

What Drives Paternity Leave: Financial Incentives or Flexibility?*

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September 2024

Abstract

Despite changing gender norms, few fathers decide to take parental leave, and when they do, their leave spells are substantially shorter compared to mothers. This study examines how paternal leave-taking is affected by two key features of leave policies: flexibility in leave duration and financial incentives. To assess their impact, we exploit recent changes to the Austrian parental leave system, which initially offered flat monthly benefits for 36 months after childbirth. The first reform added considerably shorter leave options at higher lump sum monthly benefits; the second reform introduced income-dependent benefits, increasing net income replacement rates to 80 percent. Using a regression discontinuity design based on eligibility cutoff dates, we find that both reforms had a strong impact on fathers' leave take-ups. The availability of shorter leave options increased leave-taking by 23 percent, while the introduction of income-dependent benefits raised it by another 13 percent. Despite these increases, the share of leave months taken by fathers relative to mothers did not change. Comparing the impact of the two reforms across different income groups, we conclude that offering flexible scheme choices is most effective in raising the number of leave-taking fathers.

JEL Classification: J12, J13, J18, J22, I38

Keywords: Parental leave, gender differences, childcare, financial incentives, labor supply, return to work

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1 Introduction

Why do so few fathers take paternity leave?¹ Although public leave schemes in many countries reserve a share of leave exclusively for men, there is still a significant lack of fathers' involvement in early childcare (OECD, 2016). According to the OECD Family Database, men account for just 20 percent of parents taking parental leave; and this share is mainly driven by the Nordic countries.² At the same time, there is a large body of evidence showing the benefits, for parents and children, of higher paternal involvement in child-rearing.³ To design future leave policies more effectively, it is crucial to better understand why fathers often choose not to go on leave.

One potential reason for low take-up rates is financial considerations. Many families are characterized by considerable intra-household income differences between spouses. If men earn substantially more than their partners, paternity leave entails a temporary, yet large, drop in family income. Although fathers would like to go on leave, they might not do it to avoid the associated earnings loss. This choice exacerbates gender earnings gaps because, as shown by the recent literature on *child penalties* (Kleven et al., 2019a,b), the arrival of children leads to substantial and permanent earnings losses for mothers but not for fathers. Another reason could be the lack of flexibility in parental leave schemes. Fathers might be willing to take a few months of parental leave, but they may otherwise shy away from it if the shortest available option lasts longer.

In this paper, we study the relative importance of financial concerns and flexibility considerations for leave decisions of fathers. Would men be more inclined to take paternity leave if they received better compensation for income losses, or if the leave schemes offered shorter options? To empirically test these hypotheses, we analyze two recent parental leave reforms in Austria. Before 2008, the only available leave scheme paid a flat benefit rate for 36 months. Parents who wanted shorter leave had to forgo benefit payments for the remaining months. The first reform, enacted in 2008, introduced shorter parental leave options at higher lump sum monthly payments. If all months of a scheme are used up, the overall amount of benefits is similar across all schemes. However, the new options allow parents to receive the same benefits in a shorter period. In 2010,

¹The terms paternity and maternity leave refer to parental leave taken by the father and the mother, respectively.

²See OECD Family Database (<https://www.oecd.org/els/family/database.htm>).

³Cools et al. (2015) find that children's school performance improves because of paternity leave. Persson and Rossin-Slater (2019) find that increasing the presence of the father at home during the postpartum period reduces the mother's risk of experiencing physical postpartum health complications and improves her mental health. Danzer et al. (2022); Fort et al. (2020) show adverse effects on child development due to the lack of parental care.

a second reform further increased flexibility and introduced income-dependent parental leave benefits, which considerably raised income replacement rates for high-earning parents. We use the combination of these two reforms to examine the impact of flexibility and financial incentives. While the 2008 reform made parental leave more flexible by offering shorter leave options at higher monthly compensation for all parents, the 2010 reform introduced strong financial incentives for higher income groups but increased flexibility only marginally. A comparison of changes induced by the two reforms allows us to evaluate the relative importance of both factors for paternity leave considerations.

Leveraging a regression discontinuity design based on eligibility cutoff dates for the new schemes, we find that the 2008 and 2010 reforms increased the share of fathers going on leave by 2.6 and 2.1 percentage points. Compared to pre-reform take-up rates, the changes are equivalent to relative increases of 23 and 14 percent. Contrary to the positive effects on take-up (extensive margin), we estimate decreases in paternity leave months conditional on taking leave (intensive margin); the availability of new schemes made more fathers go on leave, but they increasingly chose shorter leave options. Overall the share of leave months taken up by fathers remained similar, suggesting that increased flexibility was the key driver of higher take-up rates.

To better disentangle the impact of higher financial incentives, we compare effect sizes measured for families with different income levels because high earners benefit more from a switch to the income-dependent scheme. Deciding how much parental leave each parent takes is a joint household decision, likely to depend on the intra-household earnings gap between partners. If financial considerations prevented some fathers from taking paternity leave, we would expect that fathers with high earnings (relative to their spouses) react more to the introduction of income-dependent benefits. Indeed we find that families gaining the most, namely those in which women have low earnings and men have high earnings, show the largest increase in paternity leave take-up following the introduction in 2010. However, very similar differences can already be observed for the first reform in 2008, when income-dependent benefits were not available yet. This shows that heterogeneous responses to the policy changes rather than varying financial incentives explain the estimated differences. Because preferences and attitudes of parents are potentially correlated with intra-household earnings gaps, responses to the same policy change are not necessarily equal across families. Using supplementary survey data, we confirm that couples in which men earn more have indeed much more conservative gender and family norms than couples with similar income levels. The findings suggest that conservative families are more likely to require more flexible leave options to consider paternity leave,

whereas progressive families less often base their decisions on the availability of shorter leave schemes.

The optimal design of paternity leave policies should incentivize leave-taking while minimizing detrimental effects for fathers on the labor market. Our analysis of post-birth work outcomes shows that the reforms did not affect the employment rates or earnings of fathers. While more men went on leave, the average leave duration decreased, allowing them to return to work sooner. The absence of effects indicates that short spells do not hurt future labor market outcomes of fathers.

A central aim of paternity leave policies is to distribute the burden of early childcare more evenly between women and men. If fathers go on leave more often and longer, women can return to the labor market earlier, which should alleviate prevailing gender differences in employment and wages. In our setting, the introduction of new parental leave schemes can affect labor market outcomes of women directly and indirectly through an increase in paternity leave. Because overall paternity leave duration decreased, women did not benefit through this channel. Instead, we find evidence for direct effects of the two reforms. The availability of shorter leave options and income-dependent benefits led to a decline in leave duration of mothers. However, despite shorter leave spells, mothers did not return to work sooner or earned higher income.⁴

Our work most closely relates to the growing literature on the effectiveness of paternity leave policies in different countries.⁵ Several papers examine the introduction or extension of leave quotas reserved for fathers and document large effects on take-up in Canada, Denmark, the US, Iceland, Norway, Spain, and Sweden (Ekberg et al., 2013; Dahl et al., 2014; Cools et al., 2015; Avdic and Karimi, 2018; Bartel et al., 2018; Druedahl et al., 2019; Farré and González, 2019; Patnaik, 2019). Yet, leave schemes chosen by fathers are typically much shorter in comparison to mothers. Contrary to these studies on leave quotas, our paper focuses on the introduction of income-dependent benefits and shorter leave options instead. We study what makes fathers take more parental leave, even when leave is not exclusively reserved for them.

There exists ample evidence that taking paternity leave has far-reaching consequences for parents, affecting various outcomes such as fertility, divorce, mothers' health, and fathers' (long term) involvement in childcare and housework.⁶ Children also benefit from

⁴In our companion paper (Ziegler and Bamieh, 2023), we examine these changes in detail and provide additional evidence on maternal work preferences.

⁵See Olivetti and Petrongolo (2017) for a general overview of parental leave evaluations.

⁶See Bartel et al. (2018); Dahl et al. (2014); Farré and González (2019); González and Zoabi (2021); Kotsadam and Finseraas (2011) (fertility); Avdic and Karimi (2018); González and Zoabi (2021); Olafsson and Steingrimsdottir (2020) (divorce); Persson and Rossin-Slater (2019) (mothers' health); Almqvist

paternity leave because the increased presence of the father improves their social, behavioral, and psychological outcomes (Sarkadi et al., 2008) and increases school performance (Cools et al., 2015). A recent study by Farré et al. (2022) shows that paternity leave can change gender norms among children, which might further amplify take-up rates of future generations. Given that all these margins are affected by paternity leave, it is crucial to understand which features of existing parental leave schemes incentivize stronger involvement of fathers.

Previous studies have analyzed parental leave in Austria, but these papers focus on maternity leave and consider early changes to the system. Lalive and Zweimüller (2009) and Lalive et al. (2014) find that longer parental leave increases fertility and delays mothers' return to work but does not affect mothers' labor market outcomes in the long run. Similarly, Kleven et al. (2020) show that the expansions of parental leave and childcare subsidies have had no impact on child penalties. In line with these earlier findings, our analysis shows that the more recent improvements in parental leave flexibility and generosity did not affect future labor market outcomes of women, neither directly nor indirectly, through increased paternity leave take-up.

While discussions of benefit design are focal in other areas of policy intervention, for example unemployment benefits (Hopenhayn and Nicolini, 1997; Kolsrud et al., 2018; Lindner and Reizer, 2020), they garner less attention in research about family leave benefits. In this context, our findings offer valuable insights for the optimal design of leave schemes, specifically for policies aimed at encouraging fathers to participate more equitably in parenting.

2 Setting and data

2.1 Institutional background

In a recent study, Kleven et al. (2020) use data from the 2012 wave of the International Social Survey Program (ISSP) to show that Austria has not very different views about the role of mothers in society than other countries. We supplement this assessment by analyzing ISSP questions about the role of fathers. Figure A.2 in the appendix shows that norms are rather traditional in most countries: a minority of respondents believe that parents with similar income levels should equally divide parental leave, and many think that the best form of childcare is having the mother, not the father, take at least some

and Duvander (2014); Duvander and Johansson (2015); Farré and González (2019); González and Zoabi (2021); Patnaik (2019); Dunatchik and Özcan (2021); Ekberg et al. (2013); Kluge and Tamm (2013); Tamm (2019) (fathers' involvement).

time off work. While being, on average, more conservative, the attitudes of Austrians are not outliers in international comparison. As such, we expect that our insights on the effectiveness of leave policies also apply to other countries.

Throughout the period considered in this study (2002 - 2015), Austria provides universal parental leave benefits (*Kinderbetreuungsgeld*) for at most three years after childbirth. Parents can use up the benefit months in multiple spells with breaks in between, and eligibility does not require current or prior employment. If parents are employed, they have to take leave from work or reduce their working hours during the period of benefit receipt unless their income does not exceed the additional-income allowance. The Austrian dismissal protection law requires employers to hold open jobs for leave-taking parents until the second birthday of the child. The minimum duration of paid leave is two months for each parent. In 2008 and 2010, Austria introduced additional parental leave benefit options. The scheme choice has to be specified in the initial benefit application and cannot be changed later on. Leave periods of parents can overlap for only one month. We provide an overview of all available leave schemes in Table 1.

Table 1: Overview scheme choices

	Flat rate				Income dependent
Duration (in months)	30+6	20+4	15+3	12+2	12+2
Available since	2002	2008	2008	2010	2010
Day rate (in euros)	14.53	20.8	26.6	33	80% of prev. net monthly income (capped at 66)
Additional-income allowance (in euros per year)	60% of last annual income (at least 16,200)				5,800

Note: The minimum leave duration is 2 months for each parent.

Before 2008, parents were entitled to daily benefits of 14.53 euros (i.e., about 440 euros per month) for in total 36 months (Scheme *30+6*). If families wanted to make use of the full duration, each parent had to take at least six months of leave. Conditional on this minimum, any division was possible. For example, the mother could take 30 months of parental leave, and the father could take six months, or vice versa. Parents could continue working part-time during this spell if their earnings did not exceed 60 percent of their last annual income or at least 16,200 euros per year, otherwise all benefit payments above this amount were deducted.

From January 2008 onward, two shorter leave options were introduced (Schemes *20+4*

and $15+3$), which offered benefits for up to 24 or 18 months at day rates of 20.8 and 26.6 euros, respectively. Four months of the 24-month scheme and three months of the 18-month scheme were reserved for each parent. Finally, from January 2010, an even shorter option was introduced, offering up to 14 months of benefits, where two months were exclusive to each parent (Scheme $12+2$). For this shortest option, parents could choose a fixed daily rate of 33 euros or an income-dependent scheme paying 80 percent of the claimant's average net monthly income in the previous three months, with a lower and an upper bound of 33 and 66 euros per day (or approximately 1,000 and 2,000 euros per month). If parents chose the income-dependent scheme, any additional income exceeding 5,800 euros per year was deducted.

Although day rates are higher for the shorter leave schemes, the overall amount of benefits is similar across all flat-rate options (about 14,000 - 16,000 euros), assuming that parents go on leave for the full scheme duration. Shorter schemes offer additional flexibility for parents who prefer a shorter leave duration at higher monthly rates. The income-dependent scheme increases financial incentives in particular for high-earning parents, who can receive up to 28,000 euros in overall benefit payments.

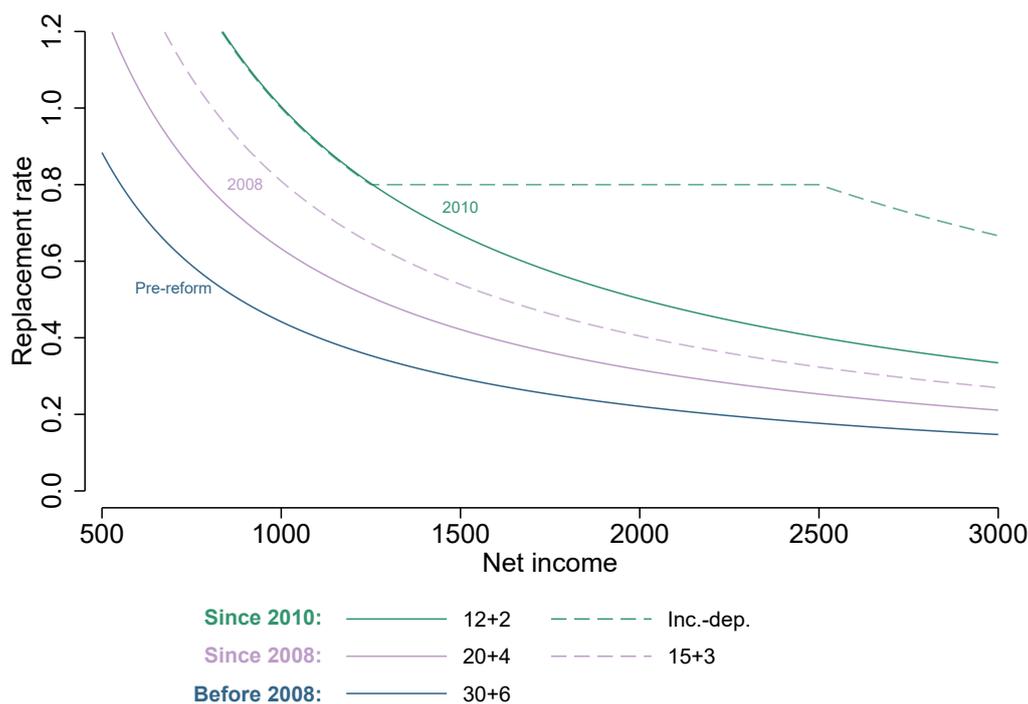
Figure 1 illustrates the relation between benefit level and claimants' net income for all available parental leave options. In schemes that offer lump sum monthly benefits, the replacement rate is strictly decreasing in income. Shorter options offer higher monthly replacement rates for all parents. While the relative increase in replacement rates is the same in all income groups, the absolute increase (in percentage points) is larger for lower income groups. The income-dependent scheme instead expands the replacement rate for higher income groups by a substantial degree. This shows that the introduction of both scheme types changed replacement rates, but the extent of changes and the affected income groups differ. The new lump sum schemes are more beneficial for lower-income parents, while the income-dependent scheme is more beneficial for those with higher earnings. Because men earn, on average, more than women, the introduction of this scheme represents a larger increase in financial incentives for fathers.

Both parental leave reforms were discussed and enacted a few months before coming into force, leaving no room for anticipation effects of parents. Specifically, we can rule out that the availability of new schemes changed fertility at the time of their introduction.

When the new schemes became available in 2008 and 2010, all parents with children below the age of three were eligible, including those who were already using one of the existing schemes. Yet, they could only switch for the remaining months and were not refunded for benefit differences in past months. Consider, for example, a child born in

June 2007. While only the $30+6$ scheme had been available before the reform, from January 2008 onward, the family had the option to switch to shorter options for the remaining months. The day rate would only be adjusted accordingly for these months, decreasing the total amount of benefit payments. Switching scheme was only attractive for families with strong preferences for short leave, who did not plan to use all the leave months offered by longer schemes. The older the child was at the time of the reform, the less attractive it was for families to switch to the new shorter schemes. Finally, parents with children born before 2006 could not switch to shorter schemes because they had already been eligible for at least two years of leave. The transition period of the 2010 reform is much shorter because only parents with children born between October and December 2009 could switch to the new income-dependent scheme for the remaining months. In the analysis section, we will discuss how we address these transition periods econometrically.

Figure 1: Reform-induced changes in the income replacement rate



2.2 Data

For our empirical analysis, we use social security data provided by the Austrian public employment service AMS and the Austrian ministry of labor and social affairs. This dataset, also known as the Austrian Social Security Database (ASSD), has been exten-

sively used for previous studies in labor economics, including evaluations of parental leave policies.⁷

Next to worker and firm characteristics, we observe both employment spells and parental leave benefit spells.⁸ The database also contains information on earnings, which are essential to implement our identification strategy and to assess if the introduction of new schemes affects parents differently depending on their income.⁹ Using employment and income records, we can retrace if parents are eligible for the income-dependent scheme. For most years under consideration, we have no information on scheme choices and benefit payments; but we infer potential benefit levels from previous earnings. Starting in 2013, however, we can observe if the income-dependent scheme is chosen. Importantly, the dataset also includes coinsurance spells, which can be used to link fathers, mothers, and children.

We combine these data to construct our outcome variables. Paid parental leave spells allow us to examine the extensive and intensive margin of paternity leave: if fathers take any parental leave, and, if yes, how many months. Linking fathers to mothers, we also compute the *leave share of fathers*: the leave duration of fathers relative to the sum of overall leave duration taken by both parents. Finally, we study if changes in parental leave affect employment and earnings.

For the analysis, we make two sample restrictions. First, we exclude single parents.¹⁰ Second, we exclude families if neither mother nor father take any parental leave, which is very uncommon. These sample restrictions reduce the sample size by 11 percent. Our final estimation sample includes both parents of 1.8 million children born between 2002 and 2015.

3 Analysis

3.1 Empirical strategy

Our empirical approach uses the 2008 and 2010 parental leave reforms to identify the effects of financial incentives and scheme flexibility on leave-taking of parents, particularly of fathers. We also study if reform-induced changes in parental leave affect labor supply

⁷See [Zweimüller et al. \(2009\)](#) for an extensive description of the ASSD.

⁸The data cover all employment relations which are subject to social security contributions. This constitutes the vast majority of the Austrian labor market but excludes civil servants and self-employed workers.

⁹Note that earnings in the data are censored at the social security contribution limit. Because the upper bound of the income-dependent benefit schedule is much lower, this does not affect our identification strategy.

¹⁰Single parents are defined as parents of children who are co-insured with only one parent.

and earnings. The first reform made parental leave in Austria much more flexible by offering shorter leave spells (holding total benefits constant). The introduction of an income-dependent scheme two years later substantially increased financial incentives for high-income parents. Combining both reforms allows us to disentangle the impact of scheme flexibility and financial incentives on the decision to take parental leave.

To identify these effects, we use a regression discontinuity design (RDD) and compare parents with children born before and after the reform cutoff dates (January 1, 2008, and January 1, 2010). For each of the two reforms, we define the estimation equation for parent outcome Y_i as

$$Y_i = \alpha_{m(i)} + \beta f(\text{month}_i) + \gamma \text{post}_i \times f(\text{month}_i) + \delta \text{post}_i + \varepsilon_i, \quad (1)$$

where subscript i refers to a child born during the period of observation. Variable month_i denotes the normalized birth month, where month 0 is the first month in which the respective reform took effect. post_i indicates whether the child was born after January 1, 2008 (or January 1, 2010), and polynomial $f(\cdot)$ accounts for cohort trends in the outcome variable. We also include calendar month indicators ($\alpha_{m(i)}$) to control for seasonal variation. The coefficient of interest, δ , captures the respective reform effect, net of potential time trends and seasonality.

Effects of the two reforms are estimated separately using two distinct samples. For the 2008 reform, the sample covers parents of children born between 2002 and 2009. Later cohorts are not included to avoid that the second reform confounds our estimates. Similarly, we restrict the sample to parents of children born between 2009 and 2015 to study the 2010 reform.

As outlined in the previous section, both reforms were implemented with a transition period. Parents of children born in this period had the option to switch from the previous benefit schemes to the new ones. As a consequence, the affected parents do not represent valid control groups. Ignoring the possibility of switching would lead to biased reform-effect estimates. Because scheme choices are not recorded for these months, we cannot identify switchers in the data. Instead, we exclude all parent-child spells during the transition months from our estimation sample. This leave-out approach implicitly extrapolates trends in the transition periods based on trends in earlier months (captured by $f(t)$ and α_m).¹¹ The 2010 reform has a relatively short transition period of three months. The 2008 reform has a longer transition period lasting 24 months, but we can accurately account for pre-trends using a long pre-treatment period which starts in 2002.

¹¹See [Ahammer et al. \(2020\)](#) for another application of an RD design with leave-out sample.

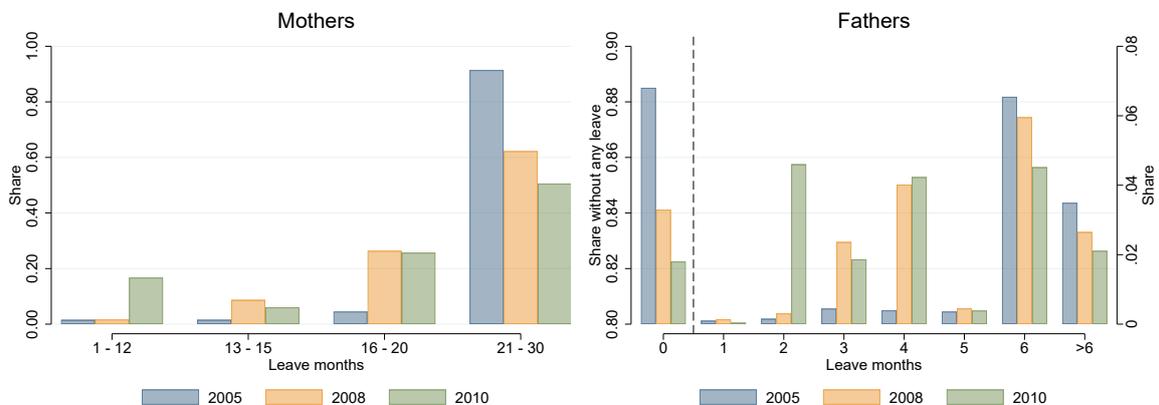
3.2 Scheme choices

To retrace changes in parental leave-taking, we first provide descriptive evidence showing how the two reforms changed scheme choices. Although the chosen scheme length is not recorded, we observe parents' realized leave spells in the social security data. Because they can use up the leave months for a given child with breaks in between, the subsequent analysis measures leave duration in total benefit months. Figure 2 shows that the extent of parental leave changed considerably over time. In 2005, when no shorter scheme options were available yet, almost all mothers took at least two years of leave; while only about 12 percent of fathers went on leave at all. Those who did very often used all six months reserved for the second parent.

Leave duration decreased strongly when shorter schemes were introduced. Already in 2008, a quarter of women went on leave for 16 to 20 months, suggesting that many parents used the newly introduced 20+4 scheme. Take-up of the shorter 15+3 scheme was less common among mothers. The share of fathers taking any leave doubled and reached 16 percent, yet, the average duration decreased because paternity leave of three or four months became more common. Most leave-taking fathers used all months reserved for the second parent, bunching again at the shortest leave options.

After the second reform in 2010, we observe similar changes, which are in line with high take-up of the new 12+2 scheme, further reducing the leave duration of both parents. The take-up rate of men increased by another two percentage points, and most fathers took only two months of leave, which corresponds to the shortest available leave option reserved for the second parent.

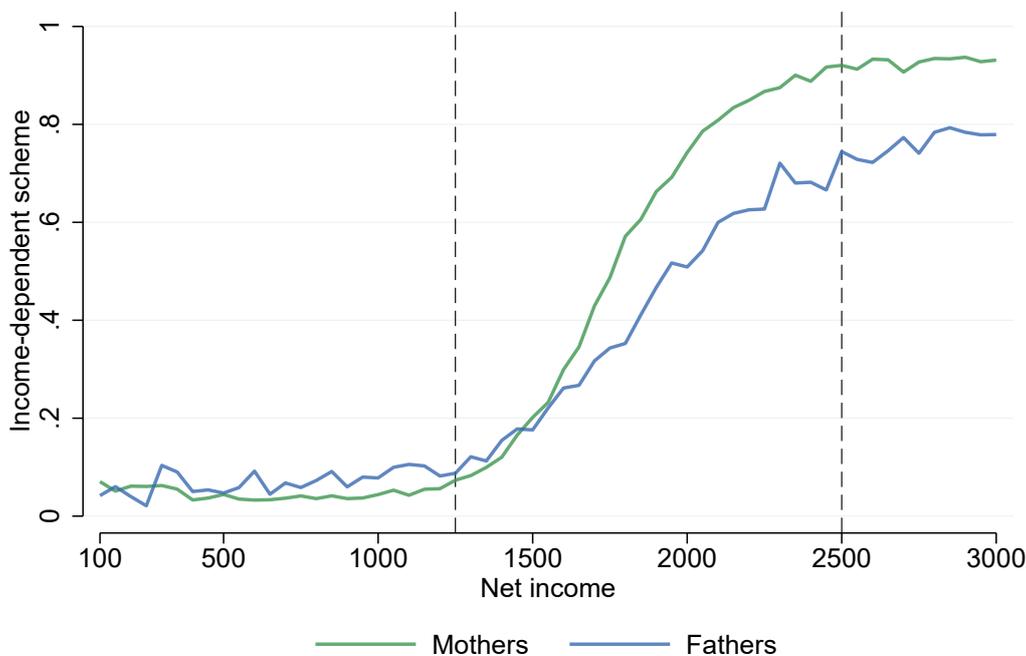
Figure 2: Realized leave duration



Starting from 2013, the social security records also indicate if parents choose the income-dependent rate or the lump-sum rate. To examine how financial incentives relate

to scheme choices, we plot the share of mothers and fathers who select the income-dependent scheme by their previous net income. Figure 3 shows a clear S-shaped relation that mimics the potential benefit payments illustrated in Figure 1. Mothers earning less than 1,250 euros per month rarely choose the income-dependent scheme; this makes sense as they would not get higher benefit payments but only restrict leave duration to 12+2 months and reduce the allowance for additional income. At higher income levels, the take-up rate increases monotonically and flattens out at the upper threshold of 2,500 euros. Above this threshold, more than 90 percent of women choose the income-dependent scheme; choosing other schemes would require them to forgo up to 12,000 euros in total benefit payments.

Figure 3: Income-dependent scheme choice by net income



Note: Scheme choice of leave spells starting in years 2013 to 2015.

The curve of fathers follows a similar pattern, but the correlation is weaker. Take-up of the income dependent scheme is only about 80 percent among the high-income fathers. Because parents can only choose one scheme which applies to both partners, the weaker relation suggests that those who share the parental leave months prioritize the potential benefit level of the mother when choosing their scheme. This makes economically sense as women take much longer leave spells than men. Even if the benefit prospects of fathers were entirely irrelevant for leave choices, income correlations between partners could

explain the observed pattern for fathers. Yet, this correlation is merely nine percent in our sample.

The S-shaped relation in Figure 3 also shows that parents do value the longer duration of the flat-rate schemes and they trade off this advantage against higher benefit payments of the income-dependent scheme. Otherwise, we would observe that all parents with income above the lower threshold choose the income-dependent scheme.

3.3 Reform effects

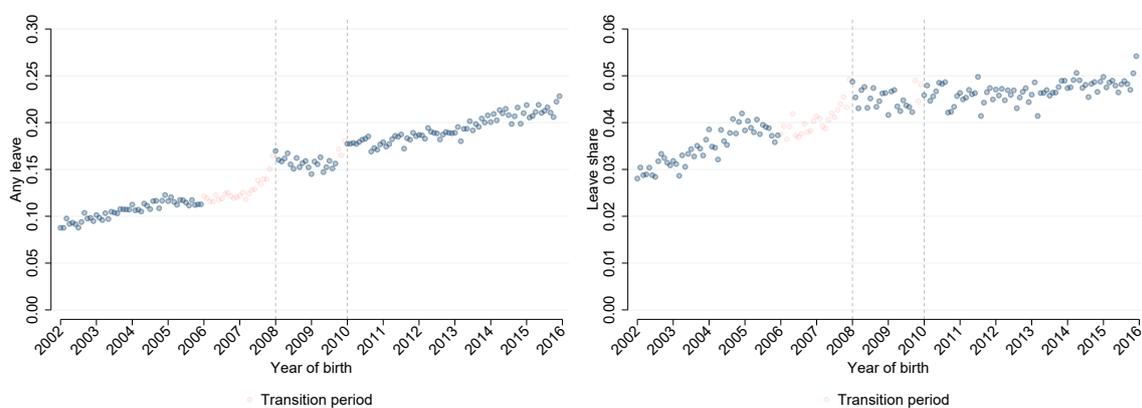
The observed trends in scheme choices suggest that the reforms in 2008 and 2010 were highly effective in altering parental leave take-up. During these years, leave duration of mothers and fathers decreased, while the share of fathers taking any leave went up. To disentangle the impact of additional scheme availability from unrelated trends in leave-taking, we next employ the outlined RDD framework. While our focus is on fathers, we also report estimates for mothers. Because parents can only choose leave schemes jointly, effects on fathers and mothers are necessarily intertwined. We discuss leave choices as a joint optimization problem in the next section.

To illustrate discontinuities around the reform cutoff dates, we first compute trends in leave-taking of fathers (aggregated by birth month of children). The left-hand graph of Figure 4 shows the paternity leave take-up rate. The right-hand graph depicts the leave share taken up by the father; that is, the father's leave duration relative to the parents' overall leave duration. Both graphs reveal relatively low involvement of fathers but a steady increase over time. The take-up rate more than doubled between 2002 and 2015, from approximately 10 percent to 22 percent. Similarly, the fraction of leave taken up by fathers increased from just three percent to about five percent, although this trend flattened out after 2008. Extrapolating changes during the transition periods from trends in earlier years, Figure 4 shows clear jumps in both outcomes at the reform cutoff dates in 2008 and 2010, especially for the earlier reform. During the first transition period, increases in leave-taking accelerate just before the cutoff date. This is also consistent with a positive reform effect. As discussed in the previous section, parents of children born during the transition period can switch to one of the newly introduced schemes, and switching becomes more attractive the younger the child is at the time of the reform.

For a quantitative assessment of the reform effects on leave-taking, we next estimate RD Equation (1). Table 2 shows results for our baseline specification, which uses a linear time trend for $f(t)$. To test the robustness of our specification choice, we also estimate regressions with a quadratic polynomial for $f(t)$ and report the results in Appendix

Table A.1. Our estimates confirm a substantial impact of the two reforms on fathers' leave take-up, increasing the share by two to three percentage points. Compared to pre-reforms leave rates, the 2008 reform caused an increase of 23 percent, and the 2010 reform of 13 percent. While take-up increased, leave duration decreased. The availability of new schemes reduced the realized duration by about 15 percent in 2008 and by five percent in 2010 relative to pre-reform levels. A negative effect can also be observed for mothers, for whom each reform decreased leave duration by about two months. In relative terms, the estimated changes at the intensive margin are similar for mothers and fathers; as a result, we do not find large changes in the share of leave taken up by fathers.

Figure 4: Leave take-up and leave share of fathers



Using a quadratic instead of a linear specification for the time trend, we obtain qualitatively similar results for most outcomes, although the estimated effect sizes differ. A comparison of the two specifications in Table A.1 shows that the more flexible choice yields a larger rise in fathers' leave take-up for the 2008 reform but a smaller increase in 2010. The decreases in leave months of fathers are not significant using the quadratic specification, which in turn leads to somewhat larger changes in their leave share. These estimates confirm that the two reforms substantially increased leave take-up of fathers, reduced leave duration of mothers, but had modest effects on fathers' leave duration. Higher paternity leave take-up rates could not raise overall leave duration because fathers chose shorter spells, canceling out the increase at the extensive margin. The new schemes induced more men to take parental leave but also allowed some of them, who would have taken leave anyway, to opt for shorter leave.

Table 2: Reform effects on leave-taking

	Fathers			Mothers
	Any leave	Leave months	Leave share	Leave months
2008 reform	0.026*** (0.003)	-0.147*** (0.033)	0.000 (0.001)	-2.386*** (0.056)
Pre-reform mean	0.115	1.046	0.038	25.661
2010 reform	0.021*** (0.003)	-0.055*** (0.021)	0.002* (0.001)	-1.712*** (0.062)
Pre-reform mean	0.155	0.977	0.044	22.508

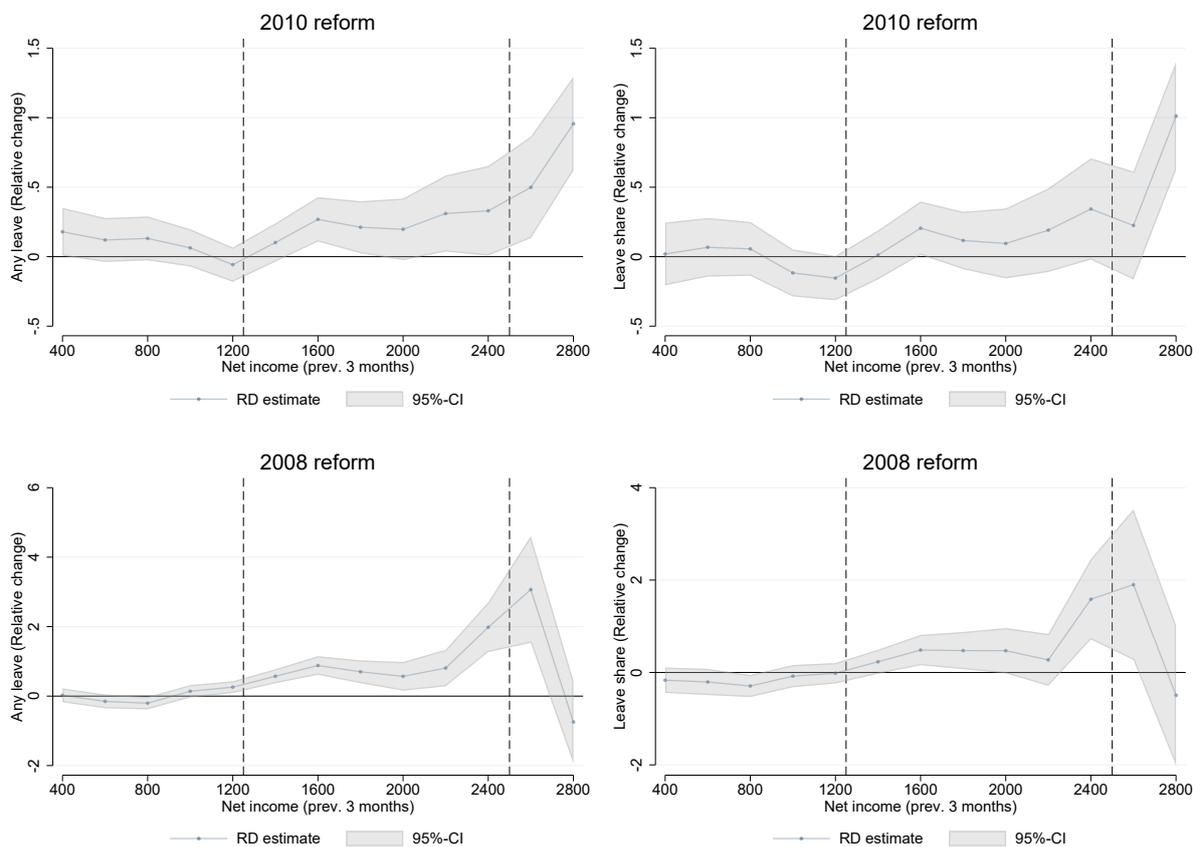
Note: $N = 350,736$ (Reform 2008); $N = 533,729$ (Reform 2010). All regressions include calendar month indicators and a linear time trend. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

The discussed estimates capture effects for the average parent affected by the changes. Yet, not everybody benefits equally from the newly introduced leave options. Opting for a shorter flat-rate scheme increases the monthly replacement rate to a larger extent for low-earning parents. And high-earning parents receive much more generous benefits when choosing the income-dependent scheme. Because men have, on average, higher earnings than women, the 2010 reform disproportionately increases financial incentives for fathers. Hence we expect that, following the introduction of the income-dependent scheme, fathers with higher earnings increase take-up relatively more. Reform effects on leave duration are unclear from a theoretical perspective. More generous benefits should incentivize longer leave spells but the income-dependent scheme restricts total leave duration to at most 12 months per parent. The introduction of shorter leave schemes instead increased the monthly replacement rate (in absolute terms) to a larger extent for low-income claimants, implying higher take-up incentives for fathers in this group.

To examine whether observed changes in leave-taking align with these predictions, we estimate the effects of the 2008 and 2010 reform for different income groups separately. In the following, we focus only on the income level of fathers to study changes in paternity leave. In the next section, we consider the income levels of mothers and fathers jointly. Figure 5 shows estimates of the income-group-specific reform effects relative to pre-reform means, which are obtained from separate RD regressions. Income refers to the father's average net monthly earnings in the three months before childbirth, and we aggregate income levels into equidistant bins of 200 euros. Recall that the income-dependent scheme offers to replace 80 percent of this income, but that benefits are bound between 1,000 and 2,000 euros per month. The two upper graphs show that, following

the 2010 reform, changes in leave-taking of fathers are in line with our predictions. We observe small and insignificant effects for fathers with low earnings, but positive and significant changes at higher income levels. The lower graphs provide the corresponding estimates for the earlier reform that introduced shorter leave options. Again, effect sizes differ considerably between income groups and the pattern is very similar to that found for the 2010 reform. This does not align with the shorter scheme's financial incentives as lower-income parents should show larger responses. Also, effect sizes are overall larger in 2008 although replacement rate gains are higher in 2010 for most income groups. This suggests that the availability of more flexible leave options is more important than higher income replacement rates for leave considerations of fathers.

Figure 5: Effects on fathers by income group



3.4 Identifying financial incentives

The decision to take parental leave is a joint household decision, trading off benefits and costs of both spouses. This is particularly important within the Austrian setting because parents have to choose a common leave scheme together, and the leave share reserved for

each parent is only about one-sixth (see Table 1). Given the option of income-dependent benefits, gender earnings gaps within the family play a crucial role for this decision. Because our data allow us to link fathers to mothers, we can assess if parental leave choices are connected to earnings differences within the family. If financial considerations prevented some fathers to take leave before 2010, we would expect that high-earning fathers with low-earning spouses react most to the introduction of the income-dependent scheme.

To show how gains differ between families with different income levels, we compute family income replacement rates if the father instead of the mother decides to take parental leave. In the following, we assume that only one parent can be on leave at a given point in time.¹² Let INC_p denote net labor income and PLB_p potential parental leave benefits of mothers ($p = m$) and fathers ($p = f$). Note that PLB_p can be a function of INC_p . Total net household income is given by $INC = INC_m + INC_f$. We define the family replacement rate as the sum of parental leave benefits and the other parent's income relative to household income before childbirth. If the father takes leave, the family replacement rate is

$$R_f = \frac{PLB_f + INC_m}{INC}. \quad (2)$$

Instead, if the mother takes the leave, the replacement rate is given by

$$R_m = \frac{PLB_m + INC_f}{INC}. \quad (3)$$

The difference of the terms captures changes in the family replacement rate if the father instead of the mother takes parental leave:

$$R_f - R_m = \frac{(PLB_f - PLB_m) + (INC_m - INC_f)}{INC}. \quad (4)$$

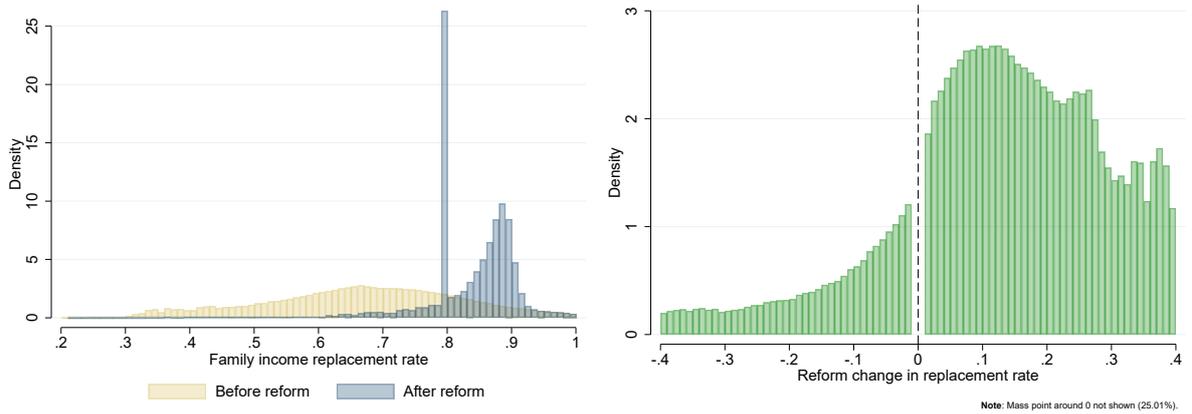
In the absence of income-dependent parental leave, both parents are eligible for the same amount of benefits ($PLB_f = PLB_m$), and differences in $R_f - R_m$ are driven entirely by income differences; if the father has higher earnings than the mother, $R_f - R_m$ is negative, meaning that the household is worse off when the father, instead of the mother, takes parental leave. Equation (4) shows that income-dependent parental leave schemes can partly offset this loss because intra-household earnings gaps imply $PLB_f > PLB_m$, thereby attenuating the term $R_f - R_m$. Whenever men earn more than women—which is often the case, especially in Austria—family replacement rates increase for most families,

¹²Recall that leave-taking of mothers and fathers can overlap for at most one month in Austria.

meaning that the father’s option to take parental leave becomes financially more feasible for the household.

For all families in our estimation sample, we compute the income replacement rate assuming that the father goes on leave and the mother returns to work after childbirth (R_f). The left-hand graph of Figure 6 shows the corresponding distribution before and after the 2010 reform. Without the income-dependent scheme, replacement rates vary substantially between families because high-earning fathers have to forgo a lot of income when on leave. After the reform, household replacement rates rise considerably, and differences are much smaller. The median rate increases from roughly 74 to 88 percent. In many families, fathers have monthly net earnings between 1,250 and 2,500 euros, while mothers do not work, generating a spike in the histogram at 80 percent.

Figure 6: Household replacement rates (if father goes on leave)



To compute the impact of the income-dependent scheme for different household income groups, we compare the difference in replacement rates $R_f - R_m$ before and after its introduction. Before 2010 (pre-period), the difference is fully determined by earnings differences within the household because the benefit amount is always the same for both partners:

$$R_f^{pre} - R_m^{pre} = \frac{(PLB_f^{pre} - PLB_m^{pre}) + (INC_m - INC_f)}{INC} = \frac{INC_m - INC_f}{INC}. \quad (5)$$

Since the introduction of the income-dependent scheme (post-period), the difference also depends on the two parent-specific potential benefit levels:

$$R_f^{post} - R_m^{post} = \frac{(PLB_f^{post} - PLB_m^{post}) + (INC_m - INC_f)}{INC}. \quad (6)$$

Therefore, the 2010 reform changed relative replacement rates as follows:

$$\text{Reform gain} = (R_f^{post} - R_m^{post}) - (R_f^{pre} - R_m^{pre}) = \frac{PLB_f^{post} - PLB_m^{post}}{INC}. \quad (7)$$

This term is positive when the father earns more than the mother and negative otherwise. It is largest when the mother does not work, and the father earns 2,500 euros per month because the working parent now receives 2,000 euros instead of 1,000 euros in benefits; in this case, the household replacement rate rises from 40 to 80 percent. When both parents earn the same, or they both earn either less than 1,200 or more than 2,500, there is no reform gain.

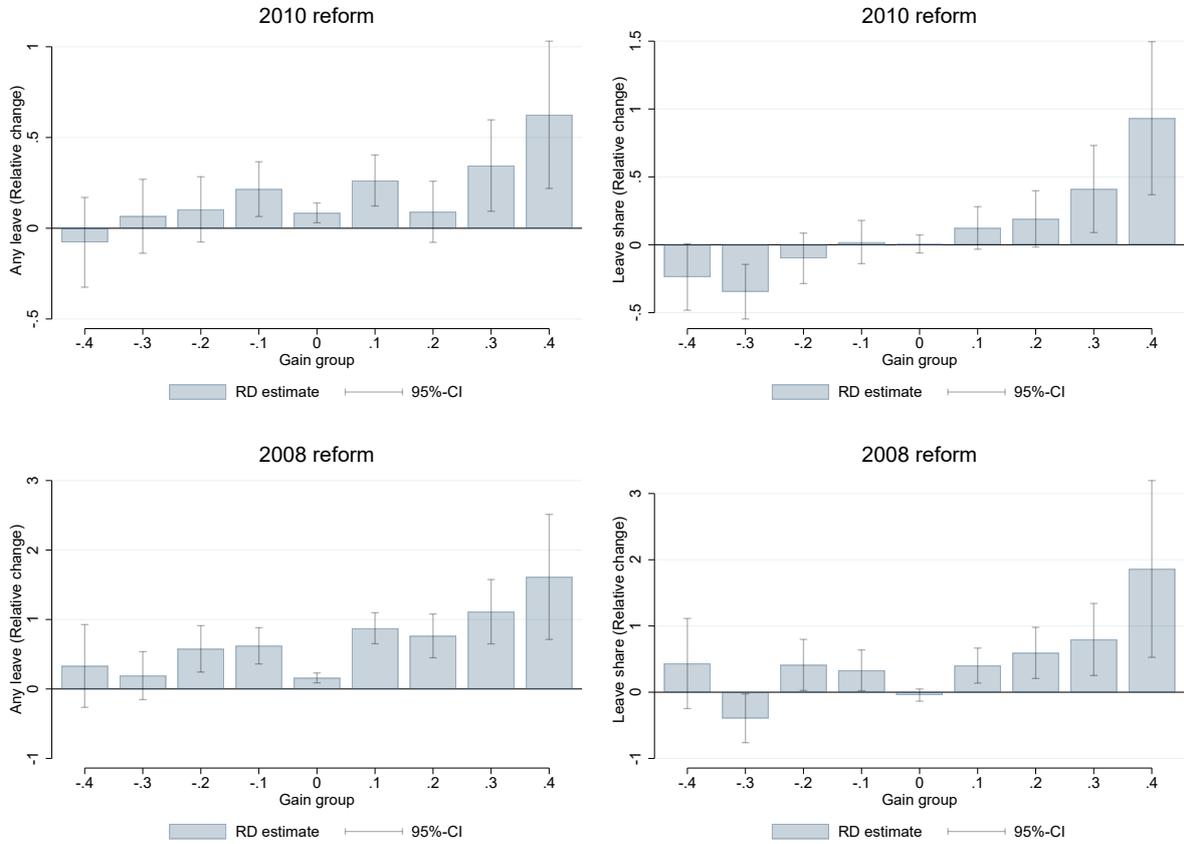
The right-hand graph of Figure 6 plots replacement rate changes due to the introduction of income-dependent benefits if the father goes on leave instead of the mother (Equation (7)). Because of prevailing gender income gaps, the majority of families gain from the reform (61 percent). Only 13 percent would instead improve the replacement rate if the mother instead of the father went on leave (negative values). The remaining 25 percent of families experience no change; these are households where the mother and the father have the same income, or they both earn either less than 1,200 or more than 2,500 euros per month.

If financial considerations mattered for the decision of fathers to take leave, we would expect stronger reform effects for families with larger potential gains as defined by Equation (7). This can be tested empirically by estimating the reform impact separately for different gain groups. We again compare the results to changes in 2008; that is, we divide parents into the same 2010 gain groups and check for heterogeneous effects. In contrast to the 2010 reform, the 2008 reform left the relative household replacement rates unchanged. Choosing a lump sum scheme, the benefit level is the same regardless of whether the father or the mother goes on leave. As a result, the 2008 reform gain shown by Equation (7) is null for all households.

Grouping parents into nine equally-spaced gain groups (ranging from -0.4 to 0.4), we estimate the reform effects in separate regressions. Figure 7 shows the corresponding estimates for take-up rate and leave share of fathers relative to pre-reform means. Consistent with our predictions, effects of the 2010 reform are larger for higher gain groups. Yet, as shown by the lower graphs of Figure 7, we observe a similar pattern two years earlier, when the 2008 reform was enacted. Although the income-dependent scheme was not available yet, fathers were still more likely to increase leave take-up and leave share if they earned more than their spouses. In line with our findings from the previous section, this suggests that increases in the household replacement rate are not the key driver of

changes in paternity leave.

Figure 7: Effects on fathers by replacement-rate gain group



It is possible that families in higher gain groups have a larger scope for changes in leave-taking when leave incentives increase. In that case, different effect sizes between gain groups are not explained by different treatment intensities but merely reflect heterogeneity in treatment effects. To learn about differences in gender and family attitudes between these groups, we draw again from data of the International Social Survey Program (ISSP). Specifically, we compare attitudes of Austrian families in which the woman earns more, the man earns more, and both have comparable income. This roughly reflects our definition of gain groups because fathers benefit relatively more from the income-dependent scheme if their income level is higher. Table A.2 in the Appendix shows for each of the three household types average levels of agreement with the four key statements that we outlined in Section 2.1. According to all four measures, households in which the man has higher earnings have much more conservative views. A priori, it is unclear whether conservative or progressive families are more affected by the introduction of new leave schemes. Some fathers with conservative values could categorically reject

the idea of paternity leave. Others might just need stronger financial incentives and more flexibility than more progressive fathers. Our estimates suggest that the latter group is more relevant in explaining take-up rate differences because high-gain families, which tend to be more conservative, show the largest response to the parental leave reforms.

4 Discussion

4.1 Labor market effects

Taking prolonged periods of leave might put parents at a disadvantage in comparison to other workers; they may miss valuable work experience or unlearn work-related skills. This can worsen their employment and earnings prospects when they return to the labor market. To assess the effectiveness of parental leave policies, it is important to also consider potential negative side effects on future labor market outcomes.

Weighing off costs and benefits of parental leave might be particularly relevant for fathers. Mothers usually take at least several weeks off and thus do not decide if but how long they want to be on leave. For fathers, it is, in most countries, still not the norm to take any parental leave. When they still opt for it, employers might perceive the decision as a lack of commitment to work. Men also hold more frequently managerial positions, which carry additional responsibilities and are difficult to replace. For these reasons, even short periods of leave could affect the career prospects of fathers relatively more.

Despite potential drawbacks for fathers, a more equal distribution of childcare responsibilities could benefit the careers of mothers. If fathers take parental leave, mothers can return to work earlier. Leave-taking can also strengthen ties between fathers and children and increase fathers' involvement in child rearing in the long run. Mothers currently spend significantly more time parenting than fathers, even after they return to work (Raley et al., 2012). Previous studies suggest that this uneven distribution affects job choices: mothers develop stronger preference for flexible work arrangements, part-time work, and less commuting (Goldin, 2014; Mas and Pallais, 2017; Le Barbanchon et al., 2021); choices that come with earnings losses. Reducing childcare responsibilities could allow mothers to work more and seek better-paid jobs, thereby reducing gender differences in the labor market.

To study how changes in leave-taking affect the careers of parents, we exploit again variation around the cutoff dates in 2008 and 2010 and estimate effects on employment and earnings. Specifically, we use work months and average monthly earnings in the first three years after childbirth as outcome variables. As reported in Table 3, fathers

do not reveal any significant change in labor supply and earnings; all coefficients are small and precisely estimated. In the previous section, we showed that the introduction of additional leave options slightly reduced average leave duration but increased take-up rates. If (short) leave spells were detrimental to the career of fathers, we would expect a negative effect on employment and earnings.

Table 3: Impact on labor market outcomes

	Fathers		Mothers	
	Work months	Av. earn./month	Work months	Av. earn./month
2008 reform	-0.140 (0.131)	-21.946 (14.358)	0.147 (0.091)	16.438*** (4.567)
Pre-reform mean	26.78	2,202.96	6.69	264.82
2010 reform	0.016 (0.107)	-5.430 (12.458)	0.046 (0.077)	7.413* (4.396)
Pre-reform mean	26.97	2,262.91	7.75	320.89

Note: $N = 350,736$ (Reform 2008); $N = 533,729$ (Reform 2010). Outcomes are measured in the first 3 years after childbirth. All regressions include calendar month indicators and a linear time trend. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

For mothers, we do not find significant employment effects either and only a moderate increase in earnings. The null effect on employment is surprising given that each reform reduced average leave duration by about two months. To understand the dynamics of these changes, we estimate reform effects on employment and earnings in every month since childbirth. Figure A.1 in the Appendix shows that the introduction of shorter schemes in 2008 accelerated the return to work, leading to a higher employment rate of mothers two years after birth. Yet, employment after three years is again somewhat lower in comparison to leave-takers before the reform. The reverse pattern can be observed after the introduction of the income-dependent scheme in 2010. Employment and earnings are significantly lower up to the first birthday of the child, but we estimate positive effects in the second and third year. This is likely due to the lower additional income allowance of the income-dependent scheme, which reduces incentives for part-time work during an active parental leave spell.

4.2 Kinked benefit schedule

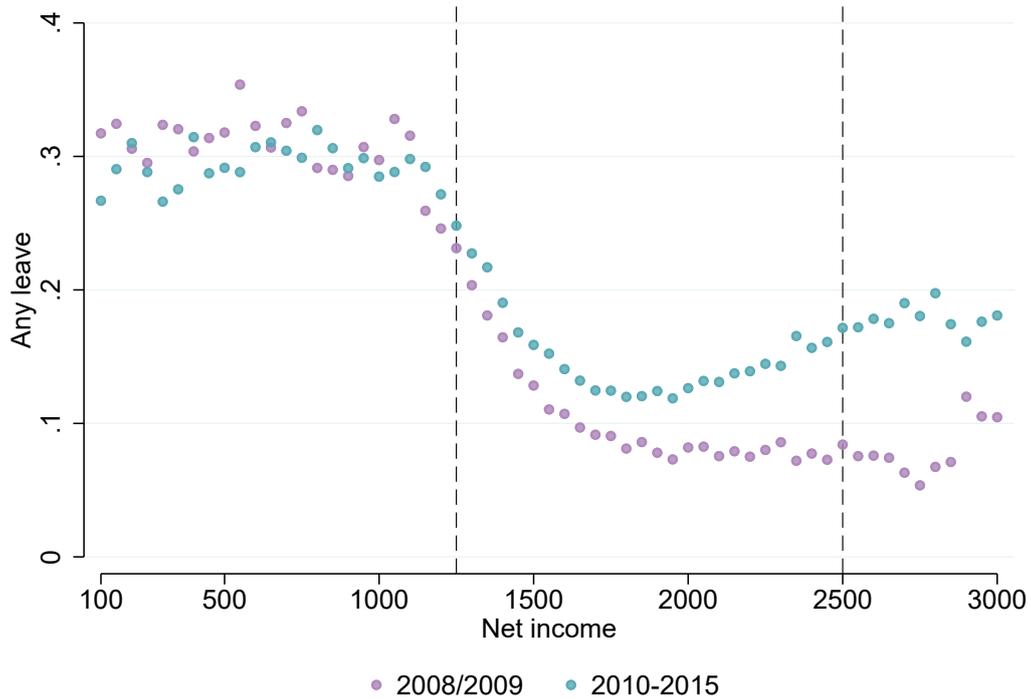
Our main estimation strategy compares outcomes before and after the introduction of new parental leave options. To analyze effects of the income-dependent scheme, we can alternatively restrict our attention to leave spells after 2010 and examine how leave-

taking differs by income replacement rates. If the extent of benefits matters for leave considerations of fathers, we expect that higher replacement rates lead to higher take-up rates. This should induce a positive relation between income and leave-taking, with two kinks at 1,250 and 2,500 euros, mimicking the changing slope of the income-dependent benefit schedule.

Like regression discontinuity designs, regression kink designs can be applied when a policy variable of interest (parental leave benefits) is determined by a known assignment variable (labor income). Kink designs have become a popular tool because there exist many policy rules with kinks in the relationship between the policy variable and the underlying assignment variable. [Card et al. \(2015, 2017\)](#) establish the conditions for such a design to identify meaningful causal effects and use the design to examine the effect of unemployment benefits on the duration of joblessness in Austria. [Bana et al. \(2020\)](#) exploit a kink in Californian paid parental leave benefits, which replace 55 percent of previous earnings up to a maximum, to study if higher benefits increase leave duration of women.

Figure 8 plots income-specific take-up rates of fathers whose children were born after the introduction of the income-dependent scheme (2010 - 2015). As comparison, we provide the equivalent graph for fathers whose children were born in the two preceding years (2008/2009). In both samples, take-up rates are highest among fathers with net monthly earnings below 1,000 euros, narrowly fluctuating around 30 percent. Near the first threshold at 1,250 euros, we observe a marked kink towards lower leave-taking. However, this kink can already be observed for take-up rates before the 2010 reform, suggesting that these changes are not driven by the benefit schedule of the income-dependent scheme. The share of leave-takers subsequently decreases to about 10 percent in both graphs. For income levels above 2,000 euros, take-up rates grow again in the sample of fathers affected by income-dependent benefits, whereas they remain at 10 percent for fathers of children born before the 2010 reform. We do not find a kink around the second threshold at 2,500 euros in either sample. These patterns are in line with our previous finding that income-specific adjustments of the benefit level are not driving the increases in leave-taking of fathers. The relation between income and take-up rates does not change at the upper threshold, and the kink at the lower threshold already emerges before the introduction of the income-dependent scheme.

Figure 8: Take-up rates of fathers by net income



4.3 Flexibility in leave-taking

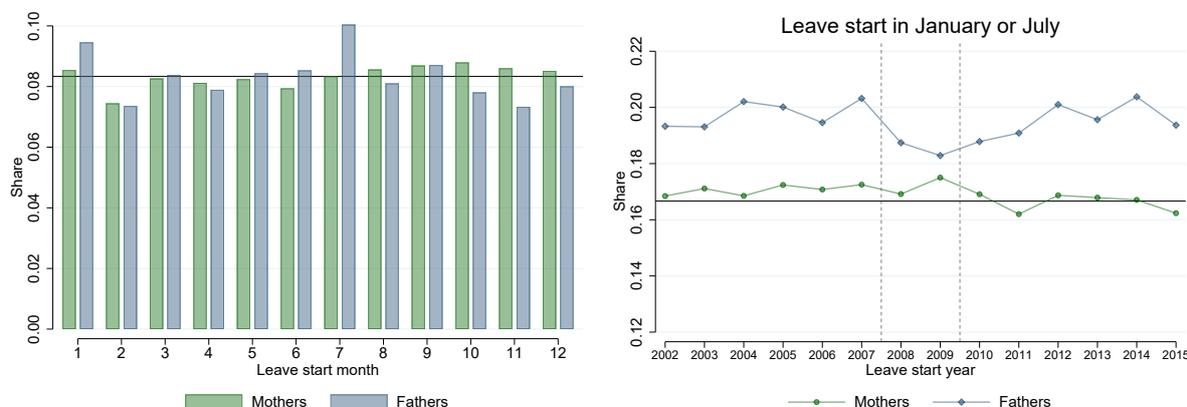
Our analysis shows that shorter leave options are more effective than financial incentives in raising take-up rates of fathers. Although workers in Austria have the right to be on leave for up to two years after childbirth, many fathers might be reluctant to be absent for longer periods because of career concerns. Short leave spells could work as a compromise that employers can agree on; if workers are only absent for a few months, many of their tasks might be postponed or carried out by coworkers.

If flexibility considerations matter, we should also observe differences in the timing of parental leave spells because the workload of the average worker is not evenly distributed over the year. During holiday seasons, after Christmas and in summer, firms might find it easier to cope with fewer workers. To illustrate the timing of parental leave in our sample, the left-hand graph of Figure 9 shows the share of leave spells starting in each calendar month. In contrast to mothers, differences in start months are much larger for fathers. Because mothers almost always go on leave in the first months, the start month of their leave spells is closely linked to the timing of childbirth. And mothers often take at least 12 months of leave, covering all calendar months. Fathers, instead, are more likely to coordinate parental leave with work duties. Consistent with a link to the holiday seasons,

we observe the highest shares of fathers starting in January and July. The right-hand graph of Figure 9 shows that the share of fathers starting in these months does not change much over time. In particular, we do not see clear structural changes around 2008 and 2010, when the shorter scheme options were introduced.

Families might also use parental leave to go on vacation together during the holiday season. When fathers take leave, 36 percent of mothers in our estimation sample do not return to work. Overall, fathers only complete 55 percent of their leave duration with a working mother.

Figure 9: Parental leave start months



Note: The horizontal lines indicate the expected share if start months were chosen at random.

5 Conclusion

In contrast to mothers, fathers rarely go on leave from work to take care of their children. And if they do so, parental leave spells are considerably shorter. In this paper, we study how flexibility considerations and financial incentives affect leave-taking choices of fathers. To identify both channels, the analysis exploits recent extensions of the Austrian parental leave scheme. Since 2000, Austria has offered universal parental leave benefits to all parents, but initially, only a 3-year option with flat monthly payments was available. In 2008, shorter leave options at higher monthly rates were introduced, and in 2010, the government added even shorter leave choices and introduced an income-dependent scheme, which considerably increased benefit levels for high-earning parents.

Using a regression discontinuity design to capture changes around the introduction dates, we estimate that both reforms had a strong impact on leave take-up of fathers. Offering new schemes in 2008 and 2010 led to relative increases of 23 percent and 13 percent, respectively. To study the impact of enhanced financial incentives, we distinguish

families by the extent to which the new scheme increases household replacement rates if the father, instead of the mother, goes on leave. Families with high-earning fathers and low-earning mothers benefit most from the income-dependent scheme and also show the largest increase in leave-taking of fathers. Yet, we observe similar heterogeneity in effect sizes already in 2008, when the income-dependent scheme was unavailable yet. Our analysis also shows that fathers are disproportionately often on leave during holiday seasons when they might find it easier to be absent from work. Taking all evidence together, the findings suggest that offering higher flexibility is most effective in inducing more fathers to take leave.

While the additional leave options fostered take-up, the within-family share of leave months assumed by fathers remained similar. More men opted for paternity leave, but the average spell duration decreased. Stronger financial incentives for high-earners due to the introduction of income-dependent benefits did not affect this distribution. To some extent, it seems plausible that women take up more childcare responsibilities than men during the first years. Due to pregnancy and childbirth, mothers have to take at least some time off from work, which allows them to acquire and improve their child-rearing skills early on. Fathers, instead, might initially lack these skills and therefore refrain from childcare responsibilities. Yet, a very unequal distribution of parental leave can be problematic for various reasons.

First, research studies on early child development show that children benefit when both parents are involved in their upbringing. Father engagement has been found to improve school performance (Cools et al., 2015) as well as social, behavioral, and psychological outcomes of children (Sarkadi et al., 2008). Second, the unequal burden of childcare duties can hinder gender equality in the labor market. Despite considerable advances in the last decades, women still work fewer hours, work in less prestigious positions and earn lower wages. Much of the prevailing evidence suggests that a key driver of these gender gaps is the direct and indirect effects of child bearing. When women get children, they often quit their previous job or take prolonged periods of leave. Mothers returning to the labor market frequently reduce working hours and switch to jobs that pay lower wages. Severe drops in labor income after childbirth can be observed in many countries, and the negative impact is particularly large in Austria (Kleven et al., 2019a). An alternative solution could be to extend options for external (full-time) childcare. Yet, some parents might have reservations to give their children to nurseries at young ages.¹³

¹³In Austria, most children do not start nursery before the age of three (European Commission, 2018). Kleven et al. (2020) show that previous expansions of early childcare did not reduce the child penalty in Austria.

We expect that a more balanced distribution of parental leave has a higher potential to reduce gender differences in the labor market. However, the reality looks very different in most countries. Our analysis shows that many fathers want to go on leave but only for short periods, and more generous parental leave benefits have limited scope to change that.

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Appendix

Table A.1: Reform effects on leave-taking (Linear vs. quadratic specification)

	Fathers						Mothers	
	Any leave		Leave months		Leave share		Leave months	
2008 reform	0.026*** (0.003)	0.057*** (0.009)	-0.147*** (0.033)	0.056 (0.097)	0.000 (0.001)	0.008** (0.004)	-2.386*** (0.056)	-2.797*** (0.164)
2010 reform	0.021*** (0.003)	0.014** (0.007)	-0.055*** (0.021)	-0.033 (0.043)	0.002* (0.001)	0.003 (0.002)	-1.712*** (0.062)	-1.235*** (0.127)
Specification	Linear	Quadr.	Linear	Quadr.	Linear	Quadr.	Linear	Quadr.

Note: $N = 350,736$ (Reform 2008); $N = 533,729$ (Reform 2010). All regressions include calendar month indicators. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Figure A.1: Impact on labor market outcomes of mothers by month after childbirth

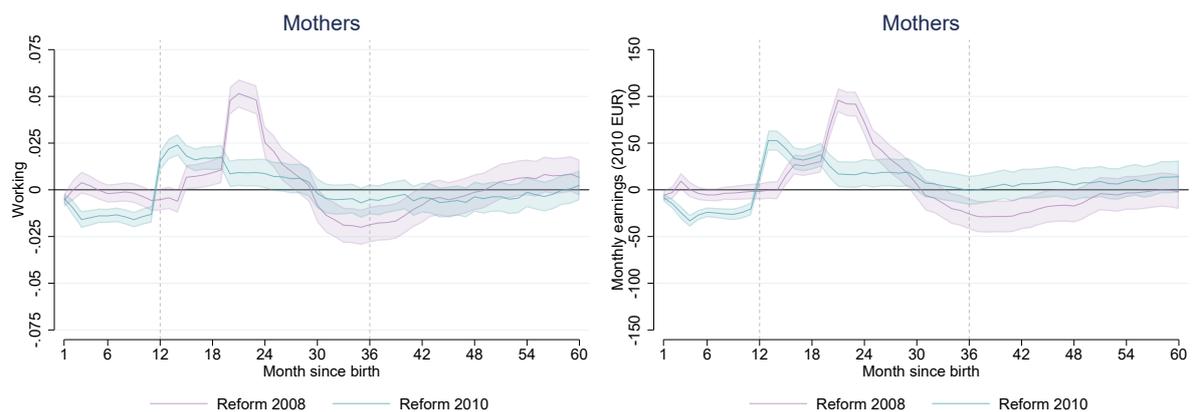
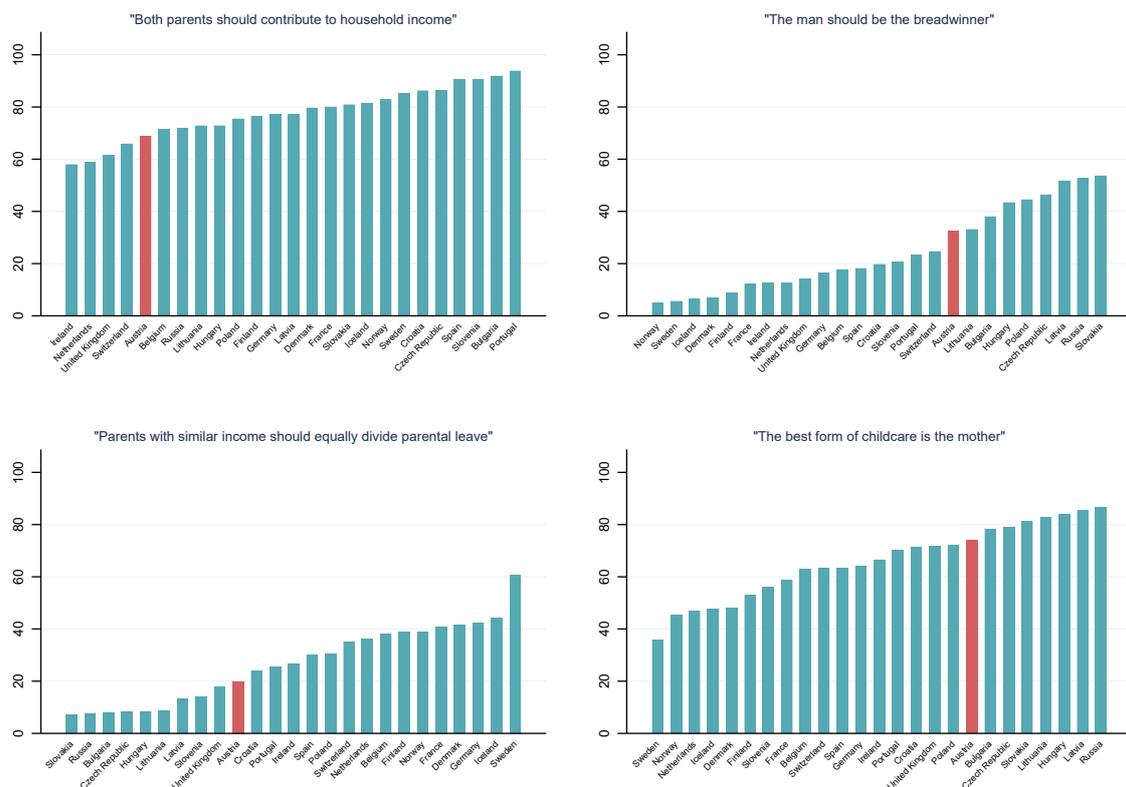


Figure A.2: Gender norms



Note: The figure is based on data from the 2012 wave of the International Social Survey Program (ISSP) and reports the percentage of people agreeing with the following statements: “Both the man and the woman should contribute to the household income”, “A man’s job is to earn money; a woman’s job is to look after the home and family”, “If both parents are in a similar work situation and are eligible for paid leave, this paid leave period should be equally divided between the mother and the father”, “Considering a family with a child under school age, the best way for them to organize their family and work life is for the father to work full-time and for the mother to stay at home or work part-time”.

Table A.2: Gender norms and income in Austria

	Woman earns more	Partners have same income	Man earns more	<i>p</i> -value for differences		
	(1)	(2)	(3)	(1)-(2)	(1)-(3)	(2)-(3)
Both parents contribute to household income	78	67	66	0.107	0.021	0.829
Man breadwinner	29	33	36	0.654	0.232	0.493
Equally share parental leave	31	28	14	0.693	0.003	0.005
Mother childcare	63	69	82	0.365	0.001	0.012
Observations	78	98	530	176	608	628

Note: The table is based on data from the 2012 wave of the International Social Survey Program (ISSP) and reports the percentage of people agreeing with the following statements: “Both the man and the woman should contribute to the household income”, “A man’s job is to earn money; a woman’s job is to look after the home and family”, “If both parents are in a similar work situation and are eligible for paid leave, this paid leave period should be equally divided between the mother and the father”, “Considering a family with a child under school age, the best way for them to organize their family and work life is for the father to work full-time and for the mother to stay at home or work part-time”.