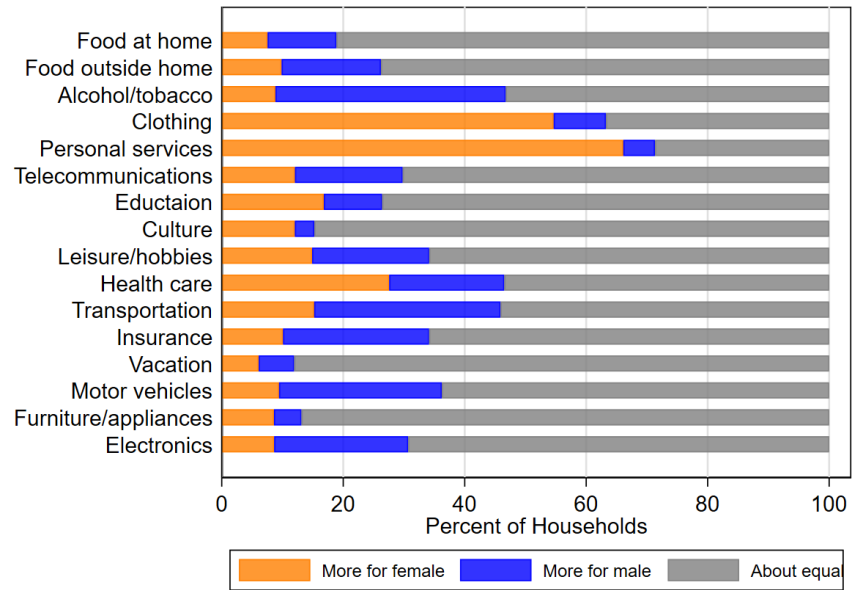
Notes: This figure reproduces Figure 1 but uses male responses as the default for households in which there are two respondents.

Table A.1: Mean Consumption Split and Career Disruptions for Different Household Types

Panel A: Indicator for Overall Consumption

Household Type	More for Female	More for Male	About Equal	F-M Gap
All	0.16	0.10	0.74	0.06
Male More Educated	0.11	0.09	0.80	0.02
Equal Education	0.18	0.08	0.74	0.10
Female More Educated	0.19	0.10	0.71	0.09

Panel B: Count of Consumption Categories

Household Type	More for Female	More for Male	About Equal	F-M Gap
All	2.69	2.48	10.23	0.21
Male More Educated	2.75	2.4	10.51	0.35
Equal Education	2.61	2.27	10.43	0.34
Female More Educated	3.31	2.64	9.29	0.67

Panel C: Career Disruptions

Household Type	Female Disruption	Male Disruption	–	F-M Gap
All	0.62	0.06	–	0.56
Male More Educated	0.68	0.05	–	0.63
Equal Education	0.60	0.07	–	0.53
Female More Educated	0.35	0.09	–	0.26

Notes: Panel A shows the share of households who report more overall consumption for the female partner or male partner, or about equal overall consumption. Panel B shows the mean number of consumption categories (listed in Figure 1) in which the female or male partner gets more, or in which consumption is about equal. Panel C shows the share of women and men who experienced a career disruption after having children, using the first definition from Section 2. In all panels, the final column reports the difference between the first two columns (i.e., the female-male gap). The first row in each panel pools all households in the main analysis sample ($N = 430$ in A and B, $N = 263$ in C). The following rows restrict to households in which the male partner is more educated ($N = 77$ in A and B, $N = 43$ in C), education of the partners is equal ($N = 182$ in A and B, $N = 123$ in C), or the female partner is more educated ($N = 42$ in A and B, $N = 24$ in C). The education categories are displayed in Table 1.

Table A.2: Robustness of Mean Consumption Split and Career Disruptions Results

Panel A: Indicator for Overall Consumption (Male Responses)

Household Type	More for Female	More for Male	About Equal	F-M Gap
All	0.15	0.12	0.73	0.03
Male More Educated	0.09	0.08	0.83	0.01
Equal Education	0.18	0.11	0.70	0.07
Fem. More Educated	0.17	0.10	0.74	0.07

Panel B: Count of Consumption Categories (Male Responses)

Household Type	More for Female	More for Male	About Equal	F-M Gap
All	2.77	2.50	10.10	0.27
Male More Educated	2.63	2.70	10.34	-0.07
Equal Education	2.87	2.17	10.14	0.70
Fem. More Educated	3.19	2.76	9.38	0.43

Panel C: Career Disruptions (Alternative Definition)

Household Type	Female Disruption	Male Disruption	–	F-M Gap
All	0.65	0.07	–	0.58
Male More Educated	0.73	0.05	–	0.68
Equal Education	0.63	0.08	–	0.55
Fem. More Educated	0.50	0.14	–	0.36

Notes: This table is analogous to Table A.1, but Panels A and B report the average consumption split using male responses as the default in households where both partners respond to the survey. Panel C reports the share of women and men reporting a career disruption after becoming a parent, using the alternative definition of disruptions described in Section 2.

Table A.3: Regression of Household Consumption on Female Career Disruption (Male Responses)

Panel A: Indicator for Overall Consumption

	More for Female (1)	More for Male (2)	About Equal (3)
Female Career Disruption	0.034	0.105**	-0.100
	(0.061)	(0.041)	(0.072)
Observations	176	176	176
Mean dep. var	0.16	0.09	0.73

Panel B: Count of Consumption Categories

	More for Female (1)	More for Male (2)	About Equal (3)
Female Career Disruption	0.584	1.044***	-0.849
	(0.401)	(0.300)	(0.558)
Observations	176	176	176
Mean dep. var	2.99	2.48	9.78

Notes: This table reproduces Table 2, but uses the male partner as the respondent in households in which both partners answer the consumption module of FWT.

Table A.4: Regression of Household Consumption on Female Career Disruption (Alternative Measure)

Panel A: Indicator for Overall Consumption

	More for Female (1)	More for Male (2)	About Equal (3)
Female career disruption	0.054	0.069*	-0.089
	(0.059)	(0.037)	(0.068)
Observations	176	176	176
Mean dep. var	0.15	0.08	0.76

Panel B: Count of Consumption Categories

	More for Female (1)	More for Male (2)	About Equal (3)
Female career disruption	0.450	1.156***	-1.128*
	(0.380)	(0.399)	(0.584)
Observations	176	176	176
Mean dep. var	2.76	2.50	10.11

Notes: This table reproduces Table 2, but uses an alternative definition of career disruptions, as described in Section 3.2.