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The Fatherhood Premium or the Fatherhood Penalty? It Depends on the Type of Marriage You're in: The Case of Slovakia 2009 through 2018¹

Drahomíra ZAJÍČKOVÁ – Miroslav ZAJÍČEK*

Abstract

The study provides estimates of the fatherhood premium for Slovakia from 2009 through 2018 using data from the EU SILC survey. We found that a raw fatherhood premium amounted to 22.26% from 2009 through 2018. However, when controlling for demographic and human capital characteristics, the premium declines to 4.90%. When accounting for the effects of partnership, the premium turns into the fatherhood penalty of 7.31%. We also show that the fatherhood premium depends on the household division of labour. For dual-earner families, fatherhood results in a penalty on fathers' incomes that amounts to 9.23% (7.87% when controlled for demographic and human capital characteristics). However, this outcome is driven by two lowest deciles of male income distribution. The effect of fatherhood on men's incomes in the male-breadwinner model when the wife fully cares for the home and parental duties (as well as high income fathers in dual-earners families) is exactly the opposite. The fatherhood premium amounts to 21.79% (7.22% when controlled for demographic and human capital characteristics).

Keywords: *fatherhood, fatherhood premium, gender, labour market, EU SILC*

JEL Classification: J24, J30, D10

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Introduction

Parenthood not only represents a significant change in status and new experiences but also has a major impact on parents in purely economic areas. Recent studies highlight the asymmetric impact of parenthood on women and men in society (Petersen et al., 2014). The transition to fatherhood strongly affects men's lives, not only in terms of identity and well-being but also in terms of employment (Knoester and Eggebeen, 2006; Townsends, 2002), work behaviour and work expectations of men (Cohen, 1993; Eggebeen and Knoester, 2001).

The essence of the fatherhood premium is a frequently observed empirical fact that fathers have higher incomes than childless men. However, unlike the motherhood penalty, which is dealt with in the literature extensively (Waldfoegel, 1997; Budig and England, 2001; Avellar and Smock, 2003; Gangl and Ziefle, 2009; Cooke, 2014; Kahn, Garcia-Manglano and Bianchi, 2014; Zajíčková and Zajíček, 2020), fatherhood and its impact on the income of men is paid considerably less attention in the literature and usually only as a part of a study of other so-called “family pay gaps” (Glauber, 2008; Budig and Hodges, 2010; Killewald, 2013; Lundberg and Rose, 2000; Petersen, Penner and Høgsnes, 2014).

So far, there is not a comprehensive study of this topic using Slovak data, although understanding the consequences of parenthood on the labour market activity of men and labour market outcomes is important both for the sake of the research itself as well as for the public policy.

Thus, the goal of this paper is to fill in the gap and answer the following questions: Does the fatherhood premium exist in Slovakia? What is its size and development over time? What are the sources of the fatherhood premium? The study uses representative standardized data with a large number of respondents and focuses on a determination of the “net” effect of fatherhood on men's income (i.e., comparing fathers to childless men, taking into account other factors affecting men's income) both in aggregation and for certain subgroups separately. The period under examination spans from 2009 through 2018.

Determining the fatherhood premium in the Slovak Republic is interesting not only in itself, especially when this quantity has never been thoroughly estimated² or published in the Slovak Republic, but also concerning the so-called “gender pay gap”, as family pay gaps (i.e., the fatherhood premium and motherhood penalty) are considered today to be one of its most important causes

² Two estimates have been published in cross-sectional studies (Boeckmann and Budig, 2013, and Cukrowska-Torzewska and Lovasz, 2020), however, these used either other datasets (Luxembourg Income Study in case of the former) or estimates are using relatively old data sets (2013 at the latest).

(Cukrowska-Torzewska and Lovasz, 2020; Angelov et al., 2016; England, 2005). The Slovak gender pay gap is among the highest in the EU, along with Czechia, Germany, and Estonia (Eurostat, 2020). We also aim to provide an explanation of the sources of the fatherhood premium.

The study is structured in the following way: Section 1 provides an overview of existing literature including a description of the basic theoretical approaches. Section 2 describes the data that the calculations were based on, including the modifications being made. Section 3 describes the regression models used to estimate the size of the fatherhood premium in detail. The results of general analysis are interpreted in Section 4. Section 5 provides for a heterogeneity analysis. Section 6 concludes.

1. Theoretical Overview and Related Literature

Theoretical reasons why fathers might have higher incomes than childless men can be divided into three categories: (1) the household division of labour theory, (2) the discrimination theory, and (3) the selection theory. The household division of labour theory is based on the fact that, for couples living together, the strategy of the household division of labour (based on comparative advantage) is economically more effective than equally sharing responsibilities, since one of the spouses may specialise in production on the labour market, whereas the other can focus on household production, thus allowing them to maximize their overall benefit (Becker, 1965). Specialising within a household means that the partners perform different activities from those they would have done had they lived on their own. It is a statistical fact that those who live together as a couple are most often parents. To this end, the effects of the housework division of labour can superficially appear as a fatherhood premium although it is rather a partnership or marriage premium. At the same time, it is true that, for biological reasons, due to the influence of social standards and as a consequence of the gender pay gap within a couple from the start, the role of “caretaker” is usually fulfilled by the mother³ (Brewster and Rindfuss, 2000; Lehrer and Nerlove, 1986). In Slovakia (and other post-communist countries, most notably the Czech Republic), such a model is also supported by a long parental leave, primarily taken by mothers,

³ Traditional socialization is gender-based, encouraging men to develop labour market skills and women to become housewives and caregivers (Becker, 1981; 1985). The labour market, given the fact that employed women have historically earned less than men, supports this specialization (Bianchi, 2014; Blau, 2012; Corcoran and Courant, 1987; Oppenheimer, 1997; Smock, Manning and Gupta, 1999).

and also by the limited public support of the institutional care of children younger than 3 years old. In traditional societies, where men are expected to be “good providers/breadwinners/fathers” and to bear the responsibility for securing the family financially, it can be expected that after a child is born, they intensify their activities on the labour market (Maume, 2006; Kaufman and Uhlenberg, 2000; West and Zimmerman, 1987), for example, by selecting a certain type of work, working more hours, or increasing their work effort, etc. Moreover, men with family responsibilities are motivated to seek a stable job and eliminate decisions that could pose a greater risk of unemployment (Ahituv and Lerman, 2011). Besides increasing the number of working hours, men who do not have to take care of the household may have more energy for work and work harder even without increasing their number of working hours.⁴

However, the relation between fatherhood and increased work effort is particularly difficult to measure. According to Becker (1981), such an effect may only occur if the income potential of a man exceeds that of a woman. From this point of view, a fatherhood premium should thus be apparent primarily in men whose wives reduced their participation in the labour market or left it completely. Studies on data from the USA showed that men whose wives reduced their participation in the labour market due to motherhood increased their activity in the labour market as a consequence of fatherhood and received the fatherhood premium (Killewald, 2013; Killewald and Gough, 2013; Lundberg and Rose, 2000). Kmec (2011) did not find convincing evidence that fathers declare more proactive behaviour at work than childless men. Rather, fathers, more often than childless men, reported that they do (or at least feel) better at work, thanks to having everything that they need at home secured. Although self-reported proactive behaviour at work should be interpreted with caution, the results indicate that on average, fathers perceive their family responsibilities as a motivation for increasing their work effort (Killewald, 2013).

From the perspective of the division of labour theory, the fatherhood premium should be higher for men with partners out of the labour market and lower for men with partners working part-time or full-time (dual-income families). On the contrary, in more egalitarian societies, where the traditional division of roles in the family and a father whose only role is that of the breadwinner are no longer expected and where the care of the children is shared between the partners more

⁴ It is worth noting that in this paper our approach is a bit different. We shall measure a total impact of fatherhood on income, i.e. the fact of fatherhood impacts not only an income itself but also a decision on the amount of time to be devoted to a work. The total income (i.e. income regardless of time devoted to achieve that) is a better measure to compare than the normalization of income over the hours worked as a number of hours worked are also impacted by the fatherhood itself.

equally, the pressure on men to increase their work effort ceases. Fathers are expected to actively participate in the direct care of the children and their upbringing (Yeung et al., 2001; Esping-Andersen et al., 2013; Sullivan et al., 2014), and thus, to reduce the intensity of their participation in the labour market. In accordance with such an assumption, Bianchi et al. (2000) found out that the amount of housework done by American men increases with the workload and working hours of their wives. Similar results were also reported by Gershuny, Godwin and Jones (1994) for Britain. Therefore, the impact of fatherhood on men's careers would depend on the family gender model (traditional vs. egalitarian) prevailing in each respective society. However, generally speaking, the effect of specialisation within the couple on the father's income is complicated due to "family endogeneity" (Lundberg, 2005). Partnerships are, especially nowadays, transient – i.e., couples quite often split up, and new relationships are formed. If specialization affects the forming and stability of the couples, then building an analysis of the fatherhood premium on the existence and characteristics of the partner may cause selection bias. For example, if a couple in which the woman does not specialize in household care is more likely to split up, then the couples that exist at any moment of time are those in which specialization within the household occurs (Kalmijn, Loeve and Manting, 2007; Lepinteur, Fleche and Powdthavee, 2016; for an overview, see Cooke and Baxter, 2010). The impact of specialization on fathers' income would then be overrated.

The second possible theoretical explanation of the fatherhood premium existence is assumed discrimination in the labour market. According to this hypothesis, fathers do not obtain a wage premium as a result of their higher productivity and intensity after becoming fathers but as a result of a different perception of fathers from their employers, who might treat them more favourably. Employers may prefer fathers to childless men, expecting them to be more responsible, productive, competent, or purposeful than their childless counterparts (Correll, Benard and Paik, 2007; Phelps, 1972). Even regardless of the real differences in productivity among male employees, men can be treated differently in the workplace depending on their parental status (e.g., fathers being late for work are more tolerated). Fathers can also be more successful than childless men in negotiating with employers about promotions and pay raises as the prevailing stereotypes may lend legitimacy to these claims (Nelson and Bridges, 1999). In this case, for married fathers and especially for married fathers with wives specializing in care and housework, the fatherhood premium can be a consequence of positive discrimination by employers rather than a change in the fathers' behaviour. A laboratory experiment done by Correll et al. (2007) showed that when assessing equally qualified fathers and married childless men, fathers were

assessed more favourably concerning their potential work commitment, and a higher salary was recommended for them, even though the underlying qualities of the candidates were the same. On the other hand, an associated field experiment monitoring the response of real employers did not show any difference for fathers as opposed to childless men. Similar ambiguous results were obtained in an extensive field experiment including a number of labour markets in Sweden (Bygren, Erlandsson and Gähler, 2017). Discrimination by an employer may also manifest itself in other ways. It may affect not only the fathers' salaries but also access to well-paid jobs and opportunities for building human capital (Killewald, 2013). Or fatherhood may be taken into account when choosing which employees to lay off. Fuller and Cooke (2018) found that fatherhood premiums are higher in firms that lack formal performance appraisal procedures, supporting the argument that employers tend to overestimate fathers' productivity. While motherhood is perceived by employers as an obstacle in working life, due to which women cannot fully devote themselves to their work, fatherhood seems to be perceived as an entirely positive characteristic. The reason, as Townsend (2002) points out, may be that while a view of a woman as a "good mother" conflicts with her working career (either a woman will be a good mother or pursue her career), the view of a man as a good father does not conflict with his working career. The author describes the so-called "package deal", which includes individual characteristics that define men. In this "package", both the requirement to be a good father and the requirement to be a good worker stand side by side and these two roles are perceived as complementary.

The third line of explanation of the fatherhood premium focuses on selection effects when men with a higher income potential more often become fathers. For example, Augustine et al. (2009) show that men who had thought positively of fatherhood were doing well financially at the time of conception. This indicates that fatherhood may follow an improvement in the financial situation of a man. If this is the case, fathers' incomes will be higher on average, however, the causality leads from income to fatherhood, not the other way round. This is also confirmed by other research studies (Gibson-Davis, Edin and McLanahan, 2005), in which fathers with low incomes state that they want to postpone marriage (and fatherhood) until they have sufficient financial resources. Moreover, studies of male fertility indicate that certain personality characteristics, such as social skills, can be a predictor of both partnership and fatherhood (Jokela, Kivimäki and Elovainio, 2009; Von der Lippe, 2010). If these characteristics are also positively connected with incomes, fathers will earn more on average than childless men and the relationship between fatherhood and income will only be a correlation connected with a common variable in the background (social skills), not a causality.

Foreign studies show that the size of the fatherhood premium varies considerably among countries and that it does not have to be detected at all in some countries. The size of the premium substantially varies depending on how the fatherhood premium is estimated and what control variables are included, the type of income used (annual, monthly, hourly), the definition of parenthood, and the institutional environment. What also varies considerably is the estimation methodology and the data used. Below we provide an overall summary of the main results obtained in foreign studies so far. Several trends and generalisations can be observed:

- The fatherhood premium is highest in North America (the USA and Canada), ranging from 6 to 16% (Lundberg and Rose, 2000; Hodges and Budig, 2010; Boeckmann and Budig, 2013; Cooke and Fuller, 2018);
- The Northern European countries (Denmark, Norway, Sweden, Finland) have especially low fatherhood premiums (up to 2%), or the results are statistically insignificant (Kellokumpu, 2007; Petersen et al., 2014, Cools, Markussen and Strøm, 2017; Kleven, Landais and Sogaard, 2018). An exception within the large Western European countries is the former Eastern Germany region, where the fatherhood premium was not ascertained (Trappe and Rosenfeld, 2000; Whitehouse, 2002; Simonsen and Skipper, 2012);
- In the United Kingdom, Germany, and France the fatherhood premium reaches 2 to 10% according to various studies (Whitehouse, 2002; Meurs et al., 2010; Smith Koslowski, 2011; Pollmann-Schult, 2011);
- In countries with a more heterogeneous population (especially the USA and Canada), differences were found in the size of the fatherhood premium based on ethnicity, socio-economic level, and family form (Hodges and Budig, 2010; Killewald, 2013). For example, the fatherhood premium of white and Latin American men is higher (9%) than that of black men (7%). Moreover, the fatherhood premium of black men is only apparent for one or two children, whereas the fatherhood premium of white and Latin American men is apparent for three and more children as well (Glauber, 2008). Similarly, Budig and Hodges (2010) found out that the fatherhood premium is higher in married men, white men, university graduates, men in managerial professions, and households with a more traditional, gender-based work division. Killewald (2013) found out that married, cohabiting, and biological fathers receive a higher fatherhood premium than single fathers, fathers not living with their children, and stepfathers;
- If the existence of the fatherhood premium was proved in each study, then the attempts to find its sources did not yield unequivocal results. However, the performed studies indicate that the effect of discrimination by employers is more likely than the selection effect, although the results vary among countries (Lundberg and Rose, 2000; Smith Koslowski, 2011);

• For Slovakia, a fatherhood premium of 11% has been estimated (Boeckmann and Budig, 2013) on data from the Luxembourg Income Study using Heckman's selection correction. A smaller fatherhood premium was found in the Cukrowska-Torzewska study (2020), which used data from EU SILC (2005 – 2013), the Oaxaca Blinder estimation method, and it did not take into account the exact number of children. The estimated value of the fatherhood premium for Slovakia amounted to 6.2% (raw value) and 5.6% after adjustments were made for demographic characteristics.

In the post-socialist countries of Central and Eastern Europe, including Slovakia, it is difficult to reconcile work responsibilities and duties arising from parenthood. Parenting strategies follow the traditional gender model of complementary roles. Women are perceived as the best caregivers and are expected to take a break from work when children are young (Treas and Widmer, 2000). Nevertheless, there is also a strong social norm that women – at least after the children reach a certain age – have to work and contribute to the family income (Lück and Hofäcker, 2003), even though the capacity of pre-school care facilities, part-time work, and home-office opportunities are insufficient (at least in the pre-Covid years that we possess data for). Standards regarding the involvement of men in the family are relatively traditional. Nevertheless, a move from traditionalist views can be observed in Slovakia in recent years (e.g., the introduction of paternity leave) with men being less expected as sole breadwinners and women as full-time carers and homemakers. Such a shift may mean parallel and potentially conflicting commitments of men to family and work. Thus, the impact of fatherhood on wages remains an open question.

2. Data and Their Modifications

The reliable quantitative identification of a fatherhood penalty requires a comprehensive econometric analysis, which places relatively high demands on data. The data used in this study are based on the EU-SILC (European Union Statistics on Income and Living Conditions), which provide data about households and individuals, their employment, family situation, living conditions, income, health, and social life. It is the only complex data set consistently monitored on a long-term basis providing appropriate information about family, children, and the position of each person within the family on the labour market, including their income.

The year-on-year comparability of the data set makes it possible to monitor the development of the measured, and thus also estimated, quantities over time. The data used have the character of overview data and they include a complete

timeline of the EU SILC from the year 2009 to 2018 for the Slovak Republic. Each year, the set includes more than 8 thousand men in a sample.⁵ Our sample includes all employees as well as self-employed persons working full-time or part-time whose monthly income can be monitored. The respondents who were economically inactive for the entire reference period were removed from the data set.

This study defines a father as a man living together with at least one child in a common household. Therefore, in our approach, a father is in fact defined in a social sense of the word (meaning a man living with a child in a common household and raising it regardless of whether or not he is the biological father) and not in a biological sense. It could therefore happen that some biological fathers who were living separately (as a household of an individual) at the time of the data collection or with a partner in a childless, two-member household are not regarded as fathers in the data set. On the contrary, men without biological children living in a household with their partner's children are listed as fathers from this point of view. This approach is, however, more of an advantage than the opposite. To be regarded as a father by society takes living with a child in a family; biological ties are less important.

The category of childless men (the control group) includes three subgroups of men: a) fathers whose child (children) has left the household, b) men who have not had children yet but are planning to, and c) men who are not fathers and are not going to become fathers, and also a group of men who are fathers but do not live in a common household with any child. Since the EU-SILC only provides information about children present in the household (not about all the children – including those who have already left the household), it is necessary to separate the group of men whose child (children) has left the household. In accordance with the literature, we have chosen an approach that defines the set through a specific age range and cap the group of men from above by the age limit of 45. We are aware of the fact that such a definition and methodology do not take into account the long-term effects of parenthood on income. However, the restriction, to a certain extent, deals with the concavity of wage development over the life cycle and therefore it is not necessary to include a variable covering this effect.

⁵ Years 2005 through 2008 are not included in the analyses because in these years, the total number of households was considerably smaller, some segments of the population have not been included at all, and some important characteristics were not incorporated in the survey. Years 2017 and 2018 contain smaller sample size – approximately a half – of the size used in years 2009 through 2016. The reason for such a change lie with a Eurostat. The usual and predictable outcome of such a change is widening of confidence intervals when estimating regression coefficients for these years.

Table 1

Definition of Fatherhood and Income in the Data Set

Father	Childless	Workforce coverage	Definition of income*
Ages of up to 45 with a dependent child up to, and including, 25 years of age in a common household	Ages of up to 45 years old without children	Employees and self-employed persons	Income from work and business, including additional income in Euro/month

Note: * The term "income" is a general term here including rewards for work in the private (wage-related) and public (salary-related) spheres but also the income of self-employed persons from business and other income.

Source: Authors.

Table 2 shows a composition of the data set (after truncation) concerning a number of childless men and men with children for each year.

Table 2

Number of Fathers and Childless Men in the Data Sample in the Years 2009 – 2018

Observations	Sample									
	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Father	2408	2274	2052	2006	2210	2146	2244	2242	1004	957
1 child	756	772	686	682	746	702	758	768	359	330
2 children	1174	1090	1016	984	1088	1086	1144	1140	497	470
3+ children	478	412	350	340	376	358	342	334	148	157
Childless	2958	3054	2858	2918	2682	2846	2864	2958	1531	1437
In total	5366	5328	4910	4924	4892	4992	5108	5200	2535	2394

Source: Authors' calculations based on the EU SILC data (EU SILC 2009 – 2018).

We observe particularly high shares of childless men; the share of childless men exceeds 50%. The most numerous among fathers are those with two children (about 50%), followed by fathers with one child (about 30%). The least numerous are the fathers with three or more children (15%).

3. Regression Model and Its Variations

Our estimates are based on the standard OLS regression model using the set of appropriate controls. The fatherhood premium is estimated in two basic forms – raw fatherhood premium and adjusted fatherhood premium (the one which uses control variables that are supposed to take account for factors affecting a man's income regardless of fatherhood and were described above).

We use two alternative approaches to express the effect of fatherhood: a) via the use of the binary variable *PARENT* (for an analogy, see also Anderson et al., 2002; Budig and England, 2001; Waldfogel, 1997) via the use of three binary variables – *CHILD1F*, *CHILD2F*, and *CHILD3plusF* (we call such an approach the extended version of the basic model).

To identify the sources of the fatherhood premium as well as to test the various hypotheses of its origin, we also provide the heterogeneity analysis for different subgroups defined according to the location of employment or business, whether they are employed in the public or private sector (or self-employed), the size of the employer, as well as whether the partner is active in the labour market.

The variability in the approaches, and thus in the modelling, will enable the more accurate identification of the sources of the fatherhood premium, or it will enable more detailed identification owing to the theoretical explanations given above. The composition of the population in Slovakia (a particularly low incidence of minority groups, which are not even identified in the data set) does not open the room to testing all approaches offered by the literature, especially the one from the USA (also from Western Europe). The models we used are as follows:

1. The model of raw fatherhood premium (1) and an extended version of the same (1a);
2. The model of adjusted fatherhood premium (2) and an extended version of the same (2a);
3. The model of adjusted fatherhood premium for the effect of a partnership (3) and an extended version of the same (3a);
4. Heterogeneity analysis I: The impact of location on the size of the fatherhood premium – models (4a through 4c) – raw and adjusted versions;
5. Heterogeneity analysis II: The impact of a type of a partnership on the size of the fatherhood premium – models (5a and 5b) – raw and adjusted versions;
6. Heterogeneity analysis III: The impact of the sector on the size of the fatherhood premium (private vs. public sector) – models (6a and 6b) – raw and adjusted versions;
7. Heterogeneity analysis IV: The impact of the size of the enterprise on the size of the fatherhood premium (big, medium, and small) – models (7a through 7c) – raw and adjusted versions;
8. Heterogeneity analysis V: The impact of the educational achievements on the size of the fatherhood premium (primary, secondary, and tertiary) – models (8a through 8c) – raw and adjusted versions.

Models (1) to (8) are defined as follows with meanings of individual variables provided below:

$$\text{Model (1): } \ln Y = \alpha + \beta_1 \text{PARENT} + \beta_2 \text{DENSEPOP} + \beta_3 \text{INTERPOP} + \varepsilon_i.$$

$$\text{Model (1a): } \ln Y = \alpha + \beta_{11} \text{CHILD1F} + \beta_{12} \text{CHILD2F} + \beta_{13} \text{CHILD3plusF} + \beta_2 \text{DENSEPOP} + \beta_3 \text{INTERPOP} + \varepsilon_i.$$

Model (2): $\ln Y = \alpha + \beta_1 PARENT + \beta_i X + \varepsilon_i$, where the X controls for population density, education, number of active years in the labour market and its square, size of the company/employer, contract type, managerial position, and industry according to the NACE classification, as defined in the previous chapter.

Model (2a): $\ln Y = \alpha + \beta_{11} CHILD1F + \beta_{12} CHILD2F + \beta_{13} CHILD3plusF + \beta_i X + \varepsilon_i$, where the X controls are the same as in Model (2).

Model (3): $\ln Y = \alpha + \beta_1 PARENT + \beta_4 PARTNER + \beta_5 \ln PARTNERINCOME + \beta_i X + \varepsilon_i$, where the X controls are the same as in Model (2).

Model (3a): $\ln Y = \alpha + \beta_{11} CHILD1F + \beta_{12} CHILD2F + \beta_{13} CHILD3plusF + \beta_4 PARTNER + \beta_5 \ln PARTNERINCOME + \beta_i X + \varepsilon_i$

where the X controls are the same as in Model (2).

Models (4) through (7) provide for a heterogeneity analysis.

Models (4a) and (4b) *RAW*: $\ln Y = \alpha + \beta_1 PARENT + \varepsilon_i$ with $PARTNERW = 1$ (a), $PARTNERW = 0$ (b).

Models (4a) and (4b) *Adjusted*: $\ln Y = \alpha + \beta_1 PARENT + \beta_i X + \varepsilon_i$ with $PARTNERW = 1$ (a), $PARTNERW = 0$ (b).

Models (5a) and (5b) *RAW*: $\ln Y = \alpha + \beta_1 PARENT + \varepsilon_i$ with $PUBLIC = 1$ (a), $PUBLIC = 0$ (b).

Models (5a) and (5b) *Adjusted*:

$\ln Y = \alpha + \beta_1 PARENT + \beta_4 PARTNER + \beta_5 \ln PARTNERINCOME + \beta_i X + \varepsilon_i$
with $PUBLIC = 1$ (a), $PUBLIC = 0$ (b), where $PUBLIC$ is a dummy variable that stands for employment in a public sector (sectors 84 and 85 according to the NACE classification).

Models (6a) through (6c) *RAW*: $\ln Y = \alpha + \beta_1 PARENT + \varepsilon_i$ with $SIZEBIG = 1$ (a), $SIZEMIDDLE = 1$ (b), $SIZESMALL = 1$ (c).

Models (6a) through (6c) *Adjusted*:

$\ln Y = \alpha + \beta_1 PARENT + \beta_4 PARTNER + \beta_5 \ln PARTNERINCOME + \beta_i X + \varepsilon_i$
with $SIZEBIG = 1$ (a), $SIZEMIDDLE = 1$ (b), $SIZESMALL = 1$ (c).

Models (7a) through (7c) *RAW*: $\ln Y = \alpha + \beta_1 PARENT + \varepsilon_i$ with $DENSEPOP = 1$ (a), $INTERPOP = 1$ (b), $THINPOP = 1$ (c).

Models (7a) through (7c) *Adjusted*:

$\ln Y = \alpha + \beta_1 PARENT + \beta_4 PARTNER + \beta_5 \ln PARTNERINCOME + \beta_i X + \varepsilon_i$
with $DENSEPOP = 1$ (a), $INTERPOP = 1$ (b), $THINPOP = 1$ (c).

Models (8a) through (8c) *RAW*: $\ln Y = \alpha + \beta_1 PARENT + \varepsilon_i$ with $EDUHIGH = 1$ (a), $EDUMIDDLE = 1$ (b), $EDULOW = 1$ (c).

Models (8a) through (8c) *Adjusted*:

$\ln Y = \alpha + \beta_1 PARENT + \beta_4 PARTNER + \beta_5 \ln PARTNERINCOME + \beta_i X + \varepsilon_i$
with $EDUHIGH = 1$ (a), $EDUMIDDLE = 1$ (b), $EDULOW = 1$ (c).

Variable Y accounts for all the person's income, standing for the gross income from his primary employment (or self-employment), his parallel part-time employment, or his parallel business activities. The income is reported by the respondents themselves and is expressed in Euros. The data are presented as the sum of their incomes over the past 12 months regardless of their real-time labour market participation. In order to account for different times of labour market participation, the data are normalised to one month. The regression models use the gross natural logarithm of gross income ($\ln Y$).

Next to the person's income, the model takes into consideration the partner's labour market activity as well as income. It is defined, modified, and normalised in the same way as the men's income. The partner's income logarithm is denoted as $\ln PARTNERINCOME$. Whether the man lives in a household together with a partner (his wife or he lives in a household of cohabiting unmarried partners) is expressed by the binary variable $PARTNER$, which takes the value 1 (if the partners live together) or 0 if the man lives without a partner. A binary variable $PARTNERW$ denotes whether their partner is or is not working, without being specific on the intensity of her labour market activity.

The number of children is the number of dependent children (persons of pre-school age, at primary school, or preparing for an occupation) up to, and including, the age of 25 living in the same household. The modelling uses two approaches: a) the binary variable $PARENT$, which stands for 1 if there is at least one dependent child in the family, or it takes the value of 0 in the opposite case; b) the inclusion of three binary variables of $CHILD1F$, $CHILD2F$, and $CHILD3plusF$ for families with one, two, or three and more children. With this way of coding, a family with three children, for example, may be listed as a family with one child because the two older offspring have already set up their own households. However, due to our age limitations, such cases are rare and do not have the potential to impact the overall estimates.

Education is represented by two binary variables – $EDUHIGH$ and $EDUMIDDLE$. The variables (if they take the value of 1 respectively) indicate that the person has received either tertiary or secondary education. The reference group is then of those who finished only basic/primary education or no education at all ($EDULOW$).

The location of employment or business is coded with the binary variables *DENSEPOP* or *INTERPOP*, which take the value of 1 if a man lives/does business in a densely populated or intermediate area. A densely populated area consists of contiguous grid cells of 1 km² with a density of at least 1,500 inhabitants per 1 km² and a minimum population of 50,000. Intermediate areas are clusters of contiguous grid cells of 1 km² with a density of at least 300 inhabitants per 1 km² and a minimum population of 5,000. The remaining areas are thinly-populated ones that also serve as a base for reference.

The length of work experience is represented by the quantity *EXPERIENCE*. In the literature, the length of work experience is approximated in different ways. Besides the number of years worked, age alone can be used as well. However, using age is complicated by the fact that people of the same age may have achieved different education levels or people of the same age may achieve the same level of education in different lengths of time. People can also differ by the intensity of their labour market activities. These undetectable differences (if a proxy variable for work experience is age) then affect the quality and interpretability of the approximations. The number of years worked also takes into consideration the possible time when the worker was out of the labour market (being unemployed, caring for family members, etc.). Bearing in mind that, in Slovakia, most fathers do not spend a substantial time on parental leave, the advantage of the variable *EXPERIENCE* is, concerning the number of children (and the fact of fatherhood itself), essentially exogenous (unlike the analogous situation with mothers when the same variable is, concerning motherhood, quite endogenous). *EXPERIENCE 2* stands for its square. *SIZEBIG* and *SIZEMIDDLE* are binary variables corresponding to the size of the workplace in terms of the number of employees. *SIZEBIG* equals 1 if the number of employees exceeds 50, otherwise, it is zero. *SIZEMIDDLE* equals 1 if the number of employees ranges between 11 and 49, otherwise, it is zero. The baseline is a workplace with fewer than 10 employees. *CONTRACT* is a dummy variable representing the fact that the employee has an unlimited contract, otherwise, it is zero. *SUPERVISOR* is a dummy that equals 1 if the employee is in a managerial position, otherwise, it is zero. *x.NACE* is a set of dummies depicting the occupational groups, where *I* equals *A* through *U*.

The descriptive characteristics of the variables within the data sets used for each year of the period monitored are presented in Appendix 1.⁶

⁶ See on:
<<https://www.sav.sk/journals/uploads/0105122107%2022%20Zajicek%20Appendix.pdf>>.

4. Results and Their Interpretation

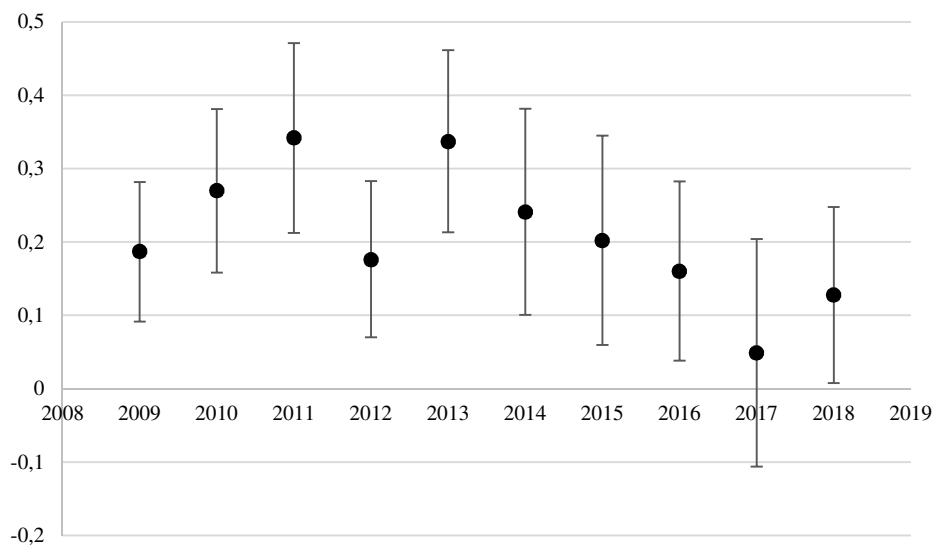
In this part of the article, we will interpret the results of the estimates from the individual models and discuss them.

Models (1) and (1a)

Graph 1 shows the estimates of the regression coefficient β_1 (both in points and at a 95% interval) for basic raw model (1), i.e., the model estimating the size of the fatherhood premium in Slovakia for each individual year between 2009 and 2018, while only the gross effect of fatherhood on a man's income is estimated, whereas its intensity (i.e., the number of children), whether or not the man lives in the same household as his partner, or how intensely this partner is involved in the labour market are not taken into consideration. Likewise, the influence of the control variables (apart from the influence of the locality)⁷ is not taken into consideration.

Graph 1

An Estimate of the Raw Fatherhood Premium in Slovakia from 2009 through 2018



Source: Authors' calculations based on the EU SILC data (EU SILC 2009 – 2018).

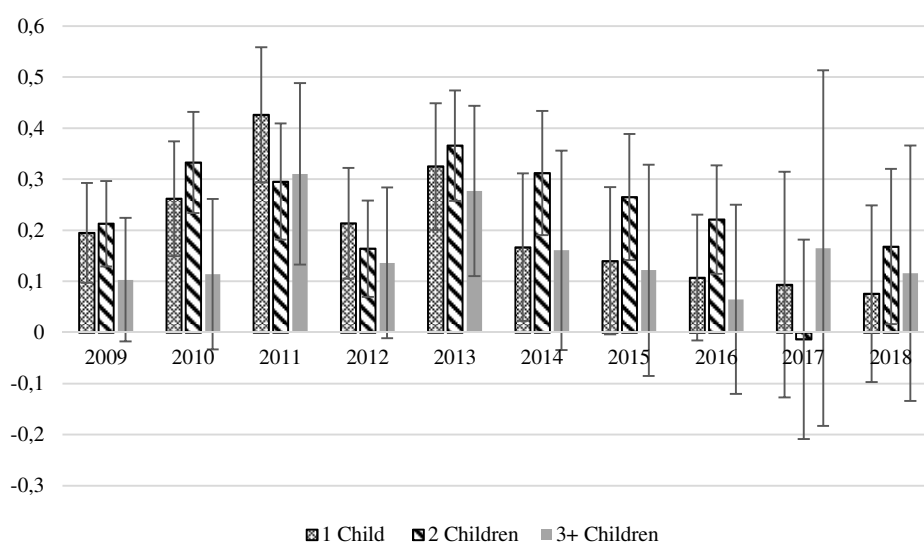
Thus, Graph 1 shows the gross fatherhood premium, in which case we find that fathers earn more than childless men on average, and that goes for the entire

⁷ The detailed results of the regression analyses are provided in the Statistical appendix.

period under review, with the exception of 2017 when the observed coefficient is not statistically significant.⁸ These gross premiums range from 34.2% for the year 2011 to 12.8% for the year 2018. From 2009 to 2013 (with the exception of 2012), the gross wage premium increases, however, it has been in decline since 2013. The average gross fatherhood premium is 22.6%. The results obtained are in line with Boeckman and Budig (2013), who estimated the gross fatherhood premium to be at 12.2% on the 2012 LIS data. In our analysis for 2012, the fatherhood premium is 17.6%. However, the analysis also shows that 2012 is rather exceptional in terms of the development of the fatherhood premium at that time, as in the surrounding years, the fatherhood premium amounts to over 30%.

Graph 1a

An Estimate of the Raw Fatherhood Premium for Slovakia from 2009 through 2018 for Different Numbers of Children



Source: Authors' calculations based on the EU SILC data (EU SILC 2009 – 2018).

Concerning this model, in the case where we take into account the size of the intensity of fatherhood (i.e., the number of children in the family), or model (1a),⁹ the overall results are similar. The highest premium is awarded to men

⁸ If the estimate is marked as statistically significant in the text, then it is understood as a 95% level of significance. If the estimate is marked as having weak statistical significance, then it is understood as a 90% level of significance.

⁹ As in the case of model (1), the detailed results of the regression analyses are provided in the Statistical appendix.

with two children (an average of 25.1%, with a maximum of 36.6% in 2013). The premium for fathers with one child is 21.17% (on average), reaching its maximum in 2011 (42.6%). After reaching the maximum values in 2011 and 2013 for these categories, the fatherhood premium gradually decreases, until after 2016 where it practically disappears.

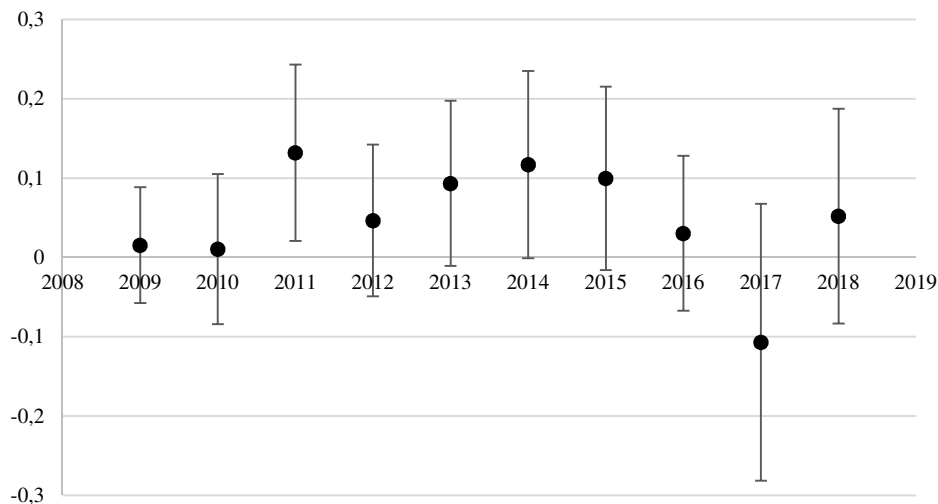
For fathers with a higher number of children, the fatherhood premium is not statistically significant, except for some years acting as the exception. The exception years are 2011 and 2013, in which case the size of the fatherhood premium displays its maximum values, even for fathers with fewer children. Everything is shown in Graph 1a, which displays the estimates of the regression coefficients β_{11} , β_{12} and β_{13} (both in points and at a 95% interval).

Models (2) and (2a)

Model 2 adds a wide range of control variables providing a way to adjust the overall raw fatherhood premium for the impact of accumulated human capital and other market and personal circumstances.¹⁰ Graph 2 displays estimates of the size of the fatherhood premium, i.e., the regression coefficient β_1 .

Graph 2

An Estimate of the Adjusted Fatherhood Premium for Slovakia from 2009 through 2018



Source: Authors' calculations based on the EU SILC data (EU SILC 2009 – 2018).

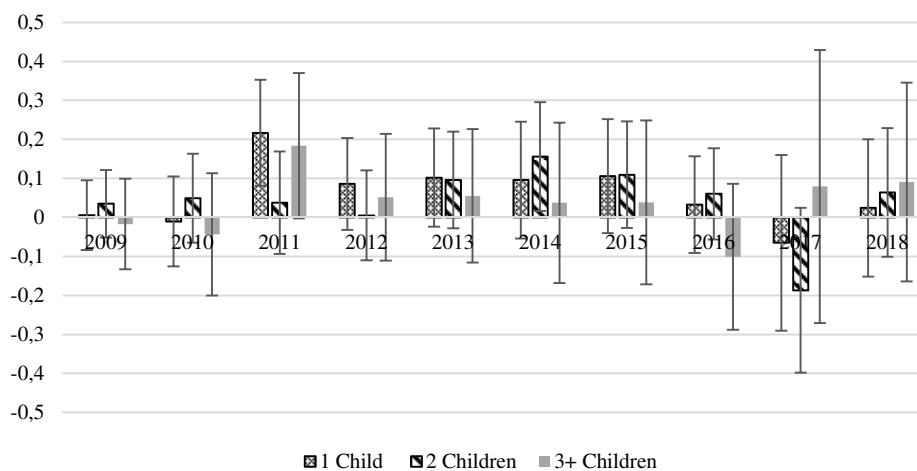
¹⁰ The detailed results of the regression analyses are provided in the Statistical appendix.

The adjusted fatherhood premium is not statistically significant over the whole period monitored, except for the years 2011 and years 2013 through 2015 where the regression coefficients are only weakly statistically significant though. For the whole period, the average value of the fatherhood premium amounts to 4.9% (and statistically significant). Thus, it is in line with the estimates provided Cukrowska-Torzewska (2020), i.e. 5.6%, rather than with those provided by Boeckmann and Budig (2013), i.e. 11.9%. However, it is worth noting, that Boeckmann and Budig (2013) only takes into account one year (2012) and Cukrowska-Torzewska (2020) uses data from 2004 through 2013. Moreover, both papers are not highly specific by way of the controls used to adjust the value of the fatherhood premium. Thus, control variables (mostly taking into account the impact of accumulated human capital) can explain about three-quarters of the raw fatherhood premium.

If the model takes into consideration the fatherhood intensity (i.e., the number of children in the family), i.e., model (2a), the overall results are quite similar.¹¹

Graph 2a

An Estimate of the Adjusted Fatherhood Premium for Slovakia from 2009 through 2018 for Different Numbers of Children



Source: Authors' calculations based on the EU SILC data (EU SILC 2009 – 2018).

The vast majority of regression coefficients estimating the size of the fatherhood premium are statistically insignificant for the individual years. However, for fathers of one child, year 2011 is an exception (the value of the coefficient is 21.7%). For fathers of two children, the value of the fatherhood premium is statistically

¹¹ The detailed results of the regression analyses are available upon request from the authors.

significant for the year 2014. For fathers of three or more children, the coefficient is only weakly statistically significant for the year 2011 (18.4%). The average values of the fatherhood premium for the entire period are 5.28% for fathers of one child, 5.17% for fathers of two children (both coefficients statistically significant), and 2.72% for fathers of three or more children (statistically insignificant). Our data indicate that an increase in family size does not correlate with an increase in the fathers' wages.

Models (3) and (3a)

To avoid confounding the impact of fatherhood on earnings with the well-documented marriage premium (Gupta et al., 2007; Korenman and Neumark, 1991), we also investigated the relationship between fatherhood and the net earnings of the effects of partnership. Models (3) and (3a) are an extension of models (2) and (2a)¹² by the control variables related to marital/partnership status (i.e., whether the father/man lives in a common household with a partner) and the degree of involvement of the partner in the labour market. To investigate the household specialization and its relation to the fatherhood wage premium, we distinguish between dual-earner couples and households with a primary male breadwinner (i.e., those where the female partner is not employed). The presence of a partner who specializes in unpaid household work (as the primary caregiver and performing the majority of the household chores) may explain part of the relationship between fatherhood and earnings; respectively, it may affect the amount of the fatherhood premium. We also incorporate the effect of the partner's involvement in the labour market in the model. The inclusion of both effects further modifies our view on the fatherhood premium.

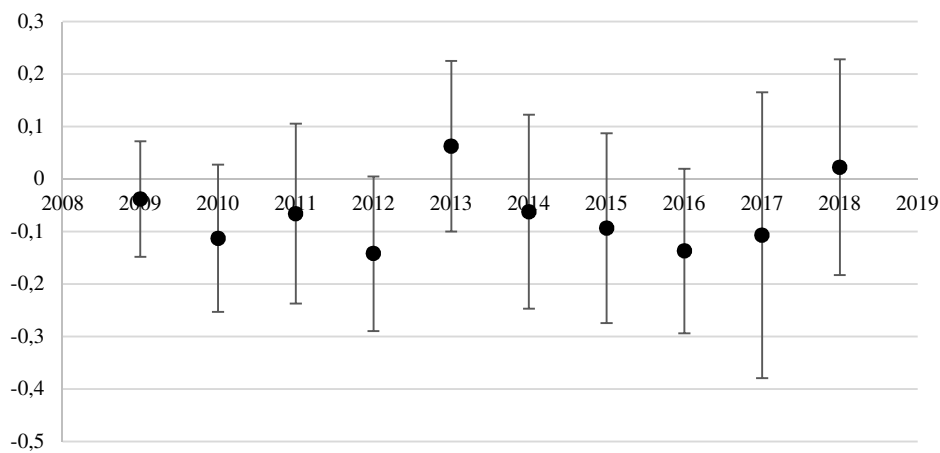
In model (3), the fatherhood premium is not statistically significant for any reference year. The exceptions are years 2012 and 2016, where the regression coefficients show weak statistical significance. Moreover, these coefficients indicate the existence of the fatherhood penalty at 12.7% or 13.7% respectively. On average for the entire period, the father's incomes show a penalty of 7.3%. Thus, a marital status, respectively a partnership (together with other control variables), not only completely eliminates the existence of any fatherhood premium, but it turns it into its opposite. Therefore, the reported fatherhood premium in the model (2) seems to be more of a partner premium, i.e., a premium resulting from the existence of the partner focusing on housework and childcare. Living with a partner who specializes in home care reduces a conflict between work and family for men, thus allowing them to fully concentrate on their labour market

¹² The detailed results of the regression analyses are provided in the Statistical appendix.

activities. Thus, more “traditional” gender attitudes towards maternal employment and the division of labour within the household are linked to higher fatherhood premiums for the male breadwinners. Men with caregiving partners primarily receive the fatherhood premium; men whose partners are not sole caregivers receive no premium or even incur penalties on their earnings. Our findings suggest that allowing for heterogeneity among men is important and that the fatherhood premium is strongly linked to the division of labour within households.

Graph 3

An Estimate of the Adjusted Fatherhood Premium for Slovakia from 2009 to 2018 with the Partnership/Marriage Premium Included



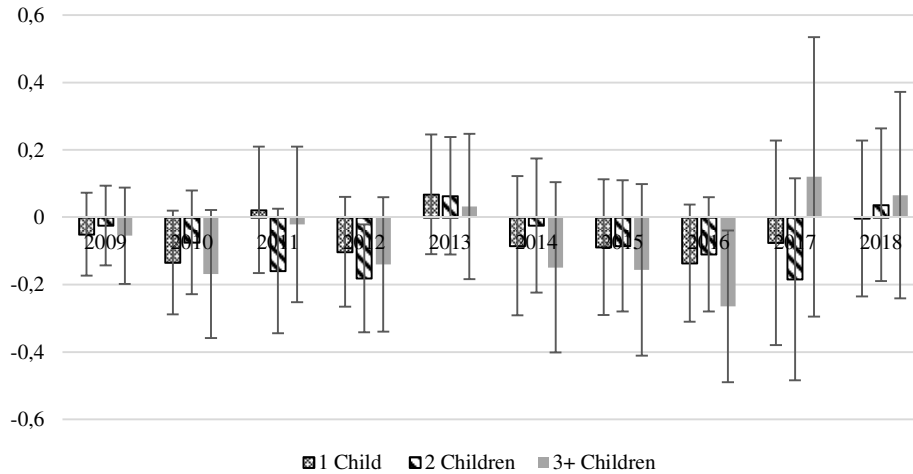
Source: Authors' calculations based on the EU SILC data (EU SILC 2009 – 2018).

When the effect of the number of children is taken into account, as in model (3a), the view of the fatherhood premium becomes much more nuanced, albeit no substantial change in view is provided (Graph 3a).

The results for model (3a) show that the fatherhood premium phenomenon practically vanished for any of the groups of fathers at any year with statistically significant regression coefficients in the year 2012 for fathers of two (with the fatherhood penalty of 18.1%) and the year 2016 (the penalty of 26.4%). On average for the entire period, the fatherhood penalty for fathers of one child amounts to 7.08%, 7.07% for fathers of two children, and 9.27% for fathers of three or more children (all aggregate coefficients are statistically significant). Our findings indicate that looking at average earning differences among all men disguises the existing earning differences that depend on the household division of labour. Hence it is important to allow for a heterogeneity among men/fathers in our analysis, which is to follow in Section 5.

Graph 3a

An Estimate of the Adjusted Fatherhood Premium for Slovakia from 2009 to 2018 for Different Numbers of Children with the Partnership/Marriage Premium Included



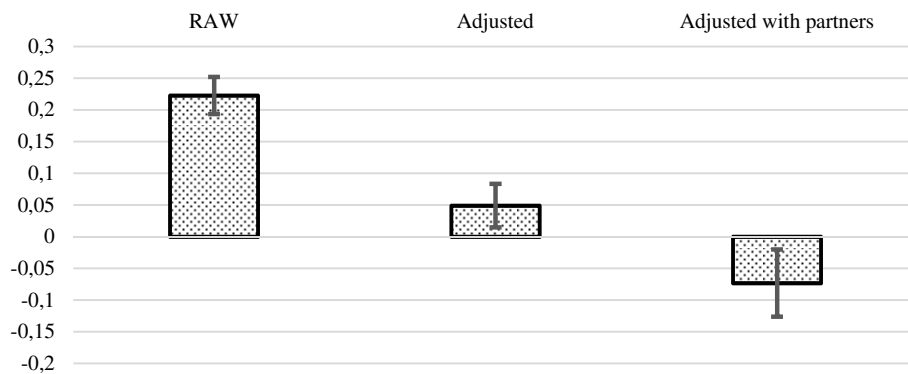
Source: Authors' calculations based on the EU SILC data (EU SILC 2009 – 2018).

To summarize the whole picture, we provide the graph depicting the differences in average premiums/penalties for the different models (1) through (3), and models (1a) through (3a).¹³

Graph 4

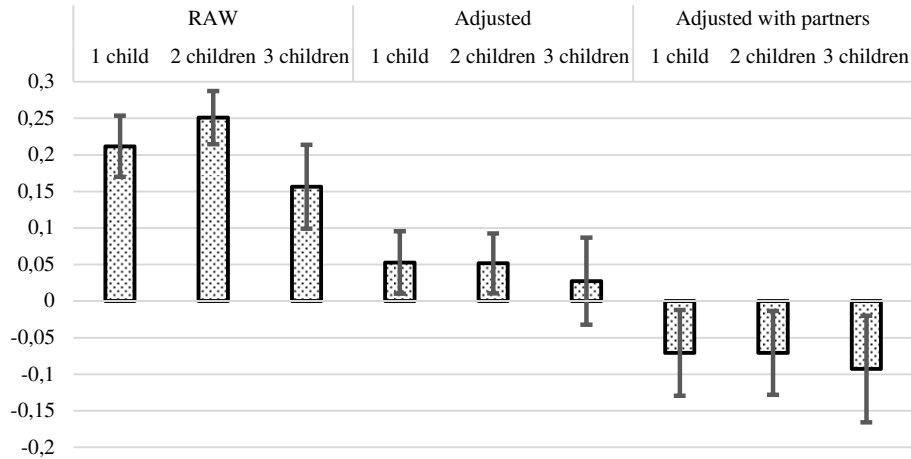
Aggregate Fatherhood Premiums/Penalties for the Years 2009 – 2018

4.1. Aggregate Fatherhood Premiums/Penalties



¹³ When “average”/“aggregate” results are reported the regression model does include all data from years used (2009 – 2018) with dummy variables for each year added to account for the inter-annual variation due to a flow of time.

4.2. Aggregate Fatherhood Premiums/Penalties for Different Numbers of Children

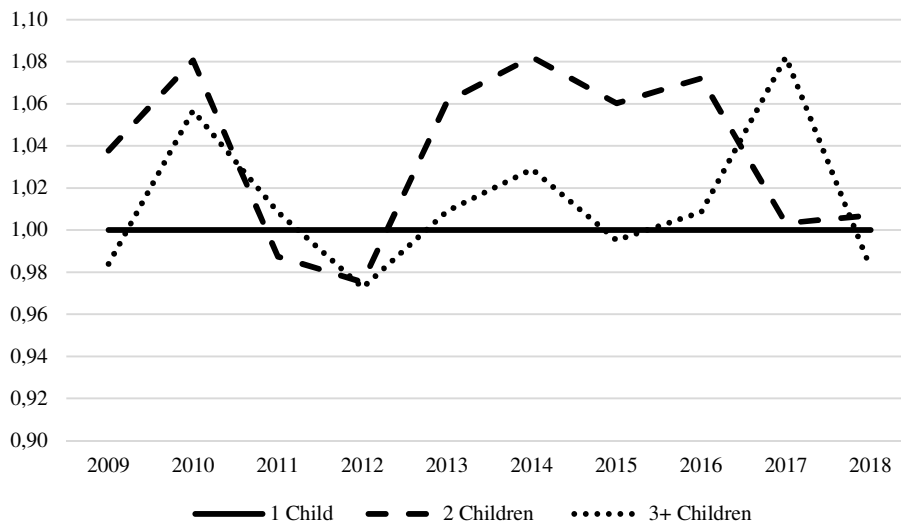


Source: Authors' calculations based on the EU SILC data (EU SILC 2009 – 2018).

The father's position in the labour market also plays an important role in deciding on the additional child. In the course of the observed period (2009 – 2018), there were significant changes in the relative incomes of fathers with different numbers of children – see Graph 5.

Graph 5

Average Income of Fathers with Different Numbers of Children Relative to the Income of Fathers with One Child



Source: Authors' calculations based on the EU SILC data (EU SILC 2009 – 2018).

A comparison of incomes expresses that while the incomes of fathers with two children show the highest earnings (except for the years 2011, 2012, and 2017), the relationship is not monotonous with the number of children. On the other hand, men with three or more children find themselves below the level of earnings of fathers with one child. The data indicate two effects: In families with fewer children (one or two), there is a positive selection of men for fatherhood – men with two children have higher incomes, and these incomes are the reason for the higher numbers of children. Multiple fatherhoods mainly concern families in which low-income fathers with a precarious position in the labour market live and there we detect the primarily negative self-selection of men for fatherhood. This effect has also been observed in some studies (Lundberg and Rose, 2000; Hodges and Budig, 2010). At the same time, over the years, there have been changes in the composition of the Slovak workforce, with lower levels of earnings for fathers with three children being associated with reduced human capital; over time, among fathers with three or more children, who make up 1/5th of all fathers, people with basic education, lower work experience, and fewer hours worked began to be significantly represented when compared with fathers of two children. Continuous employment and work experience is a decisive factor in the level of wages.

5. Heterogeneity Analysis: Models (4) through (8)

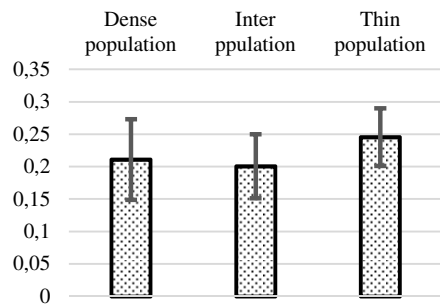
In this section, we examine the extent to which the fatherhood premium differs between demographic subgroups. As part of the analysis, we will examine the effect of population density (densely, moderately, and sparsely populated areas), the type of partnership (the “traditional” family model, respectively the traditional gender model of complementary roles vs. the “dual-income” model), sector influence (public vs. private), an influence of workplace size (large, medium, and small) and an impact of achieved level of educational (primary, secondary vs. tertiary). For the heterogeneity analysis, we merged data from individual years to achieve higher statistical significance, as dividing the EU SILC data by various characteristics would result in relatively small samples affecting the statistical significance.¹⁴ The regression analysis of this section takes into account effects of partnership and the work intensity of the partner in the labour market (fully adjusted data).

¹⁴ In so doing, we lose information on the development over time. The authors conducted the heterogeneity analysis once per each year. For those interested, such analysis may be provided on request by the authors, however, it yields relatively little as opposed to the merged numbers, which is why we do not report it in this paper.

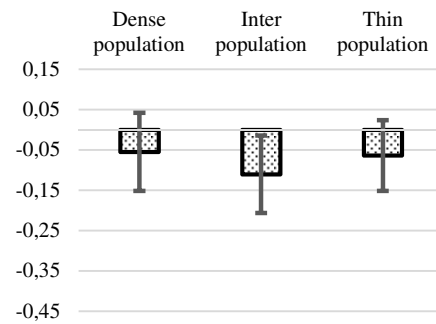
Graph 6

Differences between the Income of Fathers and Childless Men Based on Each Social Demographic Category

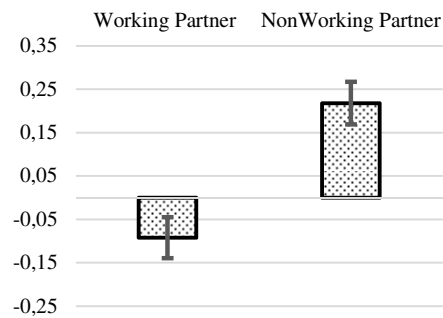
6.1. Differences in the Income of Fathers and Childless Men by Population Density – Raw Data



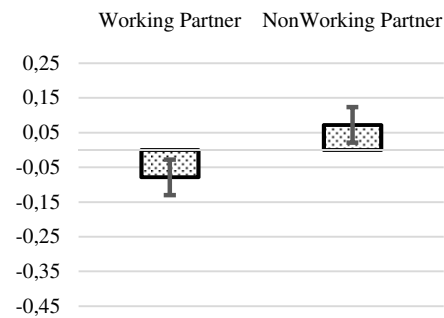
6.1a. Differences in the Income of Fathers and Childless Men by Population Density – Fully Adjusted Data



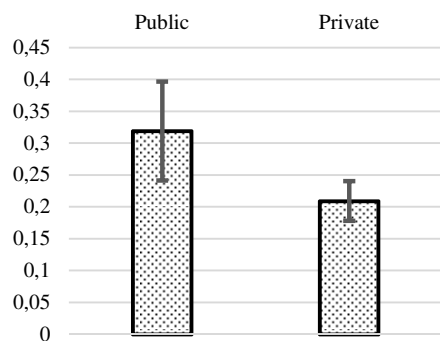
6.2. Differences in the Income of Fathers and Childless Men by the Type of Partnership/Marriage – Raw Data



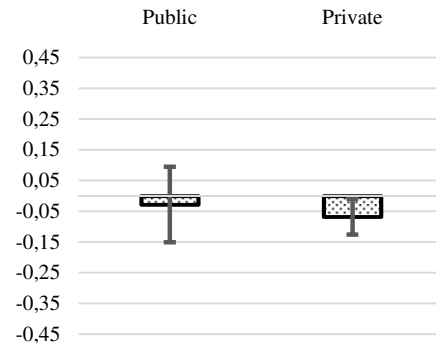
6.2a. Differences in The Income of Fathers and Childless Men by the Type of Partnership/Marriage – Fully Adjusted Data



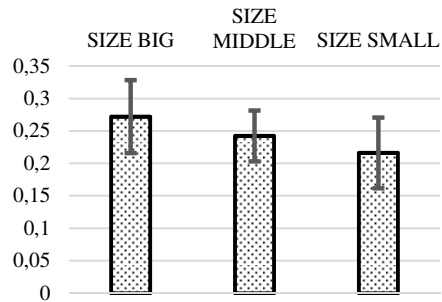
6.3. Differences in the Income of Fathers and Childless Men by Sector – Raw Data



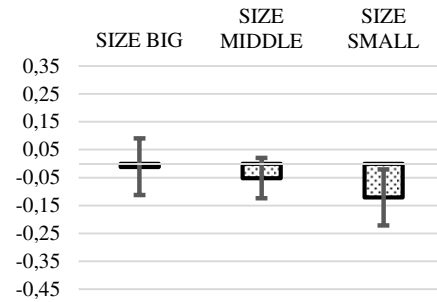
6.3a. Differences in the Income of Fathers and Childless Men by Sector – Fully Adjusted Data



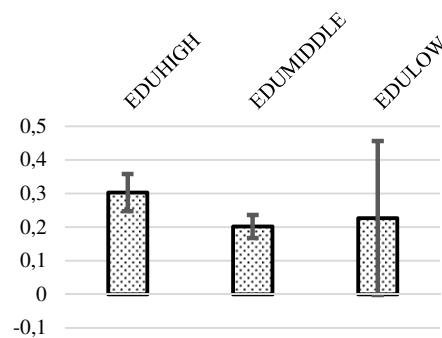
6.4. Differences in the Income of Fathers and Childless Men by Employer Size – Raw Data



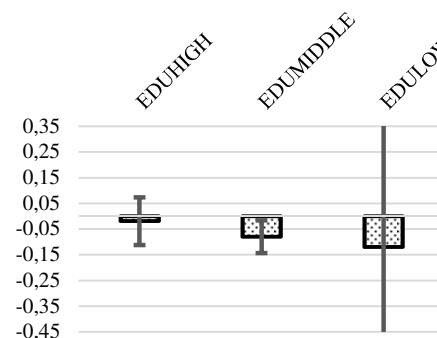
6.4a. Differences in the Income of Fathers and Childless Men by Employer Size – Fully Adjusted Data



6.5. Differences in the Income of Fathers and Childless Men by Education – Raw Data



6.5a. Differences in the Income of Fathers and Childless Men by Education – Fully Adjusted Data



Source: Authors' calculations based on the EU SILC data (EU SILC 2009 – 2018).

The largest raw fatherhood premium can be traced in sparsely populated areas (24.55%). In moderately and densely populated areas, the magnitudes of the fatherhood premium are indistinguishable from one another (the magnitudes of the premium are 21.10% and 20.07%, respectively). The situation changes significantly if we take into consideration the control variables, including the impact of the partnership and the partner's degree of involvement in the labour market. In such cases, there is only one statistically significant result: For moderately densely populated areas with a fatherhood penalty of 11.02%.

The raw fatherhood premium is higher in the public sector (31.89%) when compared to the private sector (20.91%). However, these differences are blurred, taking into account the control variables and partnerships. In such a case, the estimate of the size of the fatherhood premium in the public sector is not statistically significant and in the private sector, a fatherhood penalty of 6.74% can be seen.

The size of the workplace affects the raw and adjusted fatherhood premiums, respectively the fatherhood penalties, in the same way: As the size of the workplace increases, the size of the fatherhood premium increases (or the size of the fatherhood penalty decreases). The size of the raw fatherhood premium for large workplaces is 27.21% vs. 21.62% for small workplaces. In the case of the adjusted fatherhood premium, the difference is similar, however, after having taken the control variables and the influence of the partnerships into consideration, the estimate of the regression coefficient for large workplaces is not statistically significant, unlike the estimate for small workplaces where it is in fact penalty, i.e. the fatherhood premium is negative (−12.09%).

The effect of achieved educational level is very similar to the one of the size of the workplace. Raw premium is the largest for father with high education (30.2%), the size of the premium for fathers with lower levels of educational achievements (middle and low) are substantially lower (20.2% and 22.7% respectively, the estimate for low education fathers is on the verge of statistical significance due to a low number of such men in the whole sample). When all controls are taken into account, we find that fatherhood premium for highly educated fathers disappears completely and the premium for fathers with middle level of educational achievements turns itself into a penalty of 7.97%. Result for low education fathers is not statistically significant for the reason mentioned above.

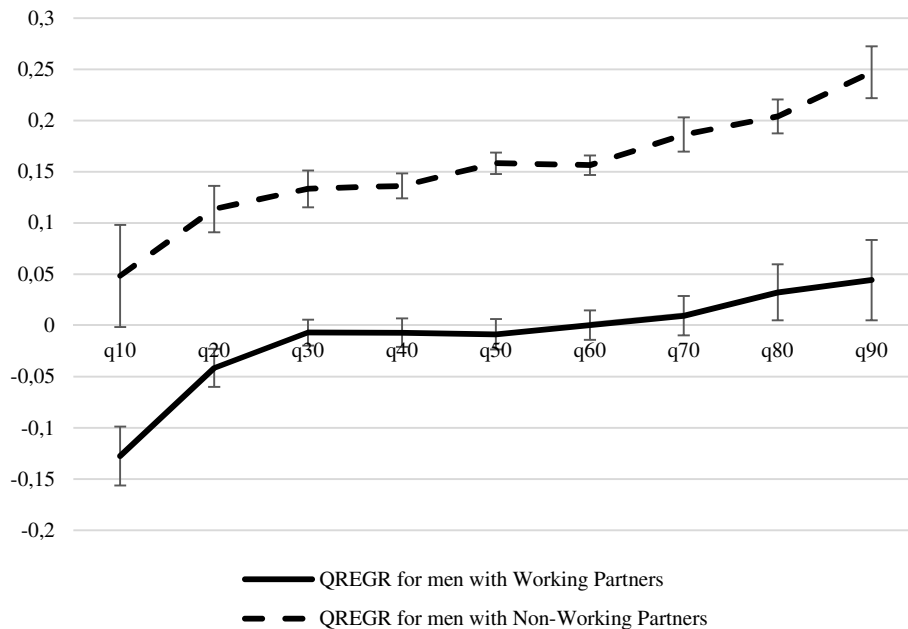
By far, the most interesting results concern the analysis of the influence of the type of partnership on the size of the fatherhood premium. We compared fathers with childless men according to whether or not their partner is active in the labour market. If their partner is involved in the labour market (this is considered a so-called “dual-income household/partnership”), then the raw fatherhood premium is changed to a raw fatherhood penalty of 9.24%. In the case of a “dual-income household/partnership”, the father has a higher proportion of household work within the family, which limits him in the labour market, meaning his earnings decline when compared with those of childless men. In the case of the “traditional” family model, i.e., the situation where the partner is not active in the labour market, and choosing to handle most of the household work and caring for the family instead, the size of the fatherhood premium is 21.79%. If we take into consideration the control variables, then the overall effect decreases, however, it qualitatively remains the same and the results are statistically significant (the fatherhood penalty of 6.36% vs. the fatherhood premium of 9.69%). Thus, the results are consistent with the household division of labour theory as well as the foreign literature (Killewald, 2013; Killewald and Gough, 2013; Lundberg and Rose, 2000). The results show that in Slovakia, two family models coexist side by side: the highly traditional male-breadwinner model vs. the dual-income model.

These two models have completely opposite effects on the size of the fatherhood premium, respectively the fatherhood penalty. In families where the conservative understanding of division of labour is widespread, the fatherhood premium is relatively high.

In order to explore the difference between “dual-income-household-men” as opposed to “traditional-family-man” we ran quantile regression of the model (4) – raw version. The results are provided in the Graph 7.

Graph 7

Quantile Regressions for Men with and without a Working Partner



Source: Authors' calculations based on the EU SILC data (EU SILC 2009 – 2018).

The overall effect for men with working partners is being determined by the two lowest deciles of income distribution. Fathers with very low income suffer a substantial fatherhood penalty (12.75% and 4.14% respectively) as opposed to well-to-do fathers (upper two deciles of an income distribution) that do enjoy statistically significant fatherhood premium (albeit not a large one – 3.23% and 4.43% respectively). For other deciles we do not see any fatherhood penalty or bonus. This outcome reinforces the household division of labour theory – as low income fathers simply must take their part in the household production and cannot buy services (to substitute for their household production contribution) on the market. More well-to-do father can – and do.

Therefore, to summarize the partial analyses performed, the raw fatherhood premium is a phenomenon of fathers from moderately populated areas, observing the “traditional” family model (i.e., with a partner outside of the labour market), and working in the public sector and large workplaces. On the contrary, taking into account the control variables and the influence of partnerships, the characteristic impact of fatherhood on men is an adjusted fatherhood penalty, especially for low-income men with dual-career/dual-income marriages who work in the private sector and small workplaces. These results confirm the influence of the household model (the continuous concepts of gender equality, shared parenthood, and active fatherhood; thus, cultural factors) on the division of labour within the family, and therefore, indirectly influence the possibility of the father’s/mother’s activity in the labour market, which affects income and the amount of the fatherhood premium or penalty, respectively.

Conclusions and Discussion

In this study, we provided an estimates of the size of the fatherhood premium in Slovakia for the years 2008 to 2019. The estimation is based on data collected within the European SILC survey. The estimates of this kind have not been produced so far in the economic literature for Slovakia, especially concerning the measurement of the impact of the type of partnership on a relationship between the income of fathers and non-fathers. Considering the questions asked at the beginning of this study, the results can be summarized as follows.

The fatherhood premium size greatly depends on whether the explanatory variables include those that reflect the effects of partnership/marriage. Living with a partner enables both a specialization and a division of labour within the household as well as sharing of household activities. This effect of partnership/marriage, which is called the partnership or marriage premium in the literature, together with the variable approximating the economic activity of the woman in the labour market, greatly modifies the size of the estimated fatherhood premium. More specifically, when the partnership/marriage premium is taken into account, no fatherhood premium is found.

In the years from 2009 to 2018, the raw fatherhood premium values are statistically significant for individual years (with exception of the year 2017). The average raw fatherhood premium for the whole monitoring period amounts to 22.26%. When controlled for demographic and human capital characteristics, the overall fatherhood premium goes down to 4.90%. When the partnership/marriage premium is taken into consideration, the premium turns into its opposite: the fatherhood penalty of 7.31%.

This conclusion is corroborated and elaborated upon by the heterogeneity analysis. When compared, fathers whose partners are active in labour market (“dual-income families”) must provide their fair (or at least fairer) share of their home care duties. Men in dual-income relationships are more likely to have to negotiate about or simply to perform more of the housework and childcare than male breadwinners with caregiver partners. As a consequence, they earn 9.23% less than their childless peers. When controlled for demographics and human capital, the size of the penalty is lower, however, it is still substantial (7.87%) and statistically significant. The fathers with partners fully devoted to household chores (the “male-breadwinner” model) can fully specialize for labour market activities, and thus, earn substantially more than childless men, to be precise 21.79% (or 7.22% when controlled for demographics and human capital). Thus, the fatherhood premium can contribute to explanation of gender inequalities, especially in partnerships with the traditional gender model of complementary gender roles, where the mothers are the primary caregivers and perform the majority of household chores, while the primary role of the fathers is to provide for the family.

In the public sector, fathers earn substantially more than childless men but only in the raw measurement (31.89%). The difference is not that great in the private sector, yet it remains significant (20.91%). However, when controlled for demographics and the effects of partnerships, the fatherhood premium all but disappears in the public sector, turning into the fatherhood penalty in the private sector (6.74%), which is also consistent with previous findings documenting the impact of shared household chores on fathers.

The raw fatherhood premium for thinly populated areas is also significantly larger than those of densely populated areas, which also supports the credibility of the previous results, as the traditional families are more often to be found in thinly inhabited areas (the countryside).

Raw premium is the largest for father with high education (30.2%), and it diminishes with the education. The size of the premium for fathers with lower levels of educational achievements (middle and low) are substantially lower (20.2% and 22.7% respectively). Adjusted fatherhood premium for highly educated fathers disappears and the premium for fathers with middle level of educational achievements turns itself into a penalty of 7.97%.

The presented analysis contributes to the field of labour economics and draws attention to the relationship between fatherhood and paid work, as it empirically documents the impact of fatherhood on men’s earnings. The study showed a link between differently arranged (gender) models (traditional vs. egalitarian), such as the relationship to the gender distribution of household work, and the women’s employment participation and individual labour market outcomes – especially

for low income fathers who cannot afford to buy market services to substitute their share of household care. We found greater fatherhood premiums in households where women do not enter the labour market (either as a result of their own free will or due to limited opportunities to enter the labour market), and we see smaller fatherhood premiums, respectively, penalties in households with gender equality and a shift in the way fatherhood is understood. Countries that allow women to enter the labour market through public policies and institutional factors by facilitating childcare or sharing household work help to reduce overall economic inequalities more evenly. The findings presented in this study may challenge the current gender and family policy.

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