Institute of Economic Studies, Faculty of Social Sciences
Charles University in Prague

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Barbara Pertold-Gebicka
Daniel Husek

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Institute of Economic Studies,
Faculty of Social Sciences,
Charles University in Prague

[UK FSV – IES]

Opletalova 26
CZ-110 00, Prague
E-mail : ies@fsv.cuni.cz
http://ies.fsv.cuni.cz

Institut ekonomických studií
Fakulta sociálních věd
Univerzita Karlova v Praze

Opletalova 26
110 00 Praha 1

E-mail : ies@fsv.cuni.cz
http://ies.fsv.cuni.cz

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Female Labor Force Participation and Childcare Policies

Barbara Pertold-Gebicka[a,b]
Daniel Husek[a]

[a]Institute of Economic Studies, Faculty of Social Sciences, Charles University in Prague, Smetanovo nábřeží 6, 111 01 Prague 1, Czech Republic
[b]Email (project leader): gebicka@fsv.cunic.cz

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Summary:
This study analyzes the situation of women in the Czech labor market with relation to childcare policies. The Czech Republic is among the European countries with the most generous systems of maternity and parental leave, allowing parents (usually mothers) to take a leave from work and get financial compensation for the period of up to 4 years after a single birth. While there exists an option to collect childcare compensation until the child's second birthday without cutting on the total value of benefits received, the majority of mothers stay at home taking care of their children for at least three years following each birth. This is partially driven by social norms prevailing in the Czech society, which strongly believes that children should spend time exclusively with their mothers until the age of three. The other driving factor for this state of being is very limited supply of places in public childcare facilities. Public nurseries are scarce (there are only 44 in the whole country) and there is no legal body responsible for their operations. The number of places in public kindergartens does not meet the demand for them, especially in large cities. In 2013 60,281 applications to public kindergartens were turned down, what corresponds to more than 16% of the total number of children attending public childcare.

Using the data from the Eurostat online database we document the following alarming facts about the Czech Republic:

1. Labor force participation for women in their early 30s is in the Czech Republic the lowest among all European Union members.
2. Czech women experience the highest drop in employment in childbearing age among all European Union members.
3. Gender wage gap in the age group 35-44 is in the Czech Republic the highest among all European Union members.
4. The share of Czech children younger than three not attending formal childcare is the highest in the European Union.

Additionally, analyzing the regional data provided by the Czech Statistical Office we find that:

5. There is significant undersupply of places in kindergartens, especially in districts with high population density and with high share of college graduates in local populations.

Numerous studies indicate that childcare leave provisions and the availability of universal childcare are the major drivers of female labor force participation and employment. A recent OECD working paper shows that female employment rate is maximized when paid childcare leave is about 2 years long. Another recent study reveals that a mother of a small child is much more likely to participate in the labor market if her child is eligible for public childcare. Our analysis of the situation of mothers in the Czech labor market also suggests that increasing the availability of universal childcare and/or shortening the parental leave could significantly improve female employment rates. This would help the Czech Republic meet the EU 2020 strategic goals in terms of employment and bring additional resources in form of labor taxes and social security contributions to the state budget.

First, we show that the unavailability of affordable childcare is the most often indicated reason for not looking for employment among Czech mothers whose youngest child does not exceed five years of age. Second, our analysis reveals that a non-negligible number of mothers on childcare leave explicitly declares willingness to work. These are usually highly educated women well in their 30s. We estimate that bringing these mothers to the labor market by, for example, improving the availability of childcare, could increase female labor force participation rate among the age group 30-39 by one percentage point and bring 264 million EUR (in a generous scenario) or 48 million EUR (in a modest scenario) in yearly wages.
Our cost-benefit analysis reveals that facilitating female employment by improving availability of childcare is cost-efficient. Financing additional 10 000 places in kindergartens, which corresponds to the number of mothers of two to four years old children explicitly wishing to work, would cost less than what could be contributed to the state budget by bringing 10 000 young mothers to the labor market, even if they assume just part-time employment.

As suggested by the Austrian example, shortening the maximum duration of parental leave also could have a positive effect on female employment. Nevertheless, such policy should be accompanied by improved availability of childcare for children of respective age. Thus, we consider childcare availability as the weakest part of the Czech system.

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1. Introduction

Last decades have faced a remarkable increase in labor force participation and employment of women in all developed countries. Their involvement in national production has significant impact on GDP growth (Eckstein and Lifshitz, 2009). Czech Republic is not an exception in this trend, although participation of Czech females, especially in the childbearing age, in the labor market is visibly lower than in other European countries (Bicakova 2012). This may lead to forgone earnings for the involved women and for the society as a whole.

Female employment is to a great extent influenced by childbearing. Women leave labor market when giving birth to a child and return only when their child can find care outside the household. This break in labor market activity not only influences participation and employment rates of women in childbearing age but also might have long-term effect on female employment and their productivity (Lai and Masters, 2005; Puhani and Sonderhof, 2011). This latter effect could be driven by depreciation of human capital during the period women spend out of the labor market, as Grolich and de Grip (2008) suggest.

Losing the valuable human capital is costly not only to the mother but also to the whole society. Lower productivity of mothers after childcare leave or their withdrawal from the labor market impedes GDP growth, means that less is collected in taxes or contributed to social security. This is especially relevant in the Czech Republic, where the labor market situation of young mothers after childcare leave is known to be difficult. Anecdotic evidence suggests that after up to 4 years of leave, associated with a single birth, mothers loose labor market attachment and some of the job-related skills. Thus, reshaping the childcare policies as to help preserving labor market attachment of mothers is crucial from the social point of view.

Public childcare policies include a system of maternity and parental leave with guaranteed re-employment, public childcare services, such as nurseries and kindergartens, as well as financial support for parents of young children. The purpose of maternity and parental leave legislation is threefold. First, it has been introduced to care for the health of mothers and their children, as it is known that children benefit from spending time with their mothers and that mothers of small children are tired and stressed even without work duties. Indeed, several studies have shown that introduction of a (paid) maternity leave decreases the probability of infant and child death (Ruhm, 2000; Tanaka, 2005). However, further prolonging the leave has been shown to have no or only marginal impact on children health and school performance (Baker and Milligan, 2010; Wurzt-Rasmussen, 2010). Second, the aim of granted (and paid) childcare leave is to promote fertility, as families take into account time and financial constraints when deciding to have children. The positive effect of prolonged childcare leave on fertility has been documented, for example, by Lalive and Zweimuller (2009). Third, childcare leave with job security has been introduced to increase labor force attachment of mothers, as they are expected to return to their previous job after

the leave times out. Nevertheless, as several studies have shown (Akgunduz and Plantenga, 2013; Thévenon and Solaz, 2013), when the leave exceeds certain length, this effect disappears or even becomes negative.

Stimulating women's return to work after childbirth is also achieved by providing public childcare facilities or directly/indirectly subsidizing private childcare facilities. Mothers can devote their time to labor market activity only when they can find alternative care for their children. Availability of childcare facilities is thus directly related to labor market participation of women. For example, a recent study by Lovasz and Szabó-Morvai (2014) demonstrates that a mother is much more likely to participate in the labor market if her child is eligible for public childcare. Nevertheless, it is often argued that public childcare is less beneficial for children well-being than other usual forms of care (Baker et al. 2008).

Thus, when designing childcare policies, the policymakers have to balance their direct and indirect costs with short and long term benefits to the children, their mothers and the whole society.

The European Union obliges its members to grant at least 14 weeks of paid maternity leave and further four months of unpaid parental leave allowing parents to take care of their children on a full-time basis. Nevertheless, childcare policies vary greatly across the European Union Member States and so does the fertility as well as the labor force status of females. While in Spain the maximum length of paid childcare leave is 3 months and prime-age female employment rate is 61%, in the Czech Republic the maximum length of paid childcare leave is 36 months and prime-age female employment rate is 75%. At the same time, the EU 2020 strategy plan aims at increasing total employment among the European population aged 20-64 "from the current 69% to at least 75%, including through the greater involvement of women, older workers and the better integration of migrants in the work force".

The goal of this study is to map the current situation of women in the Czech labor market with reference to the childcare policies, identify potential inefficiencies, and suggest policy steps which could be taken in order to achieve the EU 2020 strategic goals in terms of employment.

2. Childcare policies in the Czech Republic

The system of maternity and parental leave is very generous in the Czech Republic. Mothers are eligible for up to 28 weeks of maternity leave in case of giving birth to a single child and up to 37 weeks of maternity leave in case of giving birth to two or more children. The minimum length of maternity leave is 14 weeks and it cannot be terminated or interrupted before the end of 6th week after the day of birth. Minimum length of leave before the expected due date is not defined by law. Maximum is set to 8 weeks before the expected date of birth. Maximum period after the birth depends on the period of maternity leave

used before the day of birth. If a woman used fewer than 6 weeks of the maternity leave because of an early birth (a birth which occurred before the day anticipated by the doctor), the maternity leave lasts up to its total 28 (37) weeks in case of a birth of a single child (more children). If the period of maternity leave used before the day of birth is shorter than 6 weeks because of a different than the above-stated reason, the maximum period after the birth is 22 (31) weeks in case of a birth of a single child (more children).

While on maternity leave a mother is eligible for maternity benefit (MB) if she was a holder of a valid healthcare insurance for at least 270 days during the previous 2 years and was insured or was in a protection period (7 days after the end of the insurance) when entering the maternity leave. MB is calculated per calendar day and its level is 70% of the so called assessment base. The assessment base is calculated based on mother's average daily income during the vesting period (usually 12 months before the day of beginning of the maternity leave) according to the following rule: up to CZK 865, 100% is counted; above and up to CZK 1298, 60% is counted; above and up to CZK 2595, 30% is counted; above this level the income is disregarded. When collecting MB a mother cannot work in the same position with the same employer as was the job on the base of which the MB is provided. Different working position is allowed though. The employer who employed the mother before she entered maternity leave is expected by the law to offer her the same position when she terminates the leave.

Parental leave which, usually follows the end of a maternity leave, is fully optional with the maximum length till the 3rd birthday of the youngest child. Parental leave can be also taken by the father and can start on the day of birth of a child. There is no restriction for parents to take parental leave simultaneously, nevertheless, only one of parents can collect the parental allowance. After the 3rd birthday of the youngest child, there is a possibility to agree with employer to start an unpaid leave, this decision is fully voluntary for the employer with no binding by law. A parent taking the 4th year of leave related to the child care is either still receiving the parental allowance or has to pay health insurance.

Whether or not being on parental leave one parent of a child not exceeding 4 years of age is eligible for parental allowance. The maximum level of parental allowance is CZK 220 000 in total. This sum is divided into monthly installments which are calculated as 30 times 70% of the assessment base which was used to calculate MB and cannot exceed CZK 11 500. Hence, the shortest period to use up whole available amount of allowance is 19 months. If it is impossible to calculate the assessment base of any of parents, the parental allowance is CZK 7600 for the first 9 months and CZK 3800 until the 4th birthday of a child. The only exception is the impossibility of calculation of the assessment base caused by care of earlier born child. Person taking parental allowance is not restricted not to work. The only limitation concerns formal childcare attendance for a child less than two years old – it can attend a nursery or different facility of child care for maximum of 46 hours a month.

Public childcare in the Czech Republic consists of a system of nurseries and kindergartens. Until the end of 2012 the nurseries were administered by the Ministry of Health and in that year there were 44 nurseries in the whole country with total capacity of 1397 children. Starting in 2013 there is no legal body responsible for the operations of nurseries which makes their status problematic and limits the possibility of opening new institutions providing daycare for children younger than three.

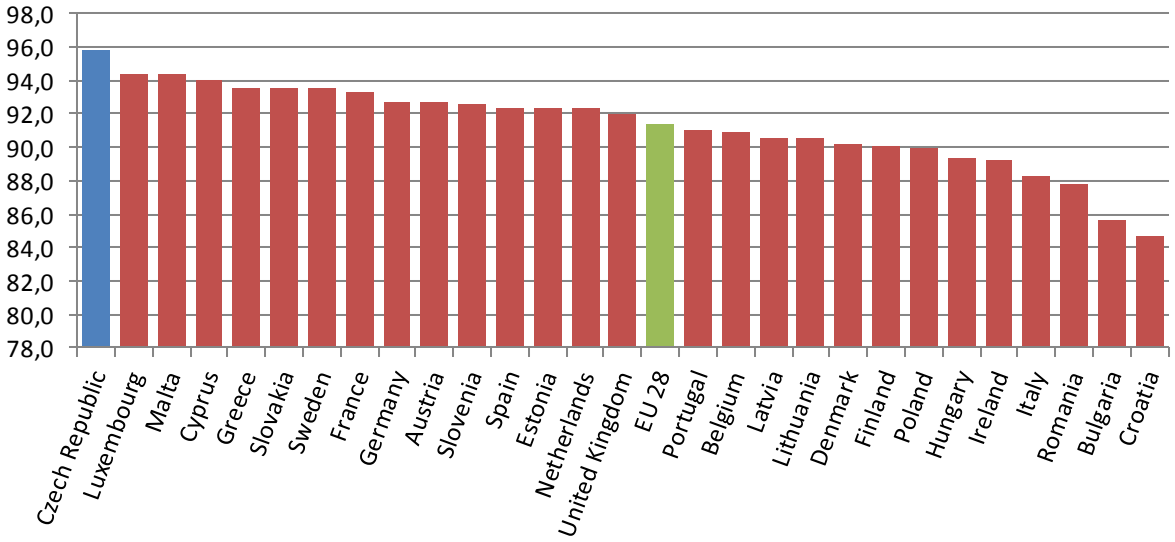
Public kindergartens are administered by the Ministry of Sports and Education. In 2012 there were 5011 kindergartens in the Czech Republic with total capacity of 363 568 children. In 2013 the total number of kindergartens grew to 5085. A child is eligible for kindergarten when it is at least 3 years old (though some kindergartens admit younger children). Nevertheless, due to undersupply of places in kindergartens in the majority of Czech districts, these institutions have to narrow down admission criteria. These usually include age of a child, whether any brother or sister already attends the kindergarten, whether the address of permanent stay is in the same district as the kindergarten, non-discriminatory health condition (needs obligatory vaccination and confirmation of having good state of health by doctor) or social criteria. Due to undersupply of places in public kindergartens 60,281 applications were turned down in 2013, what corresponds to more than 16% of the total number of children attending public childcare.

3. Stylized facts about the Czech labor market

The Czech Republic is featuring the highest labor market participation rate for prime-age men among all European Union countries, 95.8%. This is visualized in Figure 1, which presents labor market participation (or activity[1]) rates in 28 European Union countries in 2013.

Figure 1: Activity rates for prime-age (25-54) men among EU Member States in 2013

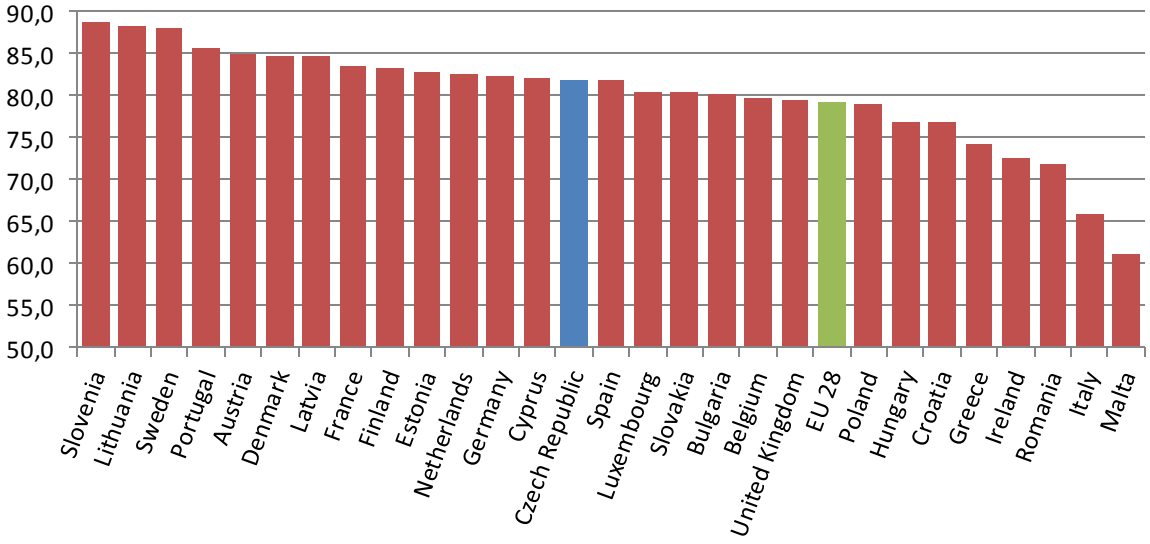
[1] The terms labor market participation and activity are used interchangeably in this text.



Source: Own elaboration using data from the Eurostat online database LFS series - Detailed annual survey results. Accessed on 18.09.2014.

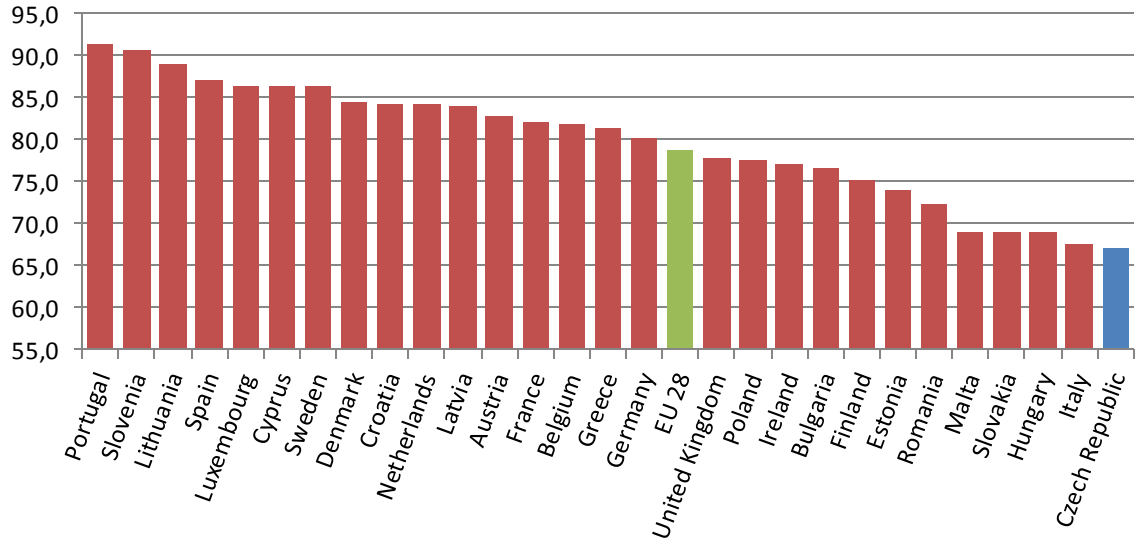
The activity rate of prime-age women in the Czech Republic is with its 81.9% much closer to the European Union average. Let us note, however, that the average is strongly pulled down by the Southern countries such as Romania, Italy, or Malta. The Czech Republic is exactly the median country in the European Union when the labor market participation rate of prime-age women is concerned.

Figure 2: Activity rates for prime-aged women among EU Member States in 2013



Source: Own elaboration using data from the Eurostat online database LFS series - Detailed annual survey results. Accessed on 18.09.2014.

Figure 3: Activity rates for women aged 30-34 among EU Member States in 2013



Source: Own elaboration using data from the Eurostat online database LFS series - Detailed annual survey results. Accessed on 18.09.2014.

What makes the Czech Republic exceptional in Europe, is its extremely low labor market participation of women in their early 30's. With the activity rate of 67%, the Czech Republic is at the low end among all European Union countries, as is visualized in Figure 3.

Table 1: Activity rates for women in the Czech Republic in 2013

Age group	25-29 years	30-34 years	35-39 years	40-44 years	45-49 years	50-54 years
Activity rate	70.0	67.0	81.4	90.5	94.5	90.1

Source: Own elaboration using data from the Eurostat online database LFS series - Detailed annual survey results. Accessed on 9.10.2014.

Early 30's is when the labor market participation rate of women in the Czech Republic drops the most, as can be seen in Table 1. This three percentage point drop with respect to the younger age group is exceptional on the European scale. As Table A1 in the appendix documents, only Austria and Slovakia feature similar, though not as strong, patterns. After the child-bearing age, Czech women re-enter the labor market and achieve participation rates well above the European Union average. This brings in several questions.

1. Do Czech women postpone childbearing till later age than in other countries?
2. Do Czech women have more children than in other countries?
3. Do Czech women spread maternity more over time than in other countries, i.e. are the distances between children larger?
4. Do Czech women stay longer at home with each child than in other countries?

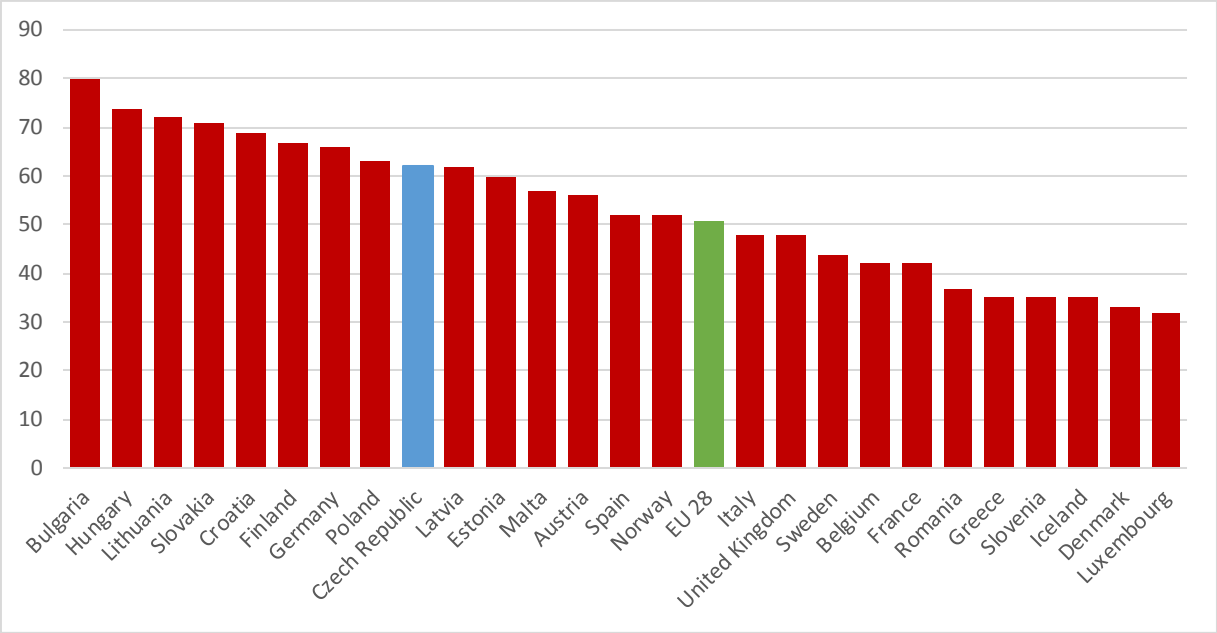
According to Table 2, general fertility behavior in the Czech Republic follows the European Union average. The total fertility rate, at its 1.45, is slightly below the European average, which is contributed mainly by lower fertility in late 30s, early 40s, as well as lower than average fertility in 20s. This comparison suggests that in the Czech Republic births are strongly concentrated among women between 25 and 34 years old. This could explain part of the labor force participation behavior observed in Figure 3.

Table 2: Fertility rates among EU Member States in 2012

	20-24	25-29	30-34	35-39	40-44	Total
EU28	0,048	0,092	0,099	0,052	0,011	1,58
Belgium	0,050	0,125	0,116	0,049	0,010	1,79
Bulgaria	0,070	0,089	0,066	0,028	0,004	1,50
Czech Republic	0,042	0,093	0,098	0,038	0,007	1,45
Denmark	0,037	0,112	0,124	0,056	0,010	1,73
Germany	0,036	0,078	0,094	0,051	0,009	1,38
Estonia	0,057	0,098	0,086	0,046	0,011	1,56
Ireland	0,051	0,088	0,131	0,098	0,023	2,01
Greece	0,033	0,077	0,092	0,048	0,010	1,34
Spain	0,029	0,058	0,092	0,063	0,014	1,32
France	0,060	0,131	0,127	0,059	0,013	2,01
Croatia	0,054	0,099	0,091	0,040	0,007	1,51
Italy	0,033	0,073	0,095	0,061	0,015	1,43
Cyprus	0,034	0,089	0,094	0,045	0,010	1,39
Latvia	0,059	0,092	0,073	0,037	0,008	1,44
Lithuania	0,056	0,117	0,089	0,035	0,007	1,60
Luxembourg	0,041	0,082	0,112	0,060	0,013	1,57
Hungary	0,042	0,078	0,081	0,039	0,007	1,34
Malta	0,040	0,085	0,094	0,043	0,008	1,43
Netherlands	0,034	0,107	0,131	0,057	0,009	1,72
Austria	0,044	0,088	0,093	0,046	0,009	1,44
Poland	0,051	0,089	0,071	0,031	0,006	1,30
Portugal	0,038	0,071	0,083	0,043	0,009	1,28
Romania	0,075	0,092	0,066	0,027	0,005	1,53
Slovenia	0,044	0,110	0,108	0,044	0,007	1,58
Slovakia	0,049	0,083	0,076	0,033	0,006	1,34
Finland	0,054	0,111	0,116	0,060	0,013	1,80
Sweden	0,047	0,112	0,133	0,067	0,014	1,91
United Kingdom	0,069	0,104	0,113	0,063	0,013	1,92

Source: Own elaboration using data from the Eurostat online database Demography - National data. Accessed on 9.10.2014.

Figure 4: Share of children aged less than 3 cared only by their parents in 2012



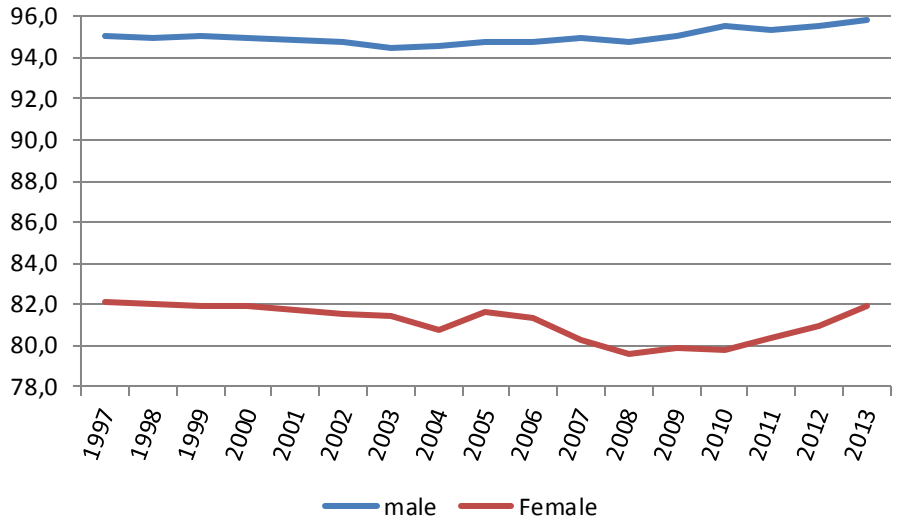
Source: Own elaboration using data from the Eurostat online database LFS series - Detailed annual survey results. Accessed on 18.11.2014.

In the Czech Republic as many as 62% of children younger than 3 years are cared of only by their parents, which is well above the EU average at 51%. This illustrates that Czech parents (usually mothers) stay at home with their children and thus refrain from market work for relatively long period.

The evolution of the Czech labor market over the last 17 years is described below. Figure 5 illustrates changes in average activity rates of prime-age men and women. Both were relatively stable over the analyzed period, with female activity rate experiencing a visible, though small drop (by 2 percentage points) between 2005 and 2008.

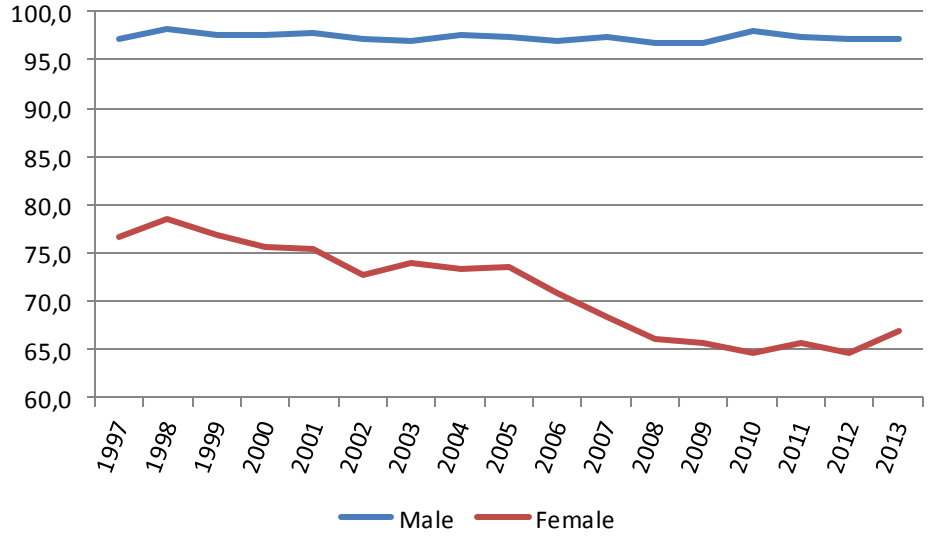
The drop in female activity rates observed among prime-age individuals was driven by women in their 30s. As next figures illustrate, labor market participation of Czech women aged 30-34 was fluctuating around 75% with a slight downward trend prior to 2005 and then fell sharply and stayed at around 65% since 2008 onwards with a slight increase in 2013. A similar, though not as dramatic, pattern is observed among Czech women in their late 30s, as Figure 7 illustrates. It is important to note that no significant movements were observed during the 2005-2008 period in activity rates of women in the age group 25-29. Moreover, the drop in labor market activity among Czech women in their 30s has happened prior to the Great Recession, which suggests that it was not influenced by the economic conditions.

Figure 5: Evolution of activity rates for prime-age individuals in the Czech Republic



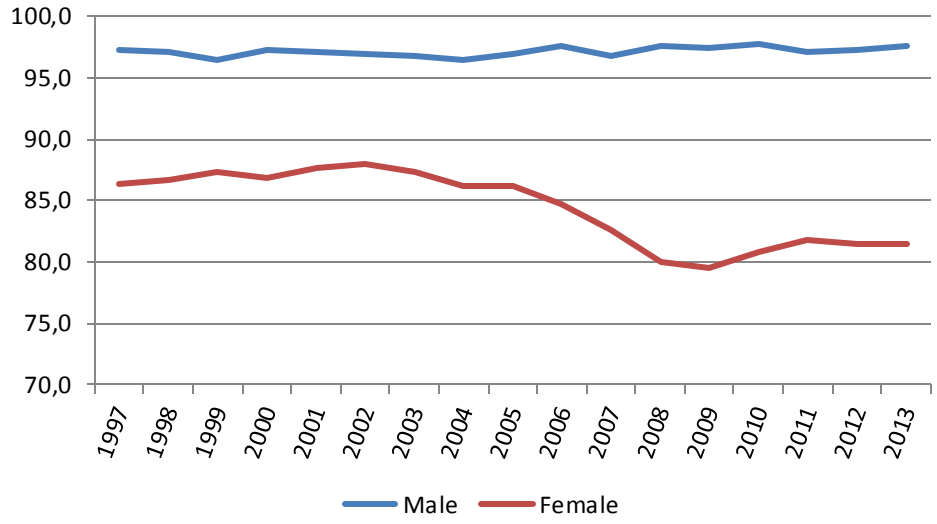
Source: Own elaboration using data from the Eurostat online database LFS series - Detailed annual survey results. Accessed on 22.09.2014.

Figure 6: Evolution of activity rates for the 30-34 age group in the Czech Republic



Source: Own elaboration using data from the Eurostat online database LFS series - Detailed annual survey results. Accessed on 22.09.2014.

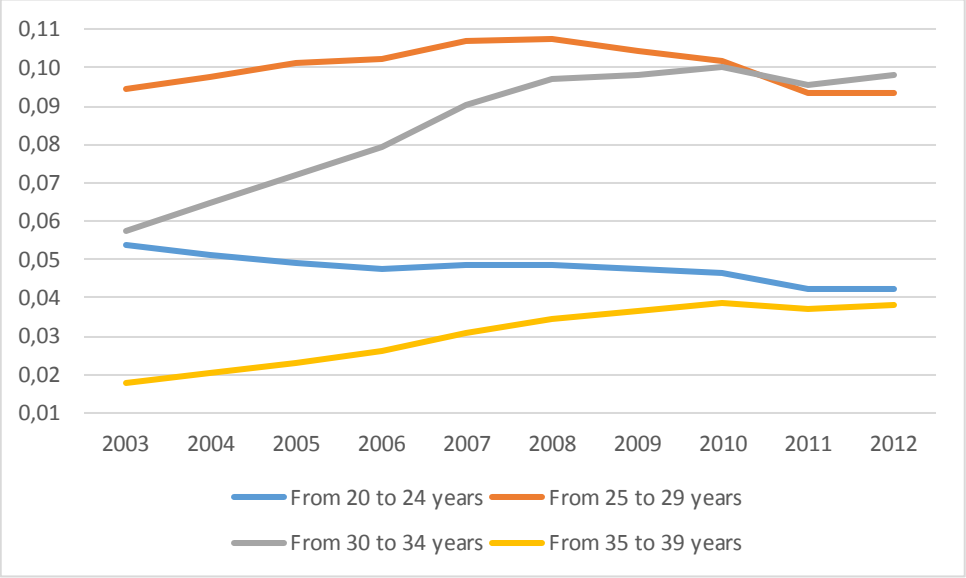
Figure 7: Evolution of activity rates for the 35-39 age group in the Czech Republic



Source: Own elaboration using data from the Eurostat online database LFS series - Detailed annual survey results. Accessed on 22.09.2014.

These patterns could be partially driven by changes in age-specific fertility in the Czech Republic. As Figure 8 illustrates, there has been a sharp increase in fertility among women in the 30-34 age group till 2008. Their take-up of childcare leave might be responsible for the observed drop in labor market participation of Czech women in their 30s.

Figure 8: Evolution of fertility rates by age group in the Czech Republic



Source: Own elaboration using data from the Eurostat online database Demography - National data. Accessed on 9.10.2014.

4. Review of previous studies

Labor market situation of women in connection with childcare policies has been extensively analyzed in the economic literature. The studies most relevant from the point of view of this analysis investigate the relationship between the length of childcare leave and employment rates or wages of mothers and young women in general. In the majority of works identification is based on a reform changing the length of statutory maternity and/or parental leave. The evidence is mixed. While some studies show that extension of childcare leave has some negative short term effects and no long term effects on mothers' employment (Schonberg and Ludsteck 2007; Lalive and Zweimuller, 2009), other studies find that increase in the length of childcare leave reduces employment and/or wages of all women in childbearing age due to employer discrimination (Lai and Masters, 2005; Puhani and Sonderhof, 2011). These effects vary with the length of leave. Introduction of few weeks' long maternity leave in the US has been shown to positively affect employment of mothers (Waldfogel 1999), while prolongation of maternity leave from one year to two years in Austria (Lalive and Zweimuller, 2009) decreased employment rates of young mothers.

Related studies analyze the relationship between availability of childcare and female employment. This literature is much more consistent in findings. It has been shown that universal, subsidized childcare significantly increases maternal labor supply (Baker et al., 2008; Lovasz and Szabó-Morvai, 2014) or that introduction of childcare subsidies conditional on parental employment increases labor supply of highly educated women (Haan and Wrohlich, 2011).

Below we offer a more detailed discussion of the most relevant studies taking into account employment of women in the Czech Republic and its relation to childcare policies.

The policy study by Kaliskova and Munich (2012) investigates the unused potential of Czech females to produce additional value added in the economy. They compare four countries: the Czech Republic, France, Great Britain, and the US to show the pattern also documented in our study. Czech women feature the largest drop in employment in the childbearing age and the highest employment rates in the age following childbearing but preceding retirement. Interestingly, when comparing hours worked, the drop associated with childbearing is comparable with the drop observed in France and the Great Britain. The authors hypothesize that this is driven by the limited availability of part-time jobs in the Czech Republic. When Czech women participate in the labor market, they usually work full-time. Kaliskova and Munich (2012) also document employment rates of females in the Czech Republic by the age of their youngest child. They show that no more than 20% of young children's mothers between 25 and 35 years of age participate in the

labor market. The authors conclude that this picture is most probably driven by two factors: social norms shared by Czech families attaching high value to the time mothers spend with their children and limited possibilities to efficiently combine family responsibilities with market work.

Bicakova (2010) analyzes the gap in unemployment rate between males and females across European countries. This author documents high variation in gender unemployment gap (i.e. the difference in unemployment rate between men and women) across Europe, ranging from -0.9 p.p. in Estonia to 8.1 p.p. in Greece. The Czech Republic is well over the EU average with the average gender unemployment gap over the 2003-2007 period being as high as 3.8 p.p. Bicakova (2010) hypothesizes that the gender differences in market human capital acquired after individuals have entered the labor market are responsible for the great part of these gaps. Children play the greatest role in driving differences in market human capital between men and women. To prove this point, the author analyzed five stages of a woman's lifecycle: being younger than 40 with no children, younger than 40 with children of 0-4 years, younger than 40 with children of 5-9 years, younger than 40 with children of 10-14 years, and 40 or above without children in the household. She shows that the gender unemployment gaps are the largest in the second stage of a woman's lifecycle, but this is due to very few women being active in the market. Unemployment gaps are also very high in the third stage of lifecycle. Similarly, gender participation gaps appear in the second stage and prevail until the third stage. Finally, Bicakova (2010) shows that cross-country differences in the length of the statutory paid childcare leave explain almost half of the variation in gender unemployment gaps.

A study by Lalive and Zweimuler (2009) analyzes a country very similar to the Czech Republic in the institutional setting, Austria. Prior to 1990 Austria granted mothers sixteen weeks of maternity leave (eight before and eight after birth) and a parental leave till the child reaches the age of one year. In 1990 Austria reformed this system prolonging the parental leave till the child reaches two years of age. A further reform in 1996 imposed a maximum leave duration for one parent of eighteen months since childbirth, practically decreasing the length of parental leave till the child reaches the age of one and a half year. Lalive and Zweimuler (2009) use these two policy changes to estimate the relationship between the length of parental leave and mothers' employment. They show that prolonging the leave from one year to two years has increased fertility (which was the goal of the reform) at the cost of delaying mothers' return to work. The authors find that after the reform more mothers remain not employed within the year directly following the parental leave and they hypothesize that this could be caused by skill depreciation while on leave. This hypothesis is supported by the fact that the reduced employment effect is observed more often among the white collar workers than among the blue collar workers. The second reform, shortening the

maximum duration of leave to eighteen months, is shown to have no influence on total fertility but a positive influence on mothers' employment.

The OECD working paper "Labour Market Effects of Parental Leave Policies in OECD Countries" (Thevenon and Solaz, 2013) analyzes the relationship between the length of the paid childcare leave and female labor market outcomes. The authors of this study base their methodology on Ruhm's (1998) approach using the total duration of paid leave as the main explanatory variable. To capture potential nonlinearities in the relationship between the leave length and labor market outcomes, Thevenon and Solaz (2013) divide the length of leave into four categories: less than 18 weeks, between 19 and 52 weeks, between 52 and 104 weeks, and more than two years. They find that the positive effect of paid parental leave provisions on female employment are diminishing with the length of leave. Their estimates suggest that prime-age female employment is maximized when the leave is about two years (125 weeks) and falls with each additional week of leave, as is visible in Figure 9. Similar results are obtained when working hours are used as the dependent variable.

Figure 9: The relationship between employment rates and the length of paid childcare leave

Note: The vertical axis shows the estimated effect on employment rates
Source: Adapted from Thevenon and Solaz (2013)

5. Analysis

In this section we provide novel findings concerning the situation of women in the Czech labor market using the European Union Labour Force Survey (EULFS) provided by the

Eurostat and the Czech Labour Force Survey (LFS) provided by the Czech Statistical Office. These datasets contain information on demographic and socio-economic situation for a representative sample of individuals in each European Union member state (EULFS) and the Czech Republic (LFS). Taking advantage of these microdata we are able to map the situation of women in the Czech labor market in more detail than using publicly available information, and investigate their employment potential.

5.1. Employment rate of mothers by the age of the youngest child

Using the microdata from the European Union Labour Force Survey, we are able to retrieve labor market participation and employment rates of women broken down to more detailed categories. Table 3 presents employment rates of Czech women in three age categories and by the age of her youngest child living in the household. Not surprisingly, among all prime-age women, employment rate is the lowest for those whose youngest child is less than 5, and it ranges from 30% among the 25-34 years old to 64% among the 45-54 years old. It is important to note that the average employment rate among the prime-age women in the Czech Republic is 75%, which is the EU 2020 strategy plan.[2] Lower employment rates are observed among mothers of young children, with the lowest rate observed for the youngest mothers. As noted in Kaliskova and Munich (2012) there might be two factors driving this observation. First, young Czechs, and especially women, increasingly participate in higher education, which often continues till their late 20s. Second, Czech females leave the labor market for several years in their late 20s and early 30s due to childbearing.

Table 3: Employment rates of women in the Czech Republic in 2012

Age group	Age group of the youngest child			Regardless children
	0-4	5-9	10-14	
25-34	30%	78%	80%	59%
35-44	42%	87%	90%	79%
45-54	64%	78%	84%	86%
25-54	34%	83%	88%	75%

Source: Own calculations using the EULFS microdata

Employment rates to a great extent follow labor market participation rates, as is presented in Table 4. While the average activity rate among Czech prime-age women is 81%, only 34% of young mothers with children younger than 5 participate in the labor

[2] The EU 2020 strategy plan aims at achieving employment rate of 75% in the whole working age population (i.e. among women AND men) aged 20-64.

market. This is in sharp contrast to 91% activity rate of young mothers with children aged 5-9.

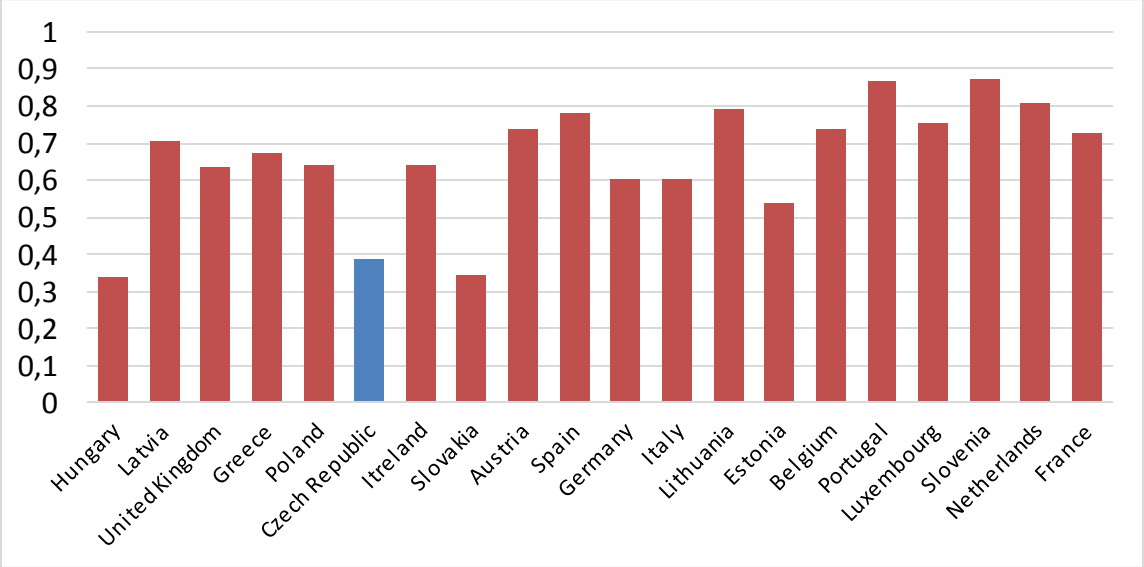
Table 4: Activity rates of women in the Czech Republic in 2012

Age group	Age group of the youngest child			Regardless children
	0-4	5-9	10-14	
25-34	34%	91%	97%	66%
35-44	47%	94%	96%	86%
45-54	69%	87%	93%	92%
25-54	38%	93%	96%	81%

Source: Own calculations using the EULFS microdata

The labor force participation rates of Czech mothers of young children are among the lowest in the European Union, as Figure 10 illustrates. Note that only Hungary and Slovakia report lower labor force participation rates for this group of women and that these three Visegrad countries strongly stand out as compared to the rest of the European Union.

Figure 10: Activity rates of mothers of children aged 0-4 among EU Member States.



Source: Own calculations using the EULFS microdata

This situation is most probably driven by the Czech childcare policy system allowing mothers to take a parental leave from work till their youngest child is 3 (4) years old, and

providing limited supply of places in nurseries and kindergartens. Next sections provide additional data in support of these hypotheses.

5.2. Reasons for not working

Several earlier studies (Kaliskova and Munich, 2012; Lovasz and Szabo-Morvai, 2014) suggest that the main factor influencing employment of mothers is the availability of childcare facilities. Taking the advantage of the variable NEEDCARE available in the EULFS and classifying the reasons for not participating in the labor market into different care-related motives we can identify the mismatch between availability of childcare facilities and the demand for formal childcare. Out of all inactive mothers in the Czech Republic with the youngest child not exceeding five years of age in 2012, 14.2% declare that they do not look for employment because the "suitable care services for children are not available or affordable". While this number is about the average among the European countries, one has to bear in mind that it is calculated from a high share of inactive mothers. This directly suggests that improving the availability of childcare services in the Czech Republic could significantly boost female labor force participation and employment.

Table 5: Number of children vs. the number of places in kindergartens in 2011.

District	No. of children aged 3-6	No. of places in public kindergartens
Czech Republic in total	362 468	341 903
Praha	40 111	37 078
Benešov	3 389	3 056
Beroun	3 374	2 954
Blansko	3 568	3 441
Brno-město	12 517	11 369
Brno-venkov	7 719	7 391
Bruntál	3 252	3 120
Břeclav	3 682	3 691
Česká Lípa	3 747	3 519
České Budějovice	6 575	6 406
Český Krumlov	2 360	2 357
Děčín	4 936	2 855
Domažlice	2 152	3 578
Frýdek-Místek	7 227	7 238
Havlíčkův Brod	3 199	3 074
Hodonín	4 938	4 966
Hradec Králové	5 517	5 581
Cheb	3 315	1 664
Chomutov	4 375	4 088
Chrudim	3 543	3 491
Jablonec nad Nisou	3 039	3 593
Jeseník	1 322	1 387
Jičín	2 718	2 691
Jihlava	3 929	3 587
Jindřichův Hradec	3 123	3 177

Karlovy Vary	3 852	2 885
Karviná	8 441	7 242
Kladno	5 873	5 055
Klatovy	2 973	2 111
Kolín	3 509	3 288
Kroměříž	3 496	3 775
Kutná Hora	2 423	2 149
Liberec	6 140	5 618
Litoměřice	4 261	4 103
Louny	3 078	4 114
Mělník	3 727	3 454
Mladá Boleslav	4 320	4 023
Most	4 100	2 677
Náchod	3 851	3 849
Nový Jičín	5 396	5 134
Nymburk	3 698	3 374
Olomouc	7 998	8 137
Opava	6 300	6 306
Ostrava-město	11 271	10 293
Pardubice	5 638	5 644
Pelhřimov	2 292	2 537
Písek	2 245	2 368
Plzeň-jih	2 114	5 888
Plzeň-město	5 957	2 834
Plzeň-sever	2 764	1 969
Praha-východ	6 896	5 193
Praha-západ	5 826	4 057
Prachatice	1 745	1 798
Prostějov	3 761	3 827
Přerov	4 466	4 411
Příbram	3 740	3 817
Rakovník	1 822	1 879
Rokycany	1 562	2 569
Rychnov nad Kněžnou	2 779	2 755
Semily	2 526	2 719
Sokolov	3 270	3 538
Strakonice	2 439	2 371
Svitavy	3 657	3 820
Šumperk	4 142	4 266
Tábor	3 415	2 336
Tachov	1 899	1 514
Teplice	4 785	3 109
Trutnov	4 117	4 160
Třebíč	3 801	3 775
Uherské Hradiště	4 638	5 039
Ústí nad Labem	4 516	3 712

Ústí nad Orlicí	4 959	5 039
Vsetín	4 937	4 716
Vyškov	3 052	3 301
Zlín	6 415	6 062
Znojmo	3 853	3 913
Žďár nad Sázavou	4 109	4 028

Source: Czech Statistical Office; the number of places in public kindergartens is for the 2011/2012 school year; the number of kindergarten-age children is the sum of all children in age groups 3-4 and 4-5 plus 1/3 of children in the age group 5-6 to account for the fact that some 6 year olds attend school. The final number most probably underestimates the total demand for kindergartens as it does not take into account children who start school at the age of 7 nor does it take into account children in the age group 2-3.

Namely, if all mothers indicating that they do not look for employment because of limited availability of childcare entered the labor market, the labor force participation of young mothers would increase from 38% to 47%.

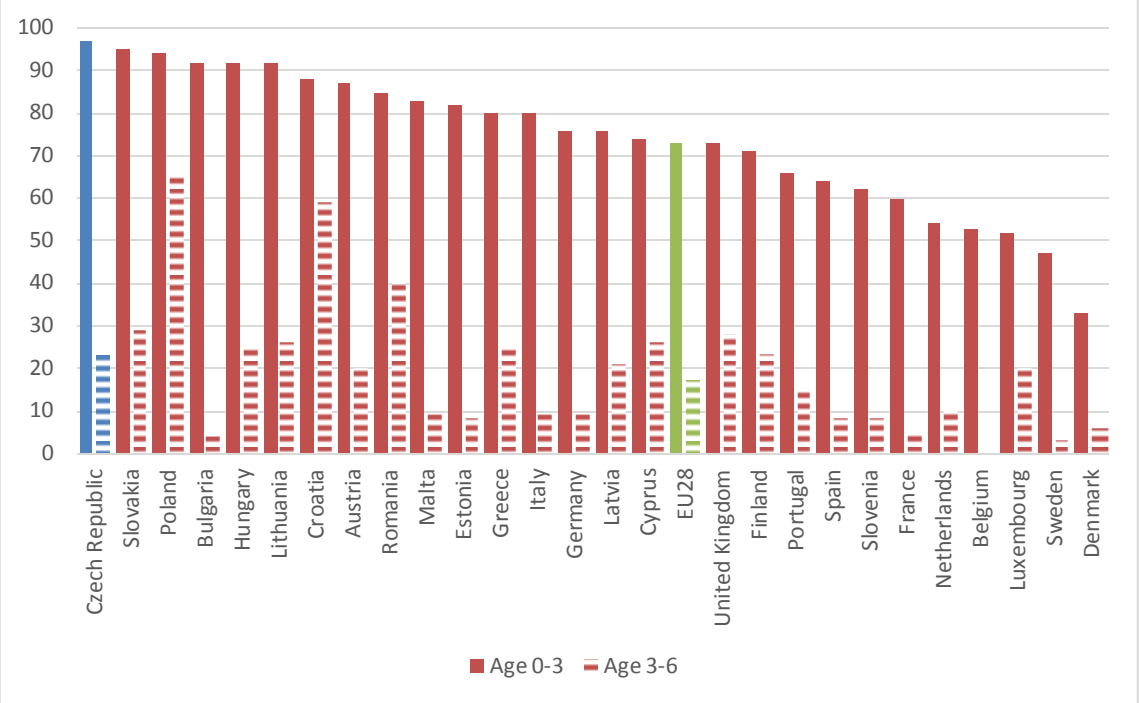
The limited availability of childcare can be best illustrated by directly comparing the number of children attending kindergartens and the total number of 3-6 year old children in each district of the Czech Republic. For this analysis use data for 2011, because this is the year when the last national census was performed and thus the population data are the most accurate. As can be seen in Table 5, in most districts the number of places in kindergartens is lower than the number of children aged 3-6, even though this age group does not represent all children who might demand kindergarten (see the note under the table).

Table 5 reveals significant geographical differences in the availability of kindergartens. While in some districts there is oversupply of places in kindergartens and even 2-year-old children are admitted to attend, in other districts there is strong undersupply. The extent of undersupply of places in kindergartens, measured as the difference between the number of places in kindergartens and number of children in kindergarten age divided by the number of children, can be related to local socio-economic conditions. Not surprisingly, there is a strong negative correlation (correlation coefficient of -0.612) between population density or the share of college graduates (correlation coefficient of -0.399) and undersupply of places in kindergartens. Districts with higher population density and with higher share of college graduates in local populations tend to perform better in terms of availability of kindergartens. Nevertheless, these high correlations are partially driven by just 4 districts with extremely low numbers for undersupply of places in kindergartens (i.e. with high oversupply). Omitting these districts from the analysis results in correlation coefficients of -0.183 and -0.090, respectively.

While there is some gap between the supply of places in kindergartens and the demand for them, the institute of public nurseries is almost nonexistent in the Czech Republic. In 2012 there were 44 nurseries in the whole country with total capacity of just 1397 places. Moreover, these were concentrated only in large cities, which further restricted

the availability of this service. This extremely low provision of public care for younger children in the Czech Republic is exceptional on the European scale, as Figure 11 illustrates.

Figure 11: Share of children not attending childcare in 2012



Source: Own elaboration using data from the Eurostat online database LFS series - Detailed annual survey results. Accessed on 18.09.2014.

The limited availability of childcare services might thus be one of the reasons why the labor force participation of mothers is so low in the Czech Republic. As the next section illustrates, improving access to public childcare has a potential to increase female labor force participation.

5.3. Who is missing in the labor market?

The structure of the Czech LFS questionnaire allows us to directly analyze not only employment rates among mothers of small children but also their willingness to work as well as reasons for not working among those not employed.[3] The original microdata provided by the Czech Statistical Office serve as the baseline for the statistics presented in Table 6. Among mothers with the youngest child aged 0 to 4 it shows employment rates (column 2), take-up of childcare leave (column 3), and the percentage wishing to work among those on leave (column 4). This table reveals that very few mothers of

[3] The variable NEEDCARE is available in the EULFS, while the variable indicating the willingness to work is available in the Czech LFS, which makes it impossible to combine these.

children up to two years are working or wishing to work. Among the mothers whose youngest child is three to four years old more than 30% work and further 7% of those on leave would like to work. While these numbers do not reveal reasons for not working among the mothers who would like to work, they are suggestive as of the labor force potential of women with small children. According to our estimates, in 2013 there were about 21 thousand women on maternity or parental leave who would like to work. As many as 10 thousand of them had the youngest child aged between two and four and thus their participation in the labor market could be facilitated by availability of childcare services. Bringing those latter mothers to the labor market would have increased prime-age female employment rate by 0.5 percentage point and employment rate among the 30-39 year old women by 1 percentage point.[4]

Table 6: Women with small children in the Czech Republic in 2013 – working and wishing to work

Child age	Share of working mothers	Share of mothers on parental leave	Mothers wishing to work (among those on leave)	Potentially working
0-1	0.5%	98%	2.5%	3.0%
1-2	2.8%	96%	6.8%	9.4%
2-3	9.0%	90%	5.3%	13.9%
3-4	30.8%	64%	6.9%	35.6%

Source: Own calculations using the LFS microdata.

To estimate earnings potential of the mothers missing in the labor market, we identify which women are involuntarily inactive by regressing the wishing-to-work dummy on a set of personal characteristics such as age, education, number of children, and age of the youngest child. For the purpose of identification, the following equation is estimated:

$$wish.work_i = \beta_0 + \beta_1 age_i + \beta_2 college_i + \beta_3 child.age_i + \beta_4 no.children_i + \varepsilon_i, \quad (1)$$

where:

- $wish.work_i$ is an indicator whether woman i being on parental leave would like to work,
- age_i is her age in years,
- $college_i$ is a dummy variable equal to one if a woman has a college degree, and zero otherwise,
- $child.age_i$ is the age of woman's youngest child in years, and
- $no.children_i$ is the number of woman's own children living in the same household, independent of their age.

[4] These estimations are based on the willingness to work as reported by the interviewed person. As the willingness to work is affected by the prevailing conditions and norms in the society, our estimates are likely downward biased. If childcare was universally available for children older than 2, most probably more mothers would decide to work. Thus we think of our estimate as of the lower bound.

The dependent variable $wish.work_i$ is defined only for mothers on childcare leave, so when estimating equation (1) we face a sample selection bias. To overcome this problem, we estimate a Heckman sample selection model where in the first step the probability of being on leave is estimated, and in the second step equation (1) is estimated with the estimated selection variable added to the regression equation. Table 7 presents the results of the second step estimation of equation (1) in four different specifications. The numbers in this table represent the marginal effects, i.e. the effect that a one-unit change in an explanatory variable would have on the probability that a mother wishes to work. The results indicate that, among others, college educated mothers are about 1.7 to 1.8 percentage points more eager to work than women without college and that mothers of older children are more eager to work than mothers of younger children. Specifically, mothers of children aged 2-3 are about 5.7 percentage points more eager to work and mothers of children aged 3-4 are about 7.2 percentage points more eager to work than mothers of newborns.

Table 7: Relationship between personal characteristics and wishing to work for mothers on childcare leave

Variable	(1)	(2)	(3)	(4)
Mother age	0,0014	0,0014	0,0015	0,0015
	(0,0009)	(0,0009)	(0,0008)	(0,0009)
College	0,0167	0,0168	0,0176	0,0178
	(0,0076)	(0,0078)	(0,0075)	(0,0077)
Child age	0,0159	0,0160		
	(0,0039)	(0,0040)		
Child age = 1-2			0,0198	0,0199
			(0,0113)	(0,0114)
Child age = 2-3			0,0220	0,0221
			(0,0113)	(0,0115)
Child age = 3-4			0,0574	0,0576
			(0,0140)	(0,0141)
Number of children		0,0003		0,0005
		(0,0052)		(0,0051)
Constant	-0,0091	-0,0090	-0,0080	-0,0077
	(0,0271)	(0,0270)	(0,0278)	(0,0277)
N	10174	10174	10174	10174

Note: Heckman selection model, second stage results, standard errors in parentheses.

Source: Own calculations using the LFS microdata.

These estimation results allow us to predict the share of mothers of specific characteristics who would like to work if they were given this possibility. Table 8 below presents such calculations for eight sample women aged either 30 or 35, with the youngest child being either between two and three or between three and four years old, and with college or no college degree. Note that more than 12% (almost 9%) of 30 years-old college-educated mothers on parental leave with 3 (2) years old children

would like to work if they had this opportunity. While these numbers are not high, they are suggestive of an overlooked issue – namely, that there is a significant number of mothers who would prefer to work rather than be on childcare leave. These are usually well educated women whose absence from the labor market is especially costly.

Table 8: Sample predictions for mothers on parental leave wishing to work

Age	30	30	35	35	30	30	35	35
College	Yes	Yes	Yes	Yes	No	No	No	No
Child age	2-3	3-4	2-3	3-4	2-3	3-4	2-3	3-4
Specification (1)	8.2%	9.8%	8.9%	10.5%	6.6%	8.2%	7.3%	8.9%
Specification (3)	8.5%	12.1%	8.1%	11.8%	7.4%	11.1%	7.0%	10.7%

Note: Numbers in this table represent the predicted share of mothers with the specified characteristics who would like to work if they had this opportunity.
Source: Own calculations using the results presented in Table 6.

Given the predictions of the above model and the distribution of individual characteristics of mothers on childcare leave in the Czech Republic, we are able to roughly estimate total wages potentially earned by the mothers wishing to work. As inputs to these calculations we use the hourly wages statistics coming from the Structure of Earnings Survey 2010 and available at the Eurostat online database.[5] Assuming that all the mothers of young children wishing to work would assume full-time employment, they would earn about 264 million Euro a year. If, on the other hand, only the wishing to work mothers of two to four year old children would start part-time employment at 20 hours a week, they would earn almost 48 million Euro a year. This means that not giving these women an opportunity to work costs the state 25.5 (1.5) million Euro a year in income tax and 119 (21.5) million Euro in social security contributions in the former (latter) case.[6]

This analysis illustrates that under the current system there is significant unused labor force potential among the mothers of young children. Analyzing the data from the Czech Labour Force Survey we were able to identify the women on childcare leave who explicitly declare willingness to work. Combined with the findings presented in the previous section, namely that 14.2% of inactive mothers of young children indicate that the reason for not looking for employment is the unavailability of childcare, these results suggest that improving the availability of formal childcare for children older than 2 years could significantly increase female labor force participation in the Czech Republic. Given that the cost of one child in a public kindergarten is 38 333 CZK a year (about 1400 EUR)[7],

[5] We use hourly earnings by gender and highest educational attainment in the table "earn_ses10_16" downloaded from the Eurostat online database.
[6] Huge differences between these two scenarios result from per-person tax deduction and cap on social security contribution.
[7] According to the budget of the Ministry of Sports and Education.

financing additional 10 000 places in kindergartens would cost less than what could be contributed to the state budget by bringing 10 000 young mothers to the labor market.

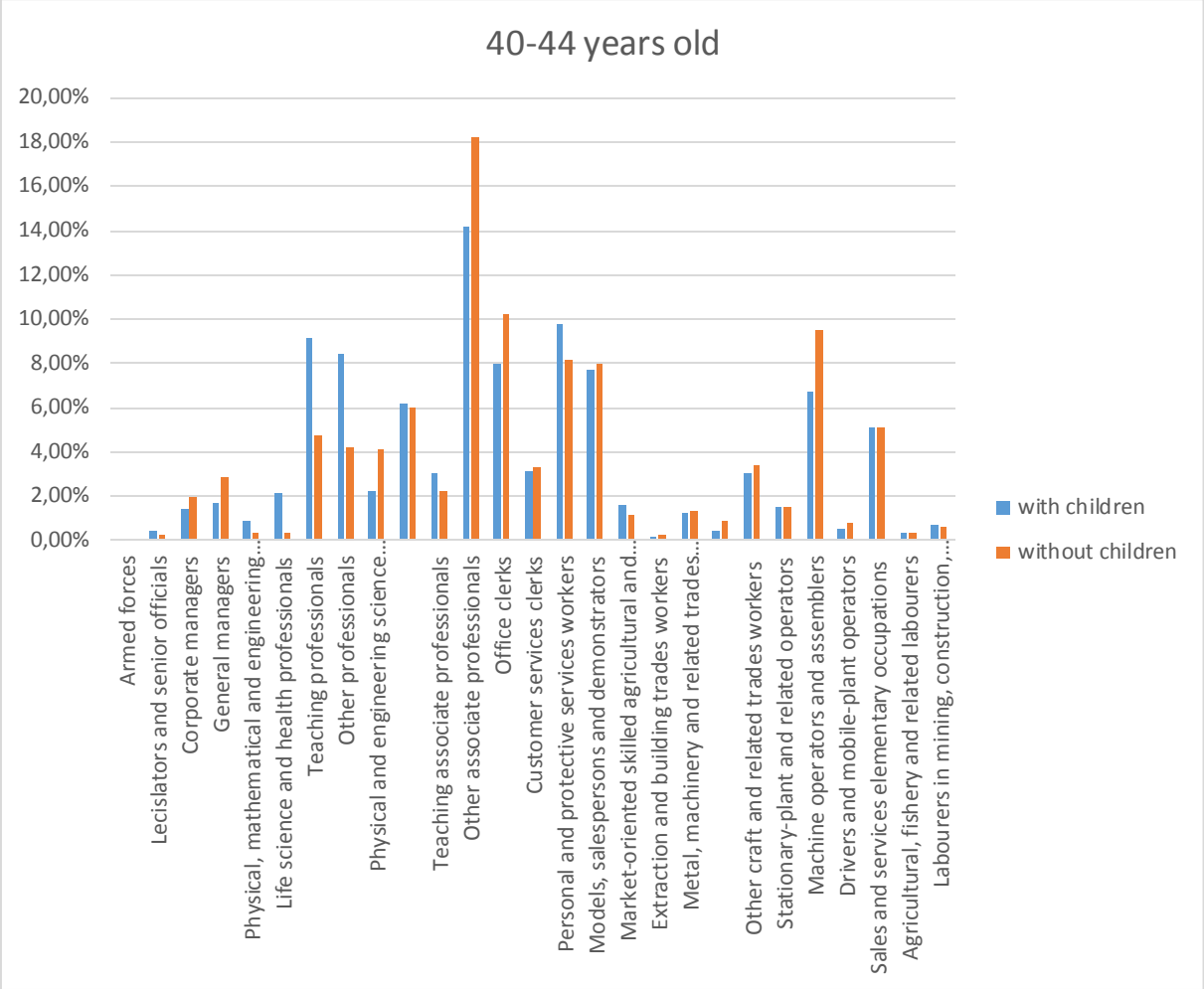
5.4. Long-term consequences of leaving the labor market around childbirth

The Czech system of long childcare leave and the limited supply of places in kindergartens adversely affect labor force participation and employment rates of mothers with small children. Nevertheless it appears that women do return to the labor market after childbearing and that employment rates among Czech women in their 40s are one of the highest in the European Union. This suggests that apart from temporal withdrawal from the labor market there are no negative labor market effects of family-oriented policies in the Czech Republic. However, the economic literature suggests that employment rates do not reveal the whole story.

According to the theory outlined by Grolich and de Grip (2008), having spent a significant amount of time on childcare leave women loose part of their human capital. This would affect their productivity and might be reflected in wages and/or the type of work. On top of this, mothers of young children often require more flexible working conditions than other women, as discussed in Felfe (2013). These include flexible or shortened working hours, possibility to work from home, or less stressful environment and are driven mainly by the need to combine household duties with market work. Both these effects are reflected in occupational allocation of mothers and non-mothers as well as in their earnings.

Table A2 in the Appendix compares occupational allocation of women living with their children aged 5-14 with women of the same age living without own children up to the age of 14. Women living with their children younger than 5 are excluded from the analysis, because a significant share of these women is on leave and those employed might not be a representative selection of all mothers with small children. Figure 12 below summarizes the comparison for women aged 40-44 years. This age group is composed of women who in the great majority have completed their fertility and thus the group without children below 15 contains women who never had children or women with grown-up children.

Figure 12: Occupational allocation of women with and without children in the CR in 2013



Source: Own calculations using the EULFS microdata.

The most remarkable differences between mothers and non-mothers are observed in managerial occupations, professional occupations, clerical work, personal service work, and factory laborers. Among the highly skilled occupations, mothers are much more often employed as life science, health, and teaching professionals, while non-mothers are more often employed as managers and other associate professionals. Among the low-skilled occupations, mothers are much more often employed in personal service occupations, while non-mothers prevail among machine operators and assemblers.

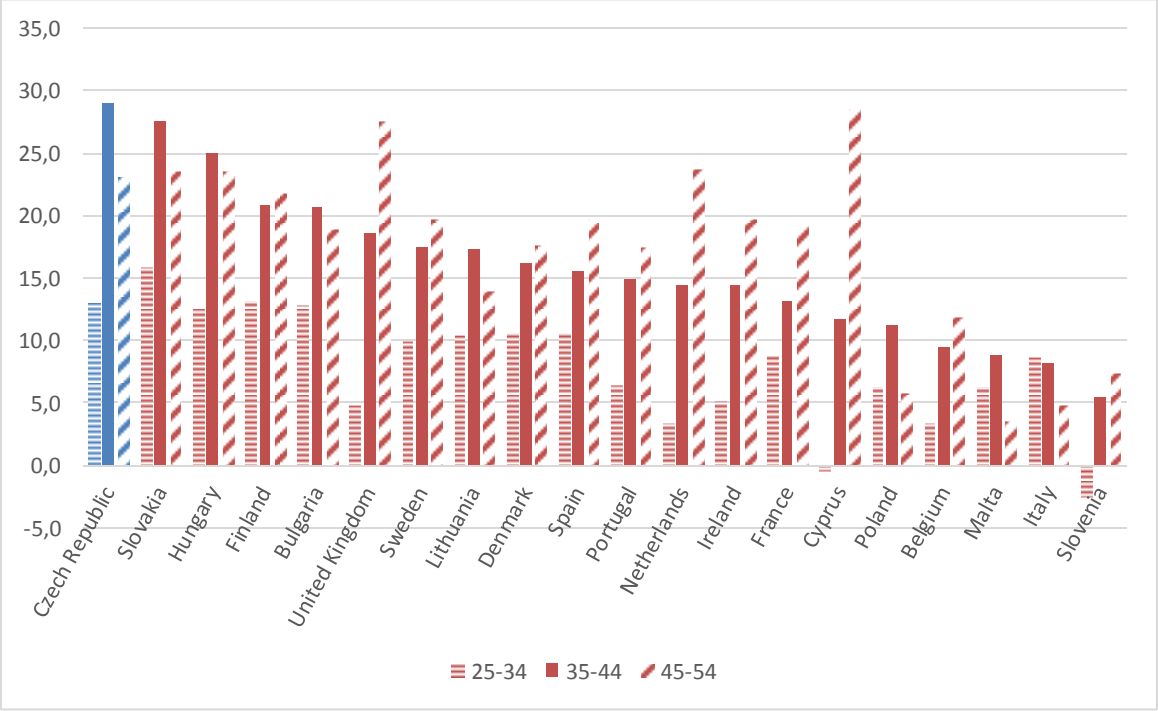
This comparison indeed illustrates that mothers are employed in less risky and less stressful occupations offering more flexible working conditions. To understand how much of this sorting is given by the necessity to combine family work with work responsibilities and how much is driven by long breaks in employment possibly affecting mothers' human capital would require a more detailed analysis and is beyond the scope of this study.

Additional insight is provided by comparison of earnings between men and women, the gender wage gap. As neither the EULFS nor the Czech LFS data contain information on

wages, we use the metadata constructed from the Structure of Earnings Survey and available at the Eurostat webpage. Figure 13 below pictures gender wage gap across European countries divided by age groups. The gender wage gap represents the difference between average gross hourly earnings of male paid employees and of female paid employees as a percentage of average gross hourly earnings of male paid employees. A gender wage gap of 20% means that female employees are pair 20% less than male employees.

The difference in remuneration between men and women may arise due to several reasons, one of them being long breaks in employment which women experience due to childbearing and which results in depreciation of their human capital. This channel would not be reflected in the gender wage gap among the young population (25-34), but could be the most visible in the age group including mothers few years after parental leave, i.e. the 35-44 age group. As is visualized in the Figure below, the gender wage gap in the 35-44 age group in the Czech Republic is at its 29% the highest in the European Union. This observation can be explained by several, not mutually exclusive hypotheses. First, there might be strong gender discrimination. Second, women might perform different, less productive tasks than men – partially because they demand more flexible and less stressful work environment. Third, women might have lower level of accumulated human capital – partially due to years spent on childcare leave. Testing which of these hypotheses are responsible for the observed gender wage gap is beyond the scope of this study.

Figure 13: Gender wage gaps by age groups among the EU Member States in 2010



Source: Eurostat, extracted on 22.11.2014

6. Discussion - conclusions

Comparing the situation of Czech women in the labor market with their European colleagues reveals a strong disparity among females in their thirties. Although the total female activity rates in the Czech Republic are around the European Union average, labor force participation of women in the age group 30-34 is the lowest in the whole European Union.

We hypothesize that this phenomenon is driven by long childcare leave available to Czech mothers and limited number of places in kindergartens, especially for children younger than four. Indeed, employment rates in the Czech Republic are the lowest among the mothers of young children and the share of Czech children younger than four not attending formal childcare is the highest in the European Union.

We show that it might be possible to increase the labor force participation of mothers by improving the availability of childcare services. The EULFS microdata reveal that more than 14% of Czech mothers with children younger than five do not to work because the "suitable care services for children are not available or affordable". Bringing these mothers to the labor market could increase labor force participation of young mothers from 38% to 47%.

Taking advantage of the Czech LFS microdata we further show that not all women taking care of their young offspring stay at home voluntarily. Detailed regression analysis reveals that more than 12% of 30 years-old college-educated mothers on parental leave with 3 years old children would like to work if they had this opportunity. Using regression results identifying the involuntarily inactive mothers and the hourly wages by education level provided by the Structure of Earnings survey we estimate that bringing the involuntarily inactive mothers to the labor market by, for example, improving the availability of childcare, could increase female labor force participation rate among the age group 30-39 by one percentage point and bring 264 million EUR (in a generous scenario) or 48 million EUR (in a modest scenario) in yearly wages. Even in the modest scenario the state budget income generated by these additional workers would be enough to finance 10 000 new places in public kindergartens.[8]

As suggested by the Austrian example, shortening the maximum duration of parental leave also could have a positive effect on mothers' activity and employment rates. Nevertheless, to be effective such policy should be accompanied by improved availability of childcare for children of respective age. This is why we consider the limited availability of childcare as the weakest part of the Czech system.

Alternatively, mothers of young children could be incentivized to work by introduction of the so called "Norwegian model" of parental support. Under this system after the child's second birthday parents would have two options: (1) prolonging the parental leave and

[8] Given that the Ministry of Education pays 38 333 CZK per child in a kindergarten.

further collecting the parental benefit or (2) terminating the parental leave and letting their child attend public or private kindergarten, where the fee for kindergarten would be at least partially reimbursed. To make the policy attractive for parents, the maximum reimbursement should be higher than the parental benefit. This could be achieved by combining the resources saved on parental benefits and additional income to the state budget coming from taxes paid by the newly employed mothers.

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Table A1: Activity rates for women over the life-cycle across Europe in 2013

	Age group				
	25-29	30-34	35-39	45-49	25-54
EU 28	76,8	78,8	80,6	81,0	79,2
Belgium	80,5	81,9	83,4	79,8	79,7
Bulgaria	67,8	76,6	83,6	84,9	80,3
Czech Republic	70,0	67,0	81,4	94,5	81,9
Denmark	77,2	84,4	86,2	86,9	84,8
Germany	79,1	80,3	80,7	85,5	82,4
Estonia	72,5	74,1	82,4	93,1	82,9
Ireland	77,2	77,1	73,8	68,5	72,5
Greece	81,6	81,5	78,5	72,1	74,3
Spain	84,6	87,1	85,5	79,0	81,8
France	81,3	82,2	84,6	86,0	83,5
Croatia	75,2	84,3	82,3	76,0	76,8
Italy	60,6	67,7	70,6	66,3	66,0
Cyprus	88,3	86,3	84,4	81,0	82,0
Latvia	79,6	83,9	84,8	88,0	84,8
Lithuania	85,7	89,1	88,8	90,1	88,4
Luxembourg	81,2	86,4	84,8	78,0	80,5
Hungary	69,4	68,9	74,9	85,7	76,9
Malta	80,8	69,1	65,7	51,8	61,1
Netherlands	86,0	84,3	84,3	81,8	82,6
Austria	85,1	82,9	85,7	87,3	85,0
Poland	76,5	77,7	81,8	82,4	79,1
Portugal	86,5	91,5	89,3	82,2	85,5
Romania	68,8	72,3	74,6	74,4	71,9
Slovenia	81,7	90,7	91,5	90,5	88,7
Slovakia	71,0	69,0	81,5	89,3	80,5
Finland	76,7	75,2	81,1	90,1	83,3
Sweden	82,0	86,3	90,9	90,0	88,1
United Kingdom	77,0	77,9	78,8	82,4	79,6

Source: Own elaboration using data from the Eurostat online database LFS series - Detailed annual survey results. Accessed on 15.10.2014.

Table A2: Occupational allocation of women with and without children in the CR in 2012

Occupation	25-29	30-34	35-39	40-44	45-49	25-29	30-34	35-39	40-44	45-49
	with children 5-14 years old					without children 0-14 years old				
Armed forces	0,00%	0,00%	0,06%	0,02%	0,00%	0,16%	0,41%	0,06%	0,00%	0,00%
Legislators and senior officials	0,00%	0,09%	0,11%	0,44%	0,89%	0,11%	0,41%	0,00%	0,28%	0,32%
Corporate managers	0,68%	0,84%	2,31%	1,46%	1,89%	2,23%	3,06%	2,66%	1,95%	2,10%
General managers	0,31%	1,56%	2,15%	1,66%	1,86%	2,14%	2,90%	2,74%	2,88%	3,13%
Physical, mathematical and engineering science professionals	0,00%	0,96%	0,44%	0,86%	2,25%	1,26%	1,68%	0,54%	0,32%	0,85%
Life science and health professionals	0,00%	0,30%	2,11%	2,13%	3,56%	1,71%	2,53%	1,19%	0,38%	1,66%
Teaching professionals	1,22%	3,38%	4,76%	9,15%	8,11%	6,46%	3,95%	4,01%	4,78%	6,28%
Other professionals	1,23%	2,05%	4,29%	8,44%	5,75%	9,13%	8,85%	3,78%	4,22%	5,11%
Physical and engineering science associate professionals	1,76%	2,72%	2,58%	2,19%	2,57%	3,92%	3,43%	3,89%	4,09%	2,94%
Life science and health associate professionals	6,95%	8,67%	7,91%	6,19%	5,45%	6,54%	5,30%	6,68%	6,03%	6,00%
Teaching associate professionals	0,98%	1,70%	2,06%	3,04%	2,90%	1,23%	2,04%	1,02%	2,20%	2,01%
Other associate professionals	11,30%	15,47%	15,77%	14,24%	12,48%	18,78%	19,06%	17,04%	18,28%	14,84%
Office clerks	13,11%	8,54%	9,03%	7,95%	5,43%	10,13%	7,77%	9,30%	10,23%	7,89%
Customer services clerks	3,80%	3,87%	2,27%	3,15%	2,08%	5,23%	4,47%	2,89%	3,29%	2,74%
Personal and protective services workers	17,79%	10,48%	10,10%	9,80%	8,41%	9,33%	9,21%	8,82%	8,13%	7,85%
Models, salespersons and demonstrators	9,84%	11,78%	9,77%	7,75%	7,40%	7,97%	8,19%	10,31%	8,00%	8,87%
Market-oriented skilled agricultural and fishery workers	0,16%	0,94%	1,38%	1,60%	3,06%	0,18%	0,76%	0,82%	1,15%	2,21%
Extraction and building trades workers	0,47%	0,12%	0,07%	0,21%	0,80%	0,24%	0,00%	0,00%	0,28%	0,03%
Metal, machinery and related trades workers	1,91%	1,45%	1,44%	1,29%	0,53%	0,96%	1,11%	2,00%	1,34%	0,88%
Precision, handicraft, printing and related trades workers	0,56%	1,14%	1,32%	0,42%	1,77%	0,47%	0,46%	1,00%	0,90%	0,87%
Other craft and related trades workers	4,01%	4,07%	2,86%	3,00%	3,44%	1,95%	2,63%	4,03%	3,44%	3,12%
Stationary-plant and related operators	3,65%	2,28%	1,51%	1,51%	0,83%	0,96%	1,27%	1,01%	1,51%	1,90%
Machine operators and assemblers	13,06%	10,73%	8,05%	6,77%	7,41%	6,90%	6,69%	10,15%	9,49%	9,99%
Drivers and mobile-plant operators	0,00%	0,78%	0,25%	0,57%	0,14%	0,28%	0,07%	1,09%	0,77%	0,79%
Sales and services elementary occupations	4,41%	5,11%	5,96%	5,15%	9,85%	1,20%	2,46%	4,01%	5,09%	5,95%
Agricultural, fishery and related laborers	0,62%	0,57%	0,48%	0,31%	0,61%	0,09%	0,00%	0,09%	0,38%	0,55%
Laborers in mining, construction, manufacturing and transport	2,21%	0,40%	0,96%	0,71%	0,51%	0,45%	1,30%	0,90%	0,61%	1,13%

Source: Own calculations using the EULFS microdata

Table A3: Occupational allocation of men in the CR in 2012

Occupation	25-29	30--34	35-39	40-44	45-49
Armed forces	0,79%	0,95%	0,54%	0,36%	0,24%
Legislators and senior officials	0,02%	0,20%	0,51%	0,69%	0,98%
Corporate managers	2,15%	3,36%	3,55%	3,65%	3,80%
General managers	2,12%	3,80%	5,23%	5,80%	5,77%
Physical, mathematical and engineering science professionals	5,09%	3,60%	3,95%	3,00%	3,43%
Life science and health professionals	0,82%	0,67%	0,92%	0,56%	1,28%
Teaching professionals	1,64%	1,39%	1,30%	1,53%	1,77%
Other professionals	3,29%	3,25%	3,32%	3,38%	3,22%
Physical and engineering science associate professionals	10,37%	10,78%	10,65%	9,76%	9,36%
Life science and health associate professionals	0,75%	0,90%	0,81%	0,84%	0,88%
Teaching associate professionals	0,43%	0,16%	0,29%	0,57%	0,56%
Other associate professionals	8,50%	7,83%	6,78%	8,30%	6,56%
Office clerks	3,39%	2,60%	2,65%	2,32%	2,23%
Customer services clerks	0,61%	0,46%	0,29%	0,25%	0,30%
Personal and protective services workers	7,47%	5,91%	5,15%	4,52%	3,51%
Models, salespersons and demonstrators	2,53%	1,89%	2,21%	1,64%	0,87%
Market-oriented skilled agricultural and fishery workers	1,23%	1,30%	1,46%	1,50%	1,92%
Extraction and building trades workers	10,79%	12,19%	12,57%	11,06%	12,12%
Metal, machinery and related trades workers	12,73%	13,79%	13,26%	14,10%	16,56%
Precision, handicraft, printing and related trades workers	1,11%	1,24%	1,06%	0,65%	1,27%
Other craft and related trades workers	2,67%	2,27%	1,55%	1,87%	1,54%
Stationary-plant and related operators	2,70%	2,69%	3,21%	2,94%	2,89%
Machine operators and assemblers	6,39%	5,20%	5,05%	4,19%	4,13%
Drivers and mobile-plant operators	8,97%	10,69%	11,17%	13,02%	11,06%
Sales and services elementary occupations	1,37%	1,03%	1,27%	1,74%	1,74%
Agricultural, fishery and related laborers	0,31%	0,29%	0,18%	0,35%	0,19%
Laborers in mining, construction, manufacturing and transport	1,76%	1,56%	1,12%	1,39%	1,81%

Source: Own calculations using the EULFS microdata

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Univerzita Karlova v Praze, Fakulta sociálních věd
Institut ekonomických studií [UK FSV – IES] Praha 1, Opletalova 26
E-mail : ies@fsv.cuni.cz http://ies.fsv.cuni.cz