DISCUSSION PAPER SERIES

DP16095

Maternal labor supply: Perceived returns, constraints, and social norms

Teodora Boneva, Katja Kaufmann and Christopher Rauh

LABOUR ECONOMICS

PUBLIC ECONOMICS

CEPR

ISSN 0265-8003

Maternal labor supply: Perceived returns, constraints, and social norms

Teodora Boneva, Katja Kaufmann and Christopher Rauh

Discussion Paper DP16095
Published 01 May 2021
Submitted 30 April 2021

Centre for Economic Policy Research
33 Great Sutton Street, London EC1V 0DX, UK
Tel: +44 (0)20 7183 8801
www.cepr.org

This Discussion Paper is issued under the auspices of the Centre's research programmes:

- Labour Economics
- Public Economics

Maternal labor supply: Perceived returns, constraints, and social norms

Abstract

We design a new survey to elicit quantifiable, interpersonally comparable beliefs about pecuniary and non-pecuniary benefits and costs to maternal labor supply decisions, to study how beliefs vary across and within different groups in the population and to analyze how those beliefs relate to choices. In terms of pecuniary returns, mothers' (and fathers') later-life earnings are perceived to increase the more hours the mother works while her child is young. Similarly, respondents perceive higher non-pecuniary returns to children's cognitive and non-cognitive skills the more hours a mother works and the more time her child spends in childcare. Family outcomes on the other hand, such as the quality of the mother-child relationship and child satisfaction, are perceived to be the highest when the mother works part-time, which is also the option most respondents believe their friends and family would like them to choose. There is a large heterogeneity in the perceived availability of full-time childcare and relaxing constraints could substantially increase maternal labor supply. Importantly, it is perceptions about the non-pecuniary returns to maternal labor supply as well as beliefs about the opinions of friends and family that are found to be strong predictors of maternal labor supply decisions, while beliefs about labor market returns are not.

JEL Classification: J22, J13, I26

Keywords: Labor Supply, childcare, beliefs, child penalties

Teodora Boneva - teodora.boneva@econ.uzh.ch
University of Zurich and CEPR

Katja Kaufmann - kkaufman@uni-mainz.de
Johannes Gutenberg University Mainz

Christopher Rauh - christopher.rauh8@gmail.com
University of Cambridge, Trinity College Cambridge and CEPR

Acknowledgements
We thank Marlis Schneider, Ana Bras Monteiro, and Matthew Bonci for their excellent research assistance and Tiffanie Perrault for translations. We are further grateful to Laetitia Renée and seminar participants at the University of Zurich, University of Basel, University of Oxford, Queen's University, the DIW Berlin and the Workshop on Subjective Expectations 2020 for helpful comments and suggestions. Boneva acknowledges support from the Jacobs Foundation. Katja Kauf- mann gratefully acknowledges funding by the German Research Foundation (DFG) through CRC TR 224 (Project C01). Rauh thanks the FRQSC for financial support (grant number 2020-NP-267422). This study has been approved by the ethics committee of the University of Mannheim.

Maternal labor supply: Perceived returns, constraints, and social norms

Teodora Boneva, Katja Kaufmann and Christopher Rauh*

April 30, 2021

Abstract

We design a new survey to elicit quantifiable, interpersonally comparable beliefs about pecuniary and non-pecuniary benefits and costs to maternal labor supply decisions, to study how beliefs vary across and within different groups in the population and to analyze how those beliefs relate to choices. In terms of pecuniary returns, mothers' (and fathers') later-life earnings are perceived to increase the more hours the mother works while her child is young. Similarly, respondents perceive higher non-pecuniary returns to children's cognitive and non-cognitive skills the more hours a mother works and the more time her child spends in childcare. Family outcomes on the other hand, such as the quality of the mother-child relationship and child satisfaction, are perceived to be the highest when the mother works part-time, which is also the option most respondents believe their friends and family would like them to choose. There is a large heterogeneity in the perceived availability of full-time childcare and relaxing constraints could substantially increase maternal labor supply. Importantly, it is perceptions about the non-pecuniary returns to maternal labor supply as well as beliefs about the opinions of friends and family that are found to be strong predictors of maternal labor supply decisions, while beliefs about labor market returns are not.

JEL: J22, J13, I26

Keywords: Labor supply, childcare, beliefs, child penalties

*Boneva: University of Zurich (email: teodora.boneva@econ.uzh.ch). Kaufmann: Johannes Gutenberg University Mainz (email: kkaufman@uni-mainz.de). Rauh: University of Cambridge (email: cr542@cam.ac.uk). We thank Marlis Schneider, Ana Bras Monteiro, and Matthew Bonci for their excellent research assistance and Tiffanie Perrault for translations. We are further grateful to Laetitia Renée and seminar participants at the University of Zurich, University of Basel, University of Oxford, Queen's University, the DIW Berlin and the Workshop on Subjective Expectations 2020 for helpful comments and suggestions. Boneva acknowledges support from the Jacobs Foundation. Katja Kaufmann gratefully acknowledges funding by the German Research Foundation (DFG) through CRC TR 224 (Project C01). Rauh thanks the FRQSC for financial support (grant number 2020-NP-267422). This study has been approved by the ethics committee of the University of Mannheim.

1 Introduction

A mother's decision to work while her children are young has a plethora of important long-run implications, including for labor market earnings, the gender wage gap, income inequality across and within households, as well as for children's cognitive and non-cognitive skills and family well-being. Maternal labor supply decisions can also spill over onto the decision of the next generation and can, more generally, impact social norms.[1] Combined with the fact that maternal labor supply decisions vary widely across and even within countries and regions, this suggests that the list of potential determinants of this decision is equally wide-ranging, encompassing both pecuniary and non-pecuniary factors.[2] Moreover, it underscores the importance of analyzing the different potential determinants jointly to fully understand maternal labor supply decisions and enable policymakers to make informed decisions likely requiring a combination of labor market, family and education/childcare inputs.

Why do some mothers choose to return to full-time work, while others decide to work part-time or not at all? Despite the importance of this decision, little is known about how women (and men) perceive the benefits and costs to mothers working part- or full-time while their children are young. Are people aware of the negative consequences a reduction in working hours can have on their lifetime earnings? And how do people think about the consequences of this decision for children's skill development and for family relationships and well-being? A chief obstacle to studying these questions is the lack of appropriate data. Observed choices can be consistent with various combinations of beliefs, preferences, and constraints, which is why it is not possible to rely on choice data alone (Manski 2004). To study heterogeneity in beliefs about the benefits/costs

[1]For the effects of maternal labor supply decisions on earnings, the 'child penalty' and the gender gap in wages, see, e.g., Goldin (1990), Goldin (2006), Bertrand, Goldin and Katz (2010), Angelov, Johansson and Lindahl (2016), Kleven, Landais and Søgaard (2019a), Kleven et al. (2019b), and Andresen and Nix (2019). For the effects in terms of child outcomes, see discussion in Section 8.3. For the role of culture and social norms in mothers' labor supply decisions, see our literature discussion.

[2]For an international comparison, see Appendix Figure A.1, which shows the percentage of mothers with children aged 0-14 staying home or working part-time (rather than full-time) by country. For differences within country see the example of East and West Germany in Appendix Figure A.2.

of female labor supply and their role in the decision, it is therefore critical to obtain individual-level, quantifiable measures of beliefs.

The goal of this paper is to fill this gap in the literature. We design a new survey using innovative instruments to elicit interpersonally comparable beliefs about the benefits and costs to maternal labor supply decisions, to study how beliefs vary across and within different groups in the population, and to analyze how those beliefs relate to choices. We administer the survey to a large sample of German adults aged 20-45 ($N = 3,973$), consisting of women and men with and without children.[3] To elicit beliefs about returns, we present respondents with hypothetical scenarios in which we exogenously vary whether the mother in the scenario works part-time, full-time, or not at all while her child is 1-5 years old. For the scenarios in which the mother works, the child is described as attending childcare while the mother is away. We then obtain respondents' beliefs about the likely child and family outcomes in these scenarios as well as beliefs about the future labor market earnings of both parents. This information allows us to infer individual perceived returns to mothers working part-time or full-time for a broad range of different outcomes. In addition, we measure beliefs about social norms (i.e., the perceived opinions of family and friends) as well as perceptions about constraints (i.e., the availability of full-time childcare). Finally, we measure actual and intended labor supply decisions and elicit information on respondents' likely labor supply choices in a hypothetical scenario in which full-time childcare is abundant.

The resulting dataset allows us to gain several important insights. First, we provide evidence on how individuals' beliefs about returns to maternal labor supply as well as beliefs about social norms and childcare constraints vary across individuals and on how individuals' actual/intended labor supply choices compare to (hypothetical) unconstrained choices. While there is considerable heterogeneity in individual beliefs, some clear patterns emerge from our study. Individuals are aware that career interrup-

[3]We also collect data from men because labor supply decisions by mothers are likely to be joint decisions in that they are the result of a household bargaining process. While we do not explicitly elicit beliefs about the bargaining process, it is certainly informative to document beliefs and preferences of men as well as women.

tions have a negative impact on mothers' later-life earnings and perceive the returns to hours worked as convex. While the theory on the effects of specialization within the household would suggest that fathers' earnings increase when mothers work less to care for young children, respondents' perceptions point to the contrary: the expected earnings of fathers increase in mothers' hours worked. In terms of a child's cognitive and socio-emotional skills, individuals expect these skills to improve when the mother works and the child attends childcare part-time rather than not at all and are perceived to improve even further when the child attends childcare full-time rather than part-time. In other words, in terms of child skills, returns to work hours are positive (in particular for social skills but also for the other four types of skills). When it comes to family outcomes, the results are more mixed. In particular, the satisfaction of the child and the mother-child relationship are perceived to suffer if the mother works full-time rather than just part-time.

Turning to beliefs about social norms, we find that most respondents think their family and friends would want mothers to work part-time rather than full-time or not at all while their children are young. While there is a large amount of heterogeneity in beliefs about the availability of childcare, respondents in our sample are particularly pessimistic about the probability of finding full-time childcare in their neighborhood. Moreover, we find that relaxing those constraints would lead to a significant rise in maternal labor supply. In particular, when we compare actual/intended labor supply choices to what respondents state they would have done/would do if full-time childcare was available to them, we find that mothers with young children would be substantially more likely to work.

Second, we estimate a model of labor supply with heterogeneous beliefs to study which factors predict maternal labor supply choices in the setting without constraints, i.e., the choices that would be made if full-time childcare was available. We find that non-pecuniary returns play a critical role. Perceptions about child skills strongly predict choices, as do beliefs about the quality of the mother-child relationship and about the satisfaction of the child and of the parent who has the same gender as the re-

spondent. Perceptions about the opinions of family and friends and the labor supply choices of respondents' mothers also relate positively to choices. Interestingly, we find that perceptions about the later-life earnings of mothers or fathers are not related to maternal labor supply decisions. These findings underline the importance of studying perceptions about non-pecuniary factors in the choice.

Finally, we highlight differences in beliefs and preferred choices across groups. Women tend to perceive the returns to full-time work as lower, and they are less likely to prefer the full-time option. Respondents in East Germany perceive the benefits to full-time work as higher and they are more likely to prefer the full-time option. Moreover, parents and older individuals are more pessimistic about mothers working full-time, while education plays a surprisingly minor role. Overall, the new survey data yields important insights into subjective expectations about maternal labor supply as well as heterogeneity within and across groups. It also draws attention to the importance of non-pecuniary factors in this decision, which have not received much attention in the existing literature.

This paper relates to several strands of the literature. First, it contributes to the literature on the determinants of female labor supply decisions. This literature dates back to Mincer (1962) and Becker (1965) who first consider the trade-off between housework and paid work. More recent work has examined the role of childcare subsidies/the availability of childcare facilities (e.g., Attanasio, Low and Sánchez-Marcos 2008; Bauernschuster and Schlotter 2015; Blundell et al. 2016), welfare policies, family policies, tax treatment of second earners (relative to single individuals), child benefits, paid maternity and parental leaves, and part-time employment opportunities (e.g., Del Boca and Wetzels 2010; Olivetti and Petrongolo 2017). Other studies have investigated the relationship between cultural norms and female employment (e.g., Fortin 2005; Fernandez and Fogli 2009; Nicoletti, Salvanes and Tominey 2018; Bursztyn, González and Yanagizawa-Drott 2018; Schönberg, Raute and Boelmann 2020) and whether the own mother worked (Fernández, Fogli and Olivetti 2004; Galassi, Koll and Mayr 2019). Our study also relates to recent work by Kuziemko et al. (2018), who show that when they

are making human capital investment decisions, women underestimate the effect of motherhood on their future labor supply. We build on and contribute to this literature by eliciting and analyzing beliefs about the benefits and costs to mothers working in terms of earnings as well as child and family outcomes. These individual-level data, combined with data on perceived constraints and social norms, allow us to jointly study the role of the different, potential determinants in maternal labor supply decisions.

Second, we contribute to the growing literature that investigates the role of beliefs in decision-making within different contexts. For example, Kaufmann and Pistaferri (2009) and Armantier et al. (2015) show that individual beliefs are important for consumption decisions and financial investment decisions, respectively. A growing literature has investigated the role of beliefs in human capital investment decisions. For decisions made by students see, e.g., Dominitz and Manski (1996); Jensen (2010); Attanasio and Kaufmann (2014); Almås et al. (2016); Bleemer and Zafar (2018); Alan, Boneva and Ertac (2019); Boneva and Rauh (2019); Boneva, Golin and Rauh (2019); Belfield et al. (2020) and/or parents see, e.g., Cunha, Elo and Culhane (2013); Boneva and Rauh (2018). Studies have also investigated the role of beliefs in students' choice of major (e.g., Zafar 2013; Wiswall and Zafar 2015, 2018), high-school track (Giustinelli 2016), and which specific university to attend (Delavande and Zafar 2019). The results of these studies have highlighted the importance of both pecuniary and non-pecuniary factors in human capital investment decisions. To the best of our knowledge, this study is the first to systematically measure the perceived pecuniary and non-pecuniary benefits/costs to labor supply choices and investigate the role of these beliefs in labor supply decisions.

2 Background: The German Context

Germany provides an ideal setting to study maternal labor supply as there is a substantial degree of variation in mothers' labor supply decisions. According to the OECD Family Database, in 2014, 30% of mothers with children aged 0-14 worked full-time,

39% worked part-time, and 31% stayed home to care for their family. Consistent with those labor supply statistics, data from the 2012 wave of the International Social Survey Program (ISSP) illustrate the gender-conservative views still prevalent in German society. In Germany, a staggering 90% of respondents state that a mother should stay home or work part-time (rather than full-time) while the child is under school age, and 75% of respondents think she should stay home or work part-time when the youngest child starts school. 34% and 35% of German respondents agree with the statements, 'A pre-school child is likely to suffer if his or her mother works' and 'All in all, family life suffers when the woman has a full-time job'. While these numbers illustrate the persistence of gender-conservative views in Germany, Germany is also by no means an outlier in the international context.[4]

Another reason why the German setting provides a perfect laboratory for studying maternal labor supply is the large historical difference in family, labor market and childcare policies between East and West Germany that continues to influence attitudes and maternal labor supply decisions to this day (Schönberg, Raute and Boelmann 2020). In former East Germany (GDR), full-time employment of women was strongly encouraged through a range of different policies such as generous maternity-leave arrangements and the provision of full-time childcare for children of all ages, allowing the reconciliation of full-time work and family life. In 1989, 80% of all children below the age of 3 were cared for in a formal childcare facility. On the other hand, in former West Germany (FRG) the state promoted traditional gender roles through policies such as joint income taxation schemes while the provision of childcare was largely considered to be the responsibility of the family. Public childcare was only available for 2% of all children below the age of 3, effectively forcing women to choose between having a career or caring for their children at home (Domscheit-Berg 2016). Before reunification, in 1989,

[4]For an international comparison, see Appendix Figure A.3, which displays the percentage of respondents who believe women should stay home or work part-time (a) when there is a child under school age and (b) after the youngest child starts school. Appendix Figure A.4 displays the percentage of respondents agreeing or strongly agreeing with the two statements 'A pre-school child is likely to suffer if his or her mother works' and 'All in all, family life suffers when the woman has a full-time job'.

East Germany's female labor force participation rate stood at 89%. This was among the highest in the world and comparable to the country's rate for men (92%). At the same time, the female labor force participation rate in West Germany was only 56%, considerably lower than that of West German men (83%) (Krueger and Pischke 1992; Klammer et al. 2020).

Despite the fact that Germany reunified more than 30 years ago, there are still substantial differences in the percentage of children attending childcare and maternal labor supply decisions. Nowadays, every child in Germany over the age of 1 has the legal right public childcare and the costs of childcare are negligible. For example, a two-parent family with average household income whose two children attend full-time daycare only need to spend about 1% of their household income on childcare.[5] Despite those facts, childcare availability and take-up still varies substantially across regions.[6] Consistent with the differences in childcare availability, data from the German Socio-Economic Panel (GSOEP) reveals an East-West gap in maternal labor supply, driven by both the extensive and intensive margin.[7]

These patterns raise an important question: How do mothers decide whether to work full-time, part-time, or stay home? While some of the variation in female labor supply may be explained by differences in constraints (e.g., differences in childcare availability across regions), it is possible that there are differences in perceptions about social norms and the returns to maternal labor supply, which may be important determinants of the labor supply decision. In order to shed light on the question we collect data on individual perceptions about constraints, social norms, and the returns to female labor supply.

[5]See Appendix Figure A.5 for a comparison of childcare costs across countries.

[6]Appendix Figure A.6 illustrates the percentage of children below the age of 3 in formal childcare, and exhibits a clear divide along the former East-West border.

[7]As illustrated in Appendix Figure A.2, there are important differences in the percentages of mothers with children in different age categories who are substantially employed (i.e. working more than 20 hours per week). While substantial employment of mothers is low and not significantly different between East and West Germany for children below 1, it is gradually increasing in the age of the child (age 1 to 5, 5 to 11, above 11) with a gap of 20 percentage points between East and West Germany.

3 Survey Design

We develop a novel survey tool to elicit individual beliefs about the returns to female labor supply as well as individual perceptions about local constraints and social norms. The survey is administered to a large sample of respondents living in Germany and it consists of several parts. To elicit perceived returns to maternal labor supply, we first present respondents with hypothetical scenarios and ask them about the likely outcomes of these scenarios (see Appendix C for the full list of questions). The scenarios depict a hypothetical family in which a mother either works full-time, part-time, or stays home while her child is between the ages of 1 and 5. By comparing responses across scenarios, we obtain quantitative, interpersonally comparable measures of respondents' beliefs about the benefits and costs of the mother's decision. The use of hypothetical scenarios has become the 'gold standard' for the elicitation of beliefs about returns and has been used in a variety of different contexts. We extend this literature to the context of female labor supply.

The rest of this section describes the different parts of the questionnaire. First, we elicit beliefs about returns, which we describe in detail in Section 3.1. Second, we elicit individual beliefs about constraints (i.e., the availability of childcare) as well as beliefs about social norms (Sections 3.2 and 3.3). Third, we collect information on actual and intended labor supply decisions and we elicit information about what respondents think they would have done/would do if full-time childcare would have been/would be available (Section 3.4). Finally, we collect data on the background characteristics of respondents (Section 3.5).

3.1 Beliefs about Returns

We use hypothetical scenarios to elicit individual beliefs about different benefits and costs to female labor supply. To facilitate the comparison of elicited beliefs across individuals in our sample, we ask respondents to imagine a hypothetical family living

in their neighborhood (rather than their own family).[8] The parents in this hypothetical family, Sarah and Michael, are described as being 30 years old and having a one-year-old child. We keep the description of the hypothetical family constant across respondents, with one notable exception: respondents with a university degree are presented with scenarios in which the parents have a bachelor's degree, while respondents without a university degree are confronted with scenarios in which the parents have a secondary school diploma. We tailor the hypothetical family in this way to make the scenarios as relevant as possible to the respondents. We also adjust the level of gross annual earnings the parents are described to earn before the birth of their child accordingly (46,000 Euro vs. 36,000 Euro).[9]

The hypothetical family and the corresponding scenarios in which the mother works part-time, full-time, or stays home while her child is 1-5 years old are introduced as follows:[10]

> *Sarah and Michael are 30 years old and both have a bachelor's degree. Before the birth of the child, both worked full-time and earned 46,000 Euro gross each year. Sarah is now on parental leave for 12 months, while Michael continues to work full-time. After the 12 months parental leave Sarah wants to go back to work. Will the family get access to childcare? The places are limited and it is not clear if the family gets a place. Imagine that it is decided by chance which of the following three cases will occur.*
>
> > ***Case 1:*** *The family cannot get access to childcare. Sarah stays at home for the next 5 years and takes care of the child.*

[8] A similar methodology has been used by Boneva and Rauh (2018) and Attanasio, Boneva and Rauh (2020) to elicit parental beliefs about the returns to educational investments in their children. See Delavande (2014) for a discussion of the different advantages and disadvantages of this method.

[9] These numbers correspond to the actual median earnings for individuals in this age group with/without university education observed in the German Socio-Economic Panel (GSOEP).

[10] The presented scenario is the scenario presented to respondents with university education. Respondents without university education are presented with parents who both have a secondary school diploma and earn 36,000 Euro before the birth of their child.

Case 2: *The family gets access to a childcare center for half the day. Sarah works part-time (20h/week) for the next 5 years.*

Case 3: *The family gets access to a childcare center for the full day. Sarah works full-time (40h/week) for the next 5 years.*

In all cases, Sarah will return to full-time work when the child is 6 years old. Sarah and Michael do not want any more children.

There are several design features which are worth noting. First, we deliberately make it explicit that the mother is taking the 12 months of parental leave while the father is continuing to work full-time. We also state that the mother will return to full-time work when the child is 6 years old, and that the parents do not wish to have more children. While these simplifying assumptions may compromise some of the external validity of our belief measures, keeping those decisions constant allows us to isolate individual beliefs about the benefits and costs to women working part- or full-time while their children are 1-5 years old. Second, we make it clear that the mother would like to go back to work when her maternity leave ends, that she would work while the child is in childcare, and that it is decided by chance whether the family finds a childcare center, which would allow her to work part- or full-time. Again, these simplifying assumptions compromise some of the external validity of our belief measures because not all women want to return to work while their children are young. At the same time, it allows us to ensure that respondents are not making inferences about the mother (or the child) from the choice she is making, which is important in this setting.[11]

We elicit individual beliefs about a broad set of benefits and costs associated with mothers working part- or full-time that are likely to be relevant in female labor supply decisions. More specifically, we elicit individual beliefs about a set of child outcomes, family outcomes, and labor market outcomes (see Table 1). The child outcomes we

[11] If it was not described as random whether the mother works part-time, full-time, or stays at home, respondents could for example conclude that if the mother decides to stay home this could be because she is more caring or has a child with different needs. We note that this setting is realistic because virtually no region in Germany has sufficient childcare coverage to accommodate all children.

capture are the child's vocabulary, their intelligence, ability to concentrate, ability to work independently, and social skills. The family outcomes we measure are the satisfaction of the child, mother and father as well as the quality of the relationship between the mother and the child and the mother and the father. Finally, we measure perceptions about the earnings of the mother and the father at ages 36 and 42. This allows us to capture perceptions of earnings trajectories in the different scenarios.

Table 1: Overview of belief elicitation questions

Scenarios	*Outcomes*
	Child Outcomes
(1) Mother stays home	Vocabulary
(2) Mother works part-time	Intelligence
(3) Mother works full-time	Concentration
	Work independently
	Social skills
	Family Outcomes
	Satisfaction child
	Satisfaction mother
	Satisfaction father
	Mother-child relationship
	Mother-father relationship
	Labor Market Outcomes
	Earnings mother (age 36)
	Earnings mother (age 42)
	Earnings father (age 36)
	Earnings father (age 42)

A challenge with eliciting beliefs about child and family outcomes is that these outcomes are of a non-pecuniary nature and hence do not have a natural metric. We propose a method that allows us to obtain interpersonally comparable quantitative measures. For each of the ten child and family outcomes, we elicit perceptions about the benefits and costs as follows. First, we provide respondents with information on the outcomes in the scenario in which Sarah does not work but looks after her child, i.e., we anchor beliefs about the outcomes in this scenario. More specifically, respondents are told that in this baseline scenario the child and the family would have average outcomes

relative to all other families living in the same neighborhood, i.e., they would have a rank of '50'.[12] We then ask respondents what they believe the outcomes are likely to be in the scenarios in which the mother works part-time or full-time. For each outcome and scenario, respondents can choose a value between '0' and '100' to indicate how they believe the child/family would rank relative to the other children/families in the neighborhood.[13] By comparing the responses in the part-time scenario to the value of '50', we can infer the perceived change in percentile rank that occurs when the mother works part-time rather than stays at home. A comparison of responses in the part-time and full-time scenarios allows us to elicit beliefs about the returns to working full-time rather than part-time.

To elicit beliefs about the labor market returns, we ask respondents to state what they believe Sarah and Michael would earn at ages 36 and 42 in each of the three scenarios. More specifically, we elicit beliefs about the gross annual earnings of both parents, assuming that both work full-time at ages 36 and 42.[14] By comparing responses across the scenarios we can infer individual beliefs about the returns to the mother working part-time or full-time while the child is 1-5 years old. We did not elicit beliefs about the variance in earnings, as this would have substantially increased the complexity and length of the survey.

[12]To illustrate that, we ask respondents to imagine that there are 100 other families with a young child living in the same neighborhood. We then introduce a scale which provides information on the ranking of the hypothetical family of interest relative to all other families. We explain that a value of '50' corresponds to the family being average, while values of '0' and '100' correspond to the family ranking at the bottom or top, respectively, and provide further examples ('40' and '60') to illustrate the scale.

[13]We made it clear that respondents should assume that all other families in the neighbourhood do not change their behavior, irrespective of which scenario Sarah and Michael find themselves in.

[14]See Appendix B for the precise wording of the questions. We provide respondents with additional information about what the parents would have earned had they not had a child, and we vary this information across respondents with different levels of education. This allows us to fix respondents' perceptions about the earnings trajectories in the absence of children.

3.2 Beliefs about Constraints

In addition to eliciting beliefs about the benefits and costs to women returning to work we also elicit individual beliefs about constraints. In particular, we ask respondents to think of families living in their neighborhood who have a one-year-old child and to state how likely they think it is (on a probabilistic scale of 0-100%) that the family would be able to find a place for their child in a childcare center. Moreover, we ask respondents how likely they think it is that the childcare center would have opening hours that would allow the mother to work full-time (8AM-6PM). These questions are asked to all respondents, regardless of whether they have children or not.

For respondents with children, we collect additional information. In particular, we ask them to think back to the time when their first child was born and we elicit information on how difficult it was for families to find a place in a childcare center in the neighborhood they were living in. More specifically, we ask how likely it was that a family would have been able to find a place in a childcare center, and how likely it was that this childcare center would have had long opening hours (8AM-6PM).

3.3 Beliefs about Social Norms

Individual decisions may be influenced by the perceived opinion of friends and family. To obtain information on perceived social norms, we ask respondents to state what they think other people would have wanted/would want them to do if there were no constraints, i.e., if places in full-time childcare centers were abundant. More specifically, we ask women with/without children what they think their friends and family would have wanted/would want them to do while their child was 1-5 years old ('do not work'/'work part-time'/'work full-time'). We ask men with/without children what they think their friends and family would have wanted/would want their partner to do (i.e., the mother of their child) if full-time childcare centers were available. We chose to elicit perceptions of the friends' and families' opinions in a scenario in which full-time childcare centers are abundant because otherwise responses might by conflated with

views on the feasibility of the different options.

3.4 Labor Supply

To study whether perceptions of returns, social norms, and constraints are related to maternal labor supply decisions, we further collect information on maternal labor supply. We proceed in several steps. First, we elicit information on actual and planned labor supply decisions. We ask women with children to provide information on their labor supply decisions the year before their first child was born as well as in each of the six subsequent years. For each of these years, we ask mothers whether they primarily worked full-time, part-time, or not at all. In the analysis, we use the mothers' responses to what she primarily did when her child was three years old as a proxy for what she was primarily doing when her first child was below school age. Women without children are asked to imagine that they had a child, and we ask them what they believe they would do while their child is 1-5 years old. We ask men with/without children the same questions as women with/without children, only that we ask all questions in relation to the mother of their child.

To study the role of constraints in maternal labor supply decisions and to obtain a measure of what the mothers think they would have done if there had been no constraints, we ask them what they would have done if full-time childcare centers had been available. Women without children are asked what they think they would do if they had a 1-5 year old child and full-time childcare centers were abundant. Again, we pose similar questions to men, only that we ask them about what they think the mother of their child would have done/would do if there were no childcare constraints. Throughout the text, we refer to respondents' actual or planned decisions as respondents' *constrained* choices, while we refer to respondents' answers in the scenario in which childcare centers are abundant as their *unconstrained* choices. By comparing respondents' constrained and unconstrained labor supply decisions, we can infer individual perceptions about the role of childcare availability in their choice.

3.5 Background Characteristics

We collect detailed information on respondents' background characteristics including their age, gender, and highest level of education. We further elicit information on whether the respondent is a parent, has a migrant background, is religious, and whether the respondent's own mother worked full-time or part-time while they were 1-5 years old. We also obtain information on where the respondent currently lives and where the respondent was born.

4 The Sample

To study which motives play a role in female labor supply decisions, we collect primary survey data on a large sample of German adults. The sample consists of 3,973 respondents aged 20-45. The data were collected by a professional survey company in September 2019.[15] We oversampled East Germany, and have 2,003 respondents who currently live in West Germany and 1,970 respondents who currently live in East Germany. Within East and West Germany, we used quota-based sampling to ensure the sample is representative at the level of the federal state.[16] Within each federal state, we set quotas to obtain an equal number of men and women with and without children. This sampling procedure has the advantage of generating sufficient power to detect differences between men and women as well as between respondents with and without children. Tables A.1 and A.2 in the Appendix show the distribution of respondents across regions within East and West Germany and compare this distribution to the national distribution of adults across regions in Germany. As can be seen from the tables, the two distributions are very similar.

Table 2 presents the characteristics of our sample. The respondents in our sample

[15] All participants were part of the company's online panel and participated in the survey online. The survey was scripted in the online survey software Qualtrics. Respondents received modest incentives for completing the survey. The median time respondents needed to complete the survey was 13 minutes.

[16] While Berlin was divided into East and West Berlin, we categorized Berlin as being in the East when setting the quotas.

are on average 33 years old, 34% have a university degree, 39% are married, and 50% are parents. On average, parents have 1.72 children. 16% of respondents in our sample have a migrant background, i.e., they have at least one parent born outside of Germany. 27% report that religion is important or very important to them. Among respondents who are in the labor force, 71% work full-time, 19% work part-time, while the remaining 10% do not work (i.e., they are either unemployed or report looking after the home and family).[17] The average annual income of respondents is 34,431 Euros.

Table 2: Descriptive statistics by gender

Variable	All	Women	Men
Age	33.46	32.65	34.29
	[6.91]	[6.74]	[6.98]
University degree	0.34	0.32	0.37
	[0.47]	[0.46]	[0.48]
Married	0.39	0.38	0.40
	[0.49]	[0.49]	[0.49]
Parent	0.50	0.50	0.51
	[0.50]	[0.50]	[0.50]
Number of children	1.72	1.72	1.72
	[0.82]	[0.83]	[0.81]
Migrant background	0.16	0.15	0.16
	[0.36]	[0.36]	[0.37]
Religious	0.27	0.26	0.28
	[0.44]	[0.44]	[0.45]
West Germany	0.50	0.50	0.51
	[0.50]	[0.50]	[0.50]
Working full-time	0.71	0.55	0.86
	[0.45]	[0.50]	[0.35]
Working part-time	0.19	0.29	0.09
	[0.39]	[0.45]	[0.28]
Annual income (in EUR)	34431.39	28254.41	40649.09
	[25561.54]	[21608.42]	[27646.29]
Observations	3,973	1,995	1,978

Notes: Column 1 displays the summary statistics for the full sample. Columns 2 and 3 display the characteristics of women and men. Migrant background indicates whether the respondent has at least one parent born outside of Germany. West Germany indicates whether the respondent lives in former West Germany. Religious indicates whether religion is important to the respondent. Annual income is the annual gross income of the respondent in Euros. The standard deviation is displayed in squared brackets.

[17] Self-employed individuals (4.1% of our sample) are categorized as working part-time if they work less than 36 hours during a typical week. Retired and chronically ill/disabled respondents (2.3% of our sample), as well as respondents who report being in full-time education (11.7% of our sample), are categorized as being out of the labor force.

5 New Evidence on Beliefs about Returns, Constraints and Social Norms

5.1 Beliefs about Returns

How do individuals perceive the returns to maternal labor supply? Our unique data allow us to shed light on this important question. We start by exploring the distribution of individual beliefs about the child and family outcomes. For each of the ten outcomes, we ask respondents to state how the child in the hypothetical family would rank relative to all other children in the neighborhood if the mother works part- or full-time while the child is 1-5 years old (see Table 1). Appendix Figure A.7 displays the distribution of responses for these outcomes in each of the two scenarios.[18] The horizontal black line illustrates the benchmark case in which the mother does not work (in this case the child would have a rank of '50', as explained in Section 3.1). Several striking patterns emerge. First, there is a substantial degree of heterogeneity in individual responses. Second, for all child and family outcomes, the vast majority of respondents believe that the child and family would be *better off* if the mother worked part- or full-time rather than not at all. Appendix Table A.3 presents the average responses to the ten questions in each of the two scenarios, separately for the low and high education group.[19] For both groups, all means are larger than 50 and significantly different from 50 at the 1% level, indicating that respondents in both groups, on average, perceive the child and family to be significantly better off if the mother works part- or full-time rather than not at all.

While there are some differences between the groups in terms of average responses (see columns 4 and 7 of Appendix Table A.3), the magnitudes of the average perceived benefits to working part- or full-time relative to not working are sizeable for both

[18]The width of the violin plots represents the density of responses, the circle represents the median, the bar covers 50% of the responses, while the thin line covers 95% of responses. In this figure, we pool all respondents irrespective of their educational background.

[19]Respondents with a high (low) level of education are presented with hypothetical families in which parents have the same (high or low) level of education, see Section 3.1.

groups and comparable in magnitude.[20] When it comes to children's skills, respondents perceive children to rank 11-19 percentiles higher relative to the other children in their neighborhood if the mother works part-time, and 14-28 percentiles higher if the mother works full-time. Similarly, both groups believe that the family would rank higher in terms of of family satisfaction and relationships relative to other families in the neighborhood if the mother works part- or full-time rather than not at all. The average perceived increase in percentiles ranges from 13-16 for part-time work and from 5-13 for full-time work. To summarize, respondents on average think that the child and family would fare substantially better if the mother works part- or full-time rather than not at all.

Next, we turn to the comparison between the part- and full-time scenarios. How do respondents perceive the returns to working full-time rather than part-time, and how do these perceptions compare to the perceived returns to working part-time rather than not at all? Table 3 displays the outcome in the scenario in which the woman does not work ('50'), the average perceived return to working part-time rather than not at all ('PT-NO'), the average perceived return to working full-time rather than part-time ('FT-PT'), as well as the difference between the two, separately for respondents with a low and high level of education. Figures 1 and 2 illustrate the average perceived returns for the ten outcomes for each education group.

For both education groups, the average perceived differences between the part- and full-time scenarios are sizeable (see columns 3 and 7). Tthe average perceived returns are significantly different from zero at the 1% level for nine of the ten outcomes we measure. Strikingly, for all five child outcomes, both groups on average think that the child will do significantly *better* if the mother works full-time and they attend childcare for the full day than if the mother works part-time and they only attend childcare for half the day. The differences range between 5-11 percentiles for the low education

[20]We note that the survey design does not allow us to disentangle whether respondents think there are benefits/costs to having highly-educated parents, or whether respondents with different levels of education think differently. We deliberately chose this survey design to make the scenarios more relevant to the respondent's own situation.

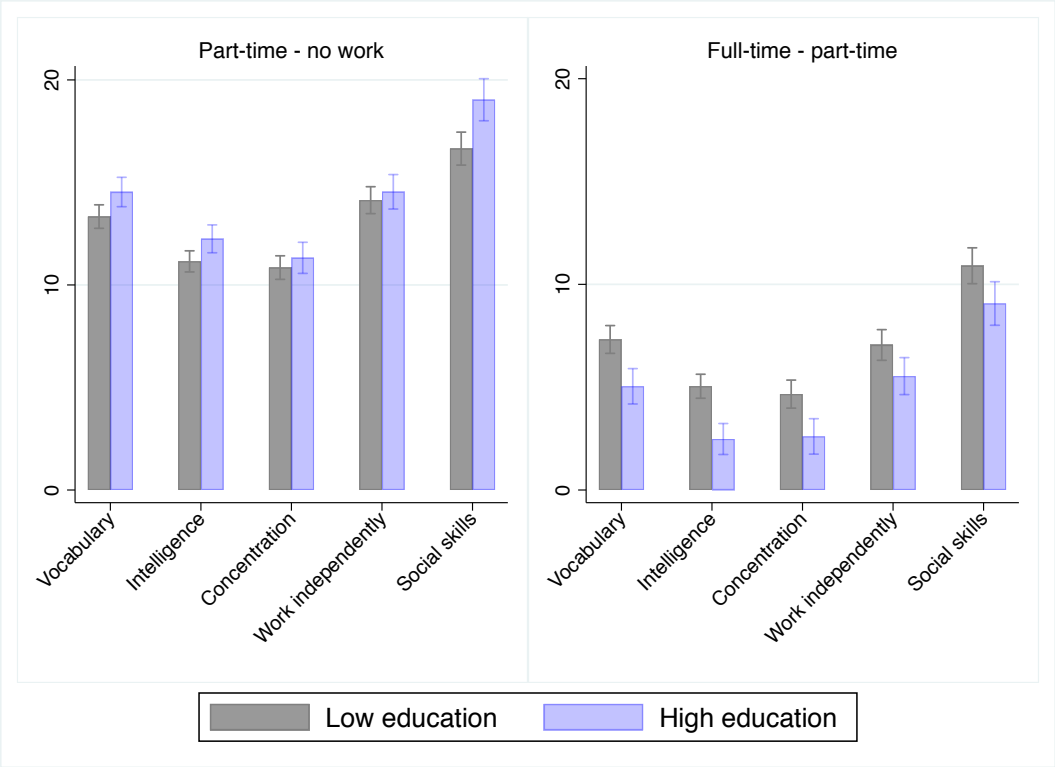
Table 3: Average returns - Child and family outcomes

	Low education				High education			
Variable	NO	PT-NO	FT-PT	Diff.	NO	PT-NO	FT-PT	Diff.
Child outcomes								
Vocabulary	50.00	13.33	7.32	-6.01	50.00	14.53	5.04	-9.49
	[0.00]	[14.87]	[17.50]	(0.000)	[0.00]	[13.52]	[16.19]	(0.000)
Intelligence	50.00	11.15	5.05	-6.10	50.00	12.25	2.48	-9.77
	[0.00]	[13.33]	[15.07]	(0.000)	[0.00]	[12.78]	[14.13]	(0.000)
Concentration	50.00	10.85	4.66	-6.18	50.00	11.32	2.61	-8.72
	[0.00]	[14.89]	[17.64]	(0.000)	[0.00]	[14.28]	[16.18]	(0.000)
Work independently	50.00	14.13	7.05	-7.08	50.00	14.54	5.54	-9.01
	[0.00]	[17.02]	[19.31]	(0.000)	[0.00]	[15.84]	[16.90]	(0.000)
Social skills	50.00	16.65	10.90	-5.75	50.00	19.03	9.07	-9.96
	[0.00]	[20.85]	[22.59]	(0.000)	[0.00]	[19.32]	[19.94]	(0.000)
Family outcomes								
Satisfaction child	50.00	14.24	-4.45	-18.69	50.00	14.27	-4.75	-19.02
	[0.00]	[16.01]	[21.64]	(0.000)	[0.00]	[15.26]	[20.39]	(0.000)
Satisfaction mother	50.00	13.09	2.16	-10.93	50.00	14.70	2.31	-12.39
	[0.00]	[19.72]	[26.87]	(0.000)	[0.00]	[19.49]	[25.76]	(0.000)
Satisfaction father	50.00	14.06	3.70	-10.37	50.00	15.26	2.62	-12.65
	[0.00]	[18.99]	[23.62]	(0.000)	[0.00]	[17.34]	[20.43]	(0.000)
Mother-child relationship	50.00	15.90	-10.74	-26.64	50.00	14.19	-9.15	-23.34
	[0.00]	[18.05]	[22.68]	(0.000)	[0.00]	[17.36]	[20.76]	(0.000)
Mother-father relationship	50.00	12.66	0.72	-11.95	50.00	12.98	1.44	-11.53
	[0.00]	[18.25]	[22.92]	(0.000)	[0.00]	[18.03]	[21.22]	(0.000)
Observations	2,609	2,609	2,609	5,218	1,364	1,364	1,364	2,728

Notes: This table displays the average perceived returns to part-time relative to no work (columns 2 and 6) and the average perceived returns to full-time relative to part-time work (columns 3 and 7). Columns 1 and 5 display the benchmark value of '50' in the scenario in which the woman does not work, to which responses were anchored. The results are presented separately for the low and high education group. Standard deviations are displayed in square brackets. Columns 4 and 8 display the difference between the returns to part-time and full-time work, separately for each education group, together with the corresponding p-values. All differences are significant at the 1% level.

group and between 2-9 percentiles for the high education group. For both groups, the largest perceived benefits are found for the child's social skills. When children attend a childcare center they are exposed to other children and trained teachers. Respondents seem to perceive this environment as more stimulating than the home environment, and they seem to believe that there is a monotonic relationship between the number of hours children spend in childcare and children's skills.

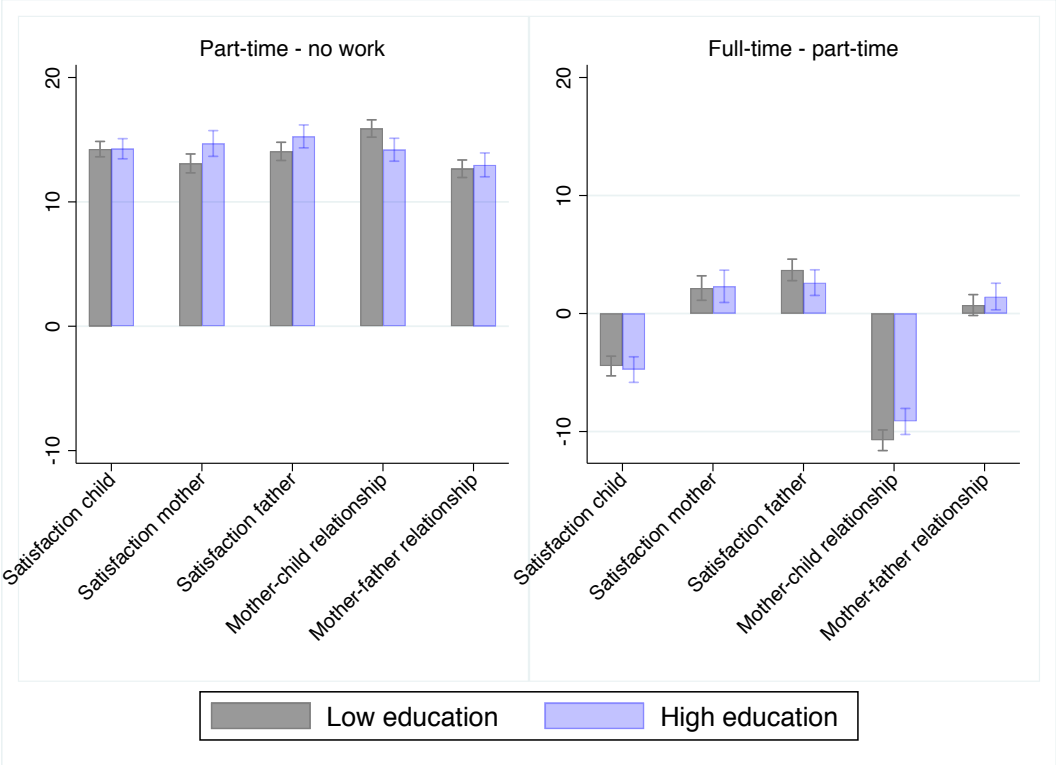
Figure 1: Average returns – Child outcomes



Notes: This figure displays the average perceived returns to working part-time relative to not working (left) as well as the average perceived returns to working full-time relative to working part-time (right) for each of the five child outcomes, separately for the two education groups.

What about the family outcomes? When it comes to the family outcomes, respondents in both groups on average think the satisfaction of the child and the relationship between mother and child would be *lower* if the mother works full-time rather than part-time. At the same time, they think the satisfaction of the mother and the father would be *higher* if the mother works full-time, while there is little difference in the

Figure 2: Average returns – Family outcomes



Notes: This figure displays the average perceived returns to working part-time relative to not working (left) as well as the average perceived returns to working full-time relative to working part-time (right) for each of the five family outcomes, separately for the two education groups.

way respondents perceive the mother-father relationship. Overall, while respondents on average think family outcomes improve if the mother works part-time rather than not at all, the picture is considerably more mixed when it comes to the comparison between part- and full-time work.[21]

Turning to the results presented in columns 4 and 8 of Table 3, respondents, on average, perceive the returns to working full-time rather than part-time (columns 3 and 7) as significantly smaller than the returns to working part-time rather than not at all (columns 2 and 6) for all ten child and family outcomes.

[21]In Appendix Figures A.8 and A.9, we break down the perceived returns by East and West. We find very similar patterns across the East and West in terms of the perceived returns to part-time work relative to no work for both child and family outcomes. However, we find that perceived returns to full-time relative to part-time work are higher in the East both for child and family outcomes. We explore heterogeneity in perceived returns in more detail in Section 8.

How do respondents perceive the impact of maternal labor supply on the future labor market earnings of the mother and the father? To examine this question, we turn to respondents' perceptions about the mother's and father's earnings at ages 36 and 42 (when both partners are assumed to be working full-time in our scenarios, see Section 3.1). Appendix Figure A.10 displays the distribution of responses to the three scenarios separately for parents with a low and high level of education. As with respondents' perceptions about the child and family outcomes, we document a considerable degree of heterogeneity.

Table 4: Average returns – Earnings

	Low education				High education			
Variable	NO	PT-NO	FT-PT	Diff.	NO	PT-NO	FT-PT	Diff.
Mother								
Age 36	33913.54	3510.87	6043.80	2532.94	43094.55	4614.73	6906.42	2291.69
	[15169.73]	[10409.88]	[10588.36]	(0.000)	[15911.81]	[10596.96]	[10239.24]	(0.000)
Age 42	39230.14	3136.22	5575.56	2439.34	50621.40	3965.16	7506.74	3541.58
	[14296.82]	[10744.58]	[11065.62]	(0.000)	[14140.78]	[10265.32]	[10541.37]	(0.000)
Father								
Age 36	42814.38	1022.07	2208.78	1186.71	55609.67	637.96	1265.66	627.71
	[11315.48]	[9171.38]	[9792.94]	(0.000)	[10804.99]	[8271.31]	[8364.35]	(0.053)
Age 42	47757.67	1013.62	2457.01	1443.39	63229.04	722.35	1788.20	1065.84
	[12564.17]	[9486.81]	[9567.48]	(0.000)	[11221.28]	[7739.07]	[8369.32]	(0.001)
Observations	2,609	2,609	2,609	5,218	1,364	1,364	1,364	2,728

Notes: This table displays the average responses to the scenario in which the mother does not work (columns 1 and 4), the average perceived returns to part-time relative to no work (columns 2 and 5) and the average perceived returns to full-time relative to part-time work (columns 3 and 6). The results are presented separately for the low and high education group. Standard deviations are displayed in square brackets. Columns 4 and 8 display the difference between the returns to part-time and full-time work, separately for each education group, together with the corresponding p-values.

Table 4 presents average responses to the scenario in which the mother does not work while her child is 1-5 years old, the average perceived return to working part-time rather than not at all, the average perceived return to working full-time rather than part-time, as well as the difference between the two. The results are presented separately for respondents with a low and high level of education. Figure 3 and Appendix Figure A.11 illustrate the average perceived returns for mother's and father's earnings, respectively.[22] We start by investigating beliefs about the mother's earnings. Mothers with a low level of education, who stay home for five years to look after their

[22]Appendix Figure A.12 further illustrates the average perceived returns for mother's log earnings.

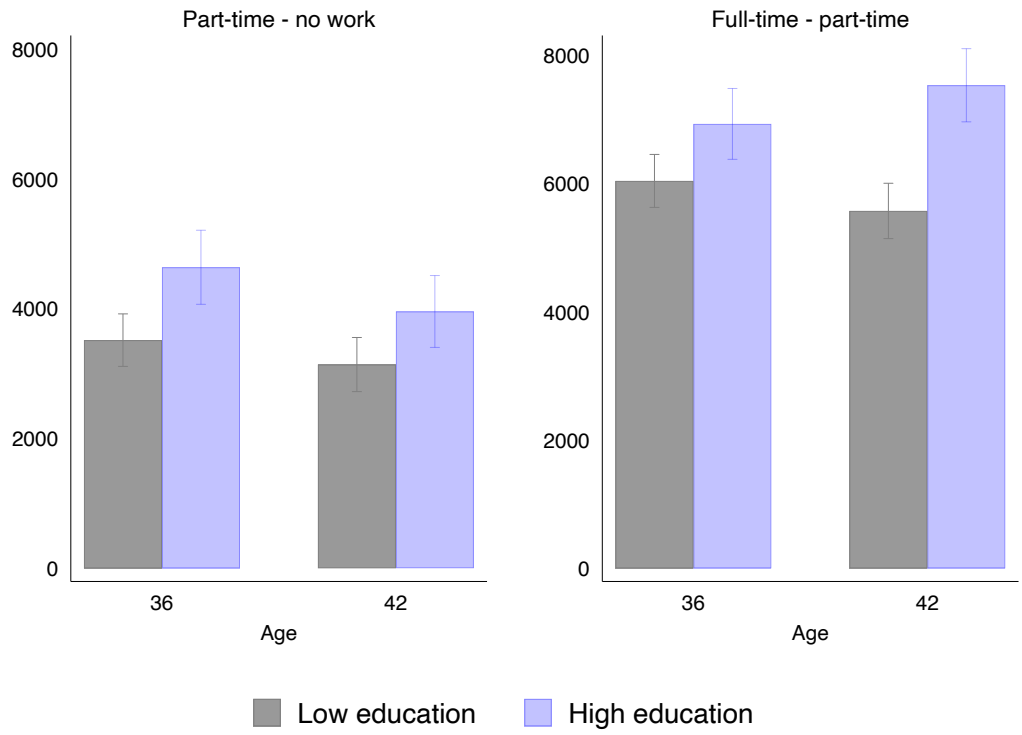
children, are perceived to earn €33,914 when they return to full-time work at age 36.[23] They are perceived to earn €3,511 (+10.4%) more at that age if they had worked part-time rather than not at all while their children were young, and an additional €6,044 (+16.2%) more if they had worked full-time rather than part-time. Consistent with a model in which returns to hours worked are convex (Blundell et al. 2016), the part-time penalty is perceived as higher than the penalty of not working at all. How do respondents perceive the impact on the trajectory of earnings? At age 42, mothers with a low level of education are perceived as earning €39,230 if they stayed home to look after their children. This average value is perceived to be €3,136 (+8.0%) higher if the mother worked part-time and it is perceived to increase further by €5,576 (+13.2%) if she worked full-time. While the penalties are perceived as similar in absolute terms, they are perceived to decrease in percentage terms as average earnings rise over the life cycle.

Turning to mothers with a high level of education, we document that respondents, on average, perceive the mother in the scenario to earn €43,095 at age 36 and €50,621 at age 42 if she stays home to look after her child while the child is young. If the mother works part-time rather than not at all, she is perceived to earn €4,615 (+10.7%) more at age 36 and €3,965 (+7.8%) more at age 42. Working full-time rather than part-time is perceived to have an additional return of €6,906 (+14.5%) on earnings at age 36 and €7,507 (+13.7%) on earnings at age 42. Again, the part-time penalty is perceived as larger than the penalty of not working at all, and the penalties are perceived as somewhat smaller as women become older and more attached to the labor market (in percentage terms). Remarkably, the perceived penalties are very similar across the two education groups in percentage terms, but higher for the high education group in absolute terms.

Do respondents believe that men's careers are going to benefit from their partners staying home and taking care of the kids or reducing their hours from full-time to

[23]Consistent with a model in which human capital depreciates when the mother is not working, this average value is *lower* than the earnings of the mother before the birth of her child (€36,000).

Figure 3: Average returns – Earnings of mother



Notes: This figure displays the average perceived returns to working part-time relative to not working (left) as well as the average perceived returns to working full-time relative to working part-time (right) for mother's earnings at ages 36 and 42, separately for the two education groups.

part-time? Surprisingly, our evidence points to the contrary. Low education (high education) fathers are perceived to make 2.4% (1.2%) *more* at age 36 if their partners work part-time rather than not at all, and another 5.0% (2.3%) more if their partners work full-time rather than part-time. Similarly, at age 42, they are perceived to earn 2.1% (1.1%) more if their partners work part-time rather than not at all, and an additional 5.2% (2.9%) if their partners work full-time rather than part-time. The average perceived returns are modest and mask a considerable degree of heterogeneity across respondents. While this is purely speculative, perceived positive returns could be reconciled with a model in which fathers want to be perceived as the main breadwinners and are hence perceived to invest more into their careers if their partner works as well (e.g., Bertrand, Kamenica and Pan 2015).

In Appendix Tables A.5 and A.6, we present the Spearman rank correlations between the different returns that we measure. The perceived returns to the five different child outcomes correlate highly with each other, which is why we construct a composite measure when estimating the choice model in Section 7. We also note that the perceived returns for the family outcomes correlate positively with the perceived returns for the child outcomes, whereas perceived returns in terms of earnings display little correlation with the other variables which we measure.

To summarize the main findings from this section, for all outcomes that we measure, it is perceived as unambiguously better if the mother works part-time rather than not at all. Children are perceived as having higher levels of skills if they attend childcare for half the day rather than not at all, family outcomes are expected to improve, and both the mother *and* the father are perceived as earning more later in life if the mother works part-time rather than not at all. When it comes to the comparison between part-time and full-time, a trade-off emerges. While the child's skills are perceived to improve as the child attends childcare full-time rather than part-time, family life is perceived to suffer. At the same time, the monetary returns (both for the mother and the father) are perceived as higher.

Which factors predict beliefs about returns? In Section 8, we explore whether individual characteristics such as age or gender predict beliefs. We also explore whether parents think differently than respondents without children, and document differences in perceptions between respondents living in East and West Germany.

5.2 Beliefs about Constraints

As illustrated in Appendix Figure A.6, childcare availability varies considerably across regions. Given that childcare availability may play an important role in maternal labor supply decisions, we document how individuals perceive childcare availability in their neighborhood. While there is considerable heterogeneity in individual responses, average responses indicate that respondents are rather pessimistic about the possibility

of finding childcare that is open the full day. Respondents with children state that a family in their neighborhood had a 62% chance of finding a childcare center and that there was a 54% chance that this childcare center would have been open the full day. Thus the perceived likelihood of finding daycare that would be open the full day is 38% (calculated as the product of the two previous questions). For respondents without children, we find that the perceived likelihood for a family to find a childcare center in their neighborhood is 56%, whereas the perceived likelihood of the childcare center being open the full day is 51%. Thus the perceived probability of finding full-time childcare is 34% according to repondents without children.[24] We explore the extent to which maternal labor supply decisions are perceived to be influenced by the lack of full-time daycare in Section 6.

5.3 Beliefs about Social Norms

The opinion of friends and family members are likely to be a strong predictor of maternal labor supply decisions. Appendix Figure A.15 shows what respondents think their family (left) and friends (right) think they (or their partner, i.e. the mother of their child) should have done/should do when the child is 1-5 years old, assuming full-time childcare is available. The top panel presents the results for respondents with children, whereas the bottom panel presents the results for respondents without children. A clear pattern emerges. The modal answer to *all* four questions is that the mother is expected to work part-time, with the share of respondents giving this answer ranging from 50-52%. The second most common answer is that the mother should work full-time, with the fraction varying between 36-43%. Respondents with children appear slightly more likely to believe that family and friends would want mothers not to work and slightly less likely to believe that family and friends would want mothers to work full-time.

[24] Appendix Figure A.14 displays the strong positive correlation between respondents' perceived availability of childcare and actual childcare provision at the state level. While we cannot answer the question whether perceptions about childcare availability are correct because actual childcare provision is determined by both supply- and demand-side factors, the strong positive correlation lends additional credibility to our data.

Overall, the perceived approval of family and friends seems highest for part-time work.

Since it has been shown in the literature that maternal labor supply decisions are influenced by whether an individual's own mother worked while the individual was young (see literature discussion), we also included a question on the labor supply of respondents' mothers while the respondent was 1-5 years old. On average, 32% of respondents' mothers did not work, 27% worked predominately part-time, and 42% predominately full-time.

6 Constrained and Unconstrained Labor Supply

Maternal labor supply is likely to be determined by a range of different factors. Among those factors, the availability of childcare is important to consider as it is difficult for mothers to work if no childcare is available as private childcare is comparably expensive and rare in Germany. To study the perceived importance of childcare availability in maternal labor supply decisions, we compare constrained with unconstrained choices, i.e., to choices the respondents state they would have made/would make if full-time daycare was available. Figure 4 displays the constrained and unconstrained labor supply choices of respondents with children (top) and respondents without children (bottom), separately for female and male respondents.

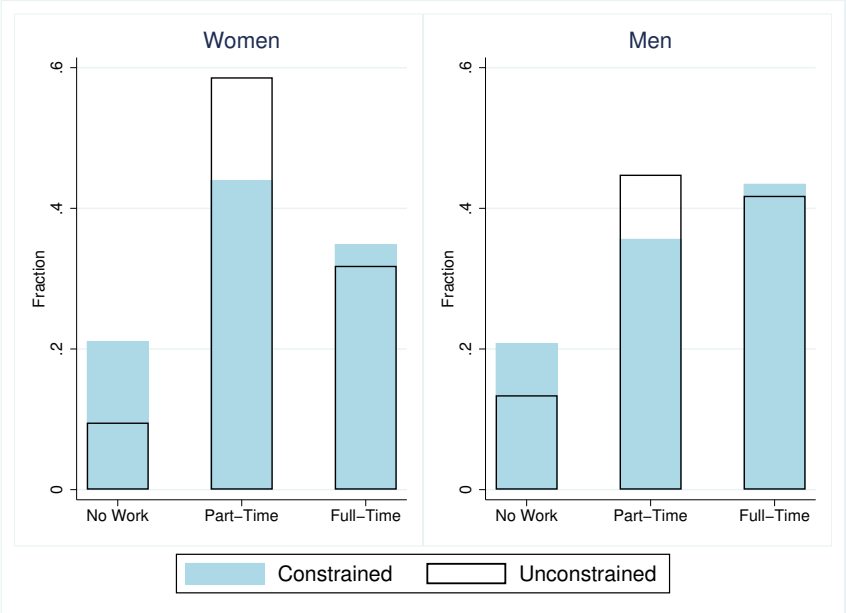
We first examine the responses of individuals with children. The fraction of women reporting that they were working part-time or full-time while their first child was three years old is 44% and 35%, respectively. 21% of mothers report that they were not working during that time. When asked what they think they *would have done* if full-time childcare had been available, we see a clear shift in responses. Mothers report that they would have been more likely to work part-time (+15 p.p.) and less likely to stay at home (-12 p.p.). When asked about the actual labor supply of the mother of their child and what they think she would have done if full-time childcare had been available, men also report their partners would have been less likely to stay at home and more likely to work part-time.

Turning to respondents without children, we find that 66% and 26% of women report that they would most likely work part-time or full-time, respectively, if they had a child below school age. Only 8% of women plan to stay at home during that time. When asked about what they think they would do if full-time childcare was available, a considerably lower share state that they would work part-time (-17 p.p.) or stay at home (-5 p.p.) and a substantially higher share report that they would work full-time (+22 p.p.). For men, the results are qualitatively similar, although men seem to believe that an even higher fraction of women would work full-time if childcare was available than what is reported by women themselves.

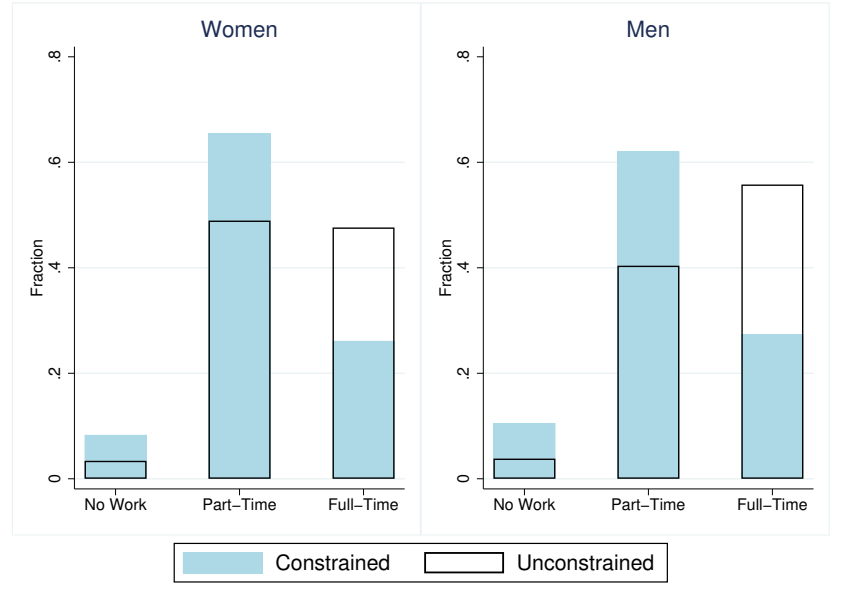
Overall, the results highlight the importance of constraints in maternal labor supply decisions. For both respondents with and without children, maternal labor supply is perceived to be constrained rather considerably by the availability of full-time daycare. This result has important implications for public policy, as it highlights the importance of expanding the provision of full-time childcare in regions where childcare availability is low or opening times are such that it is impossible for mothers to take up full-time employment.

Figure 4: Constrained and unconstrained labor supply

(a) Respondents with children



(b) Respondents without children



Notes: This figure shows the distribution constrained and unconstrained labor supply decisions. Panel A presents the results for respondents with children, whereas panel B presents the results for respondents without children.

7 A Model of Labor Supply with Heterogeneous Beliefs

Having established the perceived importance of constraints in maternal labor supply decisions, we now explore which factors predict unconstrained choices, i.e., the choices that would have been made if full-time daycare was available. For that purpose, we estimate a multinomial probit choice model in which individual i can choose between J alternatives: not working (y_{i1}), working part-time (y_{i2}), or working full-time (y_{i3}) while the child is 1-5 years old. For respondents with children, y_{ij} is the hypothetical choice the respondents state they would have made if full-time daycare had been available to them when their children were young. For respondents without children, y_{ij} refers to the hypothetical choice respondents state they would make if they had young children and full-time daycare was available. We note that for both male and female respondents, we study what predicts respondents' views about what the *mother* of the child would most likely have done/do in these hypothetical situations.

We model the utility individual i derives from choosing alternative j as a function of alternative-specific and individual-specific covariates:

$$u(y_{ij}) = \alpha_j + \beta r_{ij} + \gamma_j x_i + \varepsilon_{ij}.$$

where α_j represents the alternative-specific constant, r_{ij} is a vector of alternative-specific variables that vary across both individuals and alternatives, x_i is a vector of individual-specific variables that vary only across individuals but not alternatives, and ϵ_{ij} is the error, which is distributed as multivariate normal with mean zero and variance-covariance matrix Ω. β is the vector of parameters for the alternative-specific variables and γ_j for the individual-specific variables. Individual i selects alternative j to maximize utility $u(y_{ij})$.

In the baseline specification, the vector of alternative-specific variables, r_{ij}, contains individual beliefs about the likely child, family, and earnings outcomes for each

alternative j. Those beliefs are elicited using the hypothetical scenarios described in Section 3.1. To ease the interpretation of the results, we transform the data in several ways. For the ten child and family outcomes, we transform all perceived percentile ranks such that they lie between 0-1 rather than 0-100. Moreover, given that the five child outcomes correlate highly with each other, we construct a composite measure of perceived child skills for each alternative j by taking the average of the five elicited aspects. We further capture perceptions about the likely future earnings of each partner, for each alternative j, by calculating the discounted sum of log earnings at ages 36 and 42.[25] When estimating the choice model, we recode these variables such that the new variables 'own earnings' and 'earnings of partner' relate to the perceived earnings of mothers and fathers for female respondents, and to the perceived earnings of fathers and mothers for male respondents. Similarly, we recode the perceived satisfaction of the mother and father, for each alternative j, such that the new variables 'satisfaction own gender' and 'satisfaction of partner' correspond to the gender of the survey taker and the gender of their partner, respectively. The vector of individual-specific variables x_i includes age (in years) as well as dummy variables indicating whether the respondent has a high level of education (i.e., a university degree), is female, and has children. We extend this baseline specification to include additional variables such as perceived social norms and also perform a variety of robustness checks, detailed below.

Neither all coefficients α_j and γ_j nor all entries of the variance-covariance matrix Ω are identifiable. The model requires normalization because both the location (level) and scale of utilities are irrelevant. We follow Train (2009) and normalize location by choosing alternative $j = 1$ as the base alternative, and taking the difference between

[25] We discount future earnings at a rate of 4% per year, i.e., we use a discount factor of $0.96^6 = 0.783$.

the utility from that alternative and the other two alternatives $j \in \{2, 3\}$:

$$\begin{aligned}\nu_{ij} &= u(y_{ij}) - u(y_{i1}) \\ &= (\alpha_j - \alpha_1) + \beta(r_{ij} - r_{i1}) + (\gamma_j - \gamma_1)x_i + (\varepsilon_{ij} - \varepsilon_{i1}) \\ &= \delta_j + \beta\rho_{ij} + \lambda_j x_i + \xi_{ij}\end{aligned}$$

where $\delta_j \equiv \alpha_j - \alpha_1$, $\rho_{ij} \equiv r_{ij} - r_{i1}$, $\lambda_j \equiv \gamma_j - \gamma_1$, and $\xi_{ij} \equiv \varepsilon_{ij} - \varepsilon_{i1}$. Thereby, we have reduced the dimensionality of the covariance matrix to $(J-1) \times (J-1)$ and denote it as Σ. We can now, for example, write the probability that respondent i chooses alternative 1 as:

$$\begin{aligned}Pr(i \textit{ chooses } 1) &= Pr(\nu_{i2} \leq 0, \nu_{i3} \leq 0) \\ &= Pr(\xi_{i2} \leq -(\delta_2 + \beta\rho_{i2} + \lambda_2 x_i), \xi_{i3} \leq -(\delta_3 + \beta\rho_{i3} + \lambda_3 x_i))\end{aligned}$$

To normalize for scale, one of the diagonal elements of Σ must be fixed to a constant. The standard deviation for the utility error associated with not working is fixed to one, and its correlations with all other utility errors are set to zero. As a consequence, there are a total of $J(J-1)/2 - 1$ identifiable variance–covariance parameters, which in our case are 2. The probabilities are evaluated using a simulation technique because a closed-form solution does not exist. The likelihood evaluator implements the Geweke–Hajivassiliou–Keane (GHK) algorithm to approximate the multivariate distribution function (Geweke 1989; Keane and Wolpin 1994; Hajivassiliou and McFadden 1998).

7.1 Results

The baseline specification described in the previous section explores whether individual beliefs about the benefits and costs of maternal labor supply significantly predict the choices that would be made if full-time daycare was available. We first estimate the model on the full sample and then look at respondents with and without children, and respondents with a low and high level of education separately. The results are presented in Table 5. The top panel contains the coefficient estimates for the alternative-specific variables (β), while the second and third panels contain the coefficient estimates for the individual-specific variables for part-time work (δ_2, λ_2) and full-time work (δ_3, λ_3), respectively.

Focusing on the results for the full sample (column 1), we find that perceived child skills significantly predict choices, as do perceptions about the satisfaction of the child and the satisfaction of the parent who shares the same gender with the respondent. Similarly, perceptions about the mother-child relationship receive positive weight in the decision. At the same time, perceptions about the satisfaction of the other parent and about the mother-father relationship do not significantly predict choices. Perhaps most surprisingly, the estimated coefficients on both perceived earnings variables are close to zero and insignificant.[26] Turning to the individual-specific variables, we find that older individuals, respondents with children, and men are less likely to choose the part-time or full-time option over the option of not working. We find no significant association between choices and the respondent's level of education. A first key insight of our analysis and the discussed results is the importance of eliciting beliefs about non-pecuniary factors to shed light on maternal labor supply decisions.

[26]While this may seem surprising at first, we note that these results are consistent with results from other studies, which explore individual motives for other important life decisions, such as the decision of whether to go to university or which major to choose. In both contexts, perceived non-pecuniary returns have been shown to strongly predict choices, while perceived pecuniary returns exhibit milder relationships to individual decisions (see, e.g., Zafar 2013; Wiswall and Zafar 2018; Boneva and Rauh 2019).

Table 5: Choice model

	(All)	(Parent)	(No child)	(Low educ)	(High educ)
Child skills	0.6888***	0.4065**	1.0269***	0.9417***	0.2358
	(0.1509)	(0.1635)	(0.2708)	(0.2358)	(0.1495)
Satisfaction child	0.3302***	0.3706***	0.2982*	0.4592**	0.1469
	(0.1098)	(0.1416)	(0.1634)	(0.1829)	(0.0966)
Satisfaction own gender	0.3909***	0.2735**	0.5199***	0.6254***	0.1382
	(0.1145)	(0.1325)	(0.1827)	(0.1948)	(0.0928)
Satisfaction of partner	0.0618	0.0634	0.0049	-0.1514	0.1043
	(0.0974)	(0.1128)	(0.1566)	(0.1628)	(0.0805)
Mother-child relationship	0.2477**	0.1650	0.3105**	0.1891	0.1912*
	(0.0979)	(0.1182)	(0.1562)	(0.1542)	(0.1100)
Mother-father relationship	0.1497	0.1193	0.1926	0.2048	0.0417
	(0.1005)	(0.1203)	(0.1586)	(0.1583)	(0.0689)
Own earnings	-0.0012	-0.0149	0.0286	0.0067	-0.0034
	(0.0376)	(0.0437)	(0.0581)	(0.0501)	(0.0347)
Earnings of partner	-0.0466	-0.0562	-0.0075	-0.0686	-0.0502
	(0.0392)	(0.0466)	(0.0617)	(0.0517)	(0.0339)
Part-time					
Age	-0.0158***	-0.0031	-0.0266***	-0.0212***	0.0008
	(0.0061)	(0.0085)	(0.0085)	(0.0073)	(0.0127)
High education	-0.0592	-0.1575	0.1564		
	(0.0773)	(0.0961)	(0.1264)		
Woman	0.3033***	0.4079***	0.0890	0.2765***	0.3846***
	(0.0764)	(0.0971)	(0.1178)	(0.0922)	(0.1484)
Has children	-0.4011***			-0.0828	-0.9658***
	(0.0997)			(0.1142)	(0.2049)
Single			-0.1075		
			(0.1198)		
Constant	1.5834***	0.7789**	1.7025***	1.1739***	2.0290***
	(0.2761)	(0.3732)	(0.3774)	(0.3268)	(0.5288)
Full-time					
Age	-0.0188***	-0.0102	-0.0259***	-0.0249***	-0.0006
	(0.0053)	(0.0067)	(0.0074)	(0.0062)	(0.0122)
High education	-0.0103	-0.0775	0.1408		
	(0.0632)	(0.0729)	(0.1054)		
Woman	0.1096*	0.1791**	-0.0666	-0.0083	0.3151**
	(0.0658)	(0.0779)	(0.1010)	(0.0758)	(0.1468)
Has children	-0.5881***			-0.4346***	-0.9996***
	(0.0973)			(0.1128)	(0.2034)
Single			-0.1955**		
			(0.0991)		
Constant	1.8670***	1.0742***	1.9018***	1.5806***	2.1593***
	(0.2485)	(0.2952)	(0.3479)	(0.2879)	(0.4827)
Error					
lnl2_2	-0.7385***	-0.9628**	-0.8799**	-0.4742*	-1.8024**
	(0.2372)	(0.4020)	(0.4184)	(0.2524)	(0.7630)
l2_1	0.7066***	0.7406***	0.5687***	0.2850*	1.2029***
	(0.0888)	(0.1176)	(0.1184)	(0.1603)	(0.1278)
Observations	3551	1807	1744	2308	1243

Notes: The table presents the estimates of the multinomial probit choice model. Earnings are computed as the log of earnings at age 36 plus the log of earnings at age 42 discounted by 4% per year. Standard errors are in parenthesis. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

To obtain a better sense of the magnitude of the effect sizes, we calculate marginal effects for the alternative-specific and individual-specific variables for the full sample, which are displayed graphically in Appendix Figures A.17 and A.18, respectively.[27] As can be seen from those figures, the implied marginal effects are sizeable. For instance, increasing perceived child skills from the minimum of 0 to the maximum value of 1 in the part-time (full-time) scenario, is predicted to increase the likelihood of choosing the part-time (full-time) option by 29.6 (35.4) percentage points. To provide another example, respondents who have children are 14.1 percentage points less likely to choose the full-time option, while they are 7.7 and 6.4 percentage points more likely to choose the option of not working or working part-time, respectively.

Columns 2 and 3 display the results separately for respondents with and without children, respectively. Overall, the results are very similar to what we find in the full sample. Among the differences that do stand out, we note that the age patterns documented in the full sample seem not to be present amongst parents and are solely driven by respondents without children. Columns 4 and 5 present the results for respondents with low and high education, respectively. We note that for the high education group some of the estimated coefficients are smaller in size and not statistically different from zero.

An advantage of estimating a multinomial probit model is that it relaxes the independence of irrelevant alternatives (IIA) property that is characteristic of other choice models, such as the conditional logit model. This flexibility is important in our context as it may well be that the choice between two options is affected by the presence of the third option. For example, the probability of choosing full-time work over not working may not be independent of the part-time alternative, as both full- and part-time work involve active participation in the labor market. In the bottom panel of Table 5 we present the log-transformed diagonal element ($lnl2\_2$) and the off-diagonal entry

[27]The variables are listed on the y-axis, while the impacts on the three potential choices appear on the x-axis. When the marginal probability of one choice increases, this comes at the expense of the other two choices. In order to illustrate this substitution, the choice probability that is reduced is represented by red for no work, blue for part-time and green for full-time work in Appendix Figure A.17.

($l2\_1$) of the Cholesky matrix. In order to facilitate the interpretation of those entries, we calculate the correlation between the errors of part- and full-time work. For instance, the implied correlation in the full sample is 0.83, suggesting that after controlling for alternative- and individual-specific variables, choices between part- and full-time work (relative to no work) are highly correlated. This finding strengthens the case for the choice of our model, which allows for correlated errors, rather than, for instance, a conditional logit model, which assumes independence.

Extended Model

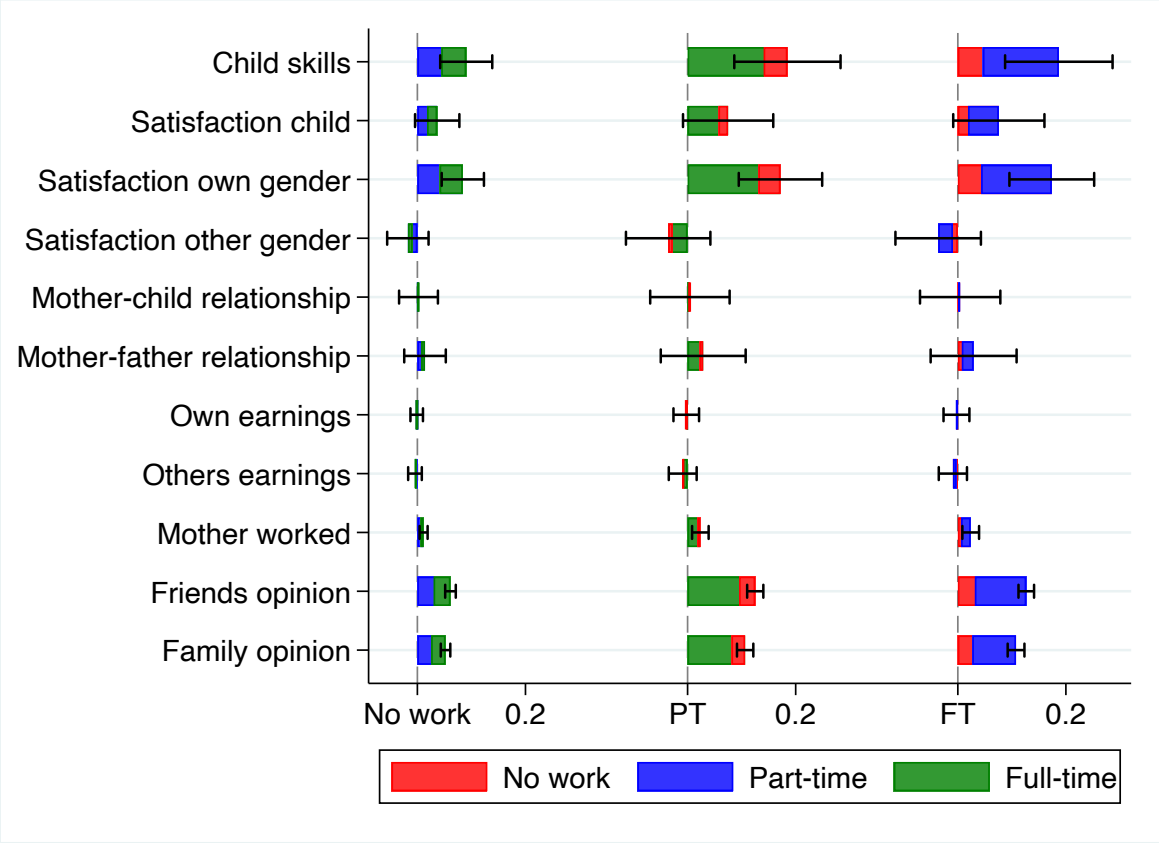
Next, we estimate an extended version of the multinomial choice model, in which we add cultural factors to the baseline specification that may be predictive of individual choices. In particular, we expand the alternative-specific vector of covariates (r_{ij}) to include whether alternative j coincides with the labor supply choice of the respondent's own mother, as well as whether it coincides with the preferred option of the respondent's friends and family.[28] We further add a dummy variable indicating whether the respondent resides in East Germany to the set of individual-specific covariates (x_i). Appendix Table A.7 presents the results of this estimation. Again, we display results for the full sample, as well as separately for respondents with and without children, and for respondents with a low and high level of education. Figures 5 and 6 illustrate the marginal effects of the alternative- and individual-specific variables for the full sample, respectively.

Focusing on results from the full sample, we find that whether the respondent's own mother chose a specific alternative makes it significantly more likely for a respondent to choose that specific alternative as well. Moreover, respondents are significantly more likely to choose a specific option if they believe that their friends or family would prefer it. The calculated marginal effects for these variables are sizeable. For instance, if a respondent's mother did not work, then this increases the probability of not working by

[28]More specifically, if the choices coincide, the variable takes the value of 1 for that alternative j, while it takes the value of 0 for the other two alternatives.

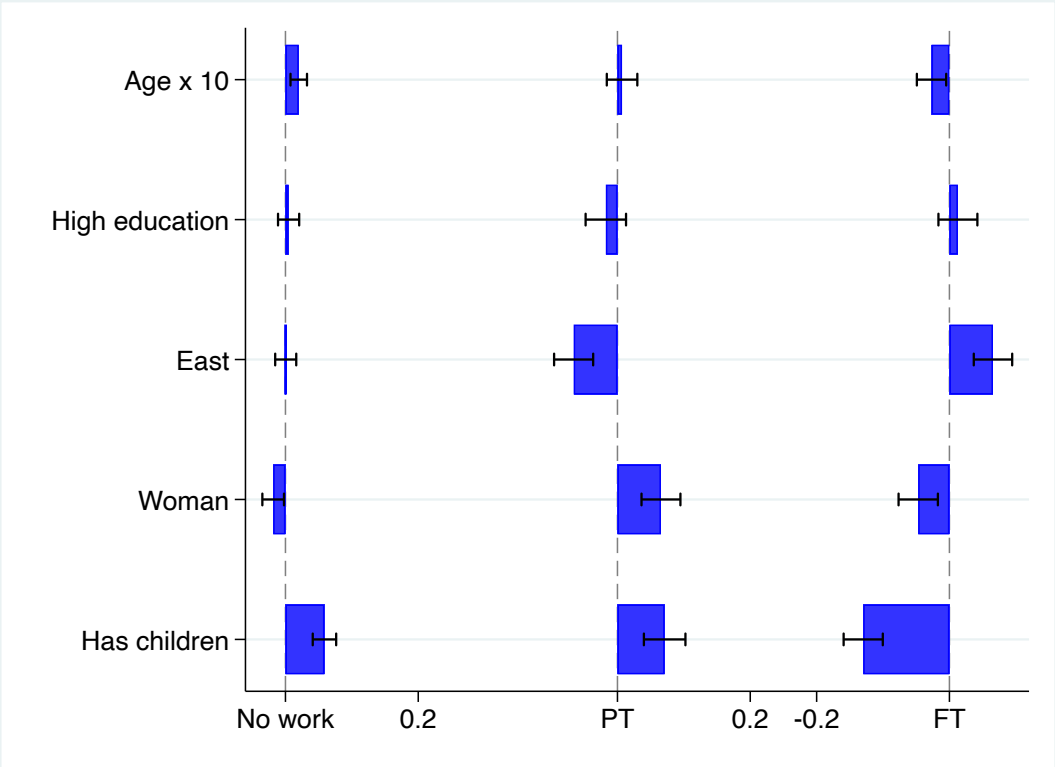
1 percentage point. If the mother worked part-time (full-time), then the probability of part-time (full-time) work increases by 2.3 (2.3) percentage points. To provide another example, if the respondent believes that their friends would prefer the mother not to work, then this increases the probability of not working by 6.1 percentage points. If the friends are perceived as preferring part-time (full-time) work, then this is associated with a significant increase in the probability of working part-time (full-time) by 12.1 (12.7) percentage points. These relatively large marginal effects suggest that perceived social norms are likely to play an important role in maternal labor supply decisions. Turning to the estimated coefficients on the other alternative-specific variables, we find that the results are qualitatively similar to those in the baseline specification (albeit somewhat muted), with the exception of the mother-child relationship, which is no longer statistically significant. The estimated marginal effects for the individual-specific variables reveal that respondents in East Germany are 6.1 percentage points less likely to favor part-time work and 5.9 percentage points more likely to favor full-time work, further highlighting the importance of cultural factors in the labor supply choice. The estimated marginal effects for the other individual-specific variables are comparable to the estimates obtained in the baseline model.

Figure 5: Marginal effects – Alternative-specific variables



Notes: Each bar represents the change in the marginal choice probability displayed on the x-axis for a one unit change in the alternative-specific variable indicated on the y-axis. Any increase in a marginal choice probability comes at the expense of the other two choices, which are represented by the respective colors. The choice probability that is reduced is represented by red for no work, blue for part-time, and green for full-time work. The thin lines represent the 95% confidence intervals. The coefficients are presented in Appendix Table A.7.

Figure 6: Marginal effects – Case-specific variables



Notes: Each bar represents the change in the marginal choice probability displayed on the x-axis for a one unit change in the case-specific variable indicated on the y-axis. The changes across the three horizontal bars sums to zero. The thin lines represent the 95% confidence intervals. The coefficients are presented in Appendix Table A.7.

In Appendix Table A.8, we present robustness checks in which we include the five different outcomes of children's skills instead of the aggregated measure of child skills. We find weak evidence that the trait valued most in the context of the labor supply choice is the child's social skills.

Overall, the choice model estimates paint a consistent picture. Beliefs about non-pecuniary factors are a strong predictor of maternal labor supply choices. Respondents seem to place greater weight on their children's skills and own satisfaction than their own or partner's earnings. Moreover, perceived social norms seem to be key predictors of individual choices. Individuals' age and being a parent are also important, while education seems to play less of a role. Being from the East plays a significant role as well, underlining the importance of culture not only via the channels of beliefs about

costs/benefits, constraints and social norms, but even on top of these three channels.

8 Discussion

8.1 Which Factors Predict Beliefs about Returns?

Having established the role of perceived returns to part- and full-time work in predicting unconstrained labor supply, we now turn to the question of what predicts beliefs about returns. We investigate whether background characteristics such as age, gender, or education predict beliefs, and explore whether individuals hold different beliefs depending on whether their own mother worked part-time, full-time, or not at all when they were young. We further study whether beliefs differ systematically between individuals living in East and West Germany, and whether individuals who moved hold beliefs that are closer to where they were born or where they currently live. More specifically, for each outcome variable k, we estimate the following two specifications:

$$r_{ik}^{PT} = \alpha_k^{PT} + \beta_{1k}^{PT} West_i + \beta_{2k}^{PT} MoverEW_i + \beta_{3k}^{PT} MoverWE_i + \gamma_k^{PT} X_i + \epsilon_{ik}^{PT} \quad \forall k \quad (1)$$

$$r_{ik}^{FT} = \alpha_k^{FT} + \beta_{1k}^{FT} West_i + \beta_{2k}^{FT} MoverEW_i + \beta_{3k}^{FT} MoverWE_i + \gamma_k^{FT} X_i + \epsilon_{ik}^{FT} \quad \forall k \quad (2)$$

r_{ik}^{PT} is the return to part-time work (relative to no work) as perceived by individual i for outcome k. r_{ik}^{FT} correspondingly captures perceived returns to full-time (relative to part-time) work. α_k^{PT} and α_k^{FT} are the intercepts of the regressions. $West_i$ is a dummy variable indicating whether the respondent currently lives in West Germany, $MoverEW_i$ indicates whether the respondent was born in East Germany but now lives in West Germany, whereas $MoverWE_i$ indicates whether the respondent was born in the West but now lives in the East. X_i is a vector of background characteristics, including age (in years) as well as dummy variables for whether the respondent is female, has a university degree, is a parent, is married, has a migrant background, is religious, and whether their own mother worked full-time or part-time while they were 1-5 years

old.

The results are presented in Appendix Tables A.9-A.11 and reveal several interesting results. For all ten child and family outcomes, non-movers in the West perceive the returns to full-time work to be significantly *lower* compared to non-movers in the East.[29] The magnitudes of the estimated coefficients are sizeable, ranging from 2.7 to 5.0 percentile ranks. Focusing on respondents living in the West, we find no significant differences in perceived returns to full-time work between respondents born in the West and born in the East.[30] Surprisingly, a different picture emerges when we focus on respondents living in the East: Respondents who were born in West Germany and moved to the East perceive the returns to full-time work to be significantly lower compared to respondents who were born and still live in the East.[31] Overall, our results point to a potential asymmetry in the persistence of beliefs about the benefits and costs to full-time work, with traditional views being more persistent.

Which background characteristics predict perceived returns to full-time work? In terms of child outcomes, parents and respondents whose own mother worked full-time while they were young are more optimistic about the returns to full-time work, while those with a university degree and those who self-identify as religious are more pessimistic. In terms of family outcomes, parents and women perceive the returns to full-time work as lower, whereas older individuals and respondents whose own mother worked full-time perceive the returns as higher.

Finally, we note that the patterns are far less systematic when we explore perceived returns to part-time work or when we focus on earnings as the outcome. While there are some significant differences across individuals with different characteristics, the results are more mixed and no clear picture emerges.

[29]The coefficients on the $West_i$ dummy, β_{1k}^{PT} and β_{1k}^{FT}, capture the extent to which non-movers in the West think differently to non-movers in the East.

[30]The coefficients on the $MoverEW_i$ dummy, β_{2k}^{PT} and β_{2k}^{FT}, capture differences in beliefs between those who moved to the West (from the East) and those who were born and still live in the West.

[31]The coefficients on the $MoverWE_i$ dummy, β_{3k}^{PT} and β_{3k}^{FT}, capture differences in beliefs between those who moved to the East (from the West) and those who were born and still live in the East.

8.2 Are the Patterns in Beliefs about Returns Unique to Germany?

We document patterns in beliefs about the returns to part- and full-time work in a sample of German adults. A natural question which emerges is whether the patterns we document are generalizable to other settings. To shed some light on the external validity of our findings, we elicit beliefs about the returns to maternal labor supply in an independent sample of Canadian adults from Quebec and Ontario.[32] To ensure comparability across countries we use the same survey elicitation approach, which is based on hypothetical scenarios (see Section 3.1).

The patterns we document using the Canadian sample are remarkably similar to what we find in the German data. For all five child outcomes, respondents, on average, believe that the child will fare better if the mother works part-time rather than not at all, and the child will do even better if the mother works full-time rather than part-time. As in Germany, the picture is more mixed when we examine the family outcomes. For all five family outcomes, respondents, on average, think the family will fare better if the mother works part-time rather than not at all. Respondents are, however, less optimistic about the benefits to mothers working full-time. Similarly to Germany, respondents in Canada believe that child satisfaction and the quality of the mother-child relationship will be lower if the mother works full-time rather than part-time. For all ten child and family outcomes, Canadian respondents perceive the returns to full-time work (relative to part-time work) to be *lower* than the returns to part-time work (relative to no work), a pattern which we also find in the German data. What is striking is that the results are not only qualitatively but also quantitatively very similar.

Next, we examine respondents' perceptions about the impact of female labor supply on mothers' and fathers' earnings at ages 36 and 42. As in Germany, we find that respondents in Canada on average think that mothers will earn more in the future if they work part-time while their children are young (rather than not at all), and that

[32] Appendix Table B.1 presents the characteristics of the Canadian sample, while Appendix Tables B.2 and B.3 present the key results.

they will earn even more if they work full-time (rather than part-time). The returns to the latter are perceived as higher than the returns to the former, consistent with returns to hours worked being convex. Further mirroring the results in the German sample, we also find that Canadian respondents do *not* seem to think that the men's careers will benefit from their partners working less. In fact, as for German respondents, we document that Canadian respondents think fathers' earnings increase with the labor supply of the mother.

In Appendix Table B.4, we present the results from estimating the choice model on the Canadian data. Several results parallel those found using the German sample. In particular, returns to child skills are significant predictors of maternal labor supply choices, as is the satisfaction of the own gender, whether the own mother worked, and perceived social norms. As in Germany, we do not find systematic evidence that concerns about future earnings play a major role in intentions. Some differences worth noting are that age effects and differences between parents and childless respondents are smaller for the Canadian sample. Moreover, regional differences are not as pronounced between Quebec and Ontario as between East and West Germany.

Overall, the striking similarities between these two samples allow us to conclude that the patterns we document for Germany are not specific to the German context. More research will be needed to document the extent to which beliefs about the returns to female labor supply differ across countries, and whether such differences could explain cross-country differences in female labor supply.

8.3 How do Beliefs about Returns Relate to Actual Returns?

Given the patterns that we document a further question that arises is whether perceptions about returns to mothers working part- or full-time are on average correct. To study this question, we would need to compare the average perceived returns as measured through our survey to the estimated causal effect that maternal employment has on the outcomes that we measure. Identifying the causal effect of maternal employment

on pecuniary and non-pecuniary outcomes is a challenging task. This is partly due to a lack of data (e.g., on the non-pecuniary outcomes that we measure) and partly due to a lack of a credible source of exogenous variation that we could exploit to identify the causal impact of mothers' employment while her child is 1-5 years old.

While estimating the causal returns to mothers' labor supply lies outside the scope of this paper, there are certain notable patterns in our data that we can compare with existing empirical evidence from other studies. For instance, respondents in our sample believe that career interruptions have a negative effect on women's later-life earnings and they perceive the returns to hours worked to be convex.[33] These patterns are consistent with existing empirical evidence. For example, Blundell et al. (2016) find that there are sizeable differences in the accumulation of experience between part- and full-time work. Consistent with the findings in Blundell et al. (2016), we also document that the perceived returns to hours worked are higher for the higher-skilled group.

Turning to perceptions about the impact of childcare attendance on child outcomes, we find that respondents in our sample perceive the returns to be positive and sizeable. Strikingly, the average perceived returns to part- and full-time childcare attendance are positive for all five child outcomes and for both education groups. Evidence on the causal impact of universal childcare programs on child outcomes is mixed, with mean effects ranging from negative to positive. Havnes and Mogstad (2011), Felfe, Nollenberger and Rodriguez-Planas (2015) and Felfe and Lalive (2018) document sizeable positive mean effects for Norway, Spain, and Germany, respectively, while Carta and Rizzica (2018) find no effect for Italy, and Baker, Gruber and Milligan (2008) and Baker, Gruber and Milligan (2019) find negative mean effects for Canada.[34] Furthermore, a growing body of evidence suggests that treatment effects are heterogeneous,

[33]Using a different methodology, Schrenker (2020) studies the perceived part-time penalty amongst women in Germany and finds that on average women in their sample are quite realistic, while mothers seem to overestimate the part-time wage penalty.

[34]Maternity leave expansions that increase maternal investments into very young children tend to have either no impact or a positive impact on child outcomes (see, e.g., Rasmussen 2010; Liu and Skans 2010; Dustmann and Schönberg 2012; Carneiro, Løken and Salvanes 2015; Dahl et al. 2016; Danzer and Lavy 2018).

with positive effects being concentrated among children in socioeconomically disadvantaged families (see, e.g., Havnes and Mogstad 2015, Kottelenberg and Lehrer 2017, Cornelissen, Raute and Schönberg 2018, Fort, Ichino and Zanella 2020). In light of this evidence, it is perhaps surprising that average perceived returns are positive and of similar magnitude for both education groups in our sample. More research will be needed to understand whether there are systematic misperceptions about the benefits of childcare attendance, especially among the highly-educated group.

9 Conclusions

In this study, we present new evidence on subjective expectations about the returns to maternal labor supply decisions. We elicit beliefs about the benefits and costs of part- and full-time work for a range of different pecuniary and non-pecuniary outcomes. The data allow us to gain new insights into how people perceive the impact of women working while their children are young. We find that children's skills are perceived to improve, the more mothers work, and the longer children attend childcare. The same perception does not hold true for a range of different family outcomes, such as the quality of the relationship between mother and child, which is perceived to peak when the mother works part-time. Perceptions about these non-pecuniary factors as well as beliefs about the opinions of family and friends strongly predict preferred maternal labor supply choices. Career interruptions are perceived as having a strong negative impact on the mothers' future earnings but, perhaps surprisingly, perceptions about these earnings penalties are not predictive of choices. We do not find that a father's career is perceived to benefit from a mother staying home to care for children. Finally, we document that people are rather pessimistic about the likelihood of finding full-time childcare in their neighborhood. In fact, we find that relaxing constraints in terms of childcare availability would result in a large increase in maternal labor supply.

The findings from our study draw attention to the importance of non-pecuniary factors in the labor supply decision of mothers. Obtaining a full picture of the motives

that determine maternal labor supply is crucial for our understanding of what drives child penalties and gender inequality in the labor market.

References

Alan, Sule, Teodora Boneva, and Seda Ertac. 2019. "Ever failed, try again, succeed better: Results from a randomized educational intervention on grit." *The Quarterly Journal of Economics*, 134(3): 1121–1162.

Almås, Ingvild, Alexander W Cappelen, Kjell G Salvanes, Erik Ø Sørensen, and Bertil Tungodden. 2016. "What explains the gender gap in college track dropout? Experimental and administrative evidence." *American Economic Review*, 106(5): 296–302.

Andresen, Martin Eckhoff, and Emily Nix. 2019. "What causes the child penalty? Evidence from same sex couples and policy reforms." Statistics Norway Discussion Paper 907.

Angelov, Nikolay, Per Johansson, and Erica Lindahl. 2016. "Parenthood and the gender gap in pay." *Journal of Labor Economics*, 34(3): 545–579.

Armantier, Olivier, Wändi Bruine de Bruin, Giorgio Topa, Wilbert Van Der Klaauw, and Basit Zafar. 2015. "Inflation expectations and behavior: Do survey respondents act on their beliefs?" *International Economic Review*, 56(2): 505–536.

Attanasio, Orazio, and Katja Kaufmann. 2014. "Education Choices and Returns to Schooling: Intra-household Decision Making, Gender and Subjective Expectations." *Journal of Development Economics*, 109: 203–216.

Attanasio, Orazio, Hamish Low, and Virginia Sánchez-Marcos. 2008. "Explaining changes in female labor supply in a life-cycle model." *American Economic Review*, 98(4): 1517–52.

Attanasio, Orazio, Teodora Boneva, and Christopher Rauh. 2020. "Parental beliefs about returns to different types of investments in school children." *Journal of*

Human Resources.

Baker, Michael, Jonathan Gruber, and Kevin Milligan. 2008. "Universal child care, maternal labor supply, and family well-being." *Journal of Political Economy*, 116(4): 709–745.

Baker, Michael, Jonathan Gruber, and Kevin Milligan. 2019. "The long-run impacts of a universal child care program." *American Economic Journal: Economic Policy*, 11(3): 1–26.

Bauernschuster, Stefan, and Martin Schlotter. 2015. "Public child care and mothers' labor supply—Evidence from two quasi-experiments." *Journal of Public Economics*, 123: 1–16.

Becker, Gary S. 1965. "A Theory of the Allocation of Time." *The Economic Journal*, 493–517.

Belfield, Chris, Teodora Boneva, Christopher Rauh, and Jonathan Shaw. 2020. "What drives enrolment gaps in further education? the role of beliefs in sequential schooling decisions." *Economica*, 87(346): 490–529.

Bertrand, Marianne, Claudia Goldin, and Lawrence F Katz. 2010. "Dynamics of the gender gap for young professionals in the financial and corporate sectors." *American economic journal: applied economics*, 2(3): 228–55.

Bertrand, Marianne, Emir Kamenica, and Jessica Pan. 2015. "Gender identity and relative income within households." *Quarterly Journal of Economics*, 571–614.

Bleemer, Zachary, and Basit Zafar. 2018. "Intended college attendance: Evidence from an experiment on college returns and costs." *Journal of Public Economics*, 157: 184–211.

Blundell, Richard, Monica Costa Dias, Costas Meghir, and Jonathan Shaw. 2016. "Female labor supply, human capital, and welfare reform." *Econometrica*, 84(5): 1705–1753.

Boneva, Teodora, and Christopher Rauh. 2018. "Parental beliefs about returns to educational investments - The later the better?" *Journal of the European Economic Association*, 16(6): 1669–1711.

Boneva, Teodora, and Christopher Rauh. 2019. "Socio-Economic Gaps in University Enrollment: The Role of Perceived Pecuniary and Non-pecuniary Returns." HCEO Working Paper.

Boneva, Teodora, Marta Golin, and Christopher Rauh. 2019. "Can perceived returns explain enrollment gaps in postgraduate education?" HCEO Working Paper.

Bursztyn, Leonardo, Alessandra L González, and David Yanagizawa-Drott. 2018. "Misperceived social norms: Female labor force participation in Saudi Arabia." National Bureau of Economic Research.

Carneiro, Pedro, Katrine V Løken, and Kjell G Salvanes. 2015. "A flying start? Maternity leave benefits and long-run outcomes of children." *Journal of Political Economy*, 123(2): 365–412.

Carta, Francesca, and Lucia Rizzica. 2018. "Early kindergarten, maternal labor supply and children's outcomes: Evidence from Italy." *Journal of Public Economics*, 158: 79 – 102.

Cornelissen, Thomas, Christian Dustmann, Anna Raute, and Uta Schönberg. 2018. "Who benefits from universal childcare? Estimating marginal returns to early childcare attendance." *Journal of Political Economy*, 126(6): 2356–2409.

Cunha, Flávio, Irma Elo, and Jennifer Culhane. 2013. "Eliciting maternal expectations about the technology of cognitive skill formation." National Bureau of Economic Research.

Dahl, Gordon B., Katrine V. Løken, Magne Mogstad, and Kari Vea Salvanes. 2016. "What Is the Case for Paid Maternity Leave?" *The Review of Economics and Statistics*, 98(4): 655–670.

Danzer, Natalia, and Victor Lavy. 2018. "Paid Parental Leave and Children's Schooling Outcomes." *The Economic Journal*, 128(608): 81–117.

Delavande, Adeline. 2014. "Probabilistic expectations in developing countries." *Annual Review of Economics*, 6(1): 1–20.

Delavande, Adeline, and Basit Zafar. 2019. "University choice: the role of expected earnings, non-pecuniary outcomes, and financial constraints." *Journal of Political*

Economy, 5(127).

Del Boca, Daniela, and Cecile Wetzels. 2010. *Social policies, labour markets and motherhood.* Cambridge University Press.

Dominitz, Jeff, and Charles Manski. 1996. "Eliciting Student Expectations of the Returns to Schooling." *Journal of Human Resources*, 31(1): 1–26.

Domscheit-Berg, Anke. 2016. "Familienpolitik in Ost- und Westdeutschland und ihre langfristigen Auswirkungen." Heinrich Böll Stiftung.

Dustmann, Christian, and Uta Schönberg. 2012. "Expansions in maternity leave coverage and children's long-term outcomes." *American Economic Journal: Applied Economics*, 4(3): 190–224.

Felfe, Christina, and Rafael Lalive. 2018. "Does early child care affect children's development?" *Journal of Public Economics*, 159: 33 – 53.

Felfe, Christina, Natalia Nollenberger, and Nuria Rodriguez-Planas. 2015. "Can't buy mommy's love? Universal childcare and children's long-term cognitive development." *Journal of Population Economics*, 28(2): 393–422.

Fernández, Raquel, Alessandra Fogli, and Claudia Olivetti. 2004. "Mothers and sons: Preference formation and female labor force dynamics." *The Quarterly Journal of Economics*, 119(4): 1249–1299.

Fernandez, Raquel, and Alessandra Fogli. 2009. "Culture: An empirical investigation of beliefs, work, and fertility." *American Economic Journal: Macroeconomics*, 1(1): 146–77.

Fortin, Nicole M. 2005. "Gender role attitudes and the labour-market outcomes of women across OECD countries." *Oxford Review of Economic Policy*, 21(3): 416–438.

Fort, Margherita, Andrea Ichino, and Giulio Zanella. 2020. "Cognitive and noncognitive costs of day care at age 0-2 for children in advantaged families." *Journal of Political Economy*, 128(1): 158–205.

Galassi, Gabriela, David Koll, and Lukas Mayr. 2019. "The Intergenerational Correlation of Employment: Is There a Role for Work Culture?"

Geweke, John. 1989. "Bayesian inference in econometric models using Monte Carlo

integration." *Econometrica*, 57(6): 1317–1339.

Giustinelli, Pamela. 2016. "Group decision making with uncertain outcomes: Unpacking child–parent choice of the high school track." *International Economic Review*, 57(2): 573–602.

Goldin, Claudia. 1990. *Understanding the gender gap: An economic history of American women. .* Oxford University Press, New York.

Goldin, Claudia. 2006. "The quiet revolution that transformed women's employment, education, and family." *American Economic Review, 96 (2), 1-21.*

Hajivassiliou, Vassilis A, and Daniel L McFadden. 1998. "The method of simulated scores for the estimation of LDV models." *Econometrica*, 66(4): 863–896.

Havnes, Tarjei, and Magne Mogstad. 2011. "No child left behind: Subsidized child care and children's long-run outcomes." *American Economic Journal: Economic Policy*, 3(2): 97–129.

Havnes, Tarjei, and Magne Mogstad. 2015. "Is Universal Child Care Leveling the Playing Field?" *Journal of Public Economics*, 127: 100 – 114.

Jensen, Robert. 2010. "The (perceived) returns to education and the demand for schooling." *The Quarterly Journal of Economics*, 125(2): 515–548.

Kaufmann, Katja, and Luigi Pistaferri. 2009. "Disentangling insurance and information in intertemporal consumption choices." *American Economic Review*, 99(2): 387–92.

Keane, Michael P, and Kenneth I Wolpin. 1994. "The solution and estimation of discrete choice dynamic programming models by simulation and interpolation: Monte Carlo evidence." *The Review of Economics and Statistics*, 648–672.

Klammer, Ute, Christina Klenner, Christiane Ochs, Peter Radke, and Astrid Ziegler. 2020. "WSI-Frauen Daten Report (Report on Women by the WSI)." Berlin: Ed. Sigma.

Kleven, Henrik, Camille Landais, and Jakob Egholt Søgaard. 2019a. "Children and gender inequality: Evidence from Denmark." *American Economic Journal: Applied Economics*, 11(4): 181–209.

Kleven, Henrik, Camille Landais, Johanna Posch, Andreas Steinhauer, and Josef Zweimüller. 2019b. "Child penalties across countries: Evidence and explanations." *American Economic Review Papers and Proceedings*, 109: 122–26.

Kottelenberg, Michael J., and Steven F. Lehrer. 2017. "Targeted or universal coverage? Assessing heterogeneity in the effects of universal child care." *Journal of Labor Economics*, 35(3): 609–653.

Krueger, Alan B, and Jorn-Steffen Pischke. 1992. "A Comparative Analysis of East and West German Labor Markets: Before and After Unification." National Bureau of Economic Research Working Paper 4154.

Kuziemko, Ilyana, Jessica Pan, Jenny Shen, and Ebonya Washington. 2018. "The Mommy Effect: Do Women Anticipate the Employment Effects of Motherhood?" National Bureau of Economic Research.

Liu, Qian, and Oskar Nordstrom Skans. 2010. "The duration of paid parental leave and children's scholastic performance." *The BE Journal of Economic Analysis & Policy*, 10(1): 1–33.

Manski, Charles F. 2004. "Measuring expectations." *Econometrica*, 72(5): 1329–1376.

Mincer, Jacob. 1962. "Labor force participation of married women: A study of labor supply." In *Aspects of labor economics*. 63–105. Princeton University Press.

Nicoletti, Cheti, Kjell G Salvanes, and Emma Tominey. 2018. "The Family Peer Effect on Mothers' Labor Supply." *American Economic Journal: Applied Economics*, 10(3): 206–34.

Olivetti, Claudia, and Barbara Petrongolo. 2017. "The economic consequences of family policies: lessons from a century of legislation in high-income countries." *Journal of Economic Perspectives*, 31(1): 205–30.

Rasmussen, Astrid Würtz. 2010. "Increasing the length of parents' birth-related leave: The effect on children's long-term educational outcomes." *Labour Economics*, 17(1): 91–100.

Schönberg, Uta, Anna Raute, and Barbara Boelmann. 2020. "Wind of Change? Cultural Determinants of Maternal Labor Supply." Mimeo.

Schrenker, Annekatrin. 2020. "Do women expect wage cuts for part-time work?" Discussion Paper.

Train, Kenneth E. 2009. *Discrete choice methods with simulation.* Cambridge university press.

Wiswall, Matthew, and Basit Zafar. 2015. "Determinants of college major choice: Identification using an information experiment." *The Review of Economic Studies*, 82(2): 791–824.

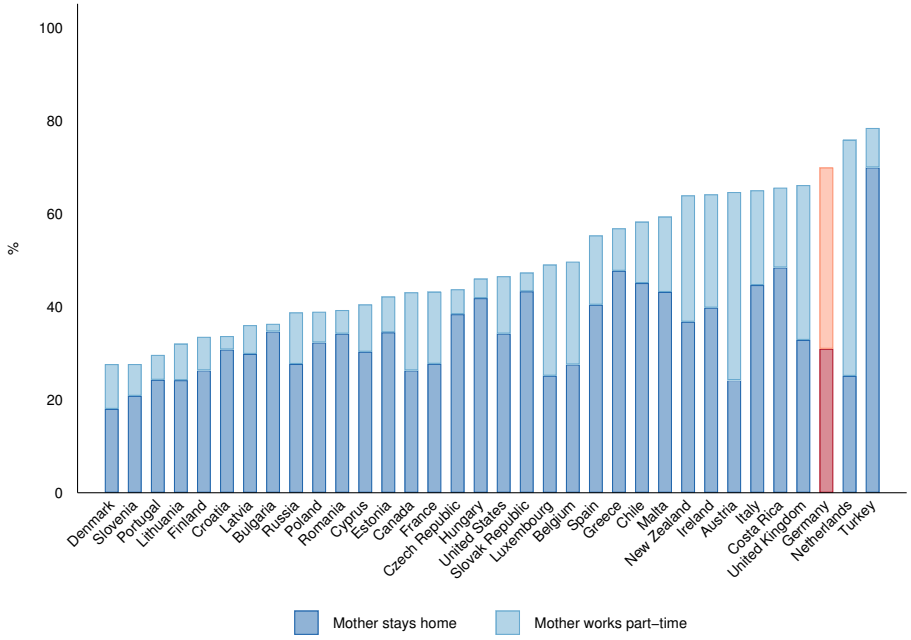
Wiswall, Matthew, and Basit Zafar. 2018. "Preference for the workplace, investment in human capital, and gender." *The Quarterly Journal of Economics*, 133(1): 457–507.

Zafar, Basit. 2013. "College major choice and the gender gap." *Journal of Human Resources*, 48(3): 545–595.

Online Appendix

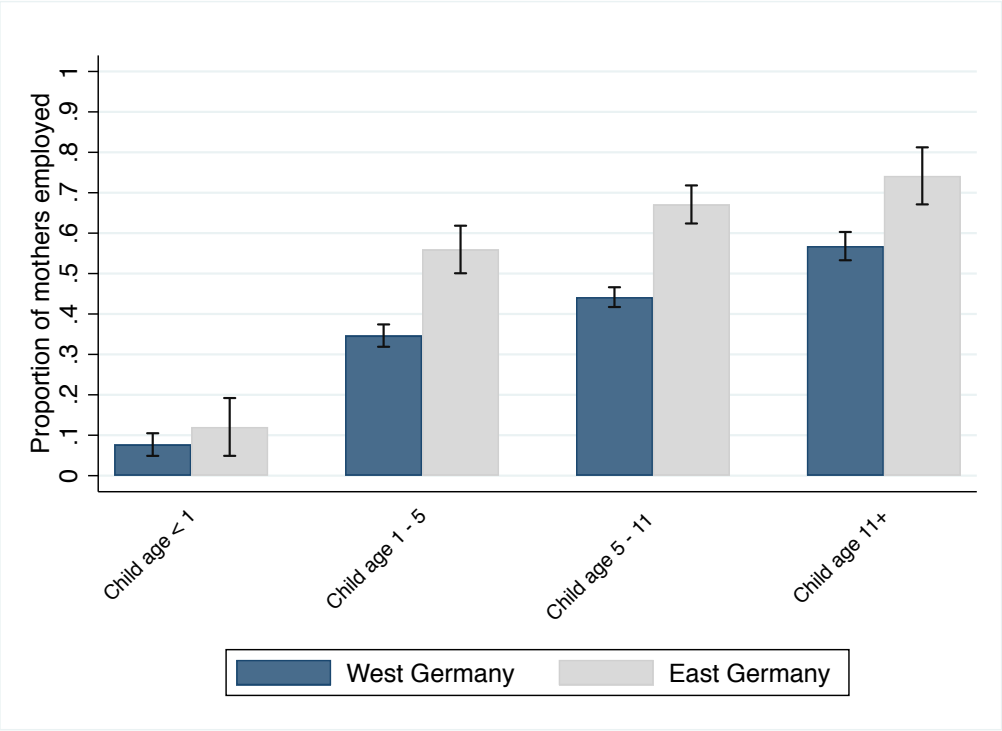
A Supplementary Analyses

Figure A.1: Maternal employment (OECD 2014)



Notes: This figure displays the percentage of women (15-64 years old) with at least one child aged 0-14 staying home or working part-time (rather than full-time). The data used comes from the 2014 OECD Family Database.

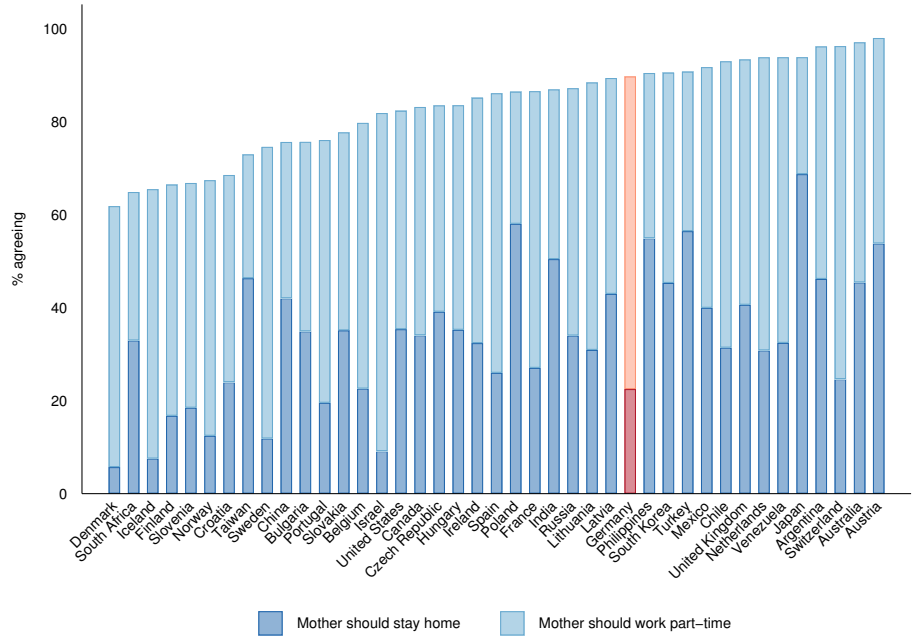
Figure A.2: Maternal employment (GSOEP 2015)



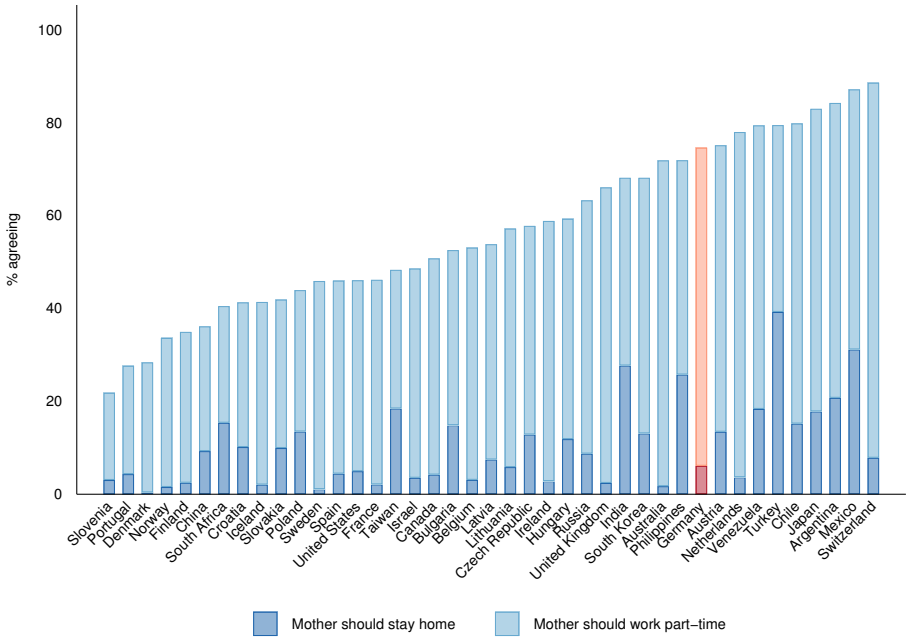
Notes: This figure displays the percentage of women with at least one child (aged below 1, 1-5, 5-11 or above 11) who are substantially employed (working more than 20 hours per week) in West and East Germany. The data used comes from the German Socio-Economic Panel 2015.

Figure A.3: What should women do under the following circumstances? (ISSP 2012)

(a) 'When there is a child under school age'



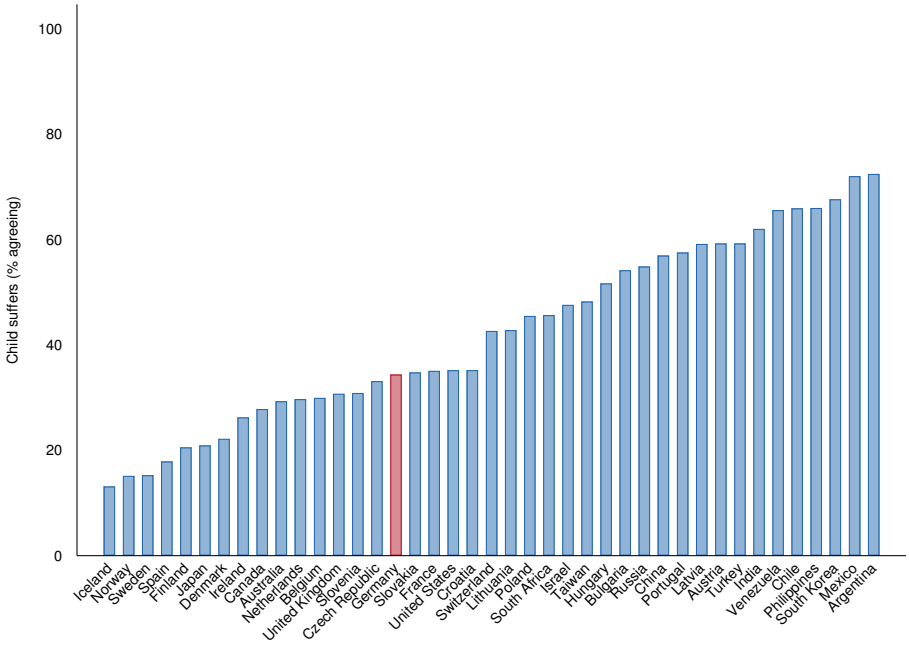
(b) 'After the youngest child starts school'



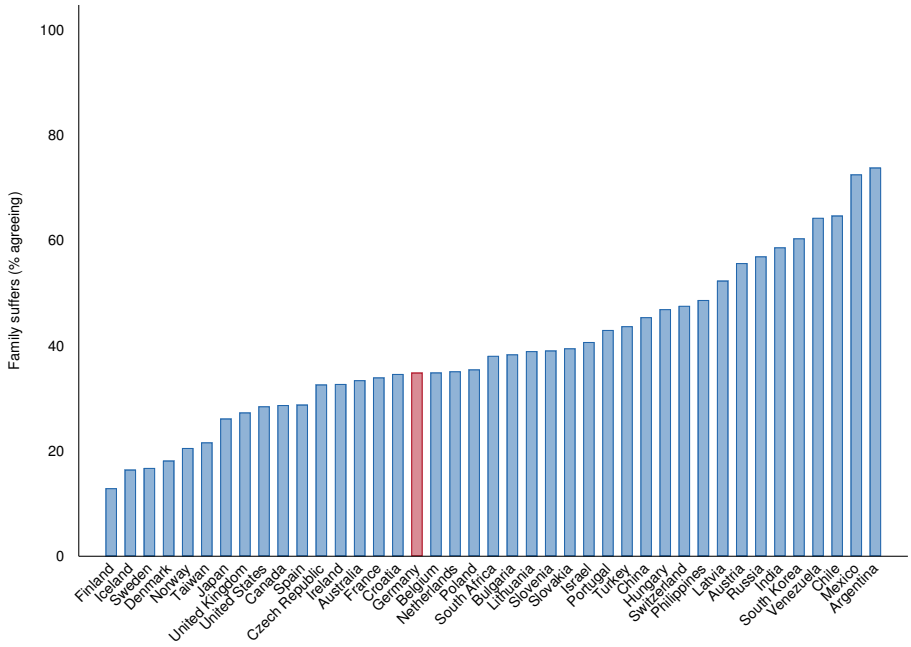
Notes: Panel (a) displays the percentage of respondents who think the woman should stay home or work part-time when she has a child under school age, while panel (b) depicts the percentage of respondents who think the woman should stay home or work part-time when the youngest child starts school. The data used is the 2012 wave of the International Social Survey Program (ISSP). Calculations are based on the responses to the question 'Do you think that women should work outside the home full-time, part-time or not at all under the following circumstances?'.

Figure A.4: Agreement with statements (ISSP 2012)

(a) 'A pre-school child is likely to suffer if his or her mother works.'

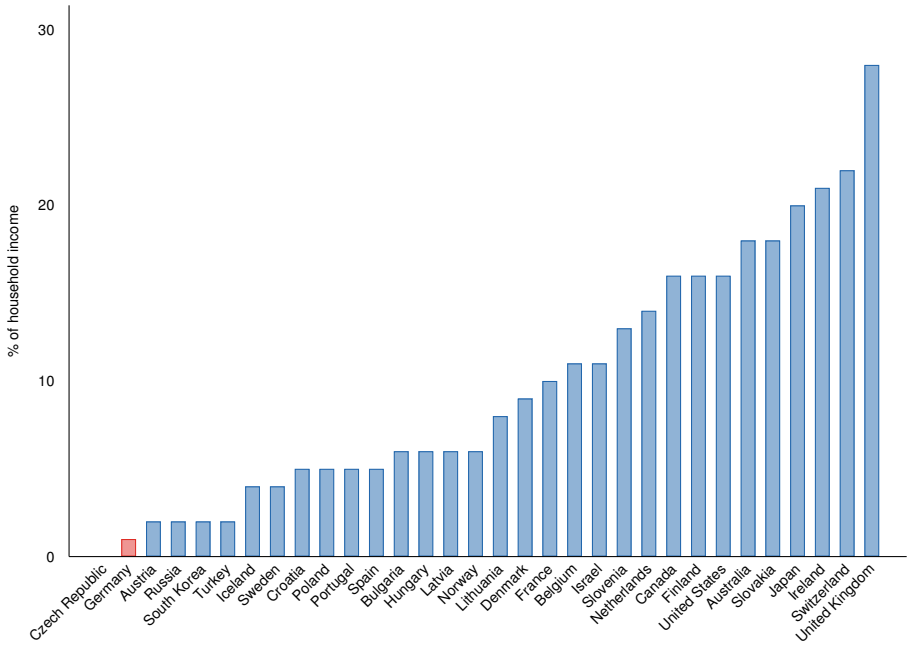


(b) 'All in all, family life suffers when the woman has a full-time job.'



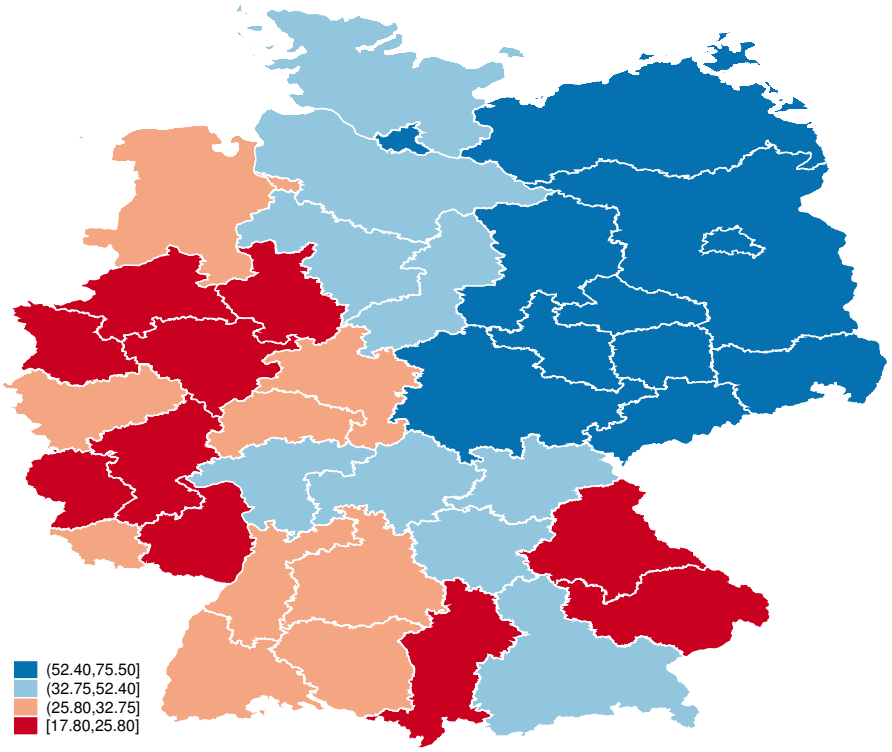
Notes: Panel (a) depicts the percentage of respondents by country agreeing or strongly agreeing to the statement 'A pre-school child is likely to suffer if his or her mother works', while panel (b) presents the percentage of respondents agreeing or strongly agreeing to the statement 'All in all, family life suffers when the woman has a full-time job'. The data used is the 2012 wave of the International Social Survey Program (ISSP).

Figure A.5: Childcare costs (OECD 2019)



Notes: This figure displays net childcare costs (as % of household income) for parents using full-time center-based childcare. It is calculated assuming a two-parent family with two children aged 2 and 3, where both parents are assumed to have average earnings. The data used comes from the OECD.

Figure A.6: Childcare supply (1-2 years old) in Germany



Notes: This figure illustrates the childcare supply for children aged 1-2 years in Germany on the level of Regierungsbezirke. Data was accessed from the Statistische Ämter des Bundes und der Länder (2018).

Table A.1: Distribution of survey respondents across federal states in West Germany

Federal state	Sample	National
Baden Würrtemberg	16.67	16.55
Bayern	19.72	19.51
Bremen	0.95	1.02
Hamburg	2.80	2.75
Hessen	9.39	9.37
Niedersachsen	11.88	11.95
Nordrhein-Westfalen	26.61	26.89
Rheinland-Pfalz	6.19	6.12
Saarland	1.40	1.49
Schleswig-Holstein	4.39	4.34

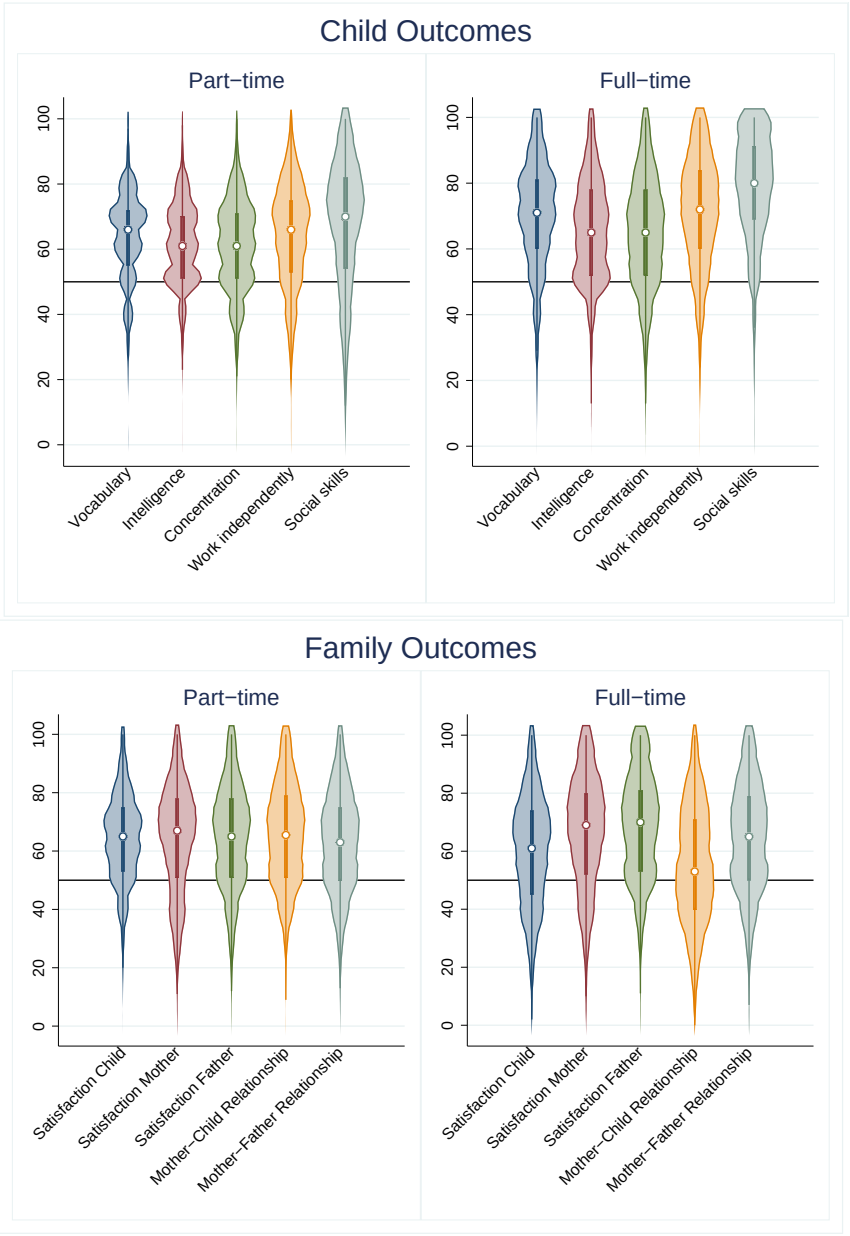
Notes: Sample shares are based on survey respondents in West Germany (N=2003). National shares are based on information provided by the Federal Statistical Office of Germany.

Table A.2: Distribution of survey respondents across federal states in East Germany

Federal state	Sample	National
Berlin	22.74	22.33
Brandenburg	14.87	15.47
Mecklenburg Vorpommern	9.34	9.95
Sachsen	25.63	25.22
Sachsen-Anhalt	14.06	13.74
Thüringen	13.35	13.29

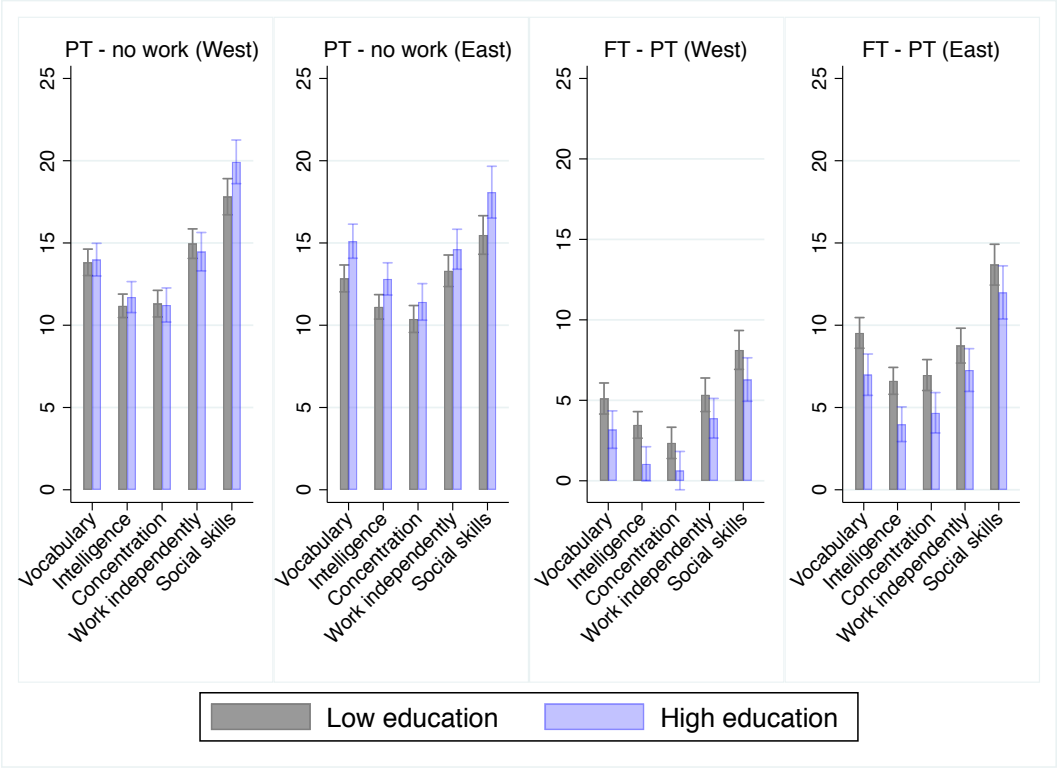
Notes: Sample shares are based on survey respondents in East Germany (N=1970). National shares are based on information provided by the Federal Statistical Office of Germany.

Figure A.7: Distribution of perceived child and family outcomes



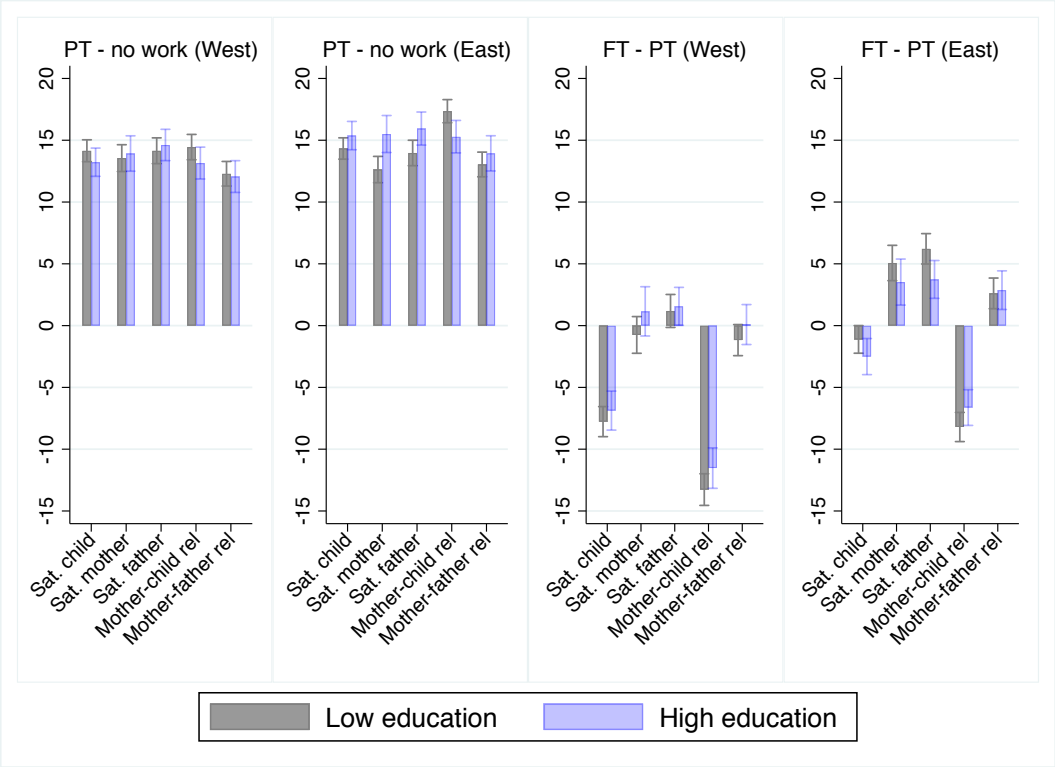
Notes: The figures illustrate the distribution of perceived child outcomes (top) and family outcomes (bottom), in the two scenarios in which the mother works part-time (left) or full-time (right) while the child is 1-5 years old. The width of the violin plots represents the density of responses, the circle represents the median, the bar covers 50% of the responses, while the thin line covers 95% of responses. The horizontal black line illustrates the benchmark case in which the mother does not work ('50').

Figure A.8: Average returns – Child outcomes (East vs. West)



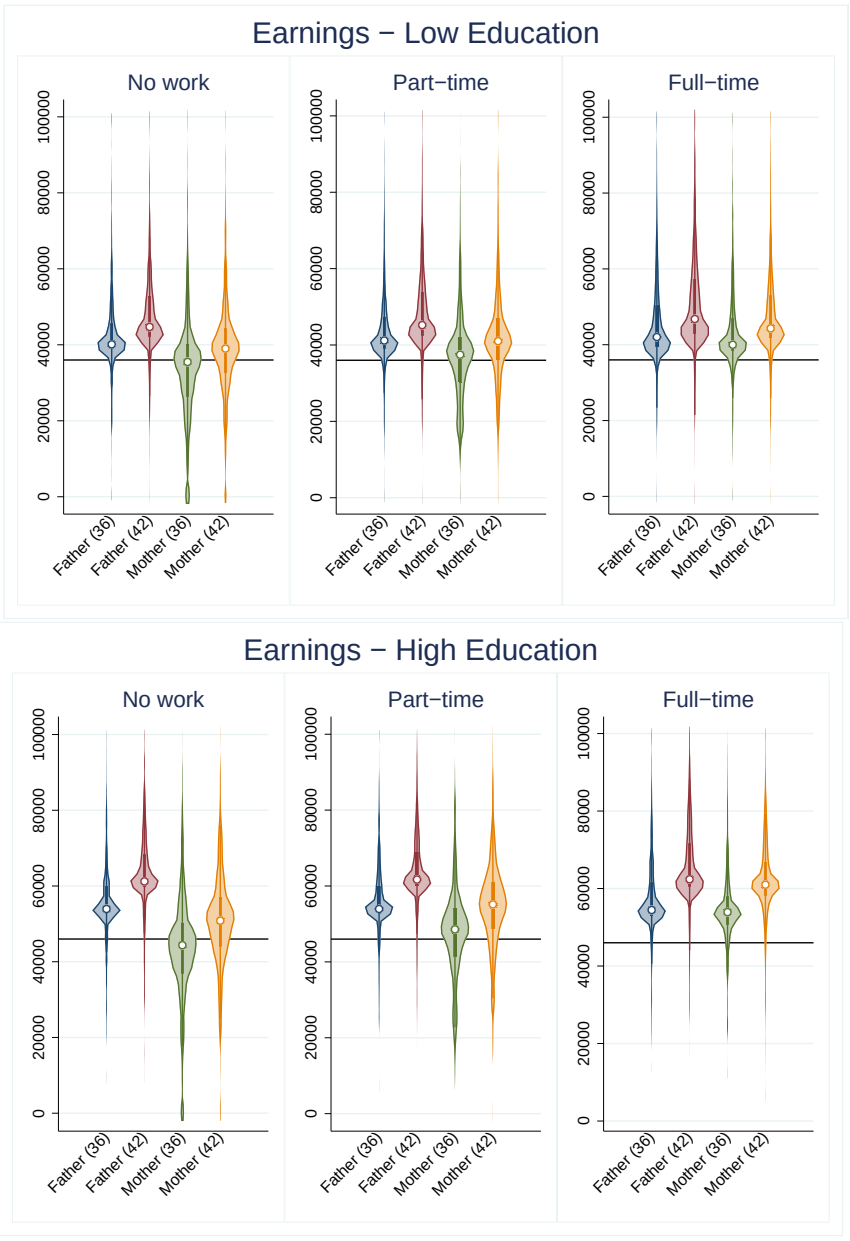
Notes: The first two panels display the average perceived returns to working part-time relative to not working, while the last two panels display the average perceived returns to working full-time relative to working part-time for each of the five child outcomes, separately for the two education groups. The first and third panel show perceived returns in the West, while the third and fourth panel show perceived returns in the East.

Figure A.9: Average returns – Family outcomes (East vs. West)



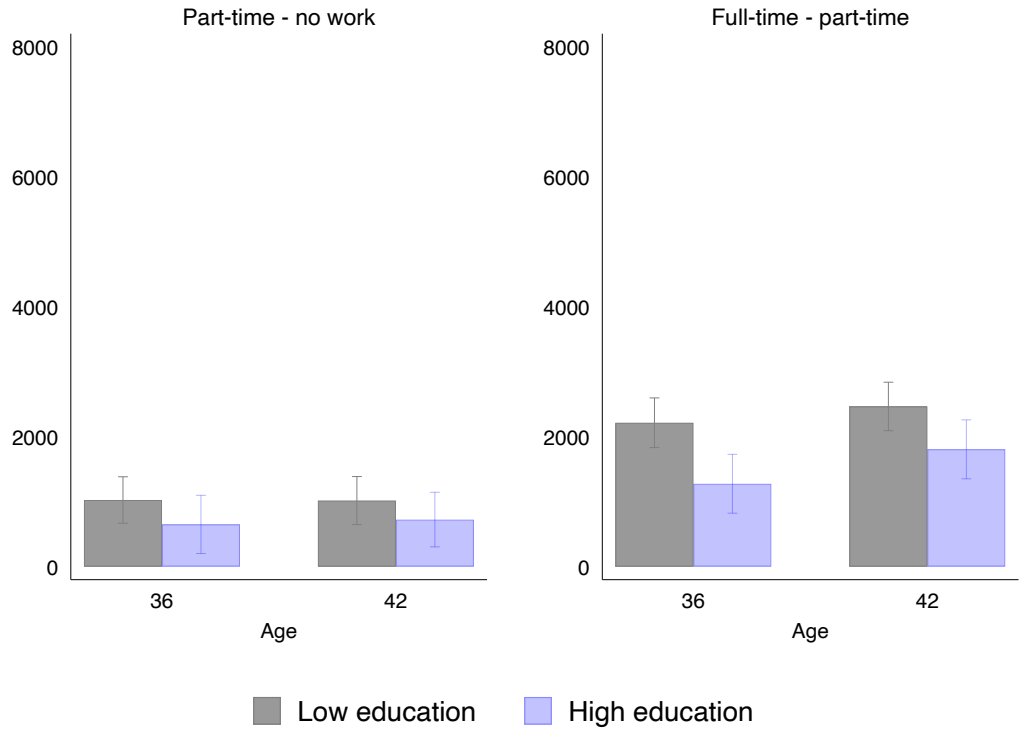
Notes: The first two panels display the average perceived returns to working part-time relative to not working, while the last two panels display the average perceived returns to working full-time relative to working part-time for each of the five family outcomes, separately for the two education groups. The first and third panel show perceived returns in the West, while the third and fourth panel show perceived returns in the East.

Figure A.10: Distribution of responses - Earnings Germany



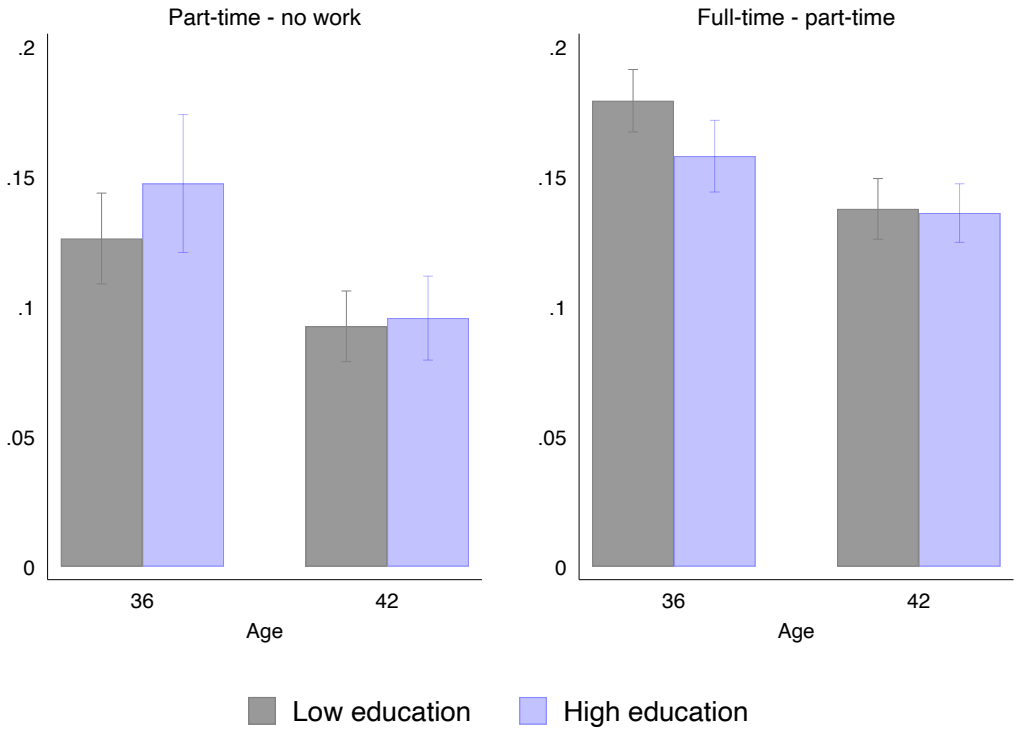
Notes: The circle represents the median, while the bar covers 50% of the responses and the thin line 95% of responses. The width of the violin represents the density. The black horizontal line illustrates the earnings at age 30. Earnings are measured in Euro.

Figure A.11: Average returns – Earnings of father



Notes: This figure displays the average perceived returns to working part-time relative to not working (left) as well as the average perceived returns to working full-time relative to working part-time (right) for father's earnings at ages 36 and 42, separately for the two education groups.

Figure A.12: Average returns – Log earnings of mother



Notes: This figure displays the average perceived returns to working part-time relative to not working (left) as well as the average perceived returns to working full-time relative to working part-time (right) for mother's log earnings at ages 36 and 42, separately for the two education groups.

Table A.3: Average responses - Child and family outcomes

	No work	Part-time			Full-time		
Variable		Low educ	High educ	Difference	Low educ	High educ	Difference
Child outcomes							
Vocabulary	50.00	63.33	64.53	1.20**	70.64	69.62	-1.03*
	[0.00]	[14.87]	[13.52]	(0.013)	[17.01]	[16.45]	(0.068)
Intelligence	50.00	61.15	62.25	1.10**	66.18	64.77	-1.41***
	[0.00]	[13.33]	[12.78]	(0.013)	[16.17]	[15.61]	(0.009)
Concentration	50.00	60.85	61.32	0.48	65.52	63.94	-1.58***
	[0.00]	[14.89]	[14.28]	(0.335)	[17.52]	[17.29]	(0.007)
Work independently	50.00	64.13	64.54	0.41	71.21	70.11	-1.10*
	[0.00]	[17.02]	[15.84]	(0.463)	[17.90]	[17.15]	(0.063)
Social skills	50.00	66.65	69.03	2.38***	77.55	78.10	0.55
	[0.00]	[20.85]	[19.32]	(0.000)	[17.94]	[16.52]	(0.350)
Family outcomes							
Satisfaction child	50.00	64.24	64.27	0.03	59.78	59.53	-0.25
	[0.00]	[16.01]	[15.26]	(0.955)	[20.44]	[19.91]	(0.709)
Satisfaction mother	50.00	63.09	64.70	1.60**	65.23	67.00	1.78***
	[0.00]	[19.72]	[19.49]	(0.015)	[20.80]	[19.92]	(0.010)
Satisfaction father	50.00	64.06	65.26	1.20*	67.78	67.89	0.11
	[0.00]	[18.99]	[17.34]	(0.051)	[19.50]	[18.68]	(0.859)
Mother-child relationship	50.00	65.90	64.19	-1.71***	55.16	55.05	-0.11
	[0.00]	[18.05]	[17.36]	(0.004)	[21.47]	[21.42]	(0.875)
Mother-father relationship	50.00	62.66	62.97	0.31	63.39	64.42	1.02
	[0.00]	[18.25]	[18.03]	(0.610)	[20.22]	[19.69]	(0.129)
Observations	3,973	2,609	1,364	3,973	2,609	1,364	3,973

Notes: This table displays average responses to the questions which relate to child and family outcomes. Responses were anchored to the benchmark value of '50' in the scenario in which the woman does not work (column 1). Columns 2-3 and 5-6 display average responses in the part-time and full-time scenario, separately by the education level of the respondent (low/high). The standard deviation is displayed in square brackets. Columns 4 and 7 display the difference in means between the low and high education group, for the part- and full-time scenario, respectively, together with the corresponding p-value. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A.4: Average responses - Earnings

	No work			Part-time			Full-time		
Variable	Low educ	High educ	Difference	Low educ	High educ	Difference	Low Educ	High Educ	Difference
Mother									
Age 36	33913.54	43094.55	9181.00***	37416.11	47703.57	10287.46***	43550.77	54634.86	11084.09***
	[15169.73]	[15911.81]	(0.000)	[13086.60]	[12977.92]	(0.000)	[11991.97]	[10774.17]	(0.000)
Age 42	39230.14	50621.40	11391.26***	42354.02	54625.01	12270.99***	48010.77	62135.20	14124.43***
	[14296.82]	[14140.78]	(0.000)	[13118.96]	[12189.50]	(0.000)	[12949.73]	[11256.50]	(0.000)
Father									
Age 36	42814.38	55609.67	12795.29***	43859.89	56275.25	12415.35***	46072.90	57525.75	11452.85***
	[11315.48]	[10804.99]	(0.000)	[11026.90]	[9911.27]	(0.000)	[12580.55]	[10832.46]	(0.000)
Age 42	47757.67	63229.04	15471.37***	48803.92	63941.12	15137.20***	51318.89	65782.90	14464.00***
	[12564.17]	[11221.28]	(0.000)	[12241.98]	[10579.95]	(0.000)	[13646.98]	[11232.41]	(0.000)
Observations	2,609	1,364	3,973	2,609	1,364	3,973	2,609	1,364	3,973

Notes: This table displays the average responses to the income questions for the no work (columns 1-2), part-time (columns 4-5) and full-time (columns 7-8) scenarios, separately by the education level of the respondent (low/high). The standard deviation is displayed in square brackets. Columns 3, 6 and 9 display the difference in means between the low and high education group, for the three scenarios, respectively, together with the corresponding p-value. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A.5: Spearman rank correlations between returns - PT-NO

	Child outcomes					Family outcomes					Earnings			
Variable	(1)	(2)	(3)	(4)	(5)	(1)	(2)	(3)	(4)	(5)	(1)	(2)	(3)	(4)
Child outcomes														
(1) Vocabulary	1.00													
(2) Intelligence	0.54	1.00												
(3) Concentration	0.49	0.52	1.00											
(4) Work independently	0.38	0.40	0.45	1.00										
(5) Social skills	0.51	0.37	0.40	0.46	1.00									
Family outcomes														
(1) Satisfaction child	0.29	0.28	0.28	0.17	0.21	1.00								
(2) Satisfaction mother	0.29	0.26	0.25	0.19	0.26	0.46	1.00							
(3) Satisfaction father	0.26	0.23	0.24	0.20	0.24	0.42	0.65	1.00						
(4) Mother-child relationship	0.13	0.19	0.19	0.09	0.08	0.51	0.32	0.25	1.00					
(5) Mother-father relationship	0.23	0.22	0.22	0.18	0.25	0.42	0.57	0.56	0.37	1.00				
Earnings														
(1) Mother (36)	0.09	0.05	0.05	0.08	0.09	-0.03	0.05	0.05	-0.10	0.02	1.00			
(2) Father (36)	0.08	0.03	0.06	0.02	0.06	0.03	0.09	0.07	0.01	0.04	0.33	1.00		
(3) Mother (42)	0.10	0.05	0.06	0.09	0.08	-0.02	0.05	0.06	-0.09	0.04	0.60	0.29	1.00	
(4) Father (42)	0.07	0.04	0.06	0.06	0.04	0.03	0.08	0.06	0.01	0.03	0.25	0.50	0.38	1.00

Notes: This table displays the Spearman rank correlations between the perceived returns to part-time relative to the no work scenarios.

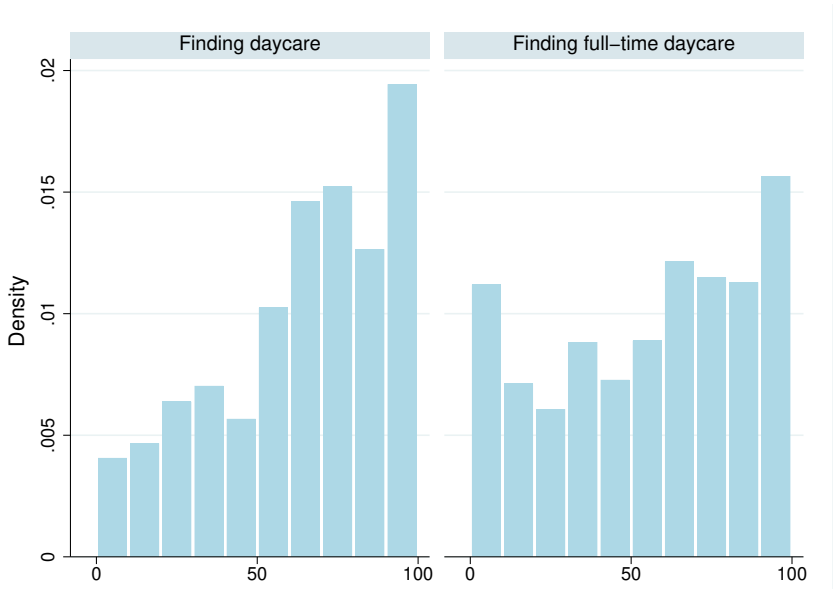
Table A.6: Spearman rank correlations between returns - FT-PT

	Child outcomes					Family outcomes					Earnings			
Variable	(1)	(2)	(3)	(4)	(5)	(1)	(2)	(3)	(4)	(5)	(1)	(2)	(3)	(4)
Child outcomes														
(1) Vocabulary	1.00													
(2) Intelligence	0.54	1.00												
(3) Concentration	0.49	0.52	1.00											
(4) Work independently	0.38	0.40	0.45	1.00										
(5) Social skills	0.51	0.37	0.40	0.46	1.00									
Family outcomes														
(1) Satisfaction child	0.29	0.28	0.28	0.17	0.21	1.00								
(2) Satisfaction mother	0.29	0.26	0.25	0.19	0.26	0.46	1.00							
(3) Satisfaction father	0.26	0.23	0.24	0.20	0.24	0.42	0.65	1.00						
(4) Mother-child relationship	0.13	0.19	0.19	0.09	0.08	0.51	0.32	0.25	1.00					
(5) Mother-father relationship	0.23	0.22	0.22	0.18	0.25	0.42	0.57	0.56	0.37	1.00				
Earnings														
(1) Mother (36)	0.09	0.05	0.05	0.08	0.09	-0.03	0.05	0.05	-0.10	0.02	1.00			
(2) Father (36)	0.08	0.03	0.06	0.02	0.06	0.03	0.09	0.07	0.01	0.04	0.33	1.00		
(3) Mother (42)	0.10	0.05	0.06	0.09	0.08	-0.02	0.05	0.06	-0.09	0.04	0.60	0.29	1.00	
(4) Father (42)	0.07	0.04	0.06	0.06	0.04	0.03	0.08	0.06	0.01	0.03	0.25	0.50	0.38	1.00

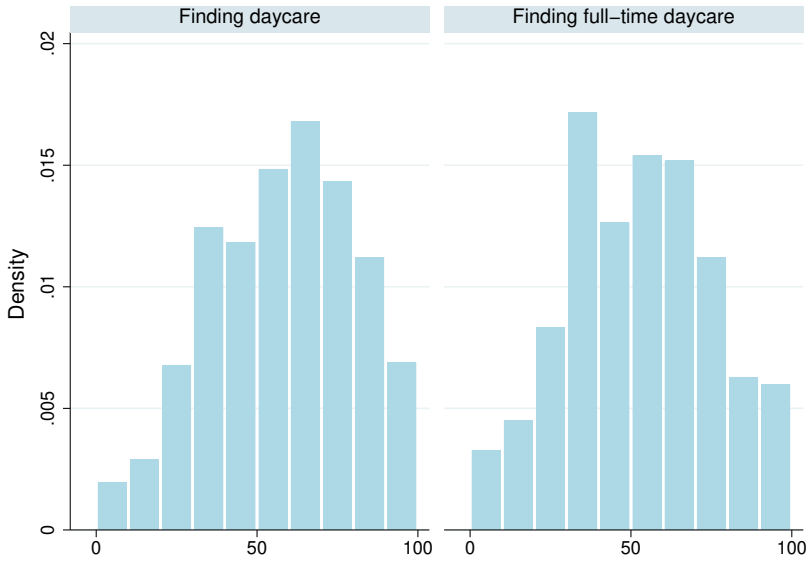
Notes: This table displays the Spearman rank correlations between the perceived returns to full-time relative to the part-time scenarios.

Figure A.13: Perceived constraints

(a) Respondents with children

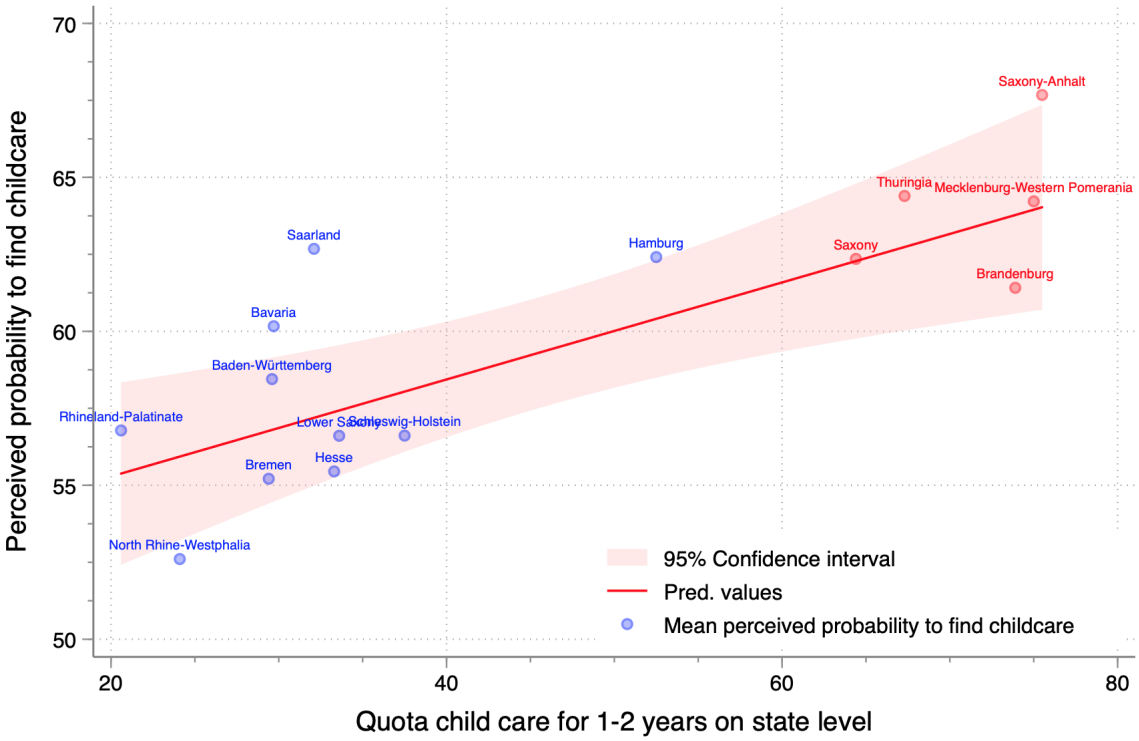


(b) Respondents without children



Notes: This figure shows the distribution of responses to the question how likely it is/was for a family with a one-year-old child in the neighborhood to find a place in a childcare center (left) and how likely it is that the childcare facility would be open full-time (right). The top panel presents the results for respondents with children, whereas the bottom panel presents the results for respondents without children.

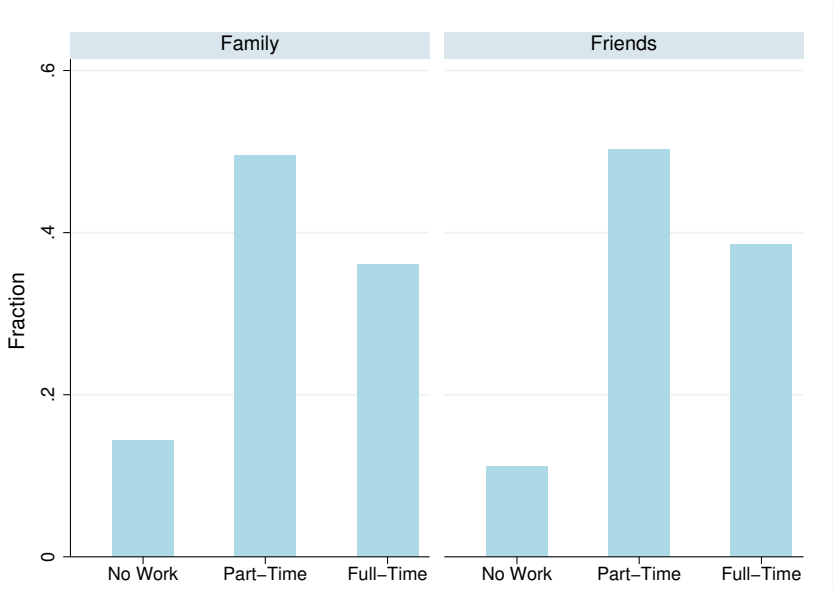
Figure A.14: Perceived and actual childcare



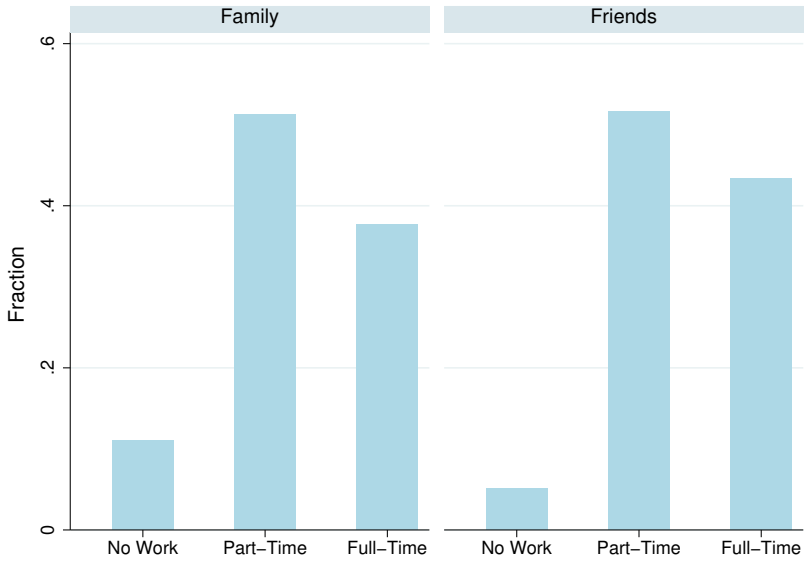
Notes: This figure illustrates the relationship between the percentage of children (aged 1-2) in formal childcare and the perceived probability to find childcare for a one-year-old child, collapsed at the federal state level. Federal states with a red label are located in East Germany while federal states with a blue label are located in West Germany.

Figure A.15: Perceived social norms

(a) Respondents with children

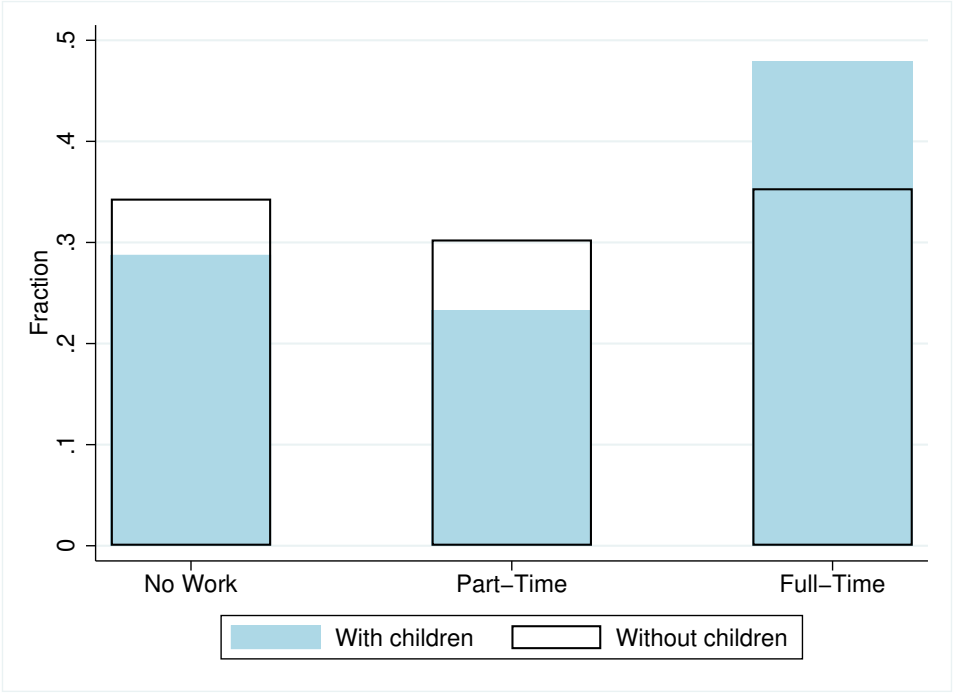


(b) Respondents without children



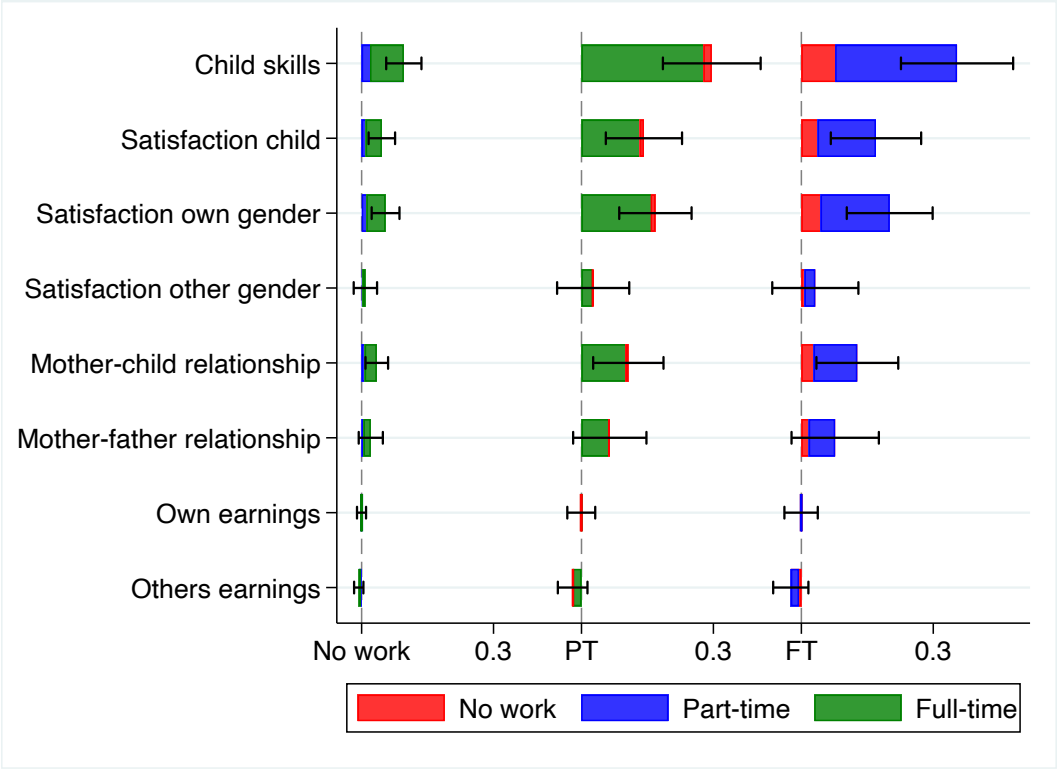
Notes: This figure shows what respondents think their family (left) and friends (right) think they (or their partner) should have done/should do when the child is 1-5 years old, assuming full-time childcare is available. The top panel presents the results for respondents with children, whereas the bottom panel presents the results for respondents without children.

Figure A.16: Labor supply of respondents' own mothers



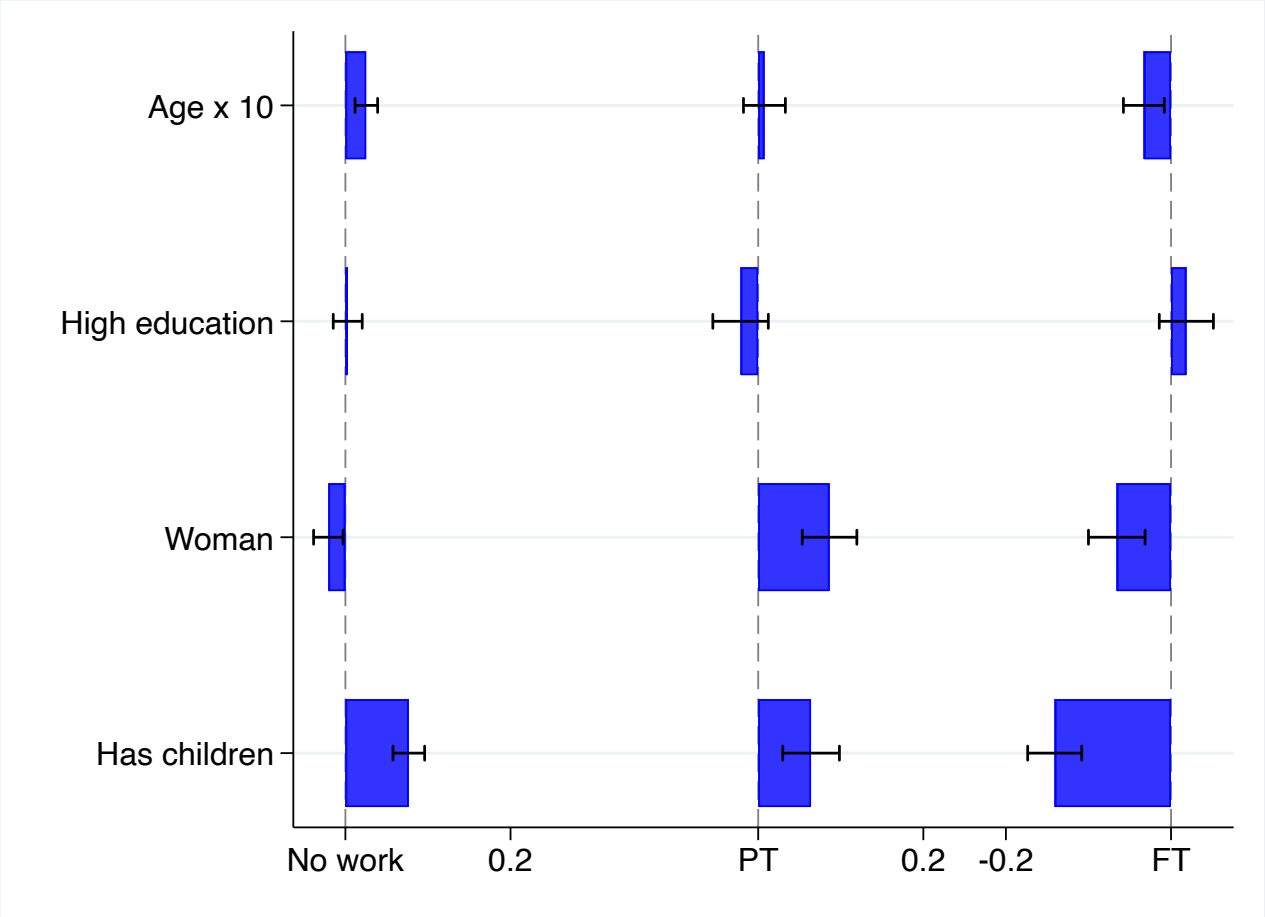
Notes: This figure illustrates what the mother of the respondent predominantly did when the respondent was 1-5 years old, separately for respondents with and without children.

Figure A.17: Marginal effects – Alternative-specific variables (benchmark)



Notes: Each bar represents the change in the marginal choice probability displayed on the x-axis for a one unit change in the alternative-specific variable indicated on the y-axis. Any increase in a marginal choice probability comes the expense of the other two choices, which are represented by the respective colors. The thin lines represent the 95% confidence intervals. The coefficients are presented in Table 5 in the main text.

Figure A.18: Marginal effects – Case-specific variables (benchmark)



Notes: Each bar represents the change in the marginal choice probability displayed on the x-axis for a one unit change in the case-specific variable indicated on the y-axis. The changes across the three horizontal bars sums to zero. The thin lines represent the 95% confidence intervals. The coefficients are presented in Table 5 in the main text.

Table A.7: Choice model with regional factors and perceived social norms

	(All)	(Parent)	(No child)	(Low educ)	(High educ)
Child skills	0.8958***	0.4996	1.5427***	1.2357***	0.3622
	(0.2453)	(0.3124)	(0.4270)	(0.3236)	(0.3645)
Satisfaction child	0.3636*	0.4378	0.3676	0.4973*	0.2861
	(0.2073)	(0.2817)	(0.3191)	(0.2795)	(0.2923)
Satisfaction own gender	0.8332***	0.6103**	1.1442***	0.9612***	0.6582**
	(0.1965)	(0.2584)	(0.3204)	(0.2609)	(0.2902)
Satisfaction of partner	-0.1741	-0.1147	-0.3285	-0.4884*	0.2826
	(0.1932)	(0.2525)	(0.3088)	(0.2615)	(0.2724)
Mother-child relationship	0.0208	-0.0027	0.0783	0.0079	0.0032
	(0.1817)	(0.2427)	(0.2826)	(0.2406)	(0.2650)
Mother-father relationship	0.1402	0.0951	0.2299	0.1726	0.0830
	(0.1941)	(0.2579)	(0.3046)	(0.2552)	(0.2905)
Own earnings	-0.0119	-0.0709	0.0942	0.0512	-0.0415
	(0.0585)	(0.0734)	(0.1042)	(0.0805)	(0.0933)
Earnings of partner	-0.0437	-0.0597	-0.0197	-0.1460*	0.1213
	(0.0637)	(0.0847)	(0.1043)	(0.0827)	(0.1102)
Mother worked	0.1145***	0.0649	0.1902***	0.0952*	0.1405**
	(0.0378)	(0.0497)	(0.0626)	(0.0503)	(0.0555)
Friends' opinion	0.6070***	0.6251***	0.5889***	0.6184***	0.5205***
	(0.0533)	(0.0688)	(0.0881)	(0.0664)	(0.0931)
Family's opinion	0.5164***	0.5537***	0.4678***	0.5574***	0.4439***
	(0.0456)	(0.0608)	(0.0714)	(0.0617)	(0.0697)
Part-time					
Age	-0.0151**	-0.0067	-0.0264**	-0.0231**	-0.0013
	(0.0073)	(0.0102)	(0.0106)	(0.0091)	(0.0127)
High education	-0.0897	-0.1187	0.0869		
	(0.0935)	(0.1183)	(0.1679)		
East Germany	-0.1888**	-0.0501	-0.4052**	-0.0861	-0.3121**
	(0.0932)	(0.1187)	(0.1590)	(0.1232)	(0.1460)
Woman	0.3422***	0.4790***	0.0728	0.2349**	0.4697***
	(0.0919)	(0.1182)	(0.1593)	(0.1171)	(0.1546)
Has children	-0.3016***			-0.1950	-0.4740***
	(0.1079)			(0.1371)	(0.1806)
Single			-0.0091		
			(0.1597)		
Constant	1.0094***	0.3703	1.4073***	1.1692***	0.7144
	(0.2741)	(0.4043)	(0.4252)	(0.3465)	(0.4606)
Full-time					
Age	-0.0243***	-0.0174*	-0.0361***	-0.0374***	-0.0023
	(0.0069)	(0.0096)	(0.0103)	(0.0092)	(0.0108)
High education	-0.0063	-0.0417	0.1281		
	(0.0868)	(0.1101)	(0.1567)		
East Germany	0.1721*	0.3024**	-0.0205	0.3547***	-0.0567
	(0.0931)	(0.1206)	(0.1544)	(0.1323)	(0.1307)
Woman	0.0321	0.1366	-0.2372	-0.1187	0.2285
	(0.0925)	(0.1200)	(0.1617)	(0.1245)	(0.1456)
Has children	-0.8491***			-0.7956***	-0.8953***
	(0.1128)			(0.1498)	(0.1798)
Single			-0.2799*		
			(0.1502)		
Constant	1.5432***	0.5040	2.0056***	1.8555***	1.0185**
	(0.2676)	(0.3804)	(0.4260)	(0.3571)	(0.4049)
Error					
lnl2_2	0.0929	0.1003	0.0765	0.2115*	-0.2129
	(0.0954)	(0.1150)	(0.1726)	(0.1194)	(0.2029)
l2_1	0.1669*	0.2068*	0.0967	0.0515	0.3895***
	(0.0934)	(0.1184)	(0.1617)	(0.1314)	(0.1265)
Observations	3551	1807	1744	2308	1243

Notes: The table presents the estimates of the multinomial probit choice model. Earnings are computed as the log of earnings at age 36 plus the log of earnings at age 42 discounted by 4% per year. Standard errors are in parenthesis. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A.8: Choice model with disaggregated child skills

	(All)	(Parent)	(No child)	(Low educ)	(High educ)
Vocabulary	0.1222	0.0482	0.1938	0.1842	0.0206
	(0.1322)	(0.1554)	(0.2048)	(0.2261)	(0.0861)
Intelligence	0.1389	-0.0242	0.3548	0.4169*	-0.0872
	(0.1456)	(0.1748)	(0.2255)	(0.2504)	(0.1054)
Concentration	0.2241*	0.2886*	0.0790	0.3472	0.0705
	(0.1261)	(0.1554)	(0.1910)	(0.2132)	(0.0860)
Work independently	-0.0067	0.0193	-0.0078	-0.0442	0.0405
	(0.1100)	(0.1371)	(0.1586)	(0.1828)	(0.0781)
Social skills	0.2117**	0.0678	0.3822**	0.1413	0.1626
	(0.1048)	(0.1228)	(0.1582)	(0.1667)	(0.1053)
Satisfaction child	0.3269***	0.3659**	0.2759*	0.4517**	0.1777*
	(0.1110)	(0.1421)	(0.1616)	(0.1877)	(0.1063)
Satisfaction own gender	0.3862***	0.2652**	0.5024***	0.6258***	0.1514
	(0.1158)	(0.1327)	(0.1800)	(0.2020)	(0.0962)
Satisfaction of partner	0.0692	0.0630	0.0025	-0.1386	0.1147
	(0.0984)	(0.1125)	(0.1551)	(0.1681)	(0.0849)
Mother-child relationship	0.2500**	0.1540	0.3223**	0.1863	0.2101*
	(0.0996)	(0.1181)	(0.1570)	(0.1593)	(0.1126)
Mother-father relationship	0.1471	0.1287	0.1966	0.2187	0.0343
	(0.1015)	(0.1212)	(0.1577)	(0.1641)	(0.0740)
Own earnings	-0.0006	-0.0158	0.0276	0.0112	0.0003
	(0.0379)	(0.0436)	(0.0573)	(0.0531)	(0.0373)
Earnings of partner	-0.0464	-0.0541	-0.0031	-0.0727	-0.0566
	(0.0395)	(0.0466)	(0.0618)	(0.0545)	(0.0358)
Part-time					
Age	-0.0159***	-0.0032	-0.0264***	-0.0224***	0.0008
	(0.0061)	(0.0085)	(0.0084)	(0.0075)	(0.0124)
High education	-0.0616	-0.1583	0.1440		
	(0.0776)	(0.0964)	(0.1251)		
Woman	0.3033***	0.4048***	0.0913	0.2773***	0.3775***
	(0.0767)	(0.0974)	(0.1164)	(0.0941)	(0.1463)
Has children	-0.4028***			-0.1093	-0.9424***
	(0.1012)			(0.1181)	(0.1997)
Single			-0.1063		
			(0.1185)		
Constant	1.5916***	0.8000**	1.6787***	1.2768***	1.9632***
	(0.2809)	(0.3781)	(0.3768)	(0.3422)	(0.5279)
Full-time					
Age	-0.0189***	-0.0102	-0.0253***	-0.0266***	-0.0006
	(0.0053)	(0.0068)	(0.0074)	(0.0067)	(0.0119)
High education	-0.0116	-0.0788	0.1321		
	(0.0636)	(0.0736)	(0.1039)		
Woman	0.1122*	0.1825**	-0.0560	-0.0060	0.3005**
	(0.0663)	(0.0791)	(0.0992)	(0.0803)	(0.1451)
Has children	-0.5913***			-0.4619***	-0.9798***
	(0.0994)			(0.1213)	(0.1952)
Single			-0.1917**		
			(0.0973)		
Constant	1.8711***	1.0951***	1.8513***	1.6950***	2.0971***
	(0.2545)	(0.3015)	(0.3501)	(0.3116)	(0.4815)
Error					
lnl2_2	-0.7227***	-0.9643**	-0.9222**	-0.4074	-1.7635**
	(0.2412)	(0.4196)	(0.4425)	(0.2593)	(0.7045)
l2_1	0.7059***	0.7511***	0.5648***	0.3100*	1.1751***
	(0.0922)	(0.1221)	(0.1159)	(0.1664)	(0.1298)
Observations	3551	1807	1744	2308	1243

Notes: The table presents the estimates of the multinomial probit choice model. Earnings are computed as the log of earnings at age 36 plus the log of earnings at age 42 discounted by 4% per year. Standard errors are in parenthesis. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A.9: Child outcomes: Determinants of perceived returns PT-NO and FT-PT Germany

	Part-time - No work					*Full-time - Part-time*				
	Voc.	Int.	Conc.	Work ind.	Soc. skills	Voc.	Int.	Conc.	Work ind.	Soc. skills
West Germany	0.161	0.010	0.954*	1.363**	2.542***	-3.494***	-2.924***	-4.023***	-3.179***	-4.893***
	(0.52)	(0.49)	(0.53)	(0.61)	(0.75)	(0.64)	(0.56)	(0.64)	(0.68)	(0.82)
Mover (to West)	3.565***	1.263	1.900	1.061	2.191	-1.181	-0.387	-2.013	-0.285	-0.590
	(1.37)	(1.33)	(1.53)	(1.69)	(1.97)	(1.59)	(1.40)	(1.86)	(1.96)	(2.03)
Mover (to East)	1.241	0.283	1.049	2.407*	5.047***	-4.666***	-3.085***	-2.396*	-3.393***	-4.822***
	(1.24)	(1.12)	(1.33)	(1.33)	(1.59)	(1.31)	(1.07)	(1.25)	(1.30)	(1.46)
Female	1.874***	0.672	2.206***	2.322***	3.802***	0.522	0.090	0.146	2.859***	-0.130
	(0.46)	(0.42)	(0.47)	(0.54)	(0.65)	(0.54)	(0.47)	(0.55)	(0.59)	(0.69)
Age	0.057	0.090***	0.086**	0.114***	0.075	0.026	0.034	0.038	-0.001	-0.104*
	(0.04)	(0.03)	(0.04)	(0.04)	(0.05)	(0.04)	(0.04)	(0.04)	(0.05)	(0.06)
University degree	1.096**	1.018**	0.359	0.252	2.334***	-1.926***	-2.472***	-1.830***	-1.083*	-1.312*
	(0.48)	(0.44)	(0.49)	(0.55)	(0.68)	(0.56)	(0.49)	(0.57)	(0.60)	(0.70)
Parent	0.254	0.532	0.738	0.637	-0.306	1.713**	0.202	1.136*	1.265*	0.968
	(0.58)	(0.53)	(0.57)	(0.65)	(0.81)	(0.67)	(0.57)	(0.66)	(0.72)	(0.87)
Married	0.487	0.065	0.142	0.404	0.510	-0.532	0.133	0.150	0.239	-0.237
	(0.58)	(0.54)	(0.58)	(0.67)	(0.82)	(0.68)	(0.58)	(0.69)	(0.71)	(0.87)
Migrant background	-0.205	0.252	0.649	0.276	-0.289	1.009	1.287*	-0.035	0.650	0.323
	(0.66)	(0.60)	(0.69)	(0.75)	(0.93)	(0.81)	(0.70)	(0.86)	(0.85)	(1.03)
Religious	0.862	0.548	1.111**	1.014	0.026	-2.135***	-0.990*	-1.805***	-2.591***	-2.507***
	(0.53)	(0.50)	(0.55)	(0.62)	(0.74)	(0.65)	(0.57)	(0.65)	(0.72)	(0.81)
Own mother worked FT	0.502	1.784***	2.065***	1.188*	0.517	2.526***	1.149*	1.040	0.741	2.599***
	(0.59)	(0.55)	(0.60)	(0.67)	(0.83)	(0.70)	(0.62)	(0.71)	(0.74)	(0.90)
Own mother worked PT	0.305	1.086**	0.508	0.242	0.141	0.785	-0.084	0.887	-0.830	1.022
	(0.61)	(0.55)	(0.62)	(0.69)	(0.84)	(0.71)	(0.62)	(0.73)	(0.79)	(0.90)
Observations	3942	3922	3929	3934	3937	3927	3909	3919	3928	3930

Notes. The dependent variable are child outcomes on a 0-100 scale relative to the benchmark value of 50 (no work). The dependent variables are in the following order: vocabulary, intelligence, concentration, working independently and social skills. Robust standard errors are reported in parentheses. Female indicates whether the respondent is female. West indicates whether the respondents lives in former West Germany. Age is measured in years. University indicates whether the respondent has completed university education. Married and parent indicate whether the respondent is married and has children, respectively. Migrant indicates whether the respondent has at least one parent born outside of Germany. Religious indicates whether religion is important to the respondent. Own mother worked FT and PT indicate if the respondent's mother predominantly worked full-time or part-time while they were aged 1-5. * p<0.10, ** p<0.05, *** p<0.01.

Table A.10: Family outcomes: Determinants of perceived returns PT-NO and FT-PT Germany

	Part-time - No work					*Full-time - Part-time*				
	Sat. child	Sat. mother	Sat. father	Mo.-ch.	Mo.-fa.	Sat. child	Sat. mother	Sat. father	Mo.-ch.	Mo.-fa.
West Germany	-0.571	0.464	0.139	-2.329***	-1.138*	-4.949***	-4.104***	-4.231***	-3.997***	-2.698***
	(0.58)	(0.71)	(0.68)	(0.65)	(0.68)	(0.75)	(0.95)	(0.81)	(0.80)	(0.80)
Mover (to West)	2.025	1.745	2.284	1.433	1.725	1.613	-0.113	-1.241	1.611	-0.334
	(1.54)	(2.05)	(1.72)	(1.84)	(1.84)	(2.20)	(2.78)	(2.27)	(2.33)	(2.38)
Mover (to East)	0.998	4.393***	3.558**	-1.805	1.253	-7.975***	-5.113**	-5.364***	-2.272	-2.003
	(1.36)	(1.70)	(1.60)	(1.59)	(1.56)	(1.72)	(2.18)	(1.77)	(1.84)	(1.84)
Female	2.786***	2.557***	2.210***	3.093***	0.888	-4.400***	-4.605***	-3.647***	-3.920***	-3.419***
	(0.51)	(0.63)	(0.60)	(0.57)	(0.59)	(0.67)	(0.84)	(0.72)	(0.70)	(0.72)
Age	-0.060	-0.066	0.014	0.037	0.023	0.218***	0.265***	0.130**	0.370***	0.142**
	(0.04)	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)	(0.07)	(0.06)	(0.05)	(0.06)
University degree	0.105	1.575**	1.106*	-1.547***	0.099	-0.385	-0.064	-1.124	1.129	0.604
	(0.53)	(0.66)	(0.61)	(0.59)	(0.61)	(0.69)	(0.88)	(0.73)	(0.72)	(0.74)
Parent	1.034	0.057	0.365	2.666***	-0.071	-1.935**	-0.810	-0.125	-2.032**	-1.540*
	(0.63)	(0.79)	(0.74)	(0.70)	(0.74)	(0.81)	(1.05)	(0.89)	(0.87)	(0.89)
Married	0.834	1.681**	0.997	0.079	1.644**	-0.695	-1.389	-0.465	-0.146	0.278
	(0.64)	(0.80)	(0.76)	(0.72)	(0.75)	(0.82)	(1.06)	(0.92)	(0.87)	(0.89)
Migrant background	0.392	-0.737	-0.515	0.931	-0.543	0.003	0.950	1.296	-0.450	0.606
	(0.70)	(0.91)	(0.86)	(0.82)	(0.85)	(1.01)	(1.24)	(1.08)	(1.06)	(1.09)
Religious	1.009*	-0.101	0.463	0.446	1.426**	-0.893	-0.493	-1.207	-0.219	-2.355***
	(0.60)	(0.72)	(0.69)	(0.68)	(0.68)	(0.78)	(0.96)	(0.85)	(0.84)	(0.84)
Own mother worked FT	2.088***	0.982	1.549**	2.366***	0.922	4.452***	2.432**	0.137	3.476***	2.258**
	(0.66)	(0.81)	(0.77)	(0.74)	(0.77)	(0.84)	(1.07)	(0.91)	(0.89)	(0.90)
Own mother worked PT	1.702**	0.641	1.072	1.626**	0.661	0.544	-0.356	-1.184	-0.099	-0.532
	(0.66)	(0.81)	(0.77)	(0.77)	(0.76)	(0.88)	(1.11)	(0.96)	(0.93)	(0.92)
Observations	3933	3940	3936	3937	3932	3930	3938	3931	3932	3924

Notes. The dependent variable are family outcomes on a scale from 0-100 relative to the benchmark value of 50 (no work). The dependent variables are in the following order: satisfaction child, satisfaction mother, satisfaction father, mother-child relationship and mother father relationship. Robust standard errors are reported in parentheses. The dependent variable are family outcomes. Female indicates whether the respondent is female. West indicates whether the respondents lives in former West Germany. Age is measured in years. University indicates whether the respondent has completed university education. Married and parent indicate whether the respondent is married and has children, respectively. Migrant indicates whether the respondent has at least one parent born outside of Germany. Religious indicates whether religion is important to the respondent. Own mother worked FT and PT indicate if the respondent's mother predominantly worked full-time or part-time while they were aged 1-5. * p<0.10, ** p<0.05, *** p<0.01.

Table A.11: Determinants of perceived earnings PT-NO and FT-PT Germany

	Part-time - No work				*Full-time - Part-time*			
	Mother (36)	Mother (42)	Father (36)	Father(42)	Mother (36)	Mother (42)	Father (36)	Father(42)
West Germany	-745.118*	-451.353	-352.477	-679.834*	79.847	-98.220	538.159	-283.262
	(402.32)	(351.44)	(419.95)	(360.76)	(409.68)	(369.50)	(418.90)	(373.20)
Mover (to West)	227.433	-233.485	-9.048	-29.060	963.910	-1.2e+03	734.581	890.961
	(823.24)	(788.38)	(935.64)	(636.76)	(922.54)	(778.96)	(1073.96)	(826.65)
Mover (to East)	-1.2e+03	-1.4e+03*	-1.2e+03	-568.259	-1.5e+03*	-2.4e+03**	-1.2e+03	-2.3e+03***
	(980.84)	(730.82)	(955.05)	(658.88)	(911.49)	(929.76)	(912.55)	(867.93)
Female	25.873	-297.936	364.525	-67.775	1281.825***	148.668	1237.952***	22.901
	(341.84)	(292.09)	(344.65)	(294.76)	(344.83)	(308.50)	(354.52)	(302.53)
Age	-40.444	-21.752	-45.607*	-11.790	27.737	-19.323	15.889	-11.571
	(27.25)	(23.72)	(27.63)	(25.11)	(28.13)	(25.97)	(29.50)	(25.05)
University degree	1227.410***	-312.772	996.896***	-264.873	1026.669***	-804.809***	2106.352***	-601.944**
	(357.05)	(295.14)	(352.55)	(285.99)	(351.01)	(308.16)	(364.02)	(306.84)
Parent	-135.131	251.699	-532.377	641.289*	620.049	540.427	1085.100**	121.591
	(431.66)	(353.30)	(445.66)	(365.10)	(433.21)	(391.48)	(456.36)	(405.73)
Married	396.786	48.630	-71.587	-402.288	-468.102	-755.139*	-748.487	-131.211
	(453.61)	(377.42)	(452.84)	(372.90)	(434.87)	(386.70)	(466.36)	(411.61)
Migrant background	-887.890*	-619.777	-1.2e+03**	234.330	-295.606	251.371	424.413	770.641*
	(469.94)	(428.60)	(528.48)	(453.21)	(505.60)	(490.63)	(537.01)	(461.64)
Religious	-985.441**	-301.970	-76.375	310.073	-441.940	246.110	-798.453**	-213.030
	(401.91)	(340.38)	(418.30)	(368.85)	(402.55)	(366.37)	(406.17)	(361.00)
Own mother worked FT	-501.557	-23.672	-117.779	3.604	-428.207	157.591	-755.388	-141.594
	(453.05)	(391.67)	(466.49)	(386.83)	(450.69)	(410.57)	(473.66)	(414.47)
Own mother worked PT	-391.984	65.432	100.511	175.552	-319.267	525.645	-787.943*	157.080
	(445.49)	(387.70)	(471.93)	(396.90)	(460.17)	(403.26)	(471.71)	(392.99)
Observations	3885	3848	3885	3849	3856	3840	3855	3838

Notes. The dependent variable are expected earnings at age 36 and 42 years for mothers and fathers relative to the benchmark value of 36,000 Euro (low education) and 46,000 Euro (high education) at the age of 30 years old. Robust standard errors are reported in parentheses. Female indicates whether the respondent is female. West indicates whether the respondents lives in former West Germany. Age is measured in years. University indicates whether the respondent has completed university education. Married and parent indicate whether the respondent is married and has children, respectively. Migrant indicates whether the respondent has at least one parent born outside of Germany. Religious indicates whether religion is important to the respondent. Own mother worked FT and PT indicate if the respondent's mother predominantly worked full-time or part-time while they were aged 1-5. * p<0.10, ** p<0.05, *** p<0.01.

B Canada

Table B.1: Descriptive statistics by gender (Canada)

Variable	All	Female	Male
Age in years	33.07	32.47	33.67
	[5.91]	[5.82]	[5.95]
University degree	0.66	0.66	0.67
	[0.47]	[0.47]	[0.47]
Married	0.46	0.44	0.48
	[0.50]	[0.50]	[0.50]
Parent	0.50	0.50	0.50
	[0.50]	[0.50]	[0.50]
Number of children	1.72	1.84	1.60
	[0.90]	[0.94]	[0.84]
Migrant background	0.37	0.39	0.36
	[0.48]	[0.49]	[0.48]
Religious	0.43	0.40	0.45
	[0.49]	[0.49]	[0.50]
Working full-time	0.71	0.62	0.79
	[0.45]	[0.49]	[0.40]
Working part-time	0.16	0.20	0.12
	[0.37]	[0.40]	[0.33]
Annual income (in CAD)	52131.43	45883.54	58323.38
	[32952.93]	[31049.33]	[33617.18]
Observations	4,014	2,000	2,014

Notes: Column 1 displays the summary statistics for the full sample. Columns 2 and 3 display the characteristics of women and men. Age is measured in years. University degree indicates whether the respondent has a university degree. Married indicates whether the respondent is married, while parent indicates whether the respondent has children. Number of children is the average number of children of respondents with children. Migrant background indicates whether the respondent has at least one parent born outside of Germany. Religious indicates whether religion is important to the respondent. Working part- or full-time is the share of individuals in the labor force who are working part- or full-time. Annual income is the annual gross income of the respondent in Euro. The standard deviation is displayed in squared brackets.

Table B.2: Average returns - Child and family outcomes (Canada)

	Low education				High education			
Variable	Baseline	PT-NO	FT-PT	Diff.	Baseline	PT-NO	FT-PT	Diff.
Child outcomes								
Vocabulary	50.00	12.75	5.66	-7.09	50.00	14.45	4.98	-9.47
	[0.00]	[13.92]	[16.67]	(0.000)	[0.00]	[12.94]	[14.40]	(0.000)
Intelligence	50.00	12.74	4.32	-8.42	50.00	13.52	3.81	-9.71
	[0.00]	[14.31]	[16.64]	(0.000)	[0.00]	[13.69]	[13.68]	(0.000)
Concentration	50.00	11.28	3.31	-7.97	50.00	13.11	3.19	-9.92
	[0.00]	[15.36]	[18.61]	(0.000)	[0.00]	[14.57]	[15.68]	(0.000)
Work independently	50.00	13.04	1.83	-11.20	50.00	14.74	2.85	-11.90
	[0.00]	[16.79]	[20.86]	(0.000)	[0.00]	[15.53]	[17.26]	(0.000)
Social skills	50.00	13.94	8.53	-5.41	50.00	16.82	8.00	-8.82
	[0.00]	[17.74]	[20.40]	(0.000)	[0.00]	[16.78]	[17.99]	(0.000)
Family outcomes								
Satisfaction child	50.00	12.88	-1.02	-13.90	50.00	13.98	-1.57	-15.56
	[0.00]	[15.75]	[19.39]	(0.000)	[0.00]	[15.19]	[18.14]	(0.000)
Satisfaction mother	50.00	12.07	2.89	-9.18	50.00	13.30	4.06	-9.25
	[0.00]	[17.83]	[22.16]	(0.000)	[0.00]	[17.13]	[20.18]	(0.000)
Satisfaction father	50.00	12.39	4.79	-7.60	50.00	14.54	4.40	-10.14
	[0.00]	[18.03]	[21.59]	(0.000)	[0.00]	[16.30]	[18.20]	(0.000)
Mother-child relationship	50.00	14.72	-5.64	-20.37	50.00	15.56	-5.17	-20.73
	[0.00]	[18.51]	[20.65]	(0.000)	[0.00]	[17.16]	[18.77]	(0.000)
Mother-father relationship	50.00	12.43	2.02	-10.40	50.00	14.54	2.19	-12.35
	[0.00]	[17.77]	[20.23]	(0.000)	[0.00]	[16.64]	[17.69]	(0.000)
Observations	1,351	1,351	1,351	2,702	2,663	2,663	2,663	5,326

Notes: This table displays the average perceived returns of the baseline (Columns 1 and 4), part-time (Columns 2 and 6) and full-time (Columns 3 and 7) scenarios on each children and family outcomes. The standard errors are displayed in square brackets. Columns 4 and 8 display the difference in means per education group between the full-time and part-time scenario, together with the corresponding p-values.

Table B.3: Average returns - Earnings (Canada)

	Low education				High education			
Variable	Baseline	PT-NO	FT-PT	Difference	Baseline	PT-NO	FT-PT	Difference
Mother								
Age 36	44081.24	2844.62	4748.13	1903.50	55952.59	4140.02	6810.50	2670.48
	[18400.55]	[12749.59]	[13413.57]	(0.000)	[19362.00]	[13584.38]	[12677.74]	(0.000)
Age 42	51112.08	1517.07	4701.86	3184.79	65770.76	2606.59	5866.38	3259.78
	[16523.71]	[13093.83]	[13544.88]	(0.000)	[16295.88]	[12147.74]	[12283.50]	(0.000)
Father								
Age 36	50550.05	1312.98	1623.71	310.73	67379.88	713.11	1295.38	582.28
	[13755.64]	[11374.11]	[12015.91]	(0.500)	[11434.63]	[9122.27]	[9511.83]	(0.027)
Age 42	56938.75	597.41	2149.57	1552.16	75444.53	433.25	1644.18	1210.93s
	[14454.33]	[12120.41]	[12221.64]	(0.001)	[11645.83]	[9092.71]	[9004.83]	(0.000)
Observations	1,351	1,351	1,351	2,702	2,663	2,663	2,663	5,326

Notes: This table displays the average perceived returns of the baseline (Columns 1 and 4), part-time (Columns 2 and 6) and full-time (Columns 3 and 7) scenarios on future earnings for the mother and father. The standard errors are displayed in square brackets. Columns 4 and 8 display the difference in means per education group between the full-time and part-time scenario, together with the corresponding p-values.

Table B.4: Choice model Canada

	(All)	(Parent)	(No child)	(Low educ)	(High educ)
Child skills	0.8651***	0.9778***	0.6706*	0.8876***	0.5120
	(0.2282)	(0.2956)	(0.3776)	(0.2425)	(0.7218)
Satisfaction child	0.0178	0.2455	-0.2900	-0.0584	0.5485
	(0.1804)	(0.2360)	(0.2969)	(0.1932)	(0.5740)
Satisfaction own gender	0.5610***	0.5768**	0.4761	0.4563**	1.7179***
	(0.1830)	(0.2297)	(0.3173)	(0.1949)	(0.6469)
Satisfaction of partner	0.1213	0.1179	0.0796	0.0646	0.4378
	(0.1824)	(0.2301)	(0.3140)	(0.1954)	(0.5674)
Mother-child relationship	0.0153	0.0791	-0.0879	0.0703	-0.4518
	(0.1712)	(0.2150)	(0.2946)	(0.1828)	(0.5621)
Mother-father relationship	0.2551	-0.1058	0.9323***	0.2827	0.0774
	(0.1800)	(0.2339)	(0.3068)	(0.1919)	(0.5882)
Own earnings	-0.0194	0.0008	-0.0694	-0.0057	-0.0899
	(0.0483)	(0.0593)	(0.0832)	(0.0529)	(0.1248)
Earnings of partner	-0.0207	-0.0187	-0.0350	-0.0131	-0.1017
	(0.0502)	(0.0680)	(0.0757)	(0.0520)	(0.1686)
Mother worked	0.1931***	0.2079***	0.1729***	0.1804***	0.2652***
	(0.0323)	(0.0417)	(0.0528)	(0.0345)	(0.0979)
Friends' opinion	0.5559***	0.4963***	0.6894***	0.5700***	0.5442***
	(0.0487)	(0.0574)	(0.0892)	(0.0539)	(0.1266)
Family's opinion	0.4616***	0.4879***	0.4301***	0.4332***	0.6208***
	(0.0407)	(0.0529)	(0.0653)	(0.0439)	(0.1190)
Part-time					
Age	-0.0100	-0.0101	-0.0137	-0.0121	-0.0031
	(0.0076)	(0.0103)	(0.0116)	(0.0081)	(0.0238)
High education	0.2760**	0.2789*	0.2687		
	(0.1239)	(0.1566)	(0.2048)		
Quebec	0.1558*	0.1975*	-0.1546	0.0891	0.2994
	(0.0888)	(0.1098)	(0.1801)	(0.0964)	(0.2638)
Woman	-0.1355	-0.2401**	0.2153	-0.0812	-0.3305
	(0.0907)	(0.1118)	(0.1810)	(0.0977)	(0.2677)
Has children	-0.0404			-0.0450	0.0410
	(0.0954)			(0.1027)	(0.2729)
Single			-0.2570*		
			(0.1454)		
Constant	0.2664	0.3571	0.3886	0.3283	0.1640
	(0.2673)	(0.3826)	(0.4255)	(0.2856)	(0.8318)
Full-time					
Age	-0.0076	-0.0024	-0.0143	-0.0077	-0.0044
	(0.0059)	(0.0081)	(0.0089)	(0.0061)	(0.0208)
High education	0.1117	0.2048	-0.0923		
	(0.1000)	(0.1290)	(0.1638)		
Quebec	0.0476	0.0716	0.0244	0.0711	-0.1919
	(0.0678)	(0.0856)	(0.1351)	(0.0714)	(0.2442)
Woman	-0.1181*	-0.1085	-0.1397	-0.1246*	-0.1350
	(0.0712)	(0.0898)	(0.1393)	(0.0751)	(0.2393)
Has children	-0.1701**			-0.1858**	-0.0415
	(0.0748)			(0.0785)	(0.2407)
Single			0.0033		
			(0.1105)		
Constant	0.5905***	0.2860	0.6995**	0.5868***	0.5846
	(0.2095)	(0.3095)	(0.3334)	(0.2199)	(0.7095)
Error					
lnl2_2	-0.2000**	-0.2273*	-0.1522	-0.2077*	-0.0962
	(0.0986)	(0.1293)	(0.1440)	(0.1072)	(0.2556)
l2_1	0.3423***	0.4633***	0.1117	0.3079***	0.3786**
	(0.0644)	(0.0765)	(0.1194)	(0.0714)	(0.1913)
Observations	2951	1716	1235	2453	498

Notes: The table presents the estimates of the multinomial probit choice model. Earnings are computed as the log of earnings at age 36 plus the log of earnings at age 42 discounted by 4% per year. Standard errors are in parenthesis. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

C Questionnaire: Beliefs about Returns

Introduction to Scenarios

In the following, we would like to ask you to imagine the following thought experiment. Please read the text carefully and try to put yourself in the position of Sarah and Michael. For Sarah and Michael, a great wish has come true. They have become parents! Both are happy, but they are facing new challenges. Imagine that the young family lives in your neighborhood.

Sarah and Michael are 30 years old and both have a secondary school diploma (*low education scenario*)/bachelor's degree (*high education scenario*). Before the birth of the child, both worked full-time and earned 36,000 (*low education scenario*)/46,000 Euro (*high education scenario*) gross each year. Sarah is now on parental leave for 12 months, while Michael continues to work full-time. After the 12 months parental leave Sarah wants to go back to work. Will the family get access to childcare?

The places are limited and it is not clear if the family gets a place. Imagine that it is decided by chance which of the following three cases will occur.

> **Case 1:** The family cannot get access to childcare. Sarah stays at home for the next 5 years and takes care of the child.
> **Case 2:** The family gets access to a childcare center for half the day. Sarah works part-time (20h/week) for the next 5 years.
> **Case 3:** The family gets access to a childcare center for the full day. Sarah works full-time (40h/week) for the next 5 years.

In all cases, Sarah will return to full-time work when the child is 6 years old. Sarah and Michael do not want any more children.

Introduction to Scale

Is it better or worse for the child and the family if the mother goes back to work? The following questions are difficult and there are no right or wrong answers. We are interested in your personal assessment. To answer the following questions, imagine there are another 100 families in your neighborhood who have a small child just like Sarah and Michael. For the following questions, we ask you to compare the child of Sarah and Michael with the other children in their neighborhood on the following 0-100 scale.

[Display slider with 0-100 scale]

A value of 0 means that the child performs worse than all other children. A value of 100 means the child performs better than all other children. A score of 50 means that the child's score is average and that the child of Sarah and Michael performs better than 50 of the other children.

> **Example 1:** A value of 40 means that the child of Sarah and Michael performs better than 40 of the 100 children (and thus worse than the average).
> **Example 2:** A value of 60 means that the child of Sarah and Michael performs better than 60 of the 100 children (and thus better than the average).

Elicitation of Beliefs about Child Outcomes

Case 1: The family cannot get access to childcare.
Remember the first case where the family cannot get access to a childcare center and Sarah stays at home for the next 5 years. Imagine that in this case, the child achieves average scores when enrolled in primary school. Thus, the child scores better than 50 of the 100 children in the neighborhood and thus receives the value "50". Does the child score the same, better or worse, if one of the other cases occurs? In all cases, assume that the behavior of the families in the neighborhood does not change.

Case 2: The family gets access to a childcare center for half the day.
Compared to case 1, how does the child fare relative to the other children if the child attends a childcare center for half the day and Sarah works part-time for the next 5 years? Remember, a score of 50 would mean that the child achieves average scores and thus the same as in the case in which Sarah stays at home.

[Display slider with 0-100 scale for each of the following outcomes:] Vocabulary, Intelligence, Concentration, Working independently, Social skills

Case 3: The family gets access to a childcare center for the full day.
Compared to case 1, how does the child fare relative to the other children if the child attends a childcare center for the full day and Sarah works full-time for the next 5 years? Remember, a score of 50 would mean that the child achieves average scores and thus the same as in the case in which Sarah stays at home.

[Display slider with 0-100 scale for each of the following outcomes:] Vocabulary, Intelligence, Concentration, Working independently, Social skills

Elicitation of Beliefs about Family Outcomes

Case 1: The family cannot get access to childcare.
Think back to the first case where the family cannot get access to a childcare center and Sarah stays at home for the next 5 years. Imagine that in this case, the family has average scores ("50") at the time of the child's primary school enrolment. This time it's about whether the family members are satisfied. Is the family similarly, more or less satisfied, if one of the other cases occurs? In all cases, assume that the behavior of the families in the neighborhood does not change.

Case 2: The family gets access to a childcare center for half the day.
Compared to case 1, how does the family fare relative to the other families if the child attends a childcare center for half the day and Sarah works part-time for the next 5 years? Remember, a score of 50 means that the family achieves an average score, and thus the same as in the case where Sarah stays at home.

[Display slider with 0-100 scale for each of the following outcomes:] Satisfaction of child, Satisfaction of mother, Satisfaction of father, Relationship between mother and child, Relationship between mother and father

Case 3: The family gets access to a childcare center for the full day.
Compared to case 1, how does the family fare relative to the other families if the child gets access to a childcare center for the full day and Sarah works full-time for the next 5 years? Remember, a score of 50 means that the family achieves an average score, and thus the same as in the case where Sarah stays at home.

[Display slider with 0-100 scale for each of the following outcomes:] Satisfaction of child, Satisfaction of mother, Satisfaction of father, Relationship between mother and child, Relationship between mother and father

Elicitation of Beliefs about Earnings

Now think about Sarah and Michael. Before the birth of their child, when both were 30 years old, both earned 36,000 Euro (*low education scenario*)/46,000 Euro (*high education scenario*) each year. Suppose you knew what Sarah and Michael would have earned had they not had a child and had they always worked full-time. Say that Sarah and Michael would have earned 39,000 Euro (*low education scenario*)/53,000 Euro (*high education scenario*) each at the age of 36 and 42,000 Euro (*low education scenario*)/60,000 Euro (*high education scenario*) each at the age of 42.

How much do you think they earn in comparison when they have a child? For all questions, assume there is no inflation, which means that prices will not rise.

Case 1: The family cannot get access to a childcare center.
Imagine the family does not get access to a childcare center and Sarah stays at home for the next 5 years. At age 36, when the child enters primary school, she returns to work and starts working full-time. How much do you think Sarah and Michael earn at the age of 36 and 42, respectively?

[Display slider with 0-100,000 Euro scale for each of the following outcomes:] Sarah (age 36), Michael (age 36), Sarah (age 42), Michael (age 42)

Case 2: The family gets access to a childcare center for half the day.
Now imagine that the family gets access to a childcare center for half the day and that Sarah works part-time for the next 5 years. At age 36, when the child enters primary school, she returns to work and starts working full-time. How much do you think Sarah and Michael earn at the age of 36 and 42, respectively?

[Display slider with 0-100,000 Euro scale for each of the following outcomes:] Sarah (age 36), Michael (age 36), Sarah (age 42), Michael (age 42)

Case 3: The family gets access to a childcare center for the full day.
Now imagine the family gets access to a childcare center for the full day and Sarah works full-time for the next 5 years. She also continues to work full-time when her child is enrolled in primary school. How much do you think Sarah and Michael earn at the age of 36 and 42, respectively?

[Display slider with 0-100,000 Euro scale for each of the following outcomes:] Sarah (age 36), Michael (age 36), Sarah (age 42), Michael (age 42)