Family-Friendliness and Gender Composition of the Workplace

Sophia Gernert*

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Abstract

Using British matched employer employee data thesis investigates the availability of family-friendly work practices using the workplace as unit of analysis. In particular, it addresses the issue of whether the availability of flexitime and other family-friendly work practices affects the gender composition of the workplace. So far, the question has been posed the other way around, i.e. whether a higher share of female employees in the firm increases the probability of this firm offering certain amenities. Recent literature has provided evidence that over their work life and especially after starting a family, women and men sort into different types of firms. Understanding whether this difference in sorting behaviour occurs because of gender differences in the demand for family-friendly work practices is at the heart of this thesis. It investigates the question of whether the availability of certain job amenities attracts more women and ultimately renders the workforce more female. I find that working reduced hours, job sharing and working only during school time is associated with a higher proportion of women in the workplace. However this link does not seem causal as the coefficients do not remain significant when an instrumental variable approach is used.

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1 Introduction

Recent papers have drawn attention to the dynamics of the gender wage gap and how these dynamics are linked to family events. Starting a family has very different consequences for the labor market outcomes of men and women and women never recover from the penalties associated to female (but not male) fertility. Women continue to spent more time on family and household responsibilities than men. Therefore gender differentials in the demand for family-friendly work practices are a likely candidate for explaining gender specific sorting into different types of firms and why these differences increase as soon as employees become parents. This thesis examines whether more family-friendly workplaces attract more women than comparable workplaces in the same industry. There are two potential channels through which the availability of modern work practices might impact the share of women in the workplace. Assuming that women have higher valuation for these job amenities than men, women might actively seek employment in family-friends firms because they have some information on this or women decide to stay in family-friendly firms and leave other firms after acquiring this information by working there some time. The British Workplace Employee Relations Survey covers many aspects of working conditions which allows me to assess their impact on the gender composition of the workplace.

The outline of the rest of this thesis is as follows: Section 2 provides a discussion of literature on gender wage differentials and gender differences in working conditions. Section 3 describes the data. Section 4 lays out the empirical strategy and section 5 presents my results. Finally, section 6 concludes.

2 Literature

In 'A Theory of Discrimination' Becker (1957) offers a narrowly defined conception of discrimination on the labor market: different wage levels for workers of identical productivity. Following this conception much of the economic literature on the gender wage gap has been focusing on gender differences in human capital, such as experience and educational attainment. This allows economists to disentangle the part of the gender wage gap that can be 'explained' from a residual difference which then could be attributed to actual discrimination - at least partially.

2.1 The gender wage gap: trends and explanations

Since the 1950's women in many Western economies experience considerable wage growth relative to men's wages. This growth spurt slows down in the 1990s and 2000s, especially for high-skilled women (e.g., Blau and Kahn, 1992, 2007, 2017). The two main reasons for this development are higher female labor force participation (with

that increased experience) and women's higher educational attainments. As women are catching-up in terms of human capital, the individual's characteristics can only explain a small share of the remaining gender wage gap, whereas gender segregation into occupations and industries and the number of weekly working hours become more important (Blau and Kahn, 2007; Goldin, 2014).

Goldin (2014) constates two important features of the gender wage gap today. In some occupations the hourly wage responds strongly to the number of weekly hours and career interruptions. Earnings in these fields are a convex function of working time. Amongst this group are many legal and management jobs. In other occupations, such as pharmacist and many tech jobs, time spent working - both throughout the week and throughout the career - matters very little. Earnings here are almost linear in hours. Moreover, Goldin (2014) notes that the gender gap widens with age and that it is caused to a large extent by a family gap: childfree women fare much better than women with children when compared to comparable male workers. These two features confer little plausibility to various explanation for the gender gap put forward so far. Gender differences in bargaining skills and in the taste for competition cannot account for the widening of the gender gap over the life cycle. Statistical and direct discrimination against women per se cannot be the main force behind the remaining gender wage gap since childfree women do not lag far behind their male colleagues of comparable background. According to Goldin (2014) the main reason for the remaining persistent gender wage gap is women's higher demand for job characteristics that facilitate the compatibility of work and family duties. This hypothesis calls for a closer examination of the work environment, to see whether working conditions of men and women indeed differ systematically in that regard. If working conditions vary across firms and if they have an impact on worker's wage, then firms are likely to play a role in understanding the gender wage gap. The following two sections present the current state of research on how firms' impact the gender wage gap.

2.2 The role of firms

For firms in Germany's private sector, Heinze and Wolf (2006) find that the mean gender wage gap within firms is smaller than the gap across firms and that it is affected by a number of firm characteristics. The mean gender wage gap decreases with firm size and increases with the firm's average wage level. It is higher in establishments where a larger share of the workforce is female and it is lower in firms equipped with a work council as well as firms whose wage setting is subject to collective bargaining (Heinze and Wolf, 2006).

This suggestive evidence is in line with Card et al. (2015) and Coudin et al. (2018). They demonstrate that firm-fixed effects can explain 21 percent of the raw Portuguese gender wage gap and 10 percent of the raw French gap. Decomposing the firm-fixed effects

into within-firm and between-firm gender differentials, the authors can show that the main driver behind the firm-fixed effects is the between-firm gender differential. Women are more likely to work in firms that pay smaller wages, given a worker's productivity related characteristics, working hours, occupation and position. This sorting effect, i.e. the between-firm component, accounts for 15 to 20 percent of the Portuguese and 11 percent of the French gap, respectively. The within-firm component, is much smaller in both countries and also insignificant (and negative) in the French case.

Both papers surmise that women sort into lower-paying firms because these also happen to be the more family-friendly firms. By interpreting the within-firm component as a bargaining effect, the authors assume that gender wage differentials for comparable workers of the same firm, in the same occupation and position are the result of men's better performance in wage negotiations.

However, it could also be the case that compensating wage differentials are responsible not only for the between-firm differential, but also for parts of the within-firm differential. The theory of compensating wage differentials holds that workers receive a wage-premium to make up for undesirable features of their work, such as health hazards. By the same token they pay a wage penalty for desirable features, such as flexitime arrangements. If, in addition to bargaining effects, compensating wage differentials were to matter as well for the within-firm gender differential identified by Card et al. (2015) and Coudin et al. (2018), the following would need to hold: after controlling for occupation and position within a firm, relatively more women than men ask for family-friendly job amenities and accept lower wages in return. By contrast, interpreting the whole within-firm effect as a bargaining effect, commits us to the view that sorting into occupations and positions in a firm accounts for all variation in the receipt of family-friendly amenities in exchange for lower wages. Put differently, this rules out the possibility that among workers in the same occupation and in the same position within the same firm, some receive higher wages and less amenities, while others are remunerated in terms of more amenities and lower wages.

The relative strength of the sorting effect suggests that, if women's higher demand for family friendliness is indeed the reason for their sorting behaviour, then the provision of family-friendly amenities will also vary more across than within firms (especially so, after controlling for occupations and positions). Economic and management theory both provide a rationale for why firms would offer different (numbers of) amenities. Economists make the case that some firms might be able to provide family-friendly amenities at lower costs than others. Therefore, some firms will provide them, whereas others will not. According to the theory of compensating differentials firms can (partly) 'pay' for these costs by reducing their payroll bills, since workers are willing to trade parts of their wage for desirable working conditions.

In UK's Workplace Employment Relations Survey of 2004 Heywood et al. (2007) find mixed evidence: while job sharing, parental leave, flexible hours and time off negatively

impact hourly wages, the existence of a nursery and the possibility to work from home increase hourly wages, ceteris paribus. Heywood et al. (2007) hypothesize that the former allow workers to pay more attention to their families while the latter allow workers to pay more attention to their work. Through productivity gains the latter might ultimately "pay for themselves". On average, Heywood et al. (2007) find a very large wage penalty of 20 percent for a combined measure of the six family-friendly characteristics they investigate. The authors caution that the large size of the coefficients might be due to few controls in their data for the job's particular nature, e.g. the worker's responsibility. Interestingly, men's pay seems to be more adversely affected (24.4 percent penalty) than that of women (16.2 percent penalty), perhaps because men are more likely to work in firms for whom it is more costly to offer family-friendly working conditions (Heywood et al., 2007) .

Management theory, on the other hand, interprets family-friendly amenities as a high-performance strategy of firms. There are two main mechanisms through wich family-friendly amenities could enhance workers' performance and, thus, make up for the costs that they impose on firms: First, family-friendly amenities, such as flexitime, might enable employees to exert more effort, because their time constraints are loosened. Second, the social gift exchange dynamic might induce higher effort: workers want to reciprocate the favor of more flexibility by putting in more effort (Chung, 2019).[1] This view is compatible with the economic theory of compensating wage differentials. Both workers' willingness to increase their productivity and their acceptance of lower wages in return for more flexibility, e.g., or a mix of both can be means of "paying" for more family-friendly working conditions.

Working with matched employer-employee data from Denmark, Gupta and Rothstein (2005) investigate the consequences of sorting and segregation by gender along different dimensions. They investigate whether the varying degree of gender diversity across industries, firms, occupations and job-cells can account for a considerable part of the gender wage gap.[2] Between 45 percent and 68 percent of the overall gender wage gap can be 'explained' by sorting along the different dimensions together with usual human capital characteristics. A structural difference emerges between white-collar and blue-collar workers. On the one hand, segregation at the occupation level has the highest impact on the gender wage gap of white-collar workers, while industry and firm level segregation are much less important. The gap for blue-collar workers, on the other hand, is much more influenced by segregation at industry, firm and, especially, the job-cell level. Gupta and Rothstein (2005) attribute the low importance of occupation in case of blue-collar workers to a relatively larger coverage of collective bargaining and union policies aimed at harmonizing wages across occupations.

[1] Throughout this text, I will use the term 'flexibility' from the perspective of the employees as a working arrangement that gives them more freedom in how they organize their everyday work. I will not use it to refer to working arrangements that are primarily in the interest of the employer, such as employees being on-call after official office hours.

[2] Job-cells are occupations within the same firm.

Furthermore, both female blue-collar workers and female white-collar workers earn significantly less than their male colleagues in the same job-cell (Gupta and Rothstein, 2005). There are at least four potential explanations for this within-firm within-occupation gender differential: First, Gupta and Rothstein (2005) do not control for job positions. If more men than women within a job-cell hold higher positions, they will also earn higher wages. Second, the within-job-cell gender wage gap might be a result of discrimination or, third, gender differences in bargaining skills. Fourth according to the theory of compensating differentials, if women ask for more flexibility or shorter hours, for example., they will have to 'buy' these job amenities and give up part of their wages.

2.3 Firm effects over the life cycle

Coudin et al. (2018) offer further evidence for the importance of family-friendliness in explaining women's sorting into low-paying firms. In order to detect lifecycle trends, they plot average bargaining and sorting effects on time relative to the birth of the first child. While women and men receive comparable firm premiums in the beginning of their careers, the gender differential in firm-fixed effects starts rising drastically after the first childbirth. Again, the sorting effect is the important driver behind this development. Throughout their working life women never recover from this adverse effect. Rather than moving to lower-paying firms in response to giving birth, it is more important, that women stop moving to higher-paying firms (Coudin et al., 2018). This could also explain why male and female firm-effects already start to diverge in the year prior to the birth of the first child. Women might anticipate that they will become mothers in the year (and most certainly in the 9 months) leading up to the birth, and therefore already reduce their job mobility, especially if switching jobs would mean leaving a more for a less family-friendly one. Alternatively, men might anticipate that they are soon to become the family's main bread-winner and increase their job mobility already shortly before they actually become fathers. However, in light of Barth et al. (2017) changes in women's sorting behavior seem to be the more likely candidate. Barth et al. (2017) document that the share of the gender wage gap that can be attributed to the between-firm component, i.e. the sorting effect, grows over the working life. They conclude that this widening is mainly driven by the different evolution of sorting effects of married women compared to the rest of the labor force.

Kleven et al. (2018) focus explicitly on the evolvement of earnings –rather than wages– and how the earnings of Danish men and women are very differently affected by the birth of a first child. They stress that choice of occupation, firm, job position and working hours are all channels through which gender differences in response to fertility manifest. The raw gender earnings gap in Denmark has declined from 46 percent in 1980 to 24 percent in 2013. Kleven et al. (2018) conduct an Oaxaca-Blinder decomposition of the

gender earnings gap in each year to distinguish 'child-related' from residual inequality. As of 2013, the authors can attribute about 80 percent of the gender earnings gap directly to post-child effects–twice as much as in 1980. In other words, 20 percentage points of the 24 percent earnings gap in 2013 are directly due to fertility. Women in other countries face even higher child-penalties. The long-run earnings gap amounts to 26 percent in Sweden, 31 percent in the US, 44 percent in the UK, 51 percent in Austria and 61 percent in Germany (Kleven et al., 2019). In Scandinavian and German-speaking countries the gender gap in labor force participation, in weekly hours and in the wage rate are found to be of similar importance importance, whereas the gender gap in labor force participation alone can explain a very large extent of the earnings gap in English-speaking countries (Kleven et al., 2019).

As in Coudin et al. (2018), part of the child-penalty can be explained by gender differences in the sorting behavior of men and women. While women's and men's probabilities of working either in the public sector or in a family-friendly private establishment follow similar trajectories before they have their first child, women's probability increases much more and persistently after giving birth. Both public and family-friendly private firms are associated with lower pay (Kleven et al., 2018). This confirms the findings of Pertold-Gebicka et al. (2016). They show that, at all stages of the family life cycle, relatively more women than men are employed in the Danish public sector. Thus, some women sort into public workplaces (which are considered more family friendly) before they start a family. Just as Kleven et al. (2018), Pertold-Gebicka et al. (2016) find that women's probability of switching from the private to the public sector increases considerably after the birth of the first child and continues to rise in subsequent years (relative to men's probability of doing so).[3] So, there are women who decide to switch sectors several years after giving birth to their first child. Pertold-Gebicka et al. (2016) interpret this along the lines of Jovanovic's (1979) theory of turnover. This theory considers job quality an experience good. Certain information about a job's quality cannot be attained without working on this job for some time. Rather than a voluntary decision, switching from the private to the public sector post-birth could thus be seen as acquiescing in the situation: Only after encountering difficulties in combining motherhood and their careers at their previous (private sector) employer do mothers switch to more family-friendly (public sector) jobs (Pertold-Gebicka et al., 2016). Low pay during maternity leave in the private sectors further increases the probability of switching to the public sector (Nielsen et al., 2004).

These dynamic analyses of the gender pay gap back Goldin's (2014)message that flexibility is key. When giving birth women's need for modern work arrangements changes more than that of men, as women shoulder a larger part of household and childcare duties (Blair and Lichter, 1991). On the labor market the first birth amounts to a point of no

[3]Low pay during maternity leave in the private sector further increases the probability of switching to the public sector (Nielsen et al., 2004).

return for the mother. The following two sections look at whether the gender gap in earnings mirrors a gender gap in preference for and availability of family-friendly work arrangements.

2.4 A gender gap in preferences for family-friendly working conditions?

So far, research on job-amenities has focused on their effect on job-satisfaction and wages. The body of work looking at gender-differences in the valuation of family-friendly job-amenities is very small. Stockton and van den Berg (2018) analyse a pretest of Germany's 2010 Socio-Economic Panel (SOEP) survey and focus on questions about workers' reservation wage for a variety of working arrangements.[4] Among childless workers, women exhibit a lower willingness to pay for schedule control than men.[5] The picture is reversed when looking at parents. Only motherhood (as opposed to fatherhood) has a significantly positive effect on a worker's willingness to pay for schedule control. Thus, Stockton and van den Berg (2018) further stress the importance of family-friendly arrangements to women, or, more precisely, to mothers.

It is important, however, to keep in mind that zero willingness to pay as stated by many survey subjects cannot be interpreted as them deriving no utility from schedule autonomy. If we want to allow for utility-functions that are non-linear in labor earnings (and even more so if we want to allow wage to affect the utility of different individuals in different ways), the marginal utility of wage will vary across individuals. In this setting people with the same preference for schedule control might report different willingness' to pay.

Relying on stated-preferences experiments with US employees Maestas et al. (2018) cannot confirm any gender difference in the valuation of schedule flexibility. Moreover, they estimate that women have a higher willingness to pay for paid time off, while men have a higher willingness to pay for switching from part-time to full-time employment. In conclusion, the little evidence on gender differences in preferences for family-friendly working arrangements is not yet conclusive.

Maestas et al. (2018) go on to compute an adjusted gender wage gap that accounts for both the differences between male and female jobs with regard to a number of amenities and gender specific valuations of each of these amenities. This correction reduces the raw gender wage gap by 30 percent (Maestas et al., 2018). The adjustment for amenities is consistent with the theory of compensating wage differentials. The adjustment for gender-specific preferences for job-amenities, however, appears to be a questionable approach. It

[4]The notion of gender-specific preferences for family-friendly job-amenities remains agnostic to whether these preferences are innate, the result of social norms or a consequence of gender-specific (time-)constraints resulting from an unequal division of labor in the home and in the family.

[5]As in the case of flexibility, 'schedule control' is to be understood from the perspective of employees, e.g. as an opportunity to decide on start and finishing times themselves.

seems to suggest that we should control for individual preferences when evaluating the way individuals and demographic groups are remunerated.[6] But wages and therefore also wage gaps are monetary metrics, not utility metrics. Adopting the approach of Maestas et al. (2018) for the entire pay scheme including monetary renumeration, i.e. adjusting the gender wage gap for possible gender differences in the preference for money, would appear very inappropriate and illustrates the unorthodoxy of their computation.

Arguments based on gender differences in preferences are thus not equipped to explain the gender wage gap in the direct manner put forward by Maestas et al. (2018). Rather, gender-specific preferences for flexible working arrangements etc. might be one explanation, for why women underperform in wage negotiations compared to men. If employers (assume to) know that they are more dependent on family-friendly job-amenities than men the employers might compress wages of women more than that of men in return for granting them flexible working arrangements (Agarwal, 1997). Beyond that, gender-specific preferences, if they translate into gender differences in the distribution of actual job-amenities, could affect the gap as described by the theory of compensating wage differentials. The next section, therefore, presents some research findings on the more fundamental question of whether women are indeed more likely to enjoy family-friendly working conditions.

2.5 A gender gap in actual working conditions?

Two decades ago, 27 percent of the US workforce report that they have control over their start and finishing times (Golden, 2001). Running a probit regression with controls for demographic, human capital and job characteristics as well as working hours, Golden (2001) points out that women are less likely than men to enjoy the possibility of flexitime.[7] The same holds true for other marginalized groups: the non-white and the less-educated. In absence of occupational controls, women are estimated to be around 50 percent less likely to enjoy schedule control than men. This result is reduced to a 10 percent likelihood gap with the introduction of coarse-grained occupational controls and is reduced further when more fine-grained occupational codes are employed. This leads to the conclusion that women predominantly work in occupations where schedule control is not widely available. Correspondingly, many of the occupations that are associated with very high levels of access are male-dominated, such as technical and managerial professions.

With respect to working hours, Golden (2001) discovers that schedule control is more easily available for workers that work either unusual hours or unusual shifts. He interprets

[6] Besides, Maestas et al. (2018) do not control for occupation, job-position, firm or industry in their adjusted metric of the gender gap. If there is a considerable correlation between the investigated job-amenities and any of those variables and if those variables affect pay for reasons other than the job-amenities they come with, the estimation of 30 percent reduction might suffer from omitted-variable-bias.

[7] The terms 'schedule control' and 'flexitime' are used interchangeably. They refer to an employee's control over her own start and finishing times.

this as another means of 'purchasing' schedule control apart from a compensating wage penalty. Workers that are willing to incur a leisure penalty, i.e. work longer hours, and workers that are willing to switch to part-time employment or self-employment are more likely to secure schedule control for themselves.

In line with his finding that the probability of having schedule control increases with educational attainment, Golden (2009b) shows in a later paper that flexitime in the US is mostly made available to high-skilled employees holding professional or managerial positions. Which employees are to have access to flexitime is seldom formalized in US firms. If firms have established regulations on whom to grant access to flexitime, these regulations still leave a lot of leeway for managerial discretion. (Kelly and Kalev, 2006).

Gray and Tudball (2003) also confirm for Australian data that high-skilled workers are more likely to profit from family-friendly work practices, in particular form schedule control, access to telephone for family reasons and the possibility of permanent part-time employment. They do not find any evidence that, within a firm, parents are more likely to have access to these family-friendly policies than their childfree colleagues. As Gray and Tudball (2003) include various controls, the effect of parenthood might be attenuated. For example, occupation and training prove to have a significantly positive impact on the probability of having schedule control. If parents already sort into the categories that ensure access to flexitime, the parenthood coefficient will not be significant, even if a higher share of parents has access to flexitime compared to childfree employees. Moreover, access to schedule control varies more within than across firms (Gray and Tudball, 2003). This further highlights the important role of occupation in securing schedule control. Some firms find it easier than others to supply flexitime. Still, the differences within firms are more decisive. Different degrees of compatibility of flexitime with different occupations would be a likely explanation for the larger within-firm variation.

Chung (2019) demonstrates that rather than the employee's gender, it is the gender domination in her sector, occupation and job position that determines whether she has access to schedule control. The 2010 European Working Conditions Survey reports that 23 percent of all men and 22 percent of women that are dependently employed in one of the EU-27 Member States have access to flexitime arrangements.[8] She compares sectors, occupations and job positions of female and male dominance to a reference group of sectors, occupations and job positions where roughly as many women as men are employed (between 40 and 60 percent). She finds that gender domination (and also the kind of gender domination) has different effects on female and male employees. Women are significantly less likely to obtain access to schedule control in job positions and sectors of female dominance. Male dominance affects women adversely only on the occupational

[8] Chung (2019) investigates today's Member States (including the UK), except for Croatia that did not join the EU until 2013. Of the EU-27, Malta and Sweden are the only countries where a larger share of women than men has access to flextime (Plantenga and Remery, 2010).

level. Men fare significantly worse in female dominated job positions and both female and male dominated sectors sectors. Thus, both genders suffer in sectors and jobs that are female-dominated.

By only looking at percentage shares men and women have almost equal access to flexitime arrangements. The fact that female dominated sectors and job positions are negatively associated with access to schedule, especially for women, makes it implausible that wages in these sectors an job positions are lower due to a compensating wage-differential for flexitime.

Heywood et al. (2007) see the income effect as an important reason for why evidence for more women than men benefitting from flexible working arrangements is hard to come by. Job-amenities, such as flexitime, are normal goods, they argue. Demand for flexitime therefore increases in income. Since, on average, men's income exceeds that of women, they demand more family-friendly job-amenities on average. This view takes a slightly different perspective than the standard argument for compensating wage differentials as is turns the causal relationship around: gender differences in working conditions might just as well be the consequence of the gender wage gap instead of its origin. This argument presupposes that for a given income, men and women demand the same amount of family-friendly job-amenities. The second assumption they make is that, contrary to Golden's (2009b) proposal, family-friendly work practices cannot be 'purchased' by means other than wage penalties. If more men than women have access to family-friendly practices and if Heywood et al. (2007) are right, then men's wages would be even higher if they were working under the same working conditions as women. Controlling for flexitime etc. would then not close the gender gap, but exacerbate it.

When investigating wether the availability of family-friendly job-amenities is in some way gender specific, the literature so far has focused on schedule control.[9] Schedule control gives workers the freedom to decide *when* they work. As this subsection showed, women and men do not differ much in this regard. Perhaps, the question of *how long* men and women work is more essential. Pay has become a convex function of hours in many professions as indicated by Goldin (2014). Therefore gender differences in working time might be more essential in understanding the gender wage gap than (hypothetical) gender differences in schedule control. In terms of hours, working part-time and being exempt from overtime would be two straightforward examples of family-friendly job-amenities. As it is common practice to control for part-time work when adjusting the gender wage gap, part-time cannot be adduced as an explanation for the adjusted gender differential. Thus, it is worth to further explore gender differences in overtime.

[9]Mind you, flexitime and part-time schemes can theoretically be combined, e.g. working 20 hours a week with control over start and finishing times

2.6 A gender gap in overtime

Long hours (or overwork) starts gaining prevalence in the US in the 1970's. In many Western European countries, such as the Netherlands and Germany, working time is on the decrease until the mid 1980's. In Both the US and Europe the shares of employees working long hours has stabilized around the turn of the century (Cha and Weeden, 2014; Golden, 2009a; Messenger et al., 2007). Today, almost one in three employees in the US is working more than the 40 statutory hours a week. Overtime is even more common in some Eastern and South Eastern Asian countries: In South Korea and Indonesia every other employee works overtime (Messenger et al., 2007). Whereas in Europe overtime is much less widespread. In the EU-27 Member States 13.4 percent of male workers and 8.7 percent of female workers work longer hours, the UK being amongst the European countries with the largest shares. According to Plantenga and Remery (2010) more than 30 percent of male workers and more than 20 percent of female workers work overtime. Such a gender gap in working hours can be found in the majority of countries worldwide. Furthermore, many countries also see an overtime gap between white and blue collar workers. In general, the probability of working longer hours is higher for men, high-skilled and those at the upper end of the wage distribution (Golden, 2009a; Messenger et al., 2007; Plantenga and Remery, 2010).

For the American labor force, Cha and Weeden (2014) can show that the gender gap in overtime does not explain the stalling convergence of the gender wage gap during the last two decades. The average share of women putting in longer hours has barely changed since 2000, and the share of men working overtime has even gone down a little. Thus the gender gap in overtime alone could not have offset developments that should have otherwise decreased the gender wage gap, such as the continuous closing of the gender education gap. In fact, Cha and Weeden (2014) prove that the price effect of overtime is more important than the quantity effect. The returns to overtime have increased a lot, especially in managerial and, to a slightly lesser extent, in professional positions. The gender gap in overtime in those positions is particularly pronounced and has almost not changed in the years between 1979 and 2009. Women and men receive a similar percentual wage premium for overtime compared to their wages under a strict full-time scheme. However, men's regular wages on average are higher. Consequently, their wage premia in absolute terms are also higher. This can help explain why the gender wage gap for high-skilled and managerial positions is so persistent. Had there been no changes to the return to long hours in managerial and professional jobs, the gender wage gap would have decreased an extra 20 percent of the actual decrease from 1979 to 2009 in management jobs, and an extra 30 percent in professional jobs (Cha and Weeden, 2014).

Cha's (2013) analysis of overwork and parenthood is consistent with the results of the event studies by Pertold-Gebicka et al. (2016), Coudin et al. (2018) and Kleven

et al. (2018) discussed earlier. She finds that, among employees that work at least 50 hours, mothers are more likely than men or childfree women to move to another occupation or even to leave the labor force altogether. However, this effect is only found for male-dominated occupations. Motherhood seems more compatible with mixed and female-dominated occupations. Cha (2013) concludes that overtime is more likely to be considered the norm in male-dominated occupations. If it is not an option to stop putting in overtime, women's only options are to change their occupation or to leave employment. Thus, overtime norms in male-dominated occupations increase gender segregation on the labor market Cha (2013).

Motherhood is a watershed in labor market biographies. Still, one might argue that the reduced job mobility, lower firm premia, higher probability of switching to the public sector and the ever increasing child penalty could be the result of women's preference to change their occupations, their weekly hours, their employment status etc. in response to having children. If this was the case, there would be no imperfections on the labor market that might justify or even necessitate government intervention. Cha's (2013) results cast doubt on such an interpretation. After all, mothers who work long hours neither leave their occupation nor their labor force when they are employed in mixed or female-dominated occupations. This suggests, that external constraints (in the workplace and in the home) at least feature in the explanation of how and why motherhood has strong impacts on women's labor market situation (Cha, 2013). Cortes and Pan (2016) look at a situation where those constraints become less binding. They show that an influx of low-skilled immigrants leads to a closing of the gender gap in overtime. This boost in the supply of low-skilled labor reduces the cost of childcare or household personnel. Mothers' 'effective wage'–their wage net of what they have to spend in order to make up for their absence in the home–increases and working (longer) becomes more attractive. In occupations in which hourly wages are a convex function of working hours, the female labor supply shock caused by migration translates into a compression of the gender wage gap (Cortes and Pan, 2016). Just as the results of Cha (2013), Cortes and Pan (2016)'s findings show how labor supply decisions of women are the result of time and financial constraints.

Lott and Chung (2016) research into the relationship of overtime and schedule control on the German labor market. They find that male and female full-time employees increase their overtime to a similar extent when they switch from a fixed schedule to flexitime. Still, schedule control increases the overall gender gap in working hours as women who work part-time do not increase their working time. The larger gender gap in overtime is one channel through which schedule control could have a widening effect on the gender wage and earnings gaps. Gender-specific wage gains associated with schedule control are the other channel. While women do not experience an increase in hourly wages or in total earnings upon switching to felxitime, men's hourly wage increases. On average,

their switch to schedule control is associated with an extra 1,200 euros in earnings, jointly resulting from longer working hours and higher hourly wages (Lott and Chung, 2016). This suggests that the switch to schedule control for men occurs within the context of moving to a better-paid job or receiving a promotion, whereas this does not seem to be the case for women. Lott and Chung (2016) therefore caution that schedule control, while often perceived as a tool for facilitating work-family balance, might ultimately reinforce traditional gender roles and the male breadwinner model.

The main take-away of this literature review is that women tend to work in different firms than men, and these firms differ regarding their wage-level after controlling for occupations, experience etc.. Event-studies show that gender-specific patterns of sorting into different firms and sectors set in with the birth of a woman's first child. Coudin et al. (2018) conjecture that women's larger demand for family-friendly job-amenities is what drives this gender divergence. In order to asses whether this explanation is indeed applicable, we need to turn to firm-level information on the availability and accessibility of family-friendly job-amenities. So far, the firm-dimension has been largely disregarded by the literature looking into the availability of family-friendly work practices (with the exemption of Gray and Tudball, 2003).

The contribution of this thesis is an investigation of family-friendly work practices using the workplace as unit of analysis. In particular, I am interested in whether the availability of flexitime and other family-friendly work practices affects the gender composition on the workplace level. So far, the question has been posed the other way around, along the lines of "does a higher share of female employees in the firm (or in the firm's management) increase the probability of this firm offering certain amenities?". However, if we deem Coudin et al.'s (2018) explanation of gender-specific sorting plausible we need to ask whether the availability of certain amenities attracts more women and ultimately renders the workforce more female.

3 Data

This thesis employs matched employer-employee data from the British Workplace Employment Relations Study (WERS, 2015).[10] It combines detailed information on the characteristics and attitudes of individuals with a range of figures on the workplace. The survey consists of five different parts: the Employee Profile Questionnaire, the Management Questionnaire, the Survey of Employees, the Survey of Worker Representatives and the Financial Performance Questionnaire. The Employee Profile and Management Questionnaire are both completed by the most senior HR manager at the workplace. The Survey of Employees is conducted with 25 workers in those workplaces which employ at

[10]The underlying definition of the term 'workplace' in WERS context is the following: "the activities of a single employer at a single set of premises"

least 25 workers. In smaller workplaces all workers are interviewed. The WERS excludes workplaces with less than five employees.

Apart from the exclusion of very small workplaces, certain industries are not included, namely agriculture, fishery, forestry, mining and quarrying. In 2011, this yields a population of 750,000 workplaces and 23.3 million employees from which the WERS sample is drawn. Thus, 35 percent of all workplaces and 90 percent of all employees are included in the WERS population.

In the sample, large workplaces and certain sectors are oversampled in order to account for the fact that many workers are employed by those workplaces and in those sectors. As a consequences of this sample design, not all workplaces and not all employees have the same probability of being selected for the WERS which distorts standard errors of estimates on the raw sample. Oversampling of large workplaces, for example, reduces standard errors of employee-based estimates at the cost of raising standard errors of workplace-level estimates. Furthermore, the sampling design is based on a stratification strategy. In order to ensure that a large enough number of observations is gathered for each workplace size within each industry, the population was stratified into a total of 153 cells - each a combination of a particular workplace size and a specific industry.

The WERS has been conducted in 1980, 1984, 1990, 1998, 2004 and 2011. As the survey questions regarding flexibility and other family-friendly workplaces are more detailed in the the two latest rounds of WERS, these are the only ones I will use. The novelty of the 2011 survey lies in its panel subset. For the first time, the WERS sample includes a panel dimension for all of its four components and not only the Management Questionnaire as was the case in previous rounds.[11]

Response rates have dropped from 2004 to 2011 both for employees and more notably for mangers and workers' representatives. Thus, due to a potential correlation of the probability to respond with firm and employee characteristics as well as due to the specific survey design, employees surveyed in WERS are not representative of the whole population of British workers and, analogously, workplaces covered by WERS are not representative of British workplaces in general. The data set provides various weights on the employee and on the workplace level that adjust for these biases.

In the 2011 Survey of Employees the most relevant question to this analysis is the following:

- In the last 12 months, have you made use of any of the following arrangements, and if not, are they available to you if you need them?
  - Flexitime

[11] In each cell, the targeted number of observations from the refreshment sample, i.e. those firms that are not include in the 2004 WERS, was determined by the expected number of observations from the panel sample, i.e. those firms that already participated in 2004.

- Job sharing (sharing a full-time job with someone else)
- The chance to reduce your working hours (e.g. full-time to part-time)
- Working the same number of hours per week across fewer days (e.g. 37 hours in four days instead of five)
- Working at or form home in normal working hours
- Working only during school term times
- Paid leave to care for dependents in an emergency

Respondents could choose from four possible answers 'I have used this arrangement' , 'Available to me but I do not use', 'Not available to me' and 'Don't know'.

The question was phrased differently in 2004 (WERS, 2014):

- If you personally needed any of the following arrangements, would they be available to you?

Only three possible answers were provided: 'Yes, 'No' and 'Don't Know'. In addition, not all practices listed in the 2011 version were covered by this question. However, in these cases, the relevant information for 2004 could be obtained from questions of similar style in other parts of Survey of Employees. Aggregating the 2011 answers 'I have used this arrangement' and 'Available to me but I do not use' yields a dichotomous variable that states the availability of a particular work practice for observations from both years.[12]

The Management Questionnaires in 2004 and 2011 also inquire about the availability of the work practices listed above:

- Do you have any of [these] working time arrangements for any employees at this workplace?

Further questions of interest concern the gender pattern among a workplace's employees, the constraints workplaces face regarding the provision of family-friendly job amenities, the prevalence of part-time and long hours as well as the impact of the latter on pay and career progression.

As reported in Table 1 the Workplace Employment Relations Study 2011 consists a total of 2,680 workplace-level and 21,981 employee-level observations. In the 2011 WERS round, for around a third, solely the managers' responses are available. In these workplaces, the Survey of Employees (SEQ) was not completed by any employee. In 2011 (2004) the average sample workplace employs 449 (414) workers. The workforce of the median sample workplace is made up of 67 (69) employees. Columns 1 and 2 present

[12]'Don't know' is coded as missing value.

Table 1: Descriptive Statistics -
Firms, Gender Segregation, Part-time and Overtime

	2004 (raw sample)	2011 (raw sample)	2004 (weighted)	2011 (weighted)
Number of employees	22,451	21,981		
Number of workplaces	2,295	2,680		
Number of workplaces with both MQ & SEQ	1732	1923		
Number of workplaces with only SEQ	563	757		
Average firm size	414	449		
Median firm size				
Female share of employees	0.5098	0.5233	0.5369	0.5325
Share of female-dominated firms	0.4228	0.4356	0.4644	0.4553
Share of male-dominated firms	0.3720	0.3312	0.3750	0.3698
Share of mixed firms	0.2053	0.2332	0.1607	0.1749
Share of part-timers overall	0.2706	0.2719	0.3234	0.3165
Share of part-timers among all female employees	0.3574		0.4334	
Share of part-timers among all male employees	0.1623		0.1850	
Share of part-timers among all managers & senior officials	0.0404	0.0694	0.0559	0.0844
Share of part-timers among female managers & senior officials	0.0766		0.1186	
Share of part-timers among male managers & senior officials	0.0174		0.0234	
Share of part-timers among all non-managerial employees	0.2907	0.2970	0.3590	0.3628
Share of part-timers among female non-managerial employees	0.3752		0.4741	
Share of part-timers among male employees	0.1793		0.2153	
Share of employees working overtime among all employees	0.4874	0.5220	0.4843	0.5104
Share of women working overtime among female employees	0.4836	0.5105	0.4833	0.5311
Share of men working overtime among male employees	0.4916	0.5104	0.4852	0.5111
Average overtime hours of all employees working overtime	7.4	7.2	7.4	7.2
Average overtime hours of female employees working overtime	7.3	7.1	7.3	7.3
Average overtime hours of male employees working overtime	7.5	7.3	7.6	7.1
Importance of overtime for career according to employees[1]		2.2344		2.2684
Proportion of employees (strongly) agreeing		0.3950		0.4100
Importance of overtime for pay according to managers		0.4729		0.3977

[1] Answer possibilities were constructed as a Likert-scale. The average was computed by assigning value 0 to 'strongly disagree', value 1 to answer 'disagree', value 2 to answer 'neither disagree nor agree', value 3 to the answer 'agree' and value 4 to the answer 'strongly agree'.

raw sample averages, the two columns on the right list weighted averages.[13] In both years, a little more than half of the workers are women. When weights are applied, more than 45 percent of the workplaces covered are female-dominated, more than 35 percent of the weighted workplaces are male-dominated and less than 20 percent of the weighted workplaces are mixed.[14]

In both years around 30 percent of all workers work part-time.[15] In the 2004 weighted poll, 43 percent of women and 18 percent of men are employed part-time. Numbers for non-managerial employees are in the same range as the overall gender averages. As to be expected, the percentages are smaller amongst managers and senior officials: 2.3 percent of male and 11.8 percent of female managers and senior officials work part-time. For 2011, no gender-specific information on part-time is available. Part-time rates by position do not differ much from the 2004 results.

While there is a large gender gap in part-time, unlike Plantenga and Remery (2010), I do not find evidence of a gender gap in overtime - neither in the share of employees that work more than their contractual hours nor in the average number of additional hours.[16] Around 50 percent of men and women work long hours.[17] On average, these employees work extra seven hours per week.

The last section of Table 1 describes the views of surveyed employees and managers on the importance of overtime. This data was only gathered in the 2011 round. Employees were asked whether they deemed working long hours necessary for an advancement of their careers, in particular promotions. They could choose from a five-level Likert-scale ranging from 'strongly agree' over 'agree', 'neither agree nor disagree' and 'disagree' to 'strongly disagree'. Around 40 percent either agree or strongly agree with the statement; the average of all responses seems to lean towards ambiguity. Managers, on the other hand, were asked a slightly different question, namely how employees could improve their pay within the same job. Here as well, 40 percent consider overtime important.

Table 2 depicts the availability of the family-friendly work practices covered by WERS. Family-friendly work practices fall into two main groups. On the one hand, there are

[13]Workplace weights are used for all variables except for overtime. As this variable is derived from the Survey of Employees and not form the Management Questionnaire, employee-weights were used.

[14]Following Chung (2019), I define workplaces with more than 60 percent female employees as 'female-dominated', workplaces with less than 40 percent female employees as 'male-dominated' and workplaces with 40 to 60 percent female employees as 'mixed'.

[15]This informations was part of the Management Questionnaire. Thus, this percentage also includes those workers that did not fill in the Survey of Employees.

[16]Furthermore, the shares of workers working overtime in the weighted WERS sample is much higher than the estimates of Plantenga and Remery (2010). Both, the higher WERS estimates and the absence of the gender wage gap are probably due to different definitions of overtime. Plantenga and Remery (2010) employ the following definition: 'hours worked over a certain threshold that attract enhanced compensation' to be defined on a national level. Under this definition overtime would start at the same number of hours for both part-timers and full-time employees (Plantenga and Remery, 2010). The conception of overtime underlying Table 1 is much broader: any extra hours worked in excess of contractual hours are counted as overtime.

[17]In 2011, employees were asked to state both their *contractual* and their *actual* working hours(including overtime)Some respondents have states actual working hours way below their contractual hours. It seems that they have stated only their extra overtime hours instead of total actual hours. To avoid misinterpretation, I define observations for working hours as missing if employees claim to work less than their contractual hours.

work practices that improve the employee's work-family balance by allowing them to reduce their working hours. On the other hand, there are work practices that do not have a direct effect on how long employees work, but rather on how, when and where they work. I will refer to the former as 'quantitative family-friendly work practices' and to the latter as 'qualitative family-friendly work practices'. quantitative practices comprise what the management literature has called 'reduced-load practices' (e.g., Kossek and Ollier-Malaterre, 2019). 'Reduced-load practices' are arrangements that lead to a permanent reduction of working load and working hours such as reduced hours and job sharing. In addition, I also call those practices quantitative that lead to a temporary reduction of the workload such as emergency leave and not working during school breaks. qualitative measures to enhances work-family balance are flexitime schedules, home-office arrangements, compressed hours, i.e. working the same number of hours per week across fewer days, and support child care.

Two arguments militate in favor of this this classification. First, women and men respond differently to fertility. On average, women are much more likely to reduce their labor supply at both the extensive and intensive margin when starting a family. The adaption of labor supply at the intensive margin is only possible in workplaces that offer some form of quantitative family-friendly practice as qualitative family-friendly practices alone could not accommodate such behavior. For (soon-to-be) mothers that do no want to work full-time (after the birth of their first child), this might be a motivation for sorting into particular firms. Second, especially in occupations where pay is a convex function of hours, a potential wage penalty incurred in return for family-friendly practices might depend on whether these are quantitative or qualitative practices.

The 2004 and 2011 weighted shares of employees who indicate having access to a certain work practice are listed in columns 1 and 3. Some of these employees actually make use of these practices, others do not take them up, but think that they could do so if they wanted to. The weighted shares of managers stating that a certain work practice is available at their workplace are displayed columns 2 and 4. The way the questions are posed, managers will identify a given work practice as available as soon as at least one employee could potentially use it.

According to the WERS data, in both years, more than 70 percent of the British workforce has access to at least one form of family-friendly practice. In 2011, 60 percent think that they have access to at least one of the quantitative options in Table 2 and around 50 percent think they have access to at least one of the qualitative options.[18] The gender gap in perceived access to any form of family-friendly practices has decreased between 2004 and 2011. Changes in the perceived access to any form of quantitative and

[18]The variables 'paid leave in case of emergency' and 'workplace nursery and/or financial help with children' are excluded from thees aggregate measures as data on the two variables is not available for both employees and mangers in both years.

Table 2: Descriptive Statistics -
Access to Family-Friendly Work Practices by Gender

Access to ...	SEQ 2004	MQ 2004	SEQ 2011	MQ 2011
any form of family-friendly practices[1]- all	0.8238	0.7748	0.7424	0.7355
any form of family-friendly practices - women	0.8602		0.7593	
any form of family-friendly practices - men	0.7871		0.7218	
any form of *quantitative* family-friendly practices[2]- all	0.6373	0.6530	0.5019	0.6065
any form of *quantitative* family-friendly practices - women	0.6995		0.5070	
any form of *quantitative* family-friendly practices - men	0.5762		0.4959	
reduced hours - all	0.4533	0.6160	0.3839	0.5638
reduced hours among - women	0.5111		0.3830	
reduced hours among - men	0.3979		0.3850	
job sharing - all	0.2953	0.2488	0.1700	0.1664
job sharing - women	0.3298		0.1689	
job sharing -men	0.2638		0.1714	
work during school term only - all	0.1888	0.1409	0.1591	0.1643
work during school term only - women	0.2317		0.1667	
work during school term only - men	0.1490		0.1498	
paid leave in case of emergency - all	0.1880		0.5001	0.3753
paid leave in case of emergency - women	0.2175		0.5052	
paid leave in case of emergency - men	0.1620		0.4940	
any form of *qualitative* family-friendly practices[3]- all	0.6374	0.4923	0.5887	0.5119
any form of *qualitative* family-friendly practices - women	0.6710		0.5994	
any form of *qualitative* family-friendly practices - men	0.6045		0.5757	
flexitime - all	0.4903	0.3491	0.4128	0.3424
flexitime - women	0.5157		0.4236	
flexitime - men	0.4655		0.3995	
home office - all	0.1691	0.2561	0.2453	0.3043
home office - women	0.1890		0.2517	
home office - men	0.1503		0.2376	
compressed hours - all	0.2823	0.1092	0.2653	0.1937
compressed hours - women	0.3058		0.2550	
compressed hours - men	0.2608		0.2778	
workplace nursery and/or financial help with childcare - all	0.0857	0.0649		0.3198
workplace nursery and/or financial help with childcare - women	0.1011			
workplace nursery and/or financial help with childcare - men	0.0717			

All shares are computed by dividing the number of positive responses by the number of unambiguous responses. Missing values and 'Don't know'-responses are ignored. Shares according to the Survey of Employees Questionnaire (SEQ) are computed using employee-weights. Shares according to the Management Questionnaire (MQ) are computed using workplace-weights.

[1] Aggregate measure of all qualitative and quantitative family-friendly practices listed below, except for 'paid leave in case of emergency' and 'workplace nursery and/or financial help with childcare' to ensure comparability across years and between employees' and managers' answers.

[2] Aggregate measure of the variables 'reduced hours', 'job sharing' and 'work during school term only'. 'Paid leave in case of emergency' is excluded as it is not observed for both groups in both years.

[3] Aggregate measure of the variables 'flexitime', 'home office' and 'compressed hours'. 'Workplace nursery and/or financial help with childcare' is excluded as it is not observed for both groups in both years.

to any form of qualitative practice mirror this general development. The perceived gender gap has decreased mainly because overall perceived access has decreased a lot for women, but the share of men reporting having access to family-friendly practices has also declined over the 7-year period covered by the data. In 2011 the gender differential for any specific family-practice is smaller than three percentage points. More women than men report having access to working during school time only, flexitime and home office, while more men than women report having the opportunity of job-sharing and compressed hours. Almost identical shares of men and women state that they could work reduced hours.

However, we cannot infer that actual access has also decreased. According to managers, overall access to family-friendly practices has only decreased by four percentage points. On the one hand, less British managers in 2011 than in 2004 state that quantitative family-friendly practices are available at their workplace. On the other hand, more managers state that they have some form of qualitative practice available for at least one employee. Among all quantitative family-friendly practices, reduced hours are the most common both according to employees and mangers. Likewise, flexitime is the most prominent example of qualitative family-friendly practices.

In some of the literature on family-friendly work practices discrepancies have been noted between statements of employees and statements of employers or managers regarding the availability of family-friendly practices. Studying the availability of flexitime in the US, Golden (2001) finds that the share of employers allegedly offering schedule control is larger than the share of workers that consider it available to them. On the contrary, Heywood et al. (2007) report that employees overestimate their access to various measures of schedule control in the 2004 round of WERS. The Management Questionnaire asks managers whether *any* worker has access to a particular work practice. Thus, if the manager responds positively, but all surveyed employees respond negatively, this does not necessarily mean that either the managers or the workers are misinformed. It could be, that the surveyed employees happen to be the once that are not eligible for the family-friendly work practice in question. However, if the manager responds negatively, but some of the surveyed workers still report having access to a certain practice, one party is not misinformed. Table 3 reports the shares of workplaces in the 2011 sample where both management and workforce have stated that a family-friendly practice is available, where neither party claims that they are available and where the two parties disagree. The last column displays the simple matching coefficient of employee and management responses. For the aggregate measures of any form, any quantitative forma and any qualitative form of family-friendly work practice the SMC score is high. For specific practices the score is lower.

Column 4 represents the outcome that should not occur if both sides were well informed. However, the share of workplaces where employees think they have access to a

Table 3: Coherence of Employees' and Managers' Responses 2011 - SEQ: at least one Employee

	Both	Neither	Mangers only	Employees only	SMC
any form of family-friendly practices	0.8737	0.0157	0.0199	0.0907	0.8894
any form of *quantitative* family-friendly practices	0.7733	0.0500	0.0526	0.1241	0.8233
reduced hours	0.7106	0.0667	0.0751	0.1467	0.7773
job sharing	0.3578	0.02622	0.0652	0.3048	0.6300
work during school term only	0.3001	0.3861	0.0792	0.2345	0.6862
any form of *qualitative* family-friendly practices	0.6848	0.0420	0.0210	0.2522	0.7268
flexitime	0.4597	0.1047	0.0257	0.4099	0.5644
home office	0.3843	0.2872	0.0909	0.2376	0.6715
compressed hours	0.3699	0.1852	0.0514	0.3935	0.5551

No weights used as this table is concerned with the coherence of the WERS sample, not its population.

given practices whereas managers deny it can go as high as 41 percent in case of flexitime. In line with Heywood et al. (2007), the analysis of the 2004 sample (reported in Table A.1 in the appendix) paints the same picture. Heywood et al. (2007) offer two explanations for this discrepancy. On the one hand, workers might never need or ask for a certain work practice. Therefore they never verify their beliefs. In this case, the information provided by managers would be more reliable. If, on the other hand, many work practices are made available informally by lower management or the workers' direct supervisors and upper management does not know about these discretionary arrangements, then the workers' responses are more reliable.

An alternative specification of availability of a work practice according to employees would be to draw the threshold at 50 percent positive answers rather than at a single positive reply. Under this specification much less workplaces exist where management gives a negative answer, whereas the workforce gives a positive answer. The exact shares are reported in Column 4 of Table A.2 and Table A.3. These lower shares are compatible with both explanations put forward by Heywood et al. (2007). There could be indeed some misinformed employees and taking one positive response as the threshold is too sensitive a measure to do justice to the generally well-informed majority. Alternatively, if management did not know about some informal arrangements, these arrangements would have to be exemptions rather than the rule since discrepancies are less frequent under the 50 percent specification of Table A.2 and Table A.3.[19] As there is no clear evidence indicating that either mangers' or employees' are more reliable, I will conduct the regeressional analysis in the following section for both set of responses.

Table 4 depicts how access to a certain practice is correlated with access to other

[19]For the sake of completeness, Table A.4 reports the correlation between the shares of employees in each workplace that report having access to a certain work practice with the corresponding information obtained from management. For each work practice, the correlation lies below the simple matching coefficient.

practices according to managers. Table A.5 presents the same relationships using Jaccard coefficients and Table A.6 analyses the correlation between the shares of workers that claim to have access to work practices for all pairs of practices. In all three cases the relationship between any pair of family-friendly practices is positive. For most pairs of work practices, the correlation between the various work practices is higher when calculated for the shares of positive responses obtained from the Survey of Employees than for the mangers' answers. In the former case correlation levels range from 0.04 to 0.51, the latter case from 0.07 to 0.33 in. Never are the coefficients negative. This suggests that workplaces do not treat the different practices as substitutes of one another. Put differently, it indicates no inherent trade-off between the six working arrangements.

Table 4: Correlation between Access to Family-Friendly Practices - MQ

	reduced hours	job sharing	work during school term	flexitime	home office	compressed hours
reduced hours	1					
job sharing	0.3273	1				
work during school term	0.2033	0.3196	1			
flexitime	0.2170	0.1891	0.0803	1		
home office	0.1417	0.1157	0.0722	0.3204	1	
compressed hours	0.2387	0.2383	0.1641	0.2557	0.1748	1

The Survey of Employees allows for a breakdown of each work practise's overall variation into within-firm and between-firm variation. As shown in Table 5 for 2011 and in Table A.7 for 2004, the WERS yields an overall variation of flexitime that is very close to what Gray and Tudball (2003) estimated for Australian data. Moreover, the within-firm and between-firm estimates are in a similar range as Gray and Tudball's (2003) estimates. For all work practices except 'work during school term only' the within-firm variation estimates exceed the between-firm-estimates.

Table 5: Total, Within-Firm and Between-Firm Variation 2011

	overall std.dev.	within-firm std.dev.	between-firm std.dev.
any form of family-friendly practices	0.4321	0.3412	0.2332
any form of *qualitative* family-friendly practices	0.4999	0.3937	0.2982
reduced hours	0.4865	0.4079	0.2549
job sharing	0.3813	0.3047	0.1827
work during school term only	0.3728	0.2236	0.2863
any form of *quantitative* family-friendly practices	0.4911	0.4023	0.2849
flexitime	0.4930	0.3898	0.2734
home office	0.4341	0.2708	0.2618
compressed hours	0.4392	0.3454	0.2242

Observations of workplaces where less than 10 workers completed the SEQ were dropped for the variation analysis, since variation estimates based on these observations would not be convincing.

Within-firm variation results from differential access to family-friendly working practices for employees of the the same firm. The literature has found skill-level and occupation to be among the determinants of access (Gray and Tudball, 2003). Between-firm variation results from differential access on the workplace level: whether a worker has access to family-friendly job-amenities depends not only on her type but also on the type of workplace she is working at. Possible explanations for this variation component could be differences across workplaces in personnel strategies or differences in (financial) constraints regarding the provision of family-friendly arrangements.

While Gray and Tudball (2003) focus on the within-firm component and investigate the sources of differential access on this level, I will focus on the between-firm component and look at how differential access on the workplace-level affects the workplaces' gender composition. The next section presents different model specifications to address this question.

4 Family-friendly work practices and gender domination at the workplace

In order to assess the plausibility of the hypothesis that women sort into low-paying firms because those firms are more family-friendly, I regress the share of women in the workplace on dummies indicating the availability six different family-friendly work-practice. The underlying identification assumption is that when controlling for a number of firm characteristics, it is possible to detect the impact of family-friendly practices on the gender composition. The controls ensure that we estimate the effect of family-friendly practices on comparable firms. If there is indeed a causal link between access to such working conditions and the gender composition in the workplace, this would support the thesis of women sorting into family-friendly firms. The observed share of female employees at the workplace is the net result of a search and an experience effects: Women who care about the compatibility of family and work apply specifically to workplace that are known for their family-friendly working conditions and the rarity of long hours. While on the job, women who have a strong preference for family-friendly practices decide to stay or leave the workplace depending on the availability of such arrangements.Thus, the workplace constitutes the unit of analysis. In view of the recent literature exploring the gender gap in overtime, I am also interested in how the perceived importance of overtime impact the gender composition of the workforce. As overtime exacerbates the work-family trade-off, its absence could be interpreted as another form of family friendly working conditions.

4.1 Empirical strategy and preliminary results

First of all, I run a pooled OLS regression on the 2004 and 2011 rounds of WERS. The regression model expresses the female share among the workforce as a function a various workplace characteristics, including the availability of family-friendly work practices (f) and a year dummy.

$$y_j = \beta_1 f_j + \beta_3 x_j \tag{1}$$

The regression is run using either 2-digit or 3-digit industry controls. It is not possible to control for 4-digit industries, since there are not enough observations within each 4-digit industry bracket. In order to still control for trends in narrowly defined industries, the share of women in 4-digit industry is included as a control variable as in Breda and Manning (2016). However, I use the information on gender composition obtained from the 2011 WERS instead of the share of women in 4-digit industries on national level. This has the drawback, that for some 4-digit industries relatively few observations are available in order to determine the female share in the respective industry. When computing the mean I use industry-specific workplace weights and drop information of 4-digit industries for which there are less than three observations.[20] This procedure improves the estimates, but does not ensure that the female shares in 4-digit industries derived from WERS are representative. It is important to keep this caveat in mind when interpreting the results.

Specifications 1 and 3 in Table 6 are based on 2-digit industry controls, specifications 2 and 4 employ 3-digit industry controls. In the two columns on the left information on the availability of family-friendly practices and on the importance of overtime is derived from the Management Questionnaire. In the two columns on the right this information is obtained from the Survey of Employees. For the specifications based on the managers' responses 'reduced hours', 'flexitime' and all other job practice variables are dummy variables. They take value one if the manager states that at least one employee has access to them and value zero otherwise. In the specifications based on the Survey of Employees the work practice variables are continuous: they represent the share of respondents that indicate that these practices are available to them. All other variables are derived from answers by managers either in the Management Questionnaire or in the Employee Profile Questionnaire; they are identical for all four specifications.

The only work practice that is significantly associated with a higher female share in all four specifications is 'working during school terms only'. Access to 'home office' is significant under three of the four specifications. At a 5 percent significance level,

[20] Industry specific workplace weights are computed as the quotient of the workplaces' weight and the sum of workplace weights in the 4-digit industry such that, in each 4-digit industry, industry-specific workplace weights sum to one.

Table 6: Pooled OLS - Management's and Employee's Responses

Dependent variable: Female share workforce	(1) MQ pooled Coeff. / SE	(2) MQ pooled Coeff. / SE	(3) SEQ pooled Coeff. / SE	(4) SEQ pooled Coeff. / SE
Quantitative family-friendly practices				
Reduced hours	0.024*	0.022*	0.029	0.025
	(0.012)	(0.013)	(0.028)	(0.027)
Job sharing	0.042***	0.037**	-0.024	-0.008
	(0.015)	(0.014)	(0.030)	(0.031)
Work during school term only	0.037**	0.040***	0.060**	0.073**
	(0.016)	(0.016)	(0.028)	(0.028)
Qualitative family-friendly practices				
Flexitime	-0.005	-0.011	0.015	-0.006
	(0.013)	(0.013)	(0.026)	(0.027)
Home office	-0.026**	-0.017	-0.095***	-0.086**
	(0.013)	(0.014)	(0.035)	(0.034)
Compressed hours	-0.021	-0.019	0.071**	0.060*
	(0.015)	(0.015)	(0.033)	(0.032)
Female share in 4-digit industry	0.816***	0.893***	0.826***	0.947***
	(0.050)	(0.068)	(0.062)	(0.082)
Log(workforce)	-0.019***	-0.020***	-0.012*	-0.013*
	(0.007)	(0.007)	(0.007)	(0.007)
Public sector	-0.005	-0.002	-0.004	-0.000
	(0.024)	(0.024)	(0.024)	(0.023)
Independent establishment	0.011	0.011	0.004	0.003
	(0.017)	(0.017)	(0.020)	(0.019)
Share minority	-0.193***	-0.207***	-0.202***	-0.214***
	(0.040)	(0.041)	(0.056)	(0.053)
Union members share	-0.051	-0.040	-0.038	-0.019
	(0.032)	(0.033)	(0.032)	(0.034)
Workplace age < 5 years	-0.033*	-0.034*	-0.021	-0.027
	(0.018)	(0.018)	(0.022)	(0.022)
Workplace age $5-14$ years	-0.018	-0.017	-0.014	-0.012
	(0.015)	(0.014)	(0.018)	(0.017)
Workplace age ≥ 25 years	-0.017	-0.016	-0.000	-0.004
	(0.014)	(0.015)	(0.016)	(0.016)
Cost target	-0.028**	-0.030**	-0.022*	-0.021
	(0.011)	(0.012)	(0.013)	(0.013)
Constant	0.270**	0.497***	0.305***	0.452***
	(0.113)	(0.062)	(0.054)	(0.072)
Industry controls	2-digit	3-digit	2-digit	3-digit
Occupational structure of workforce	yes	yes	yes	yes
Age structure of workforce	yes	yes	yes	yes
Operating days	yes	yes	yes	yes
Wage bill/sales ratio	yes	yes	yes	yes
Observation year	yes	yes	yes	yes
Observations	3004	3004	2209	2209
adjusted R^2	0.700	0.710	0.714	0.725

the manager's claim that at least one employee could work only during school term is associated with a 3.7 percentage point increase in the female share among employees, other things being equal. Among quantitative family-friendly practices, most coefficients are positive whereas many of the coefficients among qualtitative family-friendly practices are negative. For example, a workplace where all respondents of the Survey of Employees report having the option of home office has a female share which is lower by 9.5 percentage points compared to a workplace where no surveyed worker indicates that they could work from home. One explanation might be that managers and employees' information regarding the availability of a given job amenity is higher for quantitative practices. These work arrangements affect work load and working hours and might therefore be more visible and more likely to be standardized than work arrangements that only affect the modalities

of work. If this reasoning applies, data regarding quantitative work practices would be more reliable than data regarding qualitative work practices. Indeed, we see that among all specifications only three coefficients for qualitative practices, but eight coefficient of quantitative practices are significant. On the other hand, the negative association of qualitative practices with the workplace female share is at least consistent with the findings of Brescoll et al. (2013). In laboratory experiments they observed that men's requests for flexible arrangements had a higher chance of being granted by managers than such requests made by women - regardless of the woman's position or her reason for asking for schedule control. Aside from the variables of interest, the size of the workplace and the share of ethnic minorities in the workplace are associated with smaller shares of female employees, ceteris paribus. The average share of women in the 4-digit industry is positively associated with the female share of the workplace.[21]

The coefficients of Table 6, albeit significant in several cases, cannot be interpreted as causal effects. While it might be true that women sort into family-friendly workplaces to a larger extent than men, we cannot rule out that the share of women in the workplace also has an impact on the availability of family-friendly practices. Let us say that women were more likely to ask for family-friendly arrangements than men. Then, in workplaces with a higher share of women, more employees would make these requests. This, in turn, could increase the pressure on managers to provide these possibilities, or - to put it differently - managers will perceive the demand for alternative working arrangements to be higher and therefore might be more inclined to meet the employees' requests. In case of simultaneous causality, the above regression suffers from endogeneity and estimates reported in Table 6 are biased and inconsistent. The 2011 WERS round includes some questions that allow for an instrumentation of family-friendly practices. However, these questions are not included in the 2004 WERS. Therefore, the subsequent analysis is restricted to the 2011 sample.

4.2 OLS on 2011 Sample

As a reference, Table 7 reports OLS results using data from the 2011 WERS only. [22] The specifications of columns 1 and 3 are very similar to the 3-digit specifications of the pooled OLS. The only difference is, that now the importance of overtime is added as an additional control variable. Since this information is only available for 2011 it cannot be included in the pooled OLS regression. In the MQ specifications, the importance of overtime is a binary variable indicating whether managers deem overtime an important

[21] The above caveat applies.

[22] In all four specifications of Table 7 3-digit industry controls are used. Estimates do not change a lot if instead 2-digit controls are employed. These results are summarized in Table A.9 Table A.10 reports results for an alternative measure of the female share in the 4-digit industry. This measure drops is coded as missing for all 4-digit industries for which offers less than five observations (instead of less than three). Again the general picture remains the same. The regression is robust to both alternative specifications.

factor of pay rises. In the SEQ specifications, the importance of overtime reports the share of respondents that think that overtime is necessary for career progression in their workplace. As seen in Table 7, overtime importance is not significantly associated with a higher or lower share of women in the workplace. The importance of overtime can be interpreted as a proxy of the convexity of pay as coined by Goldin (2014). Ceteris paribus, overtime seems to be just as important in female dominated workplaces than in male dominated establishments. Thus, women do not seem to avoid workplaces of convex pay compared to men within the same industry. This gives some additional support to Goldin's (2014) thesis that convexity of pay features prominently in the explanation of the gender wage gap.

Table 7: OLS - Management's and Employees' Responses 2011

Dependent variable: Female share workforce	(1) MQ 2011 Coeff./ SE	(2) MQ 2011 Coeff. / SE	(3) SEQ 2011 Coeff. / SE	(4) SEQ 2011 Coeff. / SE
Quantitative family-friendly practices				
Reduced hours	0.040**		-0.026	
	(0.017)		(0.038)	
Job sharing	0.044**		0.026	
	(0.020)		(0.052)	
Work during school term only	0.036*		0.031	
	(0.019)		(0.038)	
Quantitative family friendliness index		0.039***		0.057
		(0.010)		(0.057)
Qualitative family-friendly practices				
Flexitime	-0.007		0.022	
	(0.016)		(0.037)	
Home office	-0.014		-0.077	
	(0.018)		(0.049)	
Compressed hours	-0.045**		0.047	
	(0.020)		(0.041)	
Qualitative family friendliness index		-0.020**		-0.031
		(0.009)		(0.051)
Overtime importance	0.019	0.018	0.007	0.005
	(0.016)	(0.016)	(0.008)	(0.008)
Female share in 4-digit industry	1.030***	1.020***	0.992***	1.006***
	(0.106)	(0.105)	(0.109)	(0.108)
Public Sector	-0.062*	-0.059*	-0.040	-0.043
	(0.035)	(0.035)	(0.041)	(0.040)
Log(workforce)	-0.013	-0.013*	-0.009	-0.013
	(0.008)	(0.008)	(0.009)	(0.009)
Constant	0.163	0.166	0.052	0.058
	(0.163)	(0.163)	(0.098)	(0.097)
Industry controls	3-digit	3-digit	3-digit	3-digit
Independence	yes	yes	yes	yes
Occupational structure of workforce	yes	yes	yes	yes
Age structure of workforce	yes	yes	yes	yes
Age of workplace	yes	yes	yes	yes
Share union & minority	yes	yes	yes	yes
Operating days	yes	yes	yes	yes
Wage bill/sales ratio	yes	yes	yes	yes
Cost target	yes	yes	yes	yes
Observation year	yes	yes	yes	yes
Observations	1560	1560	1125	1151
adjusted R^2	0.702	0.702	0.714	0.706

Apart from specifications 1 and 3 where family-friendly practices are included as simple regressors, Table 7 also depicts coefficient for indices of family-friendliness.[23] Column 2 and 4 report estimates on a quantitative and a qualitative measure of family-friendliness. Based on the answers of managers, the indices under specification 2 report how many quantitative or qualitative family-friendly practice the workplace has available for at least one employee. Thus, each index can take values from 0 to 3. Indices under the SEQ specification are calculated as their components' mean of shares of respondents claiming to have access to the respective work practice.[24] As documented in Table 4 correlations among quantitative and among qualitative family-friendly practices are positive. This ensures that the indices vary.[25] Rather than focusing on the effect of a particular practice, the indices capture the effect of how many possibilities workers have to either reduce their working time or to adapt schedule and location to their needs. Indices have the advantage of render also those workplaces comparable with regard to their family-friendliness as an employer when they offer different work practices. By building two different indices I can still account for the most fundamental difference between the practices, which is wether they reduce work load and working time or whether they just increase workers' freedom of shifting the workload according to their liking.

Based on 2011 data only, the availability of all quantitative family-practice as stated by managers is significant at the ten percent level at least. Again, all coefficients in this group are positive. Among the quantitative practices, only compressed hours is significantly associated with a lower female share in the workplace. The quantitative index of family-friendliness is significant at the one percent level. The female share of workplaces where an extra quantitative option is available is by 3.9 percentage points higher, ceteris paribus. On the other hand, an extra qualitative option is associated with a 2 percentage point lower female share at a five percent significance level. Compressed hours in the MQ specification are now the only qualitative practice that is significant by itself. Under the two SEQ specifications no variable of interest turns out to be significant. The Management Questionnaire is conducted with the heads of HR who are more likely to be well-versed on the matter of work practice than other employees. Consequently, it is not implausible that MQ information is more precise than answers obtained by employees.

4.3 2SLS on 2011 Sample

In order to address the endogeneity of the family-friendly work practices I instrument the quantitative and qualitative index of specifications 2 and 4 in Table 7. The 2011

[23] Specifications including the square of each index did not improve the adjusted R2 statistic.

[24] Under both specifications, indices are computed as the sum or the mean of the non-missing components. This ensures that information is not lost when data on one or two (but not all) components is missing.

[25] Table A.8 reports the number of workplaces by the number of family-friendly practices they offer.

WERS asks employees to explain what reasons they have for providing or not providing family-friendly practices in general. Constraints in providing family-friendly practices due to cost, size and operating schedule are the three potential IV candidates. To establish exogeneity of instruments the constraints must not be correlated with characteristics other than the ones controlled for in the regression. Regressors for 3-digit industry codes, for whether the workplace belongs to the private or public sector and for the size and age of the establishment already limit the variation in the type of workplace a lot. Including the occupational distribution and the age structure of employees ensure that broad workforces characteristics are accounted for. The inclusion of the proportion of union members among all employees can be interpreted as a proxy for union power. Say, unions had the tendency of demanding the extension of a family-friendly work practice to every worker once it had been introduced for a certain group, e.g. parents. Mangers of workplaces with many union members might thus be more hesitant in providing family-friendly working conditions for a group of workers if they suspected that they would be pressured into providing the amenities for all workers at higher cost. In this scenario mangers constraints regarding costs are positively correlated with the share of union members among the workforce. Due to the gender difference in union membership could be negatively correlated with the share of women among the workforce (e.g., Antos et al., 1980). In this way managers concerns regarding the cost of providing family-friendly arrangements might be linked to the gender composition of the workplace. By controlling for the number of union members, this channel is ruled out. In addition to general controls, the regression includes financial characteristics, i.e. a binary variable for whether the management of a workplace has adopted a cost target and a categorical variable for the ratio of wage bill and sales. Holding these financial characteristics constants I argue that there are no further relevant characteristics through which a financial constraint in providing family-friendly working conditions could affect the female share in the workplace. The only connection between them is the actual provision of family-friendly work practices.[26] In case of the size constraint the argument is more straight forward. The regression controls for workplace size which should be the most important determinant of whether mangers see size as a constraint. Lastly, the reasoning for the endogeneity of constraints due to operating constraints is more difficult. While the 2004 WERS contains controls for both operating days and operating hours, the 2011 WERS only gathers information on operating days. It is not possible to control for both dimensions of operating schedules. Using operating hours as an instrument for familia-friendly working arrangements thus requires the following implicit assumption that, after controlling for operating days, operating hours do not have an affect on the gender composition of the workplace. This constraint's exogeneity is therefore cannot be as firmly established as the exogeneity of

[26]The argument could be further strengthened by including variables from the WERS Financial Performance Survey which is only available under secure access.

the size and cost constraint.

Table A.11 summarizes the results from the Two Stage Least Squares regression using the three different kinds of constraints as instruments for the quantitative and qualitative family-friendly indices. The MQ first stage regressions show that facing a constraint due to the firm's operating schedule has a significantly negative impact on the number of quantitative family-friendly practices available in the workplace (according to managers) and that constraints because of the workplaces's size reduce the number of qualitative practices. The second stage suggests that only the quantitative, but not he qualitative index of family-friendliness affects the share of women in the workforce. However, the coefficient found here is much larger than in corresponding OLS regression documented in Table A.12. There are three possible explanations for this result: First, the Two Stage Least Squares coefficients are estimates of the local average treatment effect as opposed to OLS estimators. Differences between the effects for the whole sample and the subsample, here the workplaces facing the three constraints, could theoretically lead to IV estimates that differ a lot from OLS estimators. Second, despite the inclusion of controls for many characteristics, at least one of the three constraints might still have a direct effect on the share of women in the workplace rather than only an indirect effect through the family-friendly indices. In this case not all instruments are exogenous. Third, the large coefficient could also be the result of too little correlation between the instrument and the endogenous regressor. In fact, the first stage generated by the three constraint instruments is very weak. Moreover, the over identification test yields that the null-hypothesis of all instruments being valid has to be rejected at the 10 percent level. Thus, the above worries regarding the exogeneity of the constraints due to the firm's operating schedule are justified. Given these statistics, it is difficult to establish that the IV estimates under this specification are unbiased.

When using answers by employees as in Column 2 of Table A.11, none of the instruments are significant in the first stage of the qualitative index. We saw before that the answers of employees and managers can diverge. In particular there are workplaces where (some) employees think that a certain practice is available to them while, in fact, management denies that anybody has access to it. In order to mitigate the issue of some misinformed workers, the analysis of Column 3 is restricted to those workers that do not only claim that a given work arrangement is available to them but who also claim that they have already made use of it. Column 4 only focuses on the answers by women in order to see whether availability of family-friendly work practices as perceived by women can explain the female share in the workplace. Just as for the entire group of employees, for these subgroups instruments have no significant effect on qualitative family-friendliness in the first stage.

As an alternative to focusing on the specific nature of constraints, the existence of constraints in general might offer a way to circumvent the problem encountered with the

three specific constraints. Therefore as a next step I use a dummy as an instrumental variable that indicates whether the workplace faces constraints at all.[27] As the number of endogenous variables must not exceed the number of instrument I restrict the analysis to the effect of quantitative work practices. In the OLS analysis of the managers' responses all quantitative work practices haven been found to be significant compared to only one quantitative practice. Furthermore, employees that make use of work practices that reduce the workload and working-time usually earn less. Therefore such practices are more likely to be regulated and standardizend than qualitative arrangements which might also be dealt with on a more informal and personal basis, e.g. between an employee and her head of department without involving the most senior HR manger. Thus, the managers' answers might be more reliable when it comes to quantitative practice.

The reasoning from before can be used to show that the existence of constraints in general does not affect the share of women in the workplace through channels other than the level of family-friendly practices: the regression includes controls for 3-digit industries and for what proportions of employees are employed in various broadly defined occupations. A concern one might have with mangers perception on constraints in general is the following: let us assume that more conservative establishments or workplaces headed by conservative CEOs might employ fewer women while they are also more skeptical towards work practices that depart from the classical nine-to-five. These managers might be quicker to see constraints for providing family-friendly arrangements than other managers. The 3-digit industry controls take care of some aspects of this problem Certain industries, as technology, are more progressive (Goldin and Katz, 2010). The industry dummies capture these tendencies. Furthermore we control for the age structure of employees and, perhaps more importantly, for the age of the workplace itself. This addresses the fact that newly created workplaces and workplaces with a relatively young workforce might be organized in more progressive and innovative ways. Controls for the size of the workplace and for wether it is an independent establishment further ally the concerns regarding the managers' attitude towards new work practices and how it manifests in their opinions about the existence of constraints.

5 Results

Table 8 depicts the results from four Two Stage Least Squares regressions. The first two columns reports estimates based on the information on work practices obtained from HR managers. Columns 3 and 4 exploit the Survey of Employees. Columns 1 and 3 display results for the whole WERS 2011 sample. By contrast, columns 2 and 4 only rely on observations from medium and large sized workplaces, i.e. establishments that employ

[27] The variable takes value 1 when the workplace is not bound by any constraints.

at least 50 workers. In larger workplaces the decision to offer certain work practices and the decision of which employees are eligible for them is likely to be more formal and standardized than in relatively small establishments. Since large workplaces are oversampled in the WERS, enough observations remain when the sample is restricted in this manner. Table 8 documents that the existence of constraints in general has an impact on the quantitative index of family-friendliness only in the first two specifications where the answers of managers are analyzed. In the second stage the index of quantitative family-friendly work exhibits a positive coefficient in all specifications, but is never significant. The F-statistic of the first-stage regression, with a value of 5.969, is now markedly higher than in the IV approach using the three different kinds of constraints. However, it still falls short from the threshold for strong instruments. In order to asses whether the coefficient of the quantitative index is biased, I run an Anderson-Rubin test for just-identified Two Stage Least Squares regressions–a joint test for the unbiasedness of the structural parameter and the exogeneity of the instrument that is robust to weak instruments. According to the test we cannot reject the null hypothesis that the endogenous regressor's estimate of the coefficient differs significantly from its true value, indicating that the specification is acceptable. Thus, even though the quantitative index of family-friendly practices is positively associated with the female share of the workforce in the simple OLS regression, the above IV results cannot confirm that this link is causal. The availability of reduced hours, job sharing and the possibility of working only during school term do not cause an increase in the female share of employers in the workplace. As a local average treatment effect, this result is obtained for the subsample of workplaces for which managers claim that they face no constraints in providing family-friendly arrangements.

In specification 2 the effect of the quantitative index on the female share is positive and significant at the 5 percent level. However, the coefficient is much larger than in the OLS regression. There are three possible explanations for this result: First, despite the inclusion of controls for many characteristics, the existence of a constraint still has a direct effect on the share of women in the workplace. In this case the instrument is not exogenous. Second, it could also be the result of too little correlation between the instrument and the endogenous regressor. In fact, the first stage of this IV-approach is stronger than the one of the first approach. However, it still falls short of the threshold for strong instruments. Third, IV-estimates capture local average treatment affects. In our case the estimates capture the effect of the number of quantitative work practice an establishment provides on the female share of the workforce for large workplaces whose managers do not identify any constraints for their provision. It could be possible that the effect is strong for this subsample then the effect for the general sample which the OLS

regression work with. Therefore it is difficult to establish that the IV estimates presented here are unbiased (Andrews et al., 2018).

Table 8: IV

	(1) MQ 2011 Coeff. / SE	(2) MQ 2011 - large workplaces only - Coeff. / SE	(3) SEQ 2011 Coeff. / SE	(4) SEQ 2011 - large workplaces only Coeff. / SE
First stage - dependent variable: *quantitative* family-friendliness index				
No constraints on provision of flexible working	0.143**	0.150**	0.014	0.023
	(0.059)	(0.061)	(0.021)	(0.021)
Overtime importance	0.176**	0.156***	0.017*	0.018*
	(0.063)	(0.065)	(0.010)	(0.010)
Female share in 4-digit industry	0.016	0.042	-0.120	-0.112
	(0.414)	(0.437)	(0.142)	(0.143)
Public sector	0.317**	0.358**	0.047	0.036
	(0.147)	(0.146)	(0.036)	(0.035)
Log(workforce)	0.234***	0.257***	-0.002	-0.001
	(0.031)	(0.034)	(0.011)	(0.011)
Constant	0.368	0.318	0.275**	0.231*
	(0.303)	(0.326)	(0.129)	(0.133)
Observations	1559	1521	1151	1130
adjusted R^2	0.349	0.335	0.328	0.332
Second stage - dependent variable: female share workforce				
quantff_mq	0.192	0.169	0.396	0.026
	(0.127)	(0.120)	(1.497)	(0.830)
Overtime importance	-0.008	-0.001	-0.001	0.005
	(0.028)	(0.025)	(0.027)	(0.017)
Female share in 4-digit industry	1.041***	1.032***	1.056***	0.998***
	(0.113)	(0.117)	(0.231)	(0.154)
Public sector	-0.108*	-0.113*	-0.060	-0.047
	(0.060)	(0.060)	(0.081)	(0.050)
Log(workforce)	-0.053*	-0.053*	-0.013	-0.012
	(0.031)	(0.031)	(0.010)	(0.008)
Constant	-0.140	-0.117	-0.265	-0.164
	(0.139)	(0.138)	(0.386)	(0.253)
Observations	1559	1521	1151	1130
adjusted R^2	0.576	0.603	0.666	0.711
Industry controls	3-digit	3-digit	3-digit	3-digit
Independence	yes	yes	yes	yes
Occupational structure of workforce	yes	yes	yes	yes
Age structure of workforce	yes	yes	yes	yes
Age of workplace	yes	yes	yes	yes
Share union & minority	yes	yes	yes	yes
Operating days	yes	yes	yes	yes
Wage bill/sales ratio	yes	yes	yes	yes
Cost target	yes	yes	yes	yes
Observation year	yes	yes	yes	yes

6 Conclusion

The 2004 and 2011 Workplace Employee Relations Survey document that there is no considerable gender gap regarding (perceived) access to six different family-friendly work practices. When controlling for a variety of workplace characteristics, those workplaces where managers claim that employees can work reduced hours, use job sharing arrangements and work during school term only are associated with a higher level of women in the workplace, while flexitime, home office and working compressed hours is associated with a lower proportion of women in the workforce. This distinction shows that one family-friendly practice is not necessarily like another. As discussed in the literature review work practices that do not reduce the work load, such as the three qualitative work practice studied here, do not necessarily lead to more inclusion and a level playing field at the workplace (Lott and Chung, 2016).

These links are based on the statement by managers that at least one employee is entitled to use the respective work practice. The Survey of Employees, on the other hand, contains some information on how many workers think that they have access. However, answers by managers and workers do not always aline which hints at some lack of information among one of the two parties. The connection between the employees' aggregated responses seems to be less linked with the female share of the workforce than the information given by managers. As managers respond to the question of whether at least one employee could make use of a certain family-friendly practice, estimates obtained from MQ data have to be interpreted as the effects of a general availability of those practices. Rather than saying that the availability of quantitative work practices has no signifiant impact on in the IV regression, it is more appropriate to phrase the conclusion slightly differently: When workplaces categorically rule out access to quantitative family-friendly work practices for all of their employees, this does not affect the share of women working there. To put it differently, among firms of similar characteristics in the same 3-digit industries, there is no evidence of women sorting away from firms that do not offer family-friendly practices to any of their workers (or that offer a lower amount of family-friendly practices to at least on employee).

The Two Stage Least Squares results do not provide evidence of female sorting behavior *because of* family-friendliness understood in this sense. Future research might look at how the proportion of employees to whom family-friendly job amenities are made available affects the female share at the workplace. Such an analysis would require more detailed data from the side of managers than provided in the WERS. The association of quantitative family friendly practices in the OLS analysis, albeit not causal, fits into Goldin's (2014) analysis that pay as a convex function of time spent working is an important factor contributing to the gender wage gap. Since a general availability of quantitative family-friendly work practices is associated with more women in the workplace, ceteris paribus.

Either due to compensating wage differentials for these amenities or due to a convex pay scheme, these work places might be associated with lower wage levels. Thus my analysis does not contradict the hypothesis of Coudin et al. (2018), that low paying firms are also more family-friendly. However, it casts some doubt on whether the availability of family-friendly practices also is the motivation that leads to women to sort into the low-paying firms. The fact that women do not leave low paying for high paying firms at the same rate as their male colleagues might be the caused by something else than women's demand for work-family comparability, such as risk-aversion or social norms of making the family their priority.

Appendix

Table A.1: Coherence of employees' and managers' responses 2004 - SEQ: at least one employee

	Both	Neither	Mangers only	Employees only	SMC
any form of family-friendly practices	0.8917	0.007	0.0087	0.0925	0.8987
any form of *quantitative* family-friendly practices	0.8071	0.0327	0.038	0.1222	0.8398
reduced hours	0.7380	0.0531	0.0677	0.1412	0.7106
job sharing	0.4237	0.1696	0.0628	0.3439	0.3678
work during school term only	0.2305	0.4405	0.0698	0.2592	0.3001
any form of *qualitative* family-friendly practices	0.6174	0.0326	0.0134	0.3366	0.6500
flexitime	0.4228	0.0645	0.0151	0.4977	0.4597
home office	0.3181	0.3430	0.0747	0.2642	0.3843
compressed hours	0.2417	0.1986	0.0175	0.5422	0.3699

No weights used as this table is concerned with the coherence of the WERS sample, not its population.

Table A.2: Coherence of employees' and managers' responses 2011- SEQ: at least 50 percent

	Both	Neither	Mangers only	Employees only	SMC
any form of family-friendly practices	0.7353	0.0503	0.1583	0.0561	0.7856
any form of *quantitative* family-friendly practices	0.4519	0.1315	0.3740	0.0426	0.5834
reduced hours	0.2679	0.1786	0.5179	0.0357	0.4465
job sharing	0.0389	0.5465	0.394	0.0205	0.5854
work during school term only	0.1201	0.5976	0.2592	0.0231	0.7177
any form of *qualitative* family-friendly practices	0.4389	0.2014	0.2669	0.0928	0.6403
flexitime	0.2215	0.4361	0.2639	0.0785	0.6576
home office	0.1274	0.5112	0.3478	0.0136	0.6386
compressed hours	0.1107	0.5184	0.3106	0.0603	0.6291

No weights used as this table is concerned with the coherence of the WERS sample, not its population.

Table A.3: Coherence of employees' and managers' responses 2004 - SEQ: at least 50 percent

	Both	Neither	Mangers only	Employees only	SMC
any form of family-friendly practices	0.8009	0.0390	0.0995	0.0605	0.8399
any form of *quantitative* family-friendly practices	0.5839	0.1011	0.2613	0.0538	0.6850
reduced hours	0.3973	0.1459	0.4084	0.0484	0.5432
job sharing	0.1596	0.4495	0.3269	0.0640	0.6091
work during school term only	0.1126	0.6727	0.1877	0.0270	0.7853
any form of *qualitative* family-friendly practices	0.4506	0.2012	0.1802	0.1680	0.6518
flexitime	0.2503	0.3995	0.1876	0.1626	0.6498
home office	0.0736	0.5956	0.3192	0.0116	0.6692
compressed hours	0.0973	0.6540	0.1619	0.0868	0.7513

No weights used as this table is concerned with the coherence of the WERS sample, not its population.

Table A.4: Correlation of of employees' and managers' responses 2004 & 2011 - SEQ: shares

	corr(MQ, SEQ) 2004	corr (MQ, SEQ) 2011
any form of family-friendly practices	0.2477	0.2473
any form of *quantitative* family-friendly practices	0.2086	0.1852
reduced hours	0.1772	0.1469
job sharing	0.1638	0.1351
work during school term only	0.1161	0.1371
any form of *qualitative* family-friendly practices	0.1312	0.1778
flexitime	0.0979	0.1451
home office	0.0742	0.1353
compressed hours	0.1357	0.0958

No weights used as this table is concerned with the coherence of the WERS sample, not its population.

Table A.5: Jaccard Coefficients between family-friendly work practices -MQ

	reduced hours	job sharing	work during school term	flexitime	home office	compressed hours
reduced hours	1					
job sharing	0.3080	1				
work during school term only	0.2043	0.2777	1			
flexitime	0.3741	0.2433	0.1539	1		
home office	0.2918	0.1940	0.1438	0.3589	1	
compressed hours	0.2153	0.2255	0.1703	0.2390	0.1954	1

Table A.6: Correlation of shares of positive responses - SEQ

	reduced hours	job sharing	work during school term	flexitime	home office	compressed hours
reduced hours	1					
job sharing	0.4990	1				
work during school term only	0.3284	0.3265	1			
flexitime	0.3844	0.4101	0.1216	1		
home office	0.0644	0.1005	0.0406	0.3756	1	
compressed hours	0.437	0.3316	0.2078	0.5102	0.2634	1

Table A.7: Total, Within-Firm and Between-Firm Variation 2004

	overall std.dev.	within-firm std.dev.	between-firm std.dev.
any form of family-friendly practices	0.3837	0.2755	0.2108
any form of *qualitative* family-friendly practices	0.4817	0.3303	0.3149
reduced hours	0.4968	0.3881	0.2996
job sharing	0.4562	0.3668	0.2692
work during school term only	0.3969	0.1941	0.3182
any form of *quantitative* family-friendly practices	0.4835	0.4006	0.2740
flexitime	0.4995	0.4131	0.2746
home office	0.3746	0.2411	0.2178
compressed hours	0.4444	0.3503	0.2356

Observations of workplaces where less than 10 workers completed the SEQ were dropped for the variation analysis, since variation estimates based on these observations would not be convincing.

Table A.8: Number of observations by the number of family-friendly work practise available- MQ

Number of available family-friendly work practices	Number of observations 2004	Number of observations 2011	Total number of observations
0	249	328	577
1	404	398	802
2	510	458	968
3	416	458	874
4	325	345	670
5	227	320	547
6	161	355	516
all except missing	2292	2662	4954

Table A.9: Robustness Check - OLS with 2-digit Industry Controls

Dependent variable: Female share workforce	(1) MQ 2011 Coeff./ SE	(2) MQ 2011 Coeff. / SE	(3) SEQ 2011 Coeff. / SE	(4) SEQ 2011 Coeff. / SE
Quantitative family-friendly practices				
Reduced hours	0.036**		-0.003	
	(0.017)		(0.034)	
Job sharing	0.046**		0.014	
	(0.022)		(0.049)	
Work during school term only	0.035*		0.048	
	(0.019)		(0.037)	
Quantitative family friendliness index		0.039***		0.073
		(0.010)		(0.054)
Qualitative family-friendly practices				
Flexitime	-0.001		0.030	
	(0.016)		(0.034)	
Home office	-0.028		-0.095**	
	(0.018)		(0.044)	
Compressed hours	-0.037*		0.041	
	(0.020)	(0.040)		
Qualitative family friendliness index		-0.020**		-0.036
		(0.009)		(0.052)
Overtime importance	0.028*	0.028*	0.044**	0.049***
	(0.016)	(0.016)	(0.019)	(0.018)
Female share in 4-digit industry	0.813***	0.810***	0.788***	0.772***
	(0.074)	(0.074)	(0.089)	(0.090)
Public Sector	-0.061*	-0.059*	-0.039	-0.040
	(0.035)	(0.035)	(0.039)	(0.038)
Log(workforce)	-0.013	-0.014*	-0.003	-0.009
	(0.008)	(0.008)	(0.009)	(0.009)
Constant	0.150**	0.145**	0.209	0.179*
	(0.071)	(0.067)	(0.198)	(0.098)
Industry controls	2-digit	2-digit	2-digit	2-digit
Independence	yes	yes	yes	yes
Occupational structure of workforce	yes	yes	yes	yes
Age structure of workforce	yes	yes	yes	yes
Age of workplace	yes	yes	yes	yes
Share union & minority	yes	yes	yes	yes
Operating days	yes	yes	yes	yes
Wage bill/sales ratio	yes	yes	yes	yes
Cost target	yes	yes	yes	yes
Observation year	yes	yes	yes	yes
Observations	1560	1560	1137	1163
adjusted R^2	0.687	0.687	0.692	0.680

Table A.10: Robustness Check - OLS with Alternative Measure for Female Share in 4-digit Industry

Dependent variable: Female share workforce	(1) MQ 2011 Coeff./ SE	(2) MQ 2011 Coeff. / SE	(3) SEQ 2011 Coeff. / SE	(4) SEQ 2011 Coeff. / SE
Quantitative family-friendly practices				
Reduced hours	0.028		-0.044	
	(0.018)		(0.041)	
Job sharing	0.053***		0.024	
	(0.020)		(0.052)	
Work during school term only	0.041**		0.039	
	(0.020)	(0.039)		
Quantitative family friendliness index		0.036***		0.046
		(0.010)		(0.059)
Qualitative family-friendly practices				
Flexitime	-0.023		0.028	
	(0.017)		(0.038)	
Home office	-0.011		-0.075	
	(0.018)		(0.051)	
Compressed hours	-0.049**		0.047	
	(0.020)		(0.044)	
Qualitative family friendliness index		-0.026***		-0.031
		(0.010)		(0.053)
Overtime importance	0.034**	0.034**	0.005	0.003
	(0.016)	(0.016)	(0.008)	(0.008)
Female share in 4-digit industry	0.962***	0.944***	0.999***	0.997***
	(0.130)	(0.129)	(0.178)	(0.174)
Log(workforce)	-0.010	-0.011	-0.010	-0.015*
	(0.008)	(0.008)	(0.009)	(0.009)
Constant	0.078	0.077	0.211	0.218
	(0.100)	(0.095)	(0.205)	(0.197)
Industry controls	3-digit	3-digit	3-digit	3-digit
Public sector	yes	yes	yes	yes
Occupational structure of workforce	yes	yes	yes	yes
Age structure of workforce	yes	yes	yes	yes
Age of workplace	yes	yes	yes	yes
Share union & minority	yes	yes	yes	yes
Operating days	yes	yes	yes	yes
Wage bill/sales ratio	yes	yes	yes	yes
Cost target	yes	yes	yes	yes
Observation year	yes	yes	yes	yes
Observations	1430	1430	1036	1061
adjusted R^2	0.695	0.695	0.702	0.693

Table A.11: 2SLS - Three Constraints as Instruments

	(1) MQ 2011	(2) SEQ 2011 - users only -	(3) SEQ 2011	(4) SEQ 2011 - women only -
	Coeff. / SE	Coeff. / SE	Coeff. / SE	Coeff. / SE
First stage - dependent variable: *quantitative* family-friendliness index				
Constraints				
Cost	0.161	-0.001	-0.018	0.022
	(0.088)	(0.088)	(0.014)	(0.028)
Size	-0.035	0.010	0.030*	-0.034
	(0.070)	(0.023)	(0.017)	(0.028)
Operating schedule	-0.117**	-0.048**	-0.035**	-0.024
	(0.057)	(0.020)	(0.014)	(0.029)
Overtime importance	0.175***	0.016*	0.011*	0.016
	(0.063)	(0.010)	(0.006)	(0.016)
Female share in 4-digit industry	-0.009	-0.110	0.103	0.062
	(0.407)	(0.137)	(0.091)	(0.221)
Log(workforce)	0.236***	0.000	-0.002	0.013
	(0.031)	(0.011)	(0.006)	(0.014)
Constant	0.482	0.229**	0.011	0.175
	(0.307)	(0.115)	(0.085)	(0.178)
First stage - dependent variable: *qualitative* family-friendliness index				
Constraints				
Cost	0.118	-0.010	-0.007	0.001
	(0.095)	(0.027)	(0.020)	(0.038)
Size	-0.183**	0.018	0.027	0.052
	(0.077)	(0.027)	(0.018)	(0.036)
Operating schedule	0.072	-0.007	-0.020	-0.004
	(0.065)	(0.026)	(0.017)	(0.038)
Overtime importance	0.011	0.009	0.003	0.018
	(0.069)	(0.011)	(0.007)	(0.017)
Female share in 4-digit industry	-0.902	-0.277**	-0.160**	-0.305
	(0.630)	(0.124)	(0.079)	(0.197)
Log(workforce)	0.192***	0.009	0.007	0.031
	(0.037)	(0.013)	(0.009)	(0.020)
Constant	1.302***	0.478***	0.409***	0.212
	(0.419)	(0.136)	(0.114)	(0.256)
Second stage - dependent variable: female share workforce				
Quantitative family-friendliness index	0.280**	0.731	1.228	0.572
	(0.139)	(1.623)	(3.491)	(0.829)
Qualitative family-friendliness index	0.057	-2.541	-2.177	-0.163
	(0.126)	(4.674)	(5.684)	(0.886)
Overtime importance	-0.023	0.017	-0.005	-0.014
	(0.032)	(0.044)	(0.033)	(0.032)
Female share in 4-digit industry	1.094***	0.403	0.546	0.849***
	(0.174)	(1.229)	(1.237)	(0.297)
Log(workforce)	-0.085**	0.011	0.011	-0.026
	(0.038)	(0.052)	(0.068)	(0.036)
Constant	-0.228	0.519	0.317	0.010
	(0.276)	(1.502)	(1.329)	(0.437)
Industry controls	3-digit	3-digit	3-digit	3-digit
Public sector	yes	yes	yes	yes
Occupational structure of workforce	yes	yes	yes	yes
Age structure of workforce	yes	yes	yes	yes
Age of workplace	yes	yes	yes	yes
Share union & minority	yes	yes	yes	yes
Operating days	yes	yes	yes	yes
Wage bill/sales ratio	yes	yes	yes	yes
Cost target	yes	yes	yes	yes
Observation year	yes	yes	yes	yes
Observations	1559	1151	1151	564

Table A.12: OLS - QUANT

	(1) MQ β / SE	(2) SEQ β / SE
Quantitative family friendliness index	0.032***	0.039
	(0.009)	(0.049)
Overtime importance	0.019	0.005
	(0.016)	(0.008)
Female share in 4-digit industry	1.037***	1.012***
	(0.103)	(0.108)
Public sectore	-0.056	-0.043
	(0.035)	(0.040)
Log(workforce)	-0.016*	-0.014
	(0.008)	(0.009)
Constant	0.139	0.052
	(0.163)	(0.095)
Industry controls	3-digit	3-digit
Independence	yes	yes
Occupational structure of workforce	yes	yes
Age structure of workforce	yes	yes
Age of workplace	yes	yes
Share union & minority	yes	yes
Operating days	yes	yes
Wage bill/sales ratio	yes	yes
Cost target	yes	yes
Observation year	yes	yes
Observations	1560	1151
adjusted R^2	0.700	0.706

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