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FACULTY OF SOCIAL SCIENCES

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Bachelor thesis

2018 **Petra Jirůtková**

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Introduction of Paternity Leave: Expected Costs and Benefits in the Czech Republic

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Abstract

Although paternity leave policies have already been in place in a majority of European Countries, paternity leave in the Czech Republic was introduced through legislation change only in February 2018. In this thesis, we focus on an evaluation of expected costs and benefits of paternity leave in the Czech Republic. Given the recent nature of the policy change, we provide an ex ante analysis. This analysis compares the actual situation as of 2016 with a hypothetical situation of implementing paternity leave already in that year. Unlike the European Commission studies analysing the introduction of paternity leave in other European countries, we take into account heterogeneous propensities of different socio-economic groups taking paternity leave, different scenarios of overall take-up rates and different on-the-job substitution rates for fathers. We show that the lowest expected yearly costs were 427 million CZK, while the highest calculated costs were 1.28 billion CZK. The lowest costs go hand in hand with the lowest take-up rate and a higher substitution rate. On the contrary, the highest costs were calculated for the highest take-up rate and a lower substitution rate.

Keywords

family, paternity leave, benefits of paternity leave, costs of paternity leave, parental leave, take-up rate of paternity leave, Czech Republic

Range of thesis: 65 464 symbols

Abstrakt

Přestože byla otcovská dovolená zavedena již ve většině zemí Evropské unie, v České republice je otcovské poporodní volno zavedeno až legislativní změnou účinnou od února 2018. Tato práce se zabývá vyhodnocením očekávaných nákladů a přínosů spojených se zavedením otcovského volna v České republice. Vzhledem k nedávné změně legislativy je provedena ex ante analýza. Tato analýza porovnává situaci z roku 2016 s hypotetickou situací zavedení otcovského volna v tomto roce. V porovnání se studií Evropské komise, která analyzuje zavedení otcovské dovolené v jiných evropských státech, bereme v potaz rozdílné sklony k využití otcovského volna sociálně ekonomických skupin otců. Podobně se zabýváme rozdílnými scénáři procent mužů, kteří otcovské volno využijí, a rozdílnými mírami substituce otců v době jejich otcovského volna. Výsledky ukazují, že nejmenší očekávané roční náklady jsou 427 milionů Kč, naopak největší spočítané náklady jsou 1,28 miliardy Kč. Nejnižší náklady jsou spojené s nejnižším procentem mužů využívajících otcovského volna a vyšší mírou substituce. Naopak nejvyšší náklady jsou spočítány v případě nejvyššího procenta využití a nižší míry substituce.

Klíčová slova

rodina, otcovská dovolená, výhody otcovské dovolené, náklady otcovské dovolené, rodičovská dovolená, využití otcovské dovolené, Česká republika

Declaration of Authorship

1. The author hereby declares that he compiled this thesis independently, using only the listed resources and literature.

2. The author hereby declares that all the sources and literature used have been properly cited.

3. The author hereby declares that the thesis has not been used to obtain a different or the same degree.

Prague 5. 5. 2018 Petra Jirůtková

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Institute of Economic Studies
Bachelor thesis proposal

Proposed Topic*:*

Shared parental leave: Fiscal benefits and costs in the Czech Republic

Preliminary scope of work:

Research question and motivation

Gender job equality and employment are highly influenced by parental leave policies. The focus in this thesis will be put on the economic rationality of implementation of shared parental leave in the Czech Republic in its most extreme case: the equal division of parental leave between mothers and fathers. The hypothesis is that prolonging the time men spend on parental leave and shortening the time women spend on the parental leave will have a significant impact on the fiscal policies in the Czech Republic. Due to decreasing the labour market attachment of men, this might cause tax distortion and also decrease in productivity. On the other hand, shortening parental leave for women can lead to their higher employment and thus decreased costs of unemployment benefits.

Contribution

The thesis will investigate an effect of a policy that has not yet been implemented anywhere. It is, however, strongly inspired by the model of parental leave in Northern Europe (e.g. Sweden). From the fiscal perspective, the results of the thesis shall be used for further decisions of policy makers and to prove or disprove that further support of shared parental leave is economically rational in the environment of the Czech Republic.

Methodology

The thesis will include the analysis of the following data: wage gap between men and women (obtained from the Eurostat and the Czech Statistical Office), employment rates for men and women (obtained from the Eurostat), GDP as a measure of productivity (obtained from the Eurostat) and unemployment benefits in the Czech Republic (obtained from the Czech Statistical Office).

The basis for these data will be findings of other studies that elaborate on introduced parental leave for fathers and shortened parental leave for mothers in other countries. These findings will be adapted and used for a simulation in the Czech environment with the data mentioned above. In the model, the current parental leave policy in the Czech Republic will be taken as the baseline and a percentage change of government budget balance will be evaluated. It is assumed that the change will be based on relationship between employment, level of wage and length of parental leave for mothers and fathers. For this purpose, numerous scenarios of distribution of parental leave lengths will be investigated.

Outline

The thesis will be divided into two main sections: fiscal costs and fiscal benefits.

On one hand, there may be fiscal costs due to wage gap between men and women. This might cause gap in income tax. Furthermore, there might be a significant difference in productivity. Larger share of men on parental leave can be a cause of higher unemployment benefits granted to fathers.

On the other hand, there may be fiscal benefits due to increased employment rate of women. This may potentially lead to lower unemployment benefits granted to mothers and also higher income tax from mothers who start working earlier.

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Contents

Introduction

Paternity leave is a policy which has already been incorporated into schemes of family-related policies in a majority of European countries. In the Czech Republic, paternity leave has been recently introduced, affecting employed fathers of new-born children. From February 2018, a father is eligible to take up to 7 days of paternity leave within the first 6 weeks after a child's birth and is entitled to financial compensation roughly proportional to his pre-leave income level.

This thesis focuses on an evaluation of the expected benefits and costs to the introduction of paternity leave in the Czech Republic. For this purpose, the method of ex ante analysis is used, as no recent data about the leave-taking behaviour of fathers after the legislation change is available. This thesis will therefore try to evaluate the policy change using the data available before the introduction of paternity leave, basing on experiences from other EU countries introducing a similar policy. This contribution can further be used in any potential ex post analysis when comparing the actual effects of the introduction of paternity leave in the Czech Republic with the expected effects.

The thesis is structured in the following way. In the first section, we look into the legislation changes and describe the situation of family-related policies before and after February 2018. Then we continue with necessary assumptions that are needed for the method of ex ante evaluation. The main part of the thesis is the evaluation of expected benefits and costs. The expected benefits of paternity leave are introduced with a quick overview of benefits of fathers' involvement in childcare, afterwards each benefit is discussed with the use of existing literature. The expected costs of paternity leave are divided into three occurring costs, namely paternity leave benefits, tax distortion costs and production losses. The final section is dedicated to a discussion and conclusion.

The thesis does not intend to compare benefits and costs to the introduction of paternity leave in absolute terms. Benefits such as improved gender equality at work or parent health are difficult to measure, however, all benefits caused by the implementation of paternity leave are highly valuable to the society as a whole. Therefore, the aim of this thesis is to discuss the expected benefits of paternity leave, quantify the expected costs of paternity leave and leave readers with the necessary information to decide whether these costs are outweighed by the expected benefits.

1. Institutional Background

1.1 Family-related Policies Before 2018

In the Czech Republic, similarly as in other European countries, a whole set of family-related policies exists. The family support through the system of family-related policies consists of three pillars: tax exemptions and deductions, financial support for families and child care facilities. According to the Ministry of Labour and Social Affairs, family-related policies expenditures amount to 2.5% of the GDP of the Czech Republic, which corresponds to the average for the OECD countries (The Ministry of Labour and Social Affairs 2017a). The first pillar of family-related policies, tax deductions, plays the most significant role among all of the pillars. This constitution of the system is, as stated by the Ministry of Labour and Social Affairs, exceptional in the comparison of the European Union. Tax deductions and exemptions are quite high in the Czech Republic ("OECD Family Database - OECD" 2017), causing a greater impact in high-income families and posing considerable risk for low-income families in recession times. It has therefore been recommended to increase the support for families mainly through the other two pillars of family-related policies. The second pillar of financial support for families in the Czech Republic heavily concentrates on the support of families with new-born children through the maternity leave benefits and parental allowance (i.e. benefits that can be claimed when on parental leave). The increase of public expenditure is most required in the third pillar of child care facilities. In comparison to the OECD countries, the public spending on facilities such as childcare for preschool children or after-school activities are below average. According to the Ministry of Labour and Social Affairs (2017a), there is a potential for improvements in the distribution of public expenditures among these three pillars, specifically through increasing the spending in the second and third pillars and decreasing the spending in the first.

Childcare-leave policies in the Czech Republic are included in the second pillar of family-related policies and, until 2018, consisted of maternity leave legislation, parental leave legislation and parental allowance. In February 2018, paternity leave legislation came into force. For our purposes, we will be defining maternity, parental and paternity leave and will be referring to the definitions as given by van Belle (2016) for the purposes of the European Commission.

Maternity leave is a leave from work directly preceding and following childbirth that is offered to mothers. Maternity leave is granted by law and regulated by the Act No. 187/2006 Coll. This employment-protected period is considered as a "during-work" leave, which is, from the employers' perspective, comparable to taking sick leave. Mothers on maternity leave receive maternity leave benefits (Peněžitá pomoc v mateřství) for the whole length of their maternity leave. The length of maternity leave is a minimum of 14 weeks, where 6 weeks are reserved for the period before the expected date of birth. Total maximum length of maternity leave is 28 weeks (196 days) during which there is full job protection. The benefits received while on maternity leave are calculated as 70% of the daily assessment base and are therefore directly derived from mothers' earnings before maternity leave. This enables mothers to keep a similar level of income for the whole period of maternity leave (The Ministry of Labour and Social Affairs 2017a). The condition for entitlement to the maternity leave is an active participation in the social sickness insurance for at least 270 days in the past 2 years before maternity leave. If a mother is not entitled to maternity leave (e.g. she is self-employed and does not contribute to the social sickness insurance), parental allowance follows directly after the birth.

Parental leave is a leave that can often be taken until a defined child age and can be taken by either parent (in contrast to maternity or paternity leave). In the majority of European countries, parental leave is partially compensated; but in some, there is no compensation. In the Czech Republic, parental leave and parental allowance can be claimed by a parent of a child younger than 4 years and are regulated by the Act No. 117/1995 Coll. While there is some degree of job protection for parents on parental leave, it is not as strong as for mothers on maternity leave. This is also due to the fact that parental leave is from the employers' perspective considered as an unpaid leave. From the unemployment point of view, a parent on parental leave is counted as not employed, while a mother on maternity leave is counted as employed. Parental allowance does not necessarily come with parental leave and can be claimed even if a parent is employed (The Ministry of Labour and Social Affairs 2017b). In some cases, parental leave period corresponds to the period when a parent is collecting parental allowance; in other cases, the period of collecting parental allowance is longer than the period of parental leave. The total parental allowance that can be claimed by a parent per one childbirth is 220,000 CZK, while the level of monthly allowance can be chosen by the recipient. A parent is entitled to parental allowance (provided they fulfil

the conditions given by the maximum time the child spends in the childcare facilities), without the need of active participation in the social sickness insurance.

1.2 Paternity Leave Legislation in 2018

Until 2018, there was no existing paternity leave policy in the Czech Republic. Those fathers who wanted to help mothers within the first few weeks after birth had to take vacation time at work. Some companies already provided some kind of "paternity leave" as a form of employee benefits, however, it had not been incorporated into legislation.

In many studies and among various countries, the distinction between paternity and father-only parental leave may be unclear, as van Belle (2016) suggests. In some countries, sharing of parental leave is made obligatory, with a specific period of parental leave reserved only for fathers, so called father-only parental leave. We will be focusing on paternity leave, which is rather an analogy to maternity leave which will be defined as a period of time shortly after the birth. This period is to be offered exclusively to fathers and does not affect parental leave policies in any way (van Belle 2016).

Since February 2018, fathers of new-born children are entitled to paternity leave (Otcovská poporodní péče / Otcovská). Paternity leave can be taken within the first 6 weeks following a child's birth and can be taken for the maximum of 1 week (7 consecutive calendar days). The beginning of paternity leave can be chosen by the father. There is no possibility to split up the days during paternity leave once the paternity leave has started. Paternity leave must be taken in consecutive days. Fathers are entitled to only 1 week of paternity leave even if there are more children born at once.

As mentioned, features of paternity leave are very similar to features of maternity leave. This is also true for the conditions for the entitlement. To be entitled to paternity leave benefits, fathers have to be actively participating in the social sickness insurance for at least 3 months prior to the requested week of paternity leave. This is a very similar but slightly stricter condition than in the case of maternity leave, where these 3 months of active participation may be at any time in the past 2 years before maternity leave. Paternity leave is equivalent to maternity leave in that it may not be refused by employers. On the contrary, vacation has to be based on a mutual agreement between the employee and the employer; employers can refuse to give employees vacation at a specifically requested date due to various reasons, such as capacity or

operational needs. However, termination or change of date of paternity and maternity leave cannot be enforced by employers according to existing legislation.

The compensation is fully covered from the state social funds and is calculated as 70% of the daily assessment base. This means that the calculation of compensation follows the same rules as in the case of compensation for maternity leave. To calculate the daily assessment base, the yearly gross wage has to be calculated and divided by the number of days in a year (e.g. 365). The daily assessment base is then reduced, with the system of reduction boundaries that are adjusted by the Ministry of Labour and Social Affairs every year. There are 3 reduction boundaries in which the calculated daily assessment base is reduced. Until the first boundary, 100% of the amount is considered, from the first to the second boundary, 60% of the amount is considered, and from the second to the third boundary, only 30% of the amount is considered. The remaining amount above the third reduction boundary is not considered at all and is not added to the reduction of the daily assessment base. In 2016, the boundaries were 901 CZK, 1,351 CZK, and 2,701 CZK, respectively (The Ministry of Labour and Social Affairs 2015). The sum of all calculated reduced amounts within the boundaries constitutes the reduction to the daily assessment base. The daily compensation paid as benefits during paternity (and maternity) leave is calculated as 70% of this reduction.

Even though the calculation of maternity and paternity leave benefits may be considered complicated and may seem to go through a lot of reductions, its use in family-leave policies is justified. Firstly, it is directly derived from the annual gross wage, thus can be fairer than a flat-rate with no regard to income level. Secondly, as it is calculated on the basis of gross wage (and not net wage), it means there is no taxation included. This increases the daily assessment wage, and as a result, the paternity leave benefits received (in the majority of cases) exceeds 70% of net earnings for the respective period. It has been estimated that for median wage earners, fathers with the monthly gross wage between 15,000 CZK and 25,000 CZK, paternity leave benefits received for 7 calendar days are equal to 103% of their respective net wages for 5 working days (Parlament České republiky 2016). For a gross wage higher than 25,000 CZK, the compensation offered through paternity leave benefits decreases, as well as for a gross wage lower than 15,000 CZK. This is caused by the constitution of income tax in the Czech Republic. Nevertheless, the introduction of paternity leave has been a significant step towards helping to combine work and family life in the Czech Republic. Very low participation of fathers in family leave policies was often caused by

very low compensation rates, which are crucial to the income level of families. Paternity leave and paternity leave benefits aim to help family conditions, at least partially, even though they still do not constitute the full compensation of net wages.

The proposal of the law was presented by the government to the Parliament on the 27th May, 2016, as a proposal from the Ministry of Labour and Social Affairs. It was adopted on 22 May 2017, after being passed through Parliament, Senate, signed by the President and made effective from February 2018.

2. Ex Ante Policy Evaluation

The evaluation of costs and benefits to the introduction of paternity leave in the Czech Republic will be done in the form of an ex ante policy evaluation. As the European Commission states in their Ex Ante Evaluation Guide, it is a very important tool in assessing and analysing future impacts of policy interventions (European Commission 2001). It is also crucial for assessing whether it is possible for the defined objectives of a policy to be met or whether the instruments that will be used are cost-effective.

As Wolpin (2007) points out, there is only a limited applied research with the use of ex ante policy evaluation through nonexperimental methods. Ex ante evaluations offer an effective tool for improving the quality of a policy and provide more information, sometimes necessary to gather prior to adopting the act or discussions with the general public (European Commission 2001). This analysis of costs and benefits of paternity leave will not only be a mere evaluation but will also constitute a valuable example of ex ante evaluation methodology applied in the Czech Republic.

However, ex ante evaluations may have many pitfalls that will be important to consider as we proceed further. The nonexperimental approach to ex ante policy evaluation is based on already existing policies or its relevant variations (Wolpin 2007). Wolpin (2007) also mentions that, as a result of this, ex ante evaluations are strongly dependent on parametric and behavioural assumptions. These assumptions will be outlined later in the evaluation and will be considered so as to create a stylized world in comparison to the actual that is substantially more complex. For simplicity, some factors will remain constant. On contrary, other factors that will be considered as important for our evaluation will be taken into account. Nevertheless, the evaluation will never be able to fully estimate the response function to an implemented policy (Wolpin 2007).

In our ex ante evaluation, we will be assessing costs and benefits of paternity leave policy in the Czech Republic which was implemented in 2018. As there is no data from paternity leave take-up rate available, we will be comparing actual data from 2016 (before the policy came into force) and a hypothetical situation of an introduction of paternity leave policy in 2016. Important assumptions that are going to be made concern fathers' reactions to the implementation of such a policy. Generally, it will be assumed that reactions of fathers in the Czech Republic will be similar to reactions of fathers in other European countries that have recently implemented similar policies.

For the assessment of benefits, we will be relying on findings of studies describing effects of paternity leave policies in other European countries such as Norway, Sweden and Spain. We will also base our argumentation on studies from the Czech Republic, focusing on a description of the Czech environment and proposing some potential policy changes.

For the assessment of costs, we will have to determine a number of aspects that influence the results. Firstly, the overall take-up rate of paternity leave will have to be determined. This will be conducted with the use of existing literature and data from other European countries, as well as with the use of public opinion surveys conducted in the Czech Republic in recent years. Secondly, we will be determining whether some fathers are more likely to take paternity leave than others. We will be looking at specific groups of fathers and their probabilities of taking paternity leave based on the experiences from the implementation of paternity leave in Spain. This calibration exercise will include statistics on the average age of fathers in the Czech Republic, unemployment rate and their occupations. Lastly, other assumptions about the extent to which employers are able to substitute fathers that are currently on paternity leave will also play a role.

3. Take-up Rate of Paternity Leave

The take-up rate is in our case a crucial determinant for further evaluation of costs and benefits. As it will hugely influence the results, this chapter discusses a few scenarios of possible take-up rates. To determine these scenarios in the Czech Republic, it will be important to look at the effects of introducing paternity leave in other countries as well as on the estimates of take-up rates provided by others in the Czech Republic and their reasoning.

One of the European countries that has recently introduced paternity leave is Spain. As documented by Escot et al. (2014), paternity leave of 13 uninterrupted days was introduced in March 2007, with compensation of 100% of earnings. According to the available data, the take-up rate of paternity leave in the year 2007, when the policy was first introduced, amounted to 35.2% of eligible fathers. In the following years of 2008 and 2009, the take-up rates grew to 53.8% and 55.2%, respectively. The base for these take-up rate percentages are all eligible fathers identified with the use of the total number of births in the respective periods. This suggests that in more than half of Spanish families with a child born in 2008 and 2009, paternity leave was used. This was, according to Escot et al. (2014), a successful implementation of the policy for paternity leave, judging from such high take-up rates.

As can be learned from Escobedo & Wall (2015), a five-day paternity leave was introduced in 1999 in Portugal with full compensation for five working days. Since then, paternity leave followed a slightly different scheme and was made mandatory in 2004 (Escobedo and Wall 2015). In the first years, paternity leave, as evaluated by the International Network on Leave Policies & Research, was used only by a very small proportion of fathers. In 2000, 11% of eligible fathers made use of paternity leave; in 2002, it had grown to 27% of fathers, in 2003, 4 years after the introduction, the use of paternity leave rose to 36% (International Network on Leave Policies & Research 2013). Only once paternity leave became obligatory and increased to 20 working days, the take-up rate increased to 58-68% (Escobedo and Wall 2015).

Different estimates of take-up rates are proposed by a Spanish survey among parents with children aged 3 to 8 who were asked, among others, whether they took leave when their child was born (Fernández-Cornejo et al. 2016). Among them, the take-up rate of paternity leave amounted to 80% when having a child born after the implementation of paternity leave. It is also shown that among these fathers, there has been a significant decrease in usage of other types of leave, such as unpaid leave or holiday leave. This is, according to Fernández-Cornejo et al. (2016), a proof that some companies had already offered their male employees the possibility to take days off before the implementation of the official policy (with a possibility of compensation). Furthermore, it is also noticeable that for these fathers, the total number of vacation days decreased. This would support the statement given for the situation in the Czech Republic in the first chapter of institutional background. With the implementation of

paternity leave, there may be less need for fathers to take vacation time off, as they would now be able to help mothers within their official paternity leave.

Other experience with take-up rates of paternity leave can be observed in the Central European region, specifically in Hungary. As can be learned from Thomsen and Urth (2010), the take-up rate of a 5-day paternity leave was estimated at around 20% to 25%. In comparison to the already mentioned cases of paternity leave, this take-up rate seems rather low and might be accounted to conservative and less progressive family behaviour in Hungary. Therefore, the experience with paternity leave in Hungary cannot be regarded as comparable to the Czech scenario and will not be taken into consideration.

In the case of the introduction of paternity leave in the Czech Republic, there is no data regarding take-up rates since the policy has been introduced very recently. However, there are recent surveys conducted on representative samples of the Czech population that shed some light on the potential reaction and the extent of support from the general public to the implemented policy. According to the survey of the League of Open Men, conducted in two regions of the Czech Republic in 2014, the paternity leave implementation is supported by 93% of respondents. Both of the regions show comparable results. The study presents useful data on the attractiveness of paternity leave – it has been shown that paternity leave would be attractive for 88% and 91% of respondents under the condition that the paternity leave benefits are compensated for 80% to 100% of their wage (The League of Open Men 2015). These results may be slightly biased, especially due to the fact that most of the respondents might not be fully aware of the construction of paternity and maternity leave benefits as explained in the first chapter. Since paternity leave is made voluntary, the information about offered benefits equal to 70% of the daily assessment base may be misleading. It may be assumed that offered benefits compensate for only 70% of net wage and this misunderstanding may discourage more men from taking paternity leave. We would combine these results with the calculations of the Ministry of Labour and Social Affairs, which show that for fathers with a monthly gross wage less than 45,000 CZK, the benefits would cover at least 80% of the respective net income (Parlament České republiky 2016). Therefore, under the assumption that all of the respondents understand the constitution of paternity leave benefits and level of income compensation, we could conclude that roughly 90% of eligible fathers could take paternity leave.

Other estimated take-up rates of paternity leave were used in the calculation of the Ministry of Labour and Social Affairs in the Explanatory Report amending the proposal of the law. The calculations of costs are made for two scenarios: 70% and 90% take-up rate of eligible fathers (Parlament České republiky 2016).

Sample surveys were conducted also on the support and attractiveness of the extension of paternity leave, called "motivational paternity leave". Kuchařová and Peychlová (2015) discovered that there is a significant degree of support in the population. 81% of respondents showed conditional or unconditional interest for extending paternity leave. The widest support was shown for the length of 2 and 3 months and the findings from other studies about the importance of compensation level was confirmed that the height of benefit compensation is important for 93% of respondents (Kuchařová and Peychlová 2015). The results of the study describe a wider attitude of the Czech population towards family leave policies. It can be concluded that if there is support for extending the paternity leave beyond the existing paternity leave (i.e. 7 days), there would be more support for the already existing policy of paternity leave.

To summarize all the findings for our further calculations, we will be using 3 scenarios of eligible fathers' take-up rates of paternity leave. The lowest scenario of a 50% take-up rate is supported by the findings of Escot et al. (2014) and Escobedo & Wall (2015) and their experience of implementing paternity leave in Spain and Portugal. The second scenario of a 70% take-up rate will be based on the estimation of the Ministry of Labour and Social Affairs. The highest scenario of a 90% take-up rate is supported by the findings from the survey conducted by the League of Open Men (2015), as well as by the projections from the Ministry of Labour and Social Affairs.

4. Costs and Benefits

4.1 Introduction

The costs and benefits assessment builds on the earlier Impact Assessment in the 10 selected European countries conducted by Ramboll Management Consulting for the purpose of the European Parliament and the European Commission. Benefits of introducing a 1-week paternity leave in the Czech Republic will be discussed with the use of existing literature while costs will be calculated with the use of a similar, but

more detailed technique than is used in the Impact Assessment (Thomsen and Urth 2010).

For the purpose of assessing the costs and benefits of paternity leave, we will be using the previously described ex ante evaluation. Since paternity leave has only been enacted in the Czech Republic since 2018, there is no data available to evaluate its costs and benefits as they are. Therefore, we will conduct an ex ante analysis comparing the hypothetical consequences of an introduction of a 1-week paternity leave to the true before-policy situation as of 2016. Costs and benefits are therefore calculated as expected, making no real use of the change in policy in 2018.

4.2 Benefits of Fathers' Involvement in Childcare

The involvement of fathers in childcare is important for children, not only in the short term, but also in their long term development. Paternity and parental leave may offer fathers the possibility to improve their relationship with their children.

On one hand, fathers' involvement is beneficial for fathers themselves. According to Knoester et al. (2007), their marriages tend to be happier. Furthermore, they have less health issues and tend to be more active in local communities. Greater involvement in childcare has been shown to transform fathers' perspectives, values and priorities (Knoester, Petts, and Eggebeen 2007). Parenthood would possibly change fathers' time allocation, from work to home. Moreover, it has been shown that fathers, after taking parental leave, reduce their weekly working hours (Bünning 2015). This is in line with the fact that greater fathers' involvement in childcare may result in a reduction of working hours, which may be beneficial to fathers and their health.

On the other hand, fathers' involvement is beneficial for their children. According to Lamb (2004), greater involvement leads to increased empathy and cognitive skills of the children. Huerta et al. (2013) show that higher involvement is associated with higher cognitive scores. These relations were significant in the United Kingdom and the United States (Lee et al. 2013). For British children at ages 3 and 5, it has been shown that the more British fathers are involved in their children's lives, the higher their children's test scores were. It has also been shown that children show fewer behavioural problems when fathers bond with them (Lamb 2004).

As Tanaka & Waldfogel (2007) suggest, the causality between fathers' involvement and childbirth leave is not as clear as it might seem. It is suggested that fathers who take paternity leave show greater involvement later with the baby.

This would support the causality from “taking leave” to “more involvement.” However, it is also possible that nowadays, fathers experience more gender equality and want to be more involved in their children’s care. This might therefore be a reason for them to take paternity leave, which would suggest the reversed causality from “more involvement” to “taking leave” (Tanaka and Waldfogel 2007).

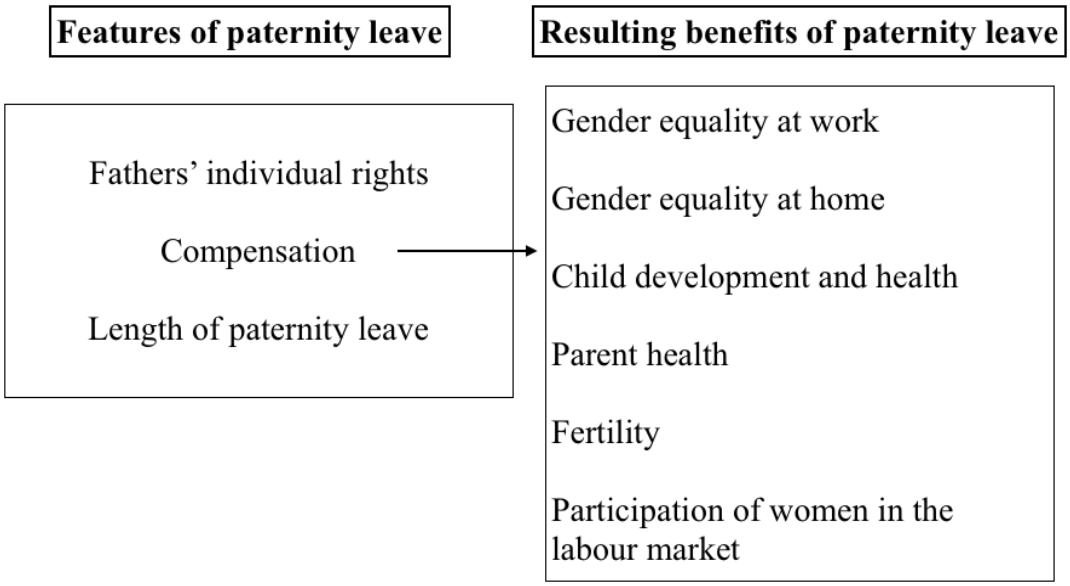
4.3 Benefits of Paternity Leave

In this chapter, the focus will mainly be on the benefits that are directly connected to the introduction of paternity leave. As the investigation of existing paternity leave policies in European countries suggests, 20 countries in the European Union have already implemented some kind of paternity leave. The compensation and length vary in each member state; however, in the majority of member states, the compensation is 100% of the wage with a certain ceiling, and fathers are entitled to at least 10 days of paternity leave (Parlament České republiky 2016).

Paternity leave may have various benefits, not only directly to family environment and the people affected (i.e. mothers, fathers, children), but also to society as a whole. The discussed benefits are expected to be the most significant among all beneficial effects that the introduction of the paternity leave is going to have on the society. These are gender equality at work, gender equality at home, child development and health, parental health, fertility and a higher participation of women in the labour market.

Before each benefit of paternity leave is described, it is important to notice which specific features of paternity leave policy will have an impact on benefits. Some of these features will be significant, especially shortly after the introduction of the paternity leave while others may play a larger role gradually when conditions of paternity leave are altered.

Figure 1: Features of paternity leave influencing benefits



Source: Author's elaboration

4.3.1 Features of Paternity Leave Influencing Benefits

For the benefits as well as for the costs, certain features of paternity leave would have a potential to change the impact of the policy as a whole. The sole introduction of paternity leave is going to have an effect all on its own: it is going to affect fathers' individual rights. Fathers' individual rights is the concept that has been introduced in the previous chapter with take-up rates and is connected to the fact that when paternity leave is introduced, fathers do not have to use other forms of leave as suggested by Fernández-Cornejo et al. (2016), to take care of their new-born child. This increases fathers' freedom of choice and therefore would be counted among the benefits of introducing paternity leave.

Additionally, there are specific features of paternity leave that may be different in each country and will be dependent upon the institutional setting. These features are important to bear in mind especially in the case of a hypothetical change in paternity leave policy. The first effective feature of paternity leave that plays a role is the compensation that is offered to fathers. This is a feature for which the benefits vary according to level of compensation. The higher the compensation, the more likely fathers will take paternity leave (The League of Open Men 2015).

The same might also apply to the second feature of paternity leave, its length. Unlike the case of compensation, there might be a certain threshold associated with the length of paternity leave at which it will no longer incentivise fathers to take

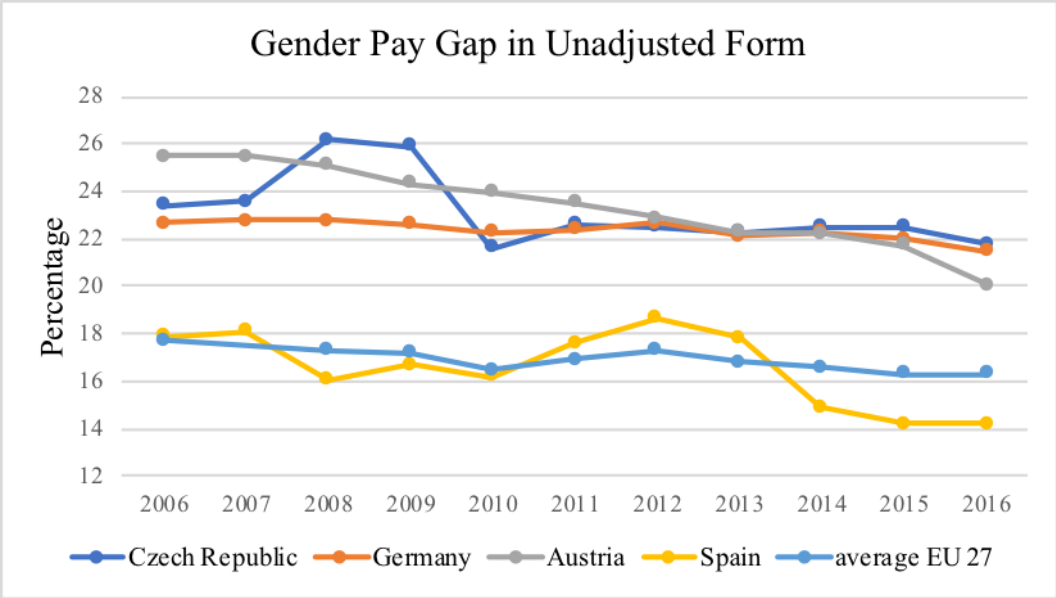
paternity leave since length (e.g. 2 months or longer) could negatively affect their careers. However, 1 week of paternity leave in our case is not long enough to affect this. Therefore, we can assume that the longer paternity leave, the more willing fathers will be to take it.

4.3.2 Improved Gender Equality at Work

Gender equality at work is expected to be positively affected by the introduction of paternity leave. Fathers, as mentioned previously, would be entitled to paternity leave and gain a higher degree of decision making freedom after childbirth (Fernández-Cornejo et al. 2016). As Cools et al. (2015) show, when spending time on paternity leave actively taking care of their new-born children, fathers build a closer bond with their child and might be more involved in childcare later. This change could help mothers in returning back to work easier when the child is older.

According to Cools et al. (2015), paternity leave plays an important role in closing the gender wage and employment gap, which in the Czech Republic is one of the highest among the European Union as shown in *Figure 2.* As women are more likely to dedicate their time to children, they have a lower probability of getting promoted at work (Kalíšková and Münich 2012). Paternity leave would introduce a slight change in work culture and in the division of traditional gender roles within the household, thus leading towards greater involvement of fathers and more engagement in active fatherhood.

Figure 2: Development of the gender pay gap during 2006-2016 period in the Czech Republic, Germany, Austria, Spain and the average gender pay gap in the EU 27 member states



Source: Author based on Eurostat Database

4.3.3 Improved Gender Equality at Home

Gender equality at home will also be promoted through the introduction of paternity leave. As suggested by the study focusing on the effect of paternity leave on fathers' involvement in childcare and domestic tasks in Spain (Romero-Balsas 2015), fathers that have one child and have used paternity leave tend to spend more time with their children in comparison to those who have not taken paternity leave. The increase of childcare time might not only have an immediate effect in the child's first year. Cools et al. (2015) additionally state that the change in policy might have a long-term impact such that as children grow older, fathers will continue to participate more, for instance, in their education.

However, according to Romero-Balsas (2015), this positive effect has not been accompanied by a greater share of domestic tasks. There has been no significant difference with and without the use of paternity leave.

4.3.4 Improved Child Development and Health

Paternity leave is suggested to have a positive impact on both the current and future development of children. The results from an implemented four-week paternity leave in Norway (Cools, Fiva, and Kirkebøen 2015) show that the use of paternity leave

improves children's school performance, especially in families where mothers have a lower degree of education than the fathers. As mentioned in the previous sub-section, this effect is also long-term and could be observed only a few years after paternity leave had been implemented.

4.3.5 Improved Parental Health

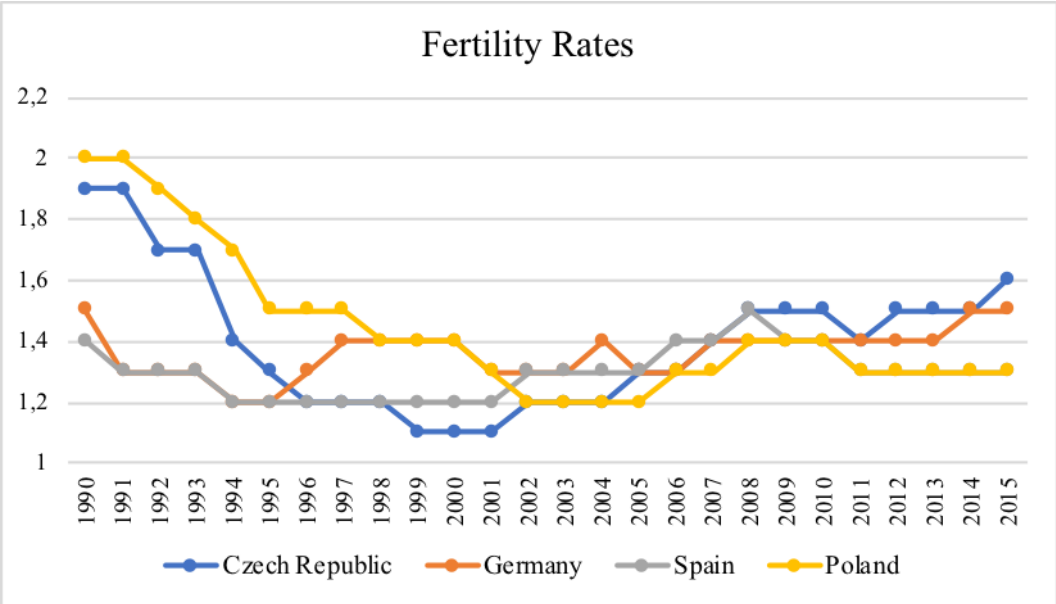
There seems to be a positive relation between paternity leave and parental health. Paternity leave has been proven to decrease the risk of mortality among fathers in Sweden between the years 1981 and 2001 (Månsdotter, Lindholm, and Winkvist 2007). This is also in line with a later study about mortality of fathers taking paternity leave between the years 1991 and 2008 (Månsdotter and Lundin 2010). Both studies observe a bigger difference in mortality for fathers that spend more than 30 days on paternity leave while a small decrease in mortality can be seen also for fathers with 1-10 days of paternity leave.

A positive relationship is also to be expected between paternity leave and the health of mothers. Increased presence of fathers after childbirth would mean a greater psychical support and increased help in the household for mothers.

4.3.6 Higher Fertility

Increased fertility could also potentially be a result of implementing a paternity leave policy, although Cools et al. (2015) have found no evidence that the paternity leave reform in Norway has had an impact on fertility rates. Fertility rates in Europe had been decreasing, with the lowest rates during 1999 to 2001. From 2002, there is a clear increasing trend as it is shown in *Figure 3.* Still, this trend shows no evident connection to the implementation of paternity leave policies. From the perspective of common sense, a short 1-week paternity leave would not have a significant effect on fertility. Therefore, fertility remains unaffected by the introduction of paternity leave.

Figure 3: Development of fertility rates during 1990-2015 period in the Czech Republic, Germany, Spain and Poland



Source: Author based on OECD Database

4.3.7 Higher Participation of Women in the Labour Market

The labour force participation of women has been strongly influenced by their dedicated time on maternity and parental leave. According to Kalíšková & Münich (2012), lower labour force participation is, particularly in the Czech Republic, involuntary and "constitutes a lost production potential." In the long run, improved gender equality can therefore support the concept of shared parenthood and result in higher participation of women in the labour market.

4.4 Costs of Paternity Leave

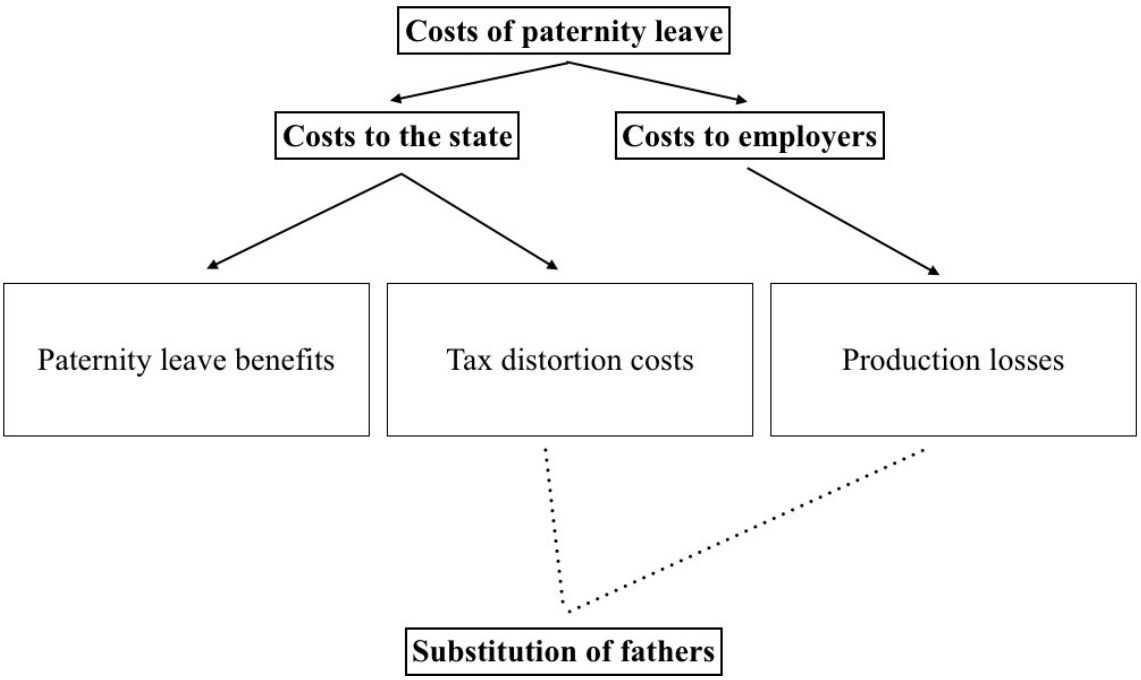
In this chapter, costs associated with paternity leave will be calculated. Two types of costs will be identified: costs to the state and costs to employers. The total costs of paternity leave will be based on the calculation of benefits that will be paid to fathers during paternity leave, a calculation of tax distortion as there are no taxes collected from fathers on paternity leave and a calculation of production losses as fathers are creating no value for their employers while on leave.

To calculate costs more precisely, we will be considering different characteristics of fathers and investigating which socio-economic groups have a larger propensity to take paternity leave. These propensities will then be used to calculate the total number of fathers taking paternity leave in specific socio-economic groups

under different scenarios of overall take-up rates as described in Chapter 3. To compute a total sum of costs, the mean gross wages within each socio-economic group are needed.

An important aspect that enters our calculations is the substitution rate of fathers. Substitution rate does not affect paternity leave benefits, however, the rate at which employers are able to replace fathers on paternity leave will directly influence tax distortion costs and production losses.

Figure 4: Division of costs of paternity leave



Source: Author's elaboration based on the Impact Assessment (Thomsen and Urth 2010)

4.4.1 Data

Data that is used for the calculations comes from a number of data sources.

The average age of fathers in 2016 is retrieved from the Czech Statistical Office. These statistics are obtained from the South Moravian region in the Czech Republic and we further make the assumption that the average age of fathers would not differ from the whole of the Czech Republic. Also, statistics on the unemployment rate of men in 2016 is obtained from the Czech Statistical Office.

Data about the number of eligible fathers with children younger than 1 year old and fathers' distribution within socio-economic groups is obtained from the Statistics on

Income and Living Conditions. These statistics were only available for 2014. Therefore, with the use of the total number of births retrieved from the Czech Statistical Office, we have adjusted for a higher number of births in 2016 in comparison to the number of births in 2014. This way we obtain the number of eligible fathers and their socio-economic distribution in 2016. Our statistics include only eligible fathers – this suggests that they are already employed, therefore, there is no need to additionally account for the unemployment rate or the non-participation rate.

Finally, the mean gross wages within each socio-economic group of fathers are obtained from the Statistics on Income and Living Conditions. This data was only available again for the year 2014. To adjust these statistics for inflation, for years 2015 and 2016, the data for the consumer price index from the Czech Statistical Office has been obtained.

4.4.2 Characteristics of Fathers

In order to provide more precise estimates of the costs, the aim of this chapter is to estimate which men are more likely to take paternity leave. Different incentives to take paternity leave will matter for the calculations of the total benefits to be paid to fathers, tax distortion costs and production losses. For the purpose of this calibration, we will be using the results presented by the study of Escot et al. (2014) and their regression estimates from a logistic regression estimating child-birth leave take-up rates. This study investigates the Spanish introduction of a 13-day paternity leave in March 2007 with a similar level of net compensation as in the case of the Czech Republic. As the study analyses personal and socio-economic determinants of fathers, differences in likelihood of taking paternity leave can be taken as a guide for the Czech experience. We will carefully consider the factors affecting different propensities and use the calibration further in our calculations.

According to the findings of Escot et al. (2014), the take-up rates are higher for parents working in the public sector rather than in the private sector, for both mothers and fathers. The estimates suggest that the difference in take-up rates between fathers working in the public and private sectors is very high. The employment sector influences the estimated probabilities of taking child-birth leave the most among all considered factors. Therefore, one of the characteristics we will be considering in our cost calculation is the allocation of the fathers between the public and private sectors.

Furthermore, the results of the Escot et al. (2014) study show that both men and women working on temporary contracts are less likely to take child-birth leave. This is due to the fact that permanent contracts constitute a higher degree of job security. As Kuchařová & Peychlová (2015) suggest, potential problems with employers in regards to taking child-birth leave have been mentioned by 77% of respondents as a reason for not taking child-birth leave. According to the OECD Database, only 10.21% of all dependent employees in the Czech Republic were employed on the basis of temporary contract in 2016 (OECD). This shows that the majority of employees are working on permanent contract. For simplicity, we will assume that all employees work on permanent contracts, and thus in our calculations, coefficient estimates of temporary contracts will not be taken into account.

Additionally, Escot et al. (2014) mention that the level of education is affecting take-up rates of child-birth leave of both men and women. The relationship of child-birth take-up rate and education is, however, different for men and women. For women, the estimates show that higher level of education is associated with an increased incentive to take child-birth leave; for men, a negative effect of higher education of the take-up rate of child-birth leave has been estimated. This difference is probably due to the different approach towards children men and women have. While better educated women can value their time with children more, more educated men would see, on the contrary, the high cost of taking leave and would have more to be sacrificed at work.

Furthermore, obtained estimates about the age of fathers suggest that younger and older fathers are more likely to take paternity leave, showing a non-linear, U-shaped relationship (Escot, Fernández-Cornejo, and Poza 2014). This relationship is, according to Escot et al. (2014), a result of a number of reasons. Firstly, the oldest group of men is on average in the best and most stable economic situation and may take the opportunity of paternity leave as a unique experience in their life. Secondly, the youngest group of men are said to be the most progressive in parental behaviour, and their careers might not be as developed as the careers of middle-aged men. Therefore, they do not sacrifice much by taking paternity leave. For the purpose of our calibration, we will be using the average age of fathers at birth in the Czech Republic. This data is not available for the whole Czech Republic; however, we can base our estimate on data from one of the regions in the Czech Republic gathered by the Czech Statistical Office. In 2016, the average age of fathers at birth in the South Moravian Region was 34.1 years (The

Czech Statistical Office 2016c). This statistic will be plugged into the regression to obtain the estimated probabilities of being on leave.

Moreover, further assumptions will be made with regards to other variables. With the use of available statistics from the Czech Statistical Office, we can simplify our calculations to the case where all men have Czech nationality (i.e. there are no immigrants). This assumption is supported by the fact that in 2016, only 1.9% of all men in the Czech Republic did not have Czech citizenship (The Czech Statistical Office 2016a). Another assumption will be made regarding employed spouses. As the unemployment rate of men was equal to 3.4% in 2016 (The Czech Statistical Office 2016b), following a decreasing trend since 2012, we will for simplicity assume that parents of new-born children live in households with employed spouses. The last assumption regarding the population will be connected to managerial functions. Our calculations will be simplified for the case of fathers who are not managers.

Lastly, it will be assumed that there is no difference between regions in the Czech Republic. This was not the case for regions in Spain. In order to capture the difference between regions, an additional control was included in the regression. For simplicity, we will assume that the introduction of paternity leave policy in the Czech Republic will create similar incentive for fathers to take paternity leave as was present in Spanish regions with more encouraging policies. Furthermore, as we cannot observe any pattern or trending behaviour in the Czech Republic, the variable representing trend will be excluded in our estimation of probabilities.

All in all, to estimate different probabilities of take-up rate among various groups of fathers, we consider four groups of fathers, namely fathers working in the public sector with a low level of education, fathers working in the public sector with a high level of education, fathers working in the private sector with a low level of education and fathers working in the private sector with a high level of education. The estimated probabilities of using the paternity leave that were calculated based on the regression are then multiplied by 26. This is done due to the fact that the data used by Escot et al. (2014) include all fathers with a child younger than 1 year. This means that the estimated probabilities represent probabilities of a father being on child-birth leave in the current week. As the proposed paternity leave policy in Spain was of the length of 2 weeks, we would multiply this by 26 (i.e. the number of 2-week periods in a year). For the 4 groups of fathers, the resulting probabilities they take paternity leave are 29.84%, 28.57%, 16.56% and 15.85%, respectively

These estimated probabilities are different for each group of fathers and are taken into account in our calculation of costs. These probabilities are not taken as nominal values; what is valuable for the analysis is the difference between these groups. The calibration shows that there is a very small difference by the level of education; low educated fathers have a slightly higher probability of taking paternity leave in both sectors. More significant is the difference between public and private sectors. We see that fathers working in the public sector are almost twice as likely to take paternity leave as fathers working in the private sector.

4.4.3 Number of Fathers

To be able to determine costs associated with paternity leave, we first have to find out the number of fathers within specific socio-economic groups who are expected to take leave. We will estimate these numbers based on different take-up rates scenarios. For this purpose, we combine the results from Chapter 3 (i.e. three different scenarios of 50%, 70% and 90% take-up rates among the eligible fathers) and the results from Section 4.5.1 discussing the prevalence of leave-taking among fathers with different socio-economic characteristics.

To calculate the expected number of fathers within each socio-economic group taking paternity leave, we departed from the results reporting the propensity of fathers to take paternity leave in Spain. Based on the estimates reported by Escot et al. (2014), we calculated the expected probabilities of taking the leave for representative fathers in each of the four socio-economic groups: low educated fathers working in the public sector, high educated fathers working in the public sector, low educated fathers working in the private sector and high educated fathers working in the private sector. Given the total number of eligible fathers and their distribution in the Czech population over these four socio-economic groups we have applied proportional mapping to compute take-up rates within each of these groups which would correspond to 50%, 70% and 90% overall take-up rates. The results are shown in *Table 1*.

In cases of the 70% and 90% overall take-up rates, resulting take-up rates for both groups of fathers working in the public sector exceeded 100%. Therefore, we forced these rates not to exceed 100% and proportionally adjusted the take-up rates of fathers working in the private sector. As Escot et al. (2014) have determined only results for the case of lower overall take-up rates, their estimation results are based on such a data set. For our purposes, the importance of using this case study from Spain lies in

the large difference between take-up rates of fathers in the private and public sectors. However, as the overall take-up rates of 70% and 90% are already quite high, there is no more space for such a large difference between the socio-economic groups of fathers.

Table 1: Number of fathers

			Take-up rates		
NUMBER OF FATHERS	Total number of fathers with children <1 year old	Mean gross wage	With overall take-up rate 50%	With overall take-up rate 70%	With overall take-up rate 90%
Public sector; Low education	1 549	18 519	82,56%	100,00%	100,00%
Public sector; High education	12 003	33 929	79,04%	100,00%	100,00%
Private sector; Low education	28 854	23 286	45,82%	66,25%	90,54%
Private sector; High education	45 281	42 313	43,86%	63,41%	86,66%
All	87 686		50%	70%	90%

4.4.4 Substitution Rates

In order to determine costs associated with paternity leave, substitution for fathers taking paternity leave would have to be estimated for the purpose of calculating tax distortion costs and production losses. In some cases, employers will be forced to substitute workers for fathers on paternity leave by the nature of their business (for instance in machinery or production lines). Especially for businesses that remunerate workers with hourly wage, it might be crucial to find a full replacement or find substitutes for absent workers by other means. This may be done by increasing the activity of existing staff or by finding replacement staff for the short period of 1 week.

The reason why the substitution rate is going to be used in the calculation is that substitution staff is, in the majority of cases, less efficient than existing staff. If a firm uses its stable staff and replaces a father on paternity leave by paying them overtime, workers are going to work more than usual and their productivity will decrease with the increased time spent at work. If a firm hires a replacement staff or deals with an absence of a father by a reallocation of workers, this substitution will never be 100% efficient.

As Thomsen and Urth (2010) suggest, this parameter is difficult to estimate and very uncertain. For the purposes of our calculation, we will be using two rates of

substitution. In one scenario, the substitution rate of 30% will be used. This is quite a low rate of substitution and is supported by the argument that, as Thomsen and Urth (2010) mention, paternity leave is short and it might be difficult to find a replacement for such a short period of time. For some firms, it might be even more costly to recruit a new person than to lose production of the father on leave. In the second scenario, it will be assumed that the substitution rate is equal to 70%, so as to keep the productivity level and not to lose competitiveness. The substitution rate of 100% can hardly ever be reached and firms are going to aim at the highest possible level of substitution; 70% substitution rate is close to an optimal level of substitution.

4.4.5 Calculation of Paternity Leave Benefits

The first set of costs are paternity leave benefits that are paid by the state to the fathers. These costs are not borne by employers, they are a burden of the state. The calculation of paternity leave benefits is based on the calculation of the daily assessment base drawn from mean wages for four socio-economic groups with the use of reduction boundaries as of 2016. For a father in a specific group, mean paternity benefits received for 7 days on paternity leave are calculated. The results of calculated paternity leave benefits are shown in *Table 2*.

Here, it is important to notice that the calculated benefits are the highest benefits paid by the state in this scenario. This is due to the fact that the three reduction boundaries constitute a level of discounting. Also, once a father earns more than 82,150 CZK monthly, the daily assessment base exceeds the third reduction boundary and the remaining amount is not taken into consideration. Fathers with an income below the mean will not be affected; however, fathers with an income higher than the mean will be affected in the way that their daily assessment base may overlap the next reduction level. When a father's daily assessment base exceeds the higher reduction (or in some cases above the third reduction boundary), he receives proportionally less back on his paternity benefits. This is why the sum of our calculated benefits is the maximum benefits paid to fathers by the state. In reality, the sum of paternity leave benefits might be slightly lower.

Table 2: Paternity leave benefits

BENEFITS	Total paternity benefits at 50% take-up rate	Total paternity benefits at 70% take-up rate	Total paternity benefits at 90% take-up rate
Public sector; Low education	3 813 933	5 339 506	4 619 854
Public sector; High education	47 866 241	67 012 738	60 559 027
Private sector; Low education	49 590 893	69 427 250	97 998 846
Private sector; High education	115 114 138	161 159 793	227 482 344
	216 385 204	302 939 286	390 660 071

4.4.6 Calculation of Tax Distortion Costs

The second set of costs are the costs following from fathers not receiving their wage during the 7 days on paternity leave, thus there are no taxes that can be collected by the state in this period.

In the Czech Republic, income tax, social insurance and health insurance are deducted from workers' wages. The base of income tax calculation is the super-gross wage, which is calculated as 134% of the gross wage and represents all compulsory costs of an employee to a firm. The income tax constitutes 15% of the super-gross wage. Then, the social insurance is to be paid separately by an employee and by an employer to the state; 25% of the gross wage is collected from the employer and 6.5% of the gross wage is collected from the employee. Additionally, health insurance is paid by the employee and the employer, however, it is not counted as direct income to the state system since it goes to the system of health insurance. Therefore, tax distortion in our case will be evaluated only as the distortion of income tax and social insurance.

In our calculations, the mean super-gross wages are going to be calculated from the mean gross wages for each socio-economic group of fathers. Then, the mean income tax and the mean social insurance paid by an employer and by an employee are calculated accordingly for each group, with the use of the number of eligible fathers. In combination with the two scenarios of substitution rates as described in Chapter 4.5.3, in the case of the substitution rate of 30%, the resulting tax distortion costs are only going to be 70% of the total calculated tax distortion. In the case of the higher substitution rate of 70%, the tax distortion is only going to be 30% of the total calculated tax distortion. The results are shown in *Table 3*.

Table 3: Tax distortion costs

TAX DISTORTION COSTS		Total tax distortion costs at 50% take-up rate	Total tax distortion costs at 70% take-up rate	Total tax distortion costs at 90% take-up rate
Public sector; Low education		3 202 033	4 482 846	3 878 654
Public sector; High education		43 535 033	60 949 046	55 079 304
Private sector; Low education		41 634 633	58 288 486	82 276 114
Private sector; High education		113 644 821	159 102 749	224 578 760
Sum		202 016 520	282 823 128	365 812 832
Substitution rate	30%	141 411 564	197 976 190	256 068 982
	70%	60 604 956	84 846 938	109 743 850

4.4.7 Calculation of Production Losses

The third set of costs occurring are losses on production and these are mostly costs to the respective firms. It might also be considered as costs to the state since the state loses a proportion of the value added tax or corporate tax, however, it would be difficult to distinguish which production loss would cause loss on VAT and which on corporate tax. Therefore, only production losses to firms are going to be considered in our calculation.

The calculation is based on the assumption that the value created by an employee (thus the potential loss on production when a worker is missing) is at least as high as the labour costs. Labour costs are often larger than the super-gross wages. Since funds are included in labour costs, they reduce the labour costs, on the contrary employee benefits are added extra and thus increase the labour costs.

To estimate production losses to a firm, we use the mean super-gross wages as a reasonable equivalent to the labour costs. Again, two scenarios of substitution rates will be used. If a firm is able to substitute at a level of 30%, resulting production losses will only be 70% of the total production losses. If the substitution rate is equal to 70%, production losses to the firm are only 30% of total production losses. In *Table 4*, results of production losses calculation are shown.

Table 4: Production losses

PRODUCTION LOSSES		Total production losses at 50% take-up rate	Total production losses at 70% take-up rate	Total production losses at 90% take-up rate
Public sector; Low education		7 931 099	11 103 538	9 607 017
Public sector; High education		107 831 690	150 964 366	136 425 632
Private sector; Low education		103 124 599	144 374 439	203 789 266
Private sector; High education		281 486 247	394 080 746	556 257 926
Sum		500 373 636	700 523 090	906 079 842
Substitution rate	30%	350 261 545	490 366 163	634 255 889
	70%	150 112 091	210 156 927	271 823 953

4.5 Results of Calculations

Calculated paternity leave benefits constitute the smallest part of all costs, amounting to nearly 216 million CZK for a 50% overall take-up rate, 303 million CZK for a 70% take-up rate and 391 million CZK for a 90% take-up rate.

Calculated tax distortion costs differ for two cases of substitution rates. The smallest distortion costs occur in the case of a 50% overall take-up rate and a 70% substitution rate, amounting to 61 million CZK. On the contrary, the highest tax distortion costs were estimated at 256 million CZK for the highest overall take-up rate of 90% and a lower substitution rate of 30%.

Calculated production losses also differ for two cases of substitution rates. Again, the smallest production losses occur at a 50% take-up rate with a 70% substitution rate, costing 150 million CZK. In contrast, the highest production losses follow from reduced ability to substitute the work force at the highest take-up rate of 90%, costing 634 million CZK. At the lower substitution rate, production losses constitute the largest item of costs.

Total calculated costs were calculated as a yearly cost and were strongly dependent on the overall take-up rates and substitution rates. The expected costs in the case of the lower substitution rate of 30% were 708 million CZK, 991 million CZK and 1.28 billion CZK, with take-up rates of 50%, 70% and 90% respectively. These expected costs in the case of 70% substitution rate were 427 million CZK, 598 million CZK and 772 million CZK, with take-up rates of 50%, 70% and 90% respectively.

Substitution rate is shown to be crucial for tax distortion costs and production losses. In both cases, the costs are lower for 90% overall take-up rate with 70% substitution than for 50% take-up rate with a 30% substitution rate. This suggests that

the level at which employers are able to substitute for fathers on paternity leave is very important. If employers were able to efficiently replace fathers on paternity leave with other workers, the total costs drop dramatically. In all cases of take-up rates, the costs with a higher percentage of substitution are roughly half the costs with a lower percentage of substitution. For the case of a lower substitution rate of 30%, calculated costs to the state are almost equal to calculated costs to employers. At a higher substitution rate of 70%, costs to the state are significantly higher than costs to employers.

5. Discussion

Because expected benefits of paternity leave are not calculated, we can hardly argue that the introduction of paternity leave is or is not economically reasonable. However, even if the expected benefits could be calculated to some extent, we cannot expect these benefits to compete with the expected costs in absolute terms. A paternity leave policy is surely a policy that would affect the state tax system and create an additional cost item in the government budget. On the other hand, benefits resulting from the introduction of paternity leave are more intangible in the way that they change the public's thinking, work environment and family environment. Some of these changes can be captured only in the long term and some degree of difficulty. Therefore, we leave to reader's consideration whether the identified and described expected benefits outweigh the calculated expected costs.

Conclusion

We discussed the recent change in legislation – the introduction of paternity leave in the Czech Republic in February 2018. This change is likely to affect both work and family environment. Fathers are now entitled to take 7 days of paternity leave under similar conditions as are valid for maternity leave.

The evaluation of expected costs and benefits to the introduction of paternity leave in the Czech Republic is conducted by the method of ex ante analysis. The ex ante evaluation is based on data from 2016 as no data after the implementation of paternity leave is available. Therefore, the actual situation in 2016 is compared to a hypothetical situation of implementing paternity leave policy in the same year. From a large part, the analysis is based on derived assumptions. Several assumptions are made regarding the overall take-up rate level of fathers. To cover more scenarios, the evaluation is conducted for the case of 50%, 70% and 90% overall take-up rates of fathers.

With the use of existing literature, all possible benefits of paternity leave are defined and thoroughly argued. Before the evaluation of the expected benefits of paternity leave, fathers' involvement in childcare is shown to be beneficial for both parents and children. Then, three major features that will influence the benefits of paternity leave are identified: fathers' individual rights, compensation level and length of paternity leave. The literature overview supports the following expected benefits of paternity leave: improved gender equality at work, improved gender equality at home, improved child development and health, improved parental health and higher participation of women in the labour market. No evidence was found about the influence of the introduction of paternity leave on fertility.

The expected costs are divided into two groups, costs to the state and costs to employers. The following expected costs have been identified: paternity leave benefits, tax distortion costs and production losses. For the calculation of each cost, statistics on the number of eligible fathers, their distribution over different socio-economic groups and their mean wages are retrieved from the Statistics on Income and Living Conditions in 2014. These statistics are further adjusted to obtain the statistics for 2016.

To increase the precision of our calculation, our calibration is based on socio-economic groups of fathers and their different take-up rates of paternity leave. We divided fathers in the Czech Republic into four socio-economic groups: low educated fathers working in the public sector, high educated fathers working in

the public sector, low educated fathers working in the private sector and high educated fathers working in the private sector. Using the results of Escot et al. (2014) about fathers and paternity leave in Spain, we accounted for the fact that fathers working in the public sector are almost twice as likely to take paternity leave than fathers working in the private sector.

With the use of this calibration, we calculated the number of fathers taking paternity leave in each socio-economic group under overall take-up rates of 50%, 70% and 90%. When combining these results with mean wages for fathers in every group, we obtained estimated costs of paternity leave benefits that are paid to fathers on paternity leave. In the calculation of expected tax distortion costs and production losses, it was also accounted for substitution rate assuming that employers will have to substitute for fathers on paternity leave to some extent. Two scenarios of substitution rate 30% and 70% were introduced; expected tax distortion costs and production losses were calculated for both substitution rates in each scenario of overall take-up rates.

We observed that the most significant item of costs were production losses. The costs were the lowest for the case of 50% overall take-up rate and substitution rate of 70%. They amounted to 427 million CZK. In contrast, the highest costs were estimated for the case of the highest overall take-up rate of 90% and the lower substitution rate of 30%, annually 1.28 billion CZK. Both the substitution rate and the overall take-up rate of paternity leave were found to have a major impact on the estimated costs.

The introduction of paternity leave is a step towards greater equality at work and at home. Benefits of paternity leave will affect the society as a whole, costs of paternity leave are a burden for the state system of social support, tax payers and employers. It is left to the reader's consideration whether the expected benefits are sufficient to justify the expected occurring costs associated with the introduction of paternity leave in the Czech Republic.

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List of appendices

Appendices

Appendix 1: Number of fathers given 50% take-up rate

50%	Total number of fathers: 43 843	
	Probability on leave; overall take-up rate included	Number of fathers on leave
Public sector; Low education	82,56%	1 278
Public sector; High education	79,04%	9 487
Private sector; Low education	45,82%	13 220
Private sector; High education	43,86%	19 858

Appendix 2: Number of fathers given 70% take-up rate

70%	Total number of fathers: 61 380	
	Probability on leave; overall take-up rate included	Number of fathers on leave
Public sector; Low education	115,58%	1 790
Public sector; High education	110,66%	13 282
Private sector; Low education	64,14%	18 507
Private sector; High education	61,40%	27 801
	Adjusted probability on leave; overall take-up rate included	Adjusted number of fathers on leave
Public sector; Low education	100,00%	1 549
Public sector; High education	100,00%	12 003
Private sector; Low education	66,25%	19 115
Private sector; High education	63,41%	28 714

Appendix 3: Number of fathers given 90% take-up rate

90%	Total number of fathers: 78 917	
	Probability on leave; overall take-up rate included	Number of fathers on leave
Public sector; Low education	148,60%	2 301
Public sector; High education	142,27%	17 077
Private sector; Low education	82,47%	23 795
Private sector; High education	78,94%	35 744
	Adjusted probability on leave; overall take-up rate included	Adjusted number of fathers on leave
Public sector; Low education	100,00%	1 549
Public sector; High education	100,00%	12 003
Private sector; Low education	90,54%	26 124
Private sector; High education	86,66%	39 242

Appendix 4: Paternity leave benefits

BENEFITS	Mean gross wage	Daily assessment base	DAB to the 1st reduction boundary	DAB to the 2nd reduction boundary	DAB to the 3rd reduction boundary	Total reduction to the DAB	70 % of total reduction to the DAB	Benefits for 7 dayss on paternity leave	Total paternity benefits at 50% take-up rate	Total paternity benefits at 70% take-up rate	Total paternity benefits at 90% take-up rate
Public sector; Low education	18 519	609	609	0	0	0	426	2 983	3 813 933	5 339 506	4 619 854
Public sector; High education	33 929	1 115	901	214	0	0	721	5 045	47 866 241	67 012 738	60 559 027
Private sector; Low education	23 286	766	766	0	0	0	536	3 751	49 590 893	69 427 250	97 998 846
Private sector; High education	42 313	1 391	901	450	63	40	828	5 797	115 114 138	161 159 793	227 482 344
									216 385 204	302 939 286	390 660 071

Appendix 5: Labour costs, social insurance

LABOUR COSTS, SOCIAL INSURANCE	Mean gross wage per week	Mean labour costs per week	Mean income tax per week	Mean social insurance paid by an employer per week	Mean social insurance paid by an employee per week
Public sector; Low education	4 630	6 204	931	1 157	301
Public sector; High education	8 482	11 366	1 705	2 121	551
Private sector; Low education	5 822	7 801	1 170	1 455	378
Private sector; High education	10 578	14 175	2 126	2 645	688

Appendix 6: Tax distortion costs, production losses

TAX DISTORTION COSTS, PRODUCTION LOSSES		Total tax distortion costs at 50% take-up rate	Total tax distortion costs at 70% take-up rate	Total tax distortion costs at 90% take-up rate	Total production losses at 50% take-up rate	Total production losses at 70% take-up rate	Total production losses at 90% take-up rate
Public sector; Low education		3 202 033	4 482 846	3 878 654	7 931 099	11 103 538	9 607 017
Public sector; High education		43 535 033	60 949 046	55 079 304	107 831 690	150 964 366	136 425 632
Private sector; Low education		41 634 633	58 288 486	82 276 114	103 124 599	144 374 439	203 789 266
Private sector; High education		113 644 821	159 102 749	224 578 760	281 486 247	394 080 746	556 257 926
Sum		202 016 520	282 823 128	365 812 832	500 373 636	700 523 090	906 079 842
Substitution rate	30%	141 411 564	197 976 190	256 068 982	350 261 545	490 366 163	634 255 889
	70%	60 604 956	84 846 938	109 743 850	150 112 091	210 156 927	271 823 953

Appendix 7: Total costs of paternity leave

OVERALL TAKE-UP RATE	BENEFITS	TAX DISTORTION COSTS		PRODUCTION LOSSES		Total costs at 30% substitution	Total costs at 70% substitution
		substitution 30%	substitution 70%	substitution 30%	substitution 70%		
50%	216 385 204	141 411 564	60 604 956	350 261 545	150 112 091	708 058 313	427 102 251
70%	302 939 286	197 976 190	84 846 938	490 366 163	210 156 927	991 281 639	597 943 152
90%	390 660 071	256 068 982	109 743 850	634 255 889	271 823 953	1 280 984 942	772 227 873