Male Unpaid Work and Female Employment Trajectories: A Dynamic Analysis

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A quienes más quiero en este mundo,

Johan y Ángela

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Abstract

This thesis analyzes whether there is an interdependence, at the intra-couple level, between men's housework and childcare participation and women's employment and economic position. The first empirical paper examines to what extent men's domestic involvement responds to variations in their own and their partner circumstances. The second paper looks into the influence of male domestic effort on the female partners' propensity to exit the labour market or leave full-time work after marriage and childbirth. The third paper, finally, assesses whether fathers' domestic inputs affect mothers' earnings trajectories. The analysis draws on longitudinal data from the German Socio-economic Panel (SOEP, 1984-2009). The findings obtained indicate that men's household involvement is responsive to shifts in their partners' relative resources and dedication to paid work. At the same time, men's domestic participation makes it easier for their partners to maintain an intense employment dedication, which also reduces the economic penalty experienced after motherhood.

Resumen

Esta tesis analiza si hay una relación de interdependencia, a nivel de la pareja, entre la participación de los hombres en tareas domésticas y de cuidado y la posición laboral y económica de las mujeres. El primer artículo empírico examina hasta qué punto la implicación de los hombres en el trabajo doméstico se modifica a raíz de variaciones en las circunstancias de éstos y de sus parejas. El segundo artículo investiga qué influencia ejerce la participación masculina en este tipo de tareas sobre la probabilidad de que las mujeres abandonen el mercado de trabajo o el empleo a tiempo completo tras el matrimonio y los nacimientos. El tercer artículo, por último, estudia si el tiempo invertido por los padres en el trabajo doméstico y de cuidado afecta a las trayectorias de ingresos de las madres. El análisis está basado en datos longitudinales del panel socioeconómico alemán (SOEP, 1984-2009). Los resultados obtenidos indican que la implicación masculina en la esfera doméstica es sensible a variaciones de los recursos relativos y la dedicación laboral de sus parejas. Al mismo tiempo, la participación

de los hombres en tareas domésticas y de cuidado facilita el mantenimiento de una dedicación intensa por parte de sus parejas al empleo, lo que también contribuye a reducir las penalizaciones económicas que éstas experimentan a raíz de la maternidad.

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1. GENERAL INTRODUCTION

1.1 Background and general objectives of the thesis

Over the past decades, post-industrial societies have witnessed deep-going changes in the roles of women and men alike. One of the most significant ones has been the massive incorporation of women to the labour market, even if their work attachment and earnings still lie to a remarkable degree behind their male counterparts'[1]. As another side of the same coin, men are increasingly involved in the household sphere, though not yet to an extent that comes near the magnitude of the so-called "female revolution"[2] (Esping-Andersen 2009). A key issue, against this backdrop, is the extent to which both dimensions are in fact intertwined and causally related. Is women's increasingly stronger economic position driving forward changes in men's participation in unpaid work? Are women's prospects in the labour market themselves contingent on whether men venture into the domestic realm? Or does women's revolution outside the home proceed with independence from what takes place within its walls?

Answering these questions makes it necessary to look beyond aggregate evidence and directly into couples' modus operandi. At the micro-level, there is considerable heterogeneity regarding both female labour market trajectories and male involvement in domestic tasks. This makes it interesting to analyze whether partners' revolutionary – versus traditional – behaviours in the respective

[1] To illustrate this point, female employment rates in 2009 – the last year of measurement in the data used in this thesis – amounted to 72.7% in Denmark, 65.2% in Germany, 63.4% in the US, and 53.5% in Spain. In the case of men, the figures were 78%, 75.4%, 72%, and 66.6%, respectively (OECD 2013). As to the gender gap in earnings, the ratio of estimated female to male earned income amounted in 2006 to 0.74 in Denmark, 0.61 in Germany, 0.64 in the US, and 0.53 in Spain (OECD 2009).

[2] For instance, in the US, the average female-male intra-couple home production ratio has been estimated to lie at 1.6 in 2003. The figure would be even higher if childcare – the kind of domestic labour in which male participation has risen the most – were not included in the estimation (Esping-Andersen 2009).

spheres go hand in hand and reinforce each other. At the heart of this thesis, thus, will be the dynamic interrelation between two phenomena: on the one hand, men's domestic participation after family-building, and, on the other hand, their female partners' labour supply and earnings outcomes.

It is only in the most recent decades that the possibility of such interdependence surfaces clearly. Up to the 1980s, male involvement in housework and childcare was reportedly very scarce. Women's growing employment participation did not seem to alter the picture substantially by the time (Coverman & Shelley 1986). This said, some authors have noted a visible increase in men's domestic involvement between the late 1960s and the 1990s (Bianchi et al. 2000), largely coinciding with the initial phase of "revolutionary change" in women's economic roles (Goldin 2006)[3]. Over the past two decades, more crucially, the figure has continued to rise. The latter is particularly manifest regarding childcare time, which has virtually doubled (Esping-Andersen 2009).[4] This begs the question of whether women's increasing work attachment could itself drive forward changes in this direction.

Some studies, indeed, have identified a positive association between women's employment and their male partners' domestic involvement (Aldous et al. 1998; Bianchi et al. 2000; Gershuny et al. 2005), even though results are not always clear-cut (see for instance Yeung et al. 2001). More importantly, women's economic resources, which can reasonably be linked to their labour market position, also correlate positively with men's participation in household tasks. This seems particularly true regarding male routine housework (Evertsson & Nermo 2007; González & Jurado-Guerrero 2009; González et al. 2009; Bloemen & Stancanelli 2009).

Such findings are often taken to suggest a causal effect of women's employment and economic resources on their male partners'

[3] Goldin (2006) distinguishes this later stage as one in which young women began to anticipate higher employment participation rates as compared to those of previous generations, thus making greater educational investments and pursuing to an increasing extent careers they identified themselves with.

[4] In the US, average male childcare exceeded 6 hours a week by year 2000 (Bianchi et al. 2006). Roughly similar figures have subsequently been found for other countries (Hook 2006; Bonke & Esping-Andersen 2011).

domestic participation. Nevertheless, as most studies build on either aggregate data or cross-sectional analyses, evidence supporting such a connection is limited. Assessing its occurrence ultimately requires following individuals over time, paying attention to how their behaviour responds to varying circumstances within the couple, and considering the possibility of selection bias.

However, studies based on longitudinal data covering more than just a couple of waves are notably scarce. The few existing exceptions, furthermore, have a very specific analytical scope. Some work has focused on how male housework is affected by variations in women's employment patterns, without paying attention to the latter's economic resources (Gershuny 2005). Other contributions consider the weight of women's economic position, yet only examine its mediating influence on how the transition to parenthood affects men's behaviour (Kühhirt 2011; Schober 2011). A couple of longitudinal, longer-term studies provide a more comprehensive picture of explanatory variables (Grunow et al. 2007; Grunow et al. 2012). Still, they are based on relative housework measures, which make it difficult to separate the effect of covariates on men's time allocation from the one they have on the female partners'. In sum, there is a need for work that analyzes whether men adapt their domestic involvement to changes in the partners' employment and economic status, among other variables.

Not less importantly, causality might also work the other way. Women's employment participation – and thus their earnings progression – is often constrained by the extent to which they simultaneously must meet domestic demands (see for instance Del Boca et al. 2009; Maani & Cruickshank 2010). This is particularly true throughout the family-building years, as having children entails a considerable increase in household responsibilities. It has been found, accordingly, that arrangements facilitating the reconciliation of paid work with the latter, or otherwise diminishing women's domestic burden, have a positive effect on female labour supply. Among these are, for instance, affordable childcare services, flexible work opportunities, and institutional support for work-family balance (Blau & Robins 1989; Blau et al. 1998; Kimmel 1998; Del Boca et al. 2009). Working mothers in societies that promote such balance through public policies also seem to face lower wage penalties (Hardoy & Schøne 2008; Budig et al. 2010).

In the light of such evidence, men's participation in housework and childcare could have a similarly positive influence on women's employment and economic outcomes. It would namely also reduce the total domestic demands faced by women, and make it easier to combine them with employment participation. Surprisingly enough, however, the explanatory potential of male domestic involvement in this respect remains largely unexplored. To the extent that earlier research has treated women's economic position and men's household behaviour as interconnected, the latter has mostly been dealt with as dependent variable.

The noted knowledge gaps bring us to the two overarching purposes of this thesis. The first one is to assess how men's housework and childcare behaviour responds to changes in – inter alia – their partners' employment situation and economic resources. Following couples over time, responses to variations of different magnitude in the aforementioned circumstances are analyzed. The second aim of the study is to understand how male domestic involvement itself affects women's employment and earnings outcomes. Differently put, men's domestic inputs are also placed at the other end of the causal chain. Focus is laid on the family-building life course stage, which entails intensified domestic demands and tends to coincide with the most crucial years for female work attachment and earnings prospects. Accordingly, the impact of male domestic involvement on their partners' labour supply after union entry and childbirth is examined. So is its effect on working mothers' earnings, giving special consideration to the latter's linkage to the continuity and intensity of labour supply. To sum up, the thesis analyzes how micro-level change in male domestic inputs unfolds over time; how it responds to variations in the female partners' employment participation and economic resources; and how it in turn influences the latter after family-building.

1.2 Relevance of the study

Understanding the interplay, at the individual-level, between men's participation in the household sphere and women's employment dedication and earnings is important on several grounds. Firstly, it

is of theoretical relevance – as noted, there are related gaps in earlier research on couple specialization and female labour supply.

The literature on men's domestic involvement calls for longitudinal evidence that clarifies the extent to which the latter is affected by women's economic position. There is, additionally, a need for further insights on the mechanisms that make such involvement increase or decrease over time. Previous studies have analyzed male participation in unpaid work from a predominantly static perspective, paying little heed to its temporal evolution *within* couples. Much earlier research on the topic has assumed that men's domestic effort experiences little variation over time – at least once a given division of labour is established after couple formation. Generally speaking, the possibility of visible change is considered only after radical transformations of the couple's life circumstances, most notably the transition to parenthood (see for example Sánchez & Thomson 1997; Gjerdingen & Center 2005; Baxter et al 2008; Kühhirt 2011; Miller 2011; Schober 2011). Nevertheless, the presumption that men's individual behaviour is otherwise subject to little change over the years requires empirical substantiation. Men's domestic dedication could well respond to smaller, more sustained adjustments in their situation; including those related to their partners' employment participation and earnings.

As previously explained, the thesis also aims to gain knowledge on the inverse relation – namely on how women's labour supply and earnings are affected by men's participation in housework and childcare. There is also a theoretical gap to be filled regarding the explanatory weight of male domestic inputs. Key contributions in couple specialization research – such as Becker's (1981) neoclassical theory of the family as well as later bargaining and "doing gender" approaches – have acknowledged that women's economic position should be tightly connected to their own and their partners' household behaviour. As already pointed out, however, analyses of men's domestic participation have mostly focused on its role as dependent variable. Knowledge on the intra-couple division of labour, and on women's participation in paid employment specifically, could thus be furthered by shifting attention to the explanatory capacity of men's unpaid work.

In particular, there are two dimensions of female labour market participation on which deeper insights could be reached through the adoption of such an approach. One is the evident heterogeneity that exists among women in terms of work attachment. Several factors accounting for variations in female labour supply have been identified – ranging from differences in comparative advantages, bargaining power and time availability, to gender attitudes, sheer preferences or the institutional context (see f.i. Blau et al. 1998; Hakim 1996; 2000; Aaberge et al. 2005). However, hardly any consideration has been given to the potential importance of the partners' behaviour within the household. This lack of attention towards partners is puzzling, as their degree of engagement in domestic work could be more or less supportive of an intense labour market dedication by their female counterparts.

First of all, male domestic involvement could plausibly lower the direct costs of women's employment participation – especially over the childbearing years –, as it would ease the double burden faced by working women (Hochschild 1989; Presser 1994) and facilitate the reconciliation of employment and family responsibilities. Secondly, it would also reduce the more indirect costs of combining work and family duties by limiting the need for substitutes for home production, such as external domestic help and childcare services. In short, there are good reasons to believe that men's involvement in housework and childcare could make it easier for women to maintain a strong foothold on the labour force – just as external arrangements, such as readily available childcare and work-family reconciliation policies, have proven to do (Blau & Robins 1989; Blau et al. 1998; Kimmel 1998; Del Boca et al. 2009).

In addition, there is a closely related dimension of women's employment participation for which male domestic inputs could be important – namely the variation in earnings between different women, especially in connection with childbearing. Although there is much research on the so-called "motherhood penalty", for which human capital theory has provided valuable explanations (see f.i. Mincer & Polachek 1974), a certain share of the latter remains unaccounted for (Blau et al. 1998; Budig et al. 2001; Anderson et al. 2002). In recent years, a growing body of literature has started to link women's wages with their housework dedication (see for example Noonan et al. 2001; Stratton 2001; Bryan & Sevilla-Sanz

2011). Again, nevertheless, virtually no attention has been paid to the role of the partner's own domestic effort.

As previously observed, empirical evidence suggests that the earnings penalty associated with childbirth is diminished by public policies promoting balance between family and work, such as extensive childcare provision (Hardoy & Schøne 2008; Budig et al. 2010; Petersen et al. 2010; Misra et al. 2011). A priori, fathers' housework and childcare involvement should likewise be beneficial to mothers' earnings prospects, since they would also contribute to limiting the domestic demands to be reconciled with paid employment.

While a couple of studies with a broader focus have considered the aforementioned possibility, finding a positive relation between male childcare time and female earnings (Coverman 1983; Shirley & Wallace 2004), they build on cross-sectional data that make it hard to deal with endogeneity and selection concerns. Furthermore, and very crucially, they do not specify the kind of mechanisms through which the partners' behaviour could be of relevance. This is precisely one of the knowledge gaps this thesis seeks to fill, by exploring direct and more indirect linkages between fathers' domestic inputs, mothers' earnings trajectories, and the latter's labour supply as a possibly intermediate variable.

To recapitulate, the study intends to make a contribution to previous research by examining, first, the determinants of intra-couple variations in male domestic engagement over time, and, second, the influence of the latter on the female partners' employment and earnings outcomes. Ultimately, the aim is to answer a question which has not yet been explored systematically in earlier work: namely that of whether – and how – men's domestic behavior responds to women's employment decisions and economic position, and vice versa.

Beyond this theoretical relevance, understanding how male domestic participation and female labour supply and earnings outcomes are intertwined is also valuable from a social perspective. To begin with, it can be justified on sheer utility-maximizing grounds. At the individual level, it is known that most women in post-industrial societies wish to combine family-building with paid

employment (see f.i. Hakim 1996; 2000; Esping-Andersen 2009). At the macro-level, societies generally benefit from broad labour market participation by their citizens. Deepening knowledge on all the variables that affect female labour supply will make it easier to achieve both objectives. Furthermore, being able to enhance women's employment and economic outcomes would be associated with clear social gains. The probability of child poverty has been found to be substantially reduced when mothers are employed (Esping-Andersen 2009). In addition, the correlation between women's employment and fertility seems to have turned positive in developed countries (see for example Ahn & Mira 2002). Accordingly, we could in principle expect women with a stronger foothold on the labour market to achieve more easily their desired fertility.

As regards men's domestic involvement, research has shown that children derive long-term cognitive, behavioural, emotional and social benefits when fathers – and not only mothers – participate actively in their care and everyday life (see f.i. Marsiglio et al. 2000; Yeung et al. 2001; Aldous & Mulligan 2002; Gaertner et al. 2007; Hsin 2009; Lamb 2010). In consequence, and in order to facilitate such engagement, it seems important to understand under which conditions men's participation in family- and household-related tasks increases.

Last but not least, gaining insights on the relations between men's unpaid work and women's employment and economic position is important on equality grounds. As noted, women still face difficulties to maintain a strong degree of employment dedication throughout the family-building life course stage. In addition, motherhood often entails an economic penalty, while it typically exerts no influence (or a positive one) on fathers' earnings (Gornick 2004). Greater knowledge on the variables affecting such outcomes will make it easier to develop instruments that guarantee equal chances for all individuals, be they women or men, in these respects. Furthermore, parental time investments have been noted to be one crucial mechanism in the reproduction of educational and social inequality; not least during the first years of life of the child (Esping-Andersen 2002; Esping-Andersen 2009; González et al. 2010). This makes it also important to understand under what

circumstances men's participation in childcare and household tasks increases, in order to promote it more successfully.

1.3 Theoretical perspectives and existing empirical evidence

The question of the interdependence, at the micro-level, between men's unpaid work and women's position in the labour market has not been addressed systematically in earlier research; especially not from a longitudinal perspective. Nevertheless, the literature on couple specialization and time allocation to paid and unpaid labour has already provided relevant insights on related issues. Consequently, the analysis must take as point of departure previous economic and sociological work on these phenomena.

1.3.1 Understanding men's participation in housework and childcare: couple specialization theories

One of the aims of the thesis is to shed light on how male domestic behaviour reacts to changes in their female partners' employment and economic status. Accordingly, a central issue is that of when and why men embrace – alternatively get out of – domestic work. The most influential theoretical approaches to the intra-household division of labour offer useful clues for answering this question.

A key contribution to this literature is Becker's (1981) neoclassical theory of the family, which assumes household members to be rational individuals aiming to maximize a single utility function. While several variants of this approach have been put forward (for a detailed examination, see Killingsworth & Heckman 1986)[5], a very

[5] A simple version is the so-called "conventional model of family labour supply", which regards joint family utility as a function of the family members' leisure time and their joint income. There are also more sophisticated time allocation models that treat family utility as a function of a set of "products" or "activities" (for instance, the market work participation of any household member); each of which is in turn a function of a set of costs and of time assigned to the activity in question by each individual. For further details on their technical aspects, see Killingsworth & Heckman 1986.

influential one has been the so-called "specialization and exchange" framework. Its fundamental contention is that household members maximize joint utility most efficiently when one of them specializes – at least to some extent – in market production, while the partner proceeds similarly regarding home production. The basis for specialization would be the individuals' ability to perform one of the two types of labour better than the other one – or, differently put, their respective comparative advantages regarding paid and unpaid work.

By the time this approach was developed, it predicted gender specialization consistent with the breadwinner model as the most efficient intra-household division of labour (Esping-Andersen 2009). Traditional family systems, due to gender-specific skill investments, made women develop a comparative advantage regarding domestic work, while men developed a comparative advantage in paid employment. This prediction, nevertheless, is no longer given as the educational level and earning power of men and women have become increasingly equalized in post-industrial societies (Blossfeld & Drobniç 2001). Indeed, empirical support for this framework has been moderate. For instance, its expectation that men's education and occupational status should influence female labour supply negatively has only been partially corroborated.[6]

Regarding the variable now in focus – male domestic participation – specialization and exchange theory appears to fit reality to the extent it hypothesizes men to devote significantly less time to household tasks than their female partners. To be sure, while a

[6] While some studies have found evidence of such a relation (see Blossfeld et al. 1996; Bernasco et al. 1998; Bernardi 1999), it seems to be largely context-dependent, as there is visible cross-country diversity in this respect. In conservative-type welfare states (see the typology developed by Esping-Andersen, 1990), including the Mediterranean countries, it has been found that men with high occupational resources do tend to suppress their partners' labour market participation. In social democratic types of welfare state, in contrast, the linkage between men's occupational resources and female labour market activities appears to be exactly the opposite – the higher the former, the greater and more intense the latter. Interestingly enough, in the UK – a liberal type of welfare state – no relation has been observed between the two variables (Blossfeld & Drobniç 2001). Such variation most probably reflects differences among societies regarding how long they have come in the equalization of gender roles (see Esping-Andersen 2009; Esping-Andersen et al. 2013)

traditional division of labour is no longer a fact in post-industrial societies – where couples are increasingly adopting more egalitarian roles – it is still women who generally shoulder the lion's share of unpaid work (Blau et al. 1998; Bianchi et al. 2000; Breen & Cooke 2005). However, specialization and exchange models have a fundamental limitation: they can not explain differences in domestic dedication between men and women after controlling for their participation in paid work (Evertsson & Nermo 2004).

From a theoretical perspective, this approach has also been criticized for disregarding the utility obtained from work and leisure, for not considering that some tasks are most efficiently performed by several individuals together, and for ignoring that comparative advantages do not necessarily remain static over time. Moreover, the assumption of a single utility function – which, as noted by many, is only sustainable if we also assume families to operate altruistically – does not consider the possibility of conflicting preferences. An additional criticism made to these models builds on their assuming intra-household decisions to be exclusively made on efficiency grounds. They have also been claimed to pay too scant attention to the internal decision-making structures of families (see Blau et al. 1998; Blossfeld & Drobniç 2001; Hakim 2000; Esping-Andersen 2009).

As a response to such shortcomings, alternative frameworks seeking to explain the intra-household division of labour have gradually emerged. Among the most prominent have been "transaction and bargaining" approaches, based on non-cooperative and – most frequently – cooperative models (for a formal overview of their theoretical foundations, see for example Manser & Brown 1980; McElroy & Horney 1981; Chiappori 1988; Lundberg & Pollak 1993; Browning et al. 1994; Lundberg & Pollak 1996; Apps & Rees 1997; Chiappori 1997). These acknowledge partners to have separate utility functions; regarding marriage as an institution that structures relations between spouses and thereby limits decision costs. In case of conflict between the partners' preferences, they predict a negotiation process in which a threat point (usually divorce) is implicitly or explicitly invoked. The relative command of external resources – that is, of those which are not conditional to the partnership – is central in this perspective, as it will result in increased chances of posing credible threats, and thus in greater

bargaining power. Accordingly, as bargaining approaches from economic theory have found their way into sociological research, increasing consideration has been given to the partners' relative resources and their potential to affect specialization outcomes.[7] Regarding participation in unpaid work, bargaining models expect individuals with greater relative resources – in comparison to their partners' – to negotiate themselves into doing less domestic tasks. Of course, this prediction presupposes that both men and women perceive this kind of work as unattractive (Shelton & John 1996). It is precisely for this reason that the study of the division of housework has been claimed to be particularly suitable to get insights into power and equity dynamics within couples (Davis & Greenstein 2013), or between women and men in society. In this sense, the theoretical stream of research known as "the marital power framework" – which integrates a bargaining perspective with the idea that structural conditions generally bestow men and women with unequal resources for domestic negotiation – attributes women's greater overall housework involvement to the perceived undesirability of this task. Housework involvement itself has been used, in fact, as a measure of power within couples (Sullivan 2013).

At the end of the day, empirical support for bargaining models has been limited. Some studies have observed a positive relation between a smaller gender gap in earnings and a more egalitarian division of work (see for instance Presser 1994; Bianchi et al. 2000; Evertsson & Nermo 2007). Still, the effect seems relatively small. Furthermore, relative economic resources do not appear to affect women's and men's domestic participation to a similar degree. According to several studies, sometimes it is women's absolute earnings, rather than their relative levels, that matter the most (Gupta 2007; González & Jurado-Guerrero 2009). Measuring the effect of relative educational resources, in turn, is not easy – as they can be reflecting gender attitudes – and findings regarding the weight of relative occupational prestige have not proven conclusive (Shelton & John 1996).

[7] Relevant resources can be as varied as earnings, the control of financial assets, education, occupational prestige, or social status (Shelton & John 1996; Evertsson & Nermo 2007).

Both specialization and bargaining frameworks emphasize the weight of economic resources for couple specialization. A central question now is: how do they fare when it comes to accounting for men's *absolute* levels of domestic participation? The answer varies, in fact, depending on the type of domestic work in focus. This should not be too surprising, as housework and childcare are qualitatively distinct kinds of tasks. Childcare is usually experienced as more rewarding than housework (Coverman & Sheley 1986; Hallberg & Klevmarken 2003; Paihlé & Solaz 2008). Individuals incur significantly larger costs if they neglect the former than if they forsake the latter (Aldous et al. 1998), and time-use data confirms that individuals' perceptions of both activities in terms of enjoyment differ markedly. Furthermore, different processes of change have been found to be underway over the past decades regarding both male and female involvement in the two types of tasks. Institutional configurations also appear to affect developments in housework versus childcare participation in distinct ways (Sullivan 2013). Such divergences should lead us to expect the intra-couple distribution of the two activities to follow at least partially different logics.

Starting with housework, most of the explanations proposed by couple specialization theories have obtained some empirical support. Economic resources – especially those commanded by the female partner – appear most clearly associated with male housework time.[8] A positive relation, consistent with both specialization and bargaining theory, can be observed between the latter and the partners' occupational and financial position (see for example Deutsch et al. 1993; Presser et al 1994; Evertsson & Nermo, 2007; Bloemen & Stancanelli 2009; González et al. 2009).[9]

Regarding male childcare participation, in contrast, neither specialization theories nor bargaining frameworks seem fully adequate as explanatory frameworks. The direct effect of wages,

[8] It is not only women's relative resources that prove important – evidence of linear effects of female absolute earnings on male domestic participation has also been found, see f.i. Bloemen & Stancanelli 2009.

[9] Nevertheless, it has also been noted that when women's relative earnings surpass a certain threshold – 50% of the couple's income – the association with greater male housework involvement is no longer given (Bittman et al. 2003).

income differences and market productivities appears weak (Hallberg & Klevmarken 2003), inconsistent between weekdays and weekends (Yeung et al. 2001), and not very robust to different specification checks (Bloemen & Stancanelli 2009). Moreover, even in studies finding a positive association between men's childcare inputs and their female partners' earnings, it is still women who assume the bulk of childcare tasks; regardless of their economic position (see again Yeung et al. 2001; Bloemen & Stancanelli 2009). As noted, such a result should not be too surprising given bargaining approaches' assumption that negotiation takes place over tasks considered unattractive by both partners. This is not necessarily the case of childcare, which is often perceived as an enjoyable activity by men as well as women (Hallberg & Klevmarken 2003; Sullivan 2013). At any rate, even presuming that such negotiation could take place over less rewarding, routine childcare tasks, empirical support for bargaining mechanisms seems at best mixed. Some authors have found a positive relation between men's childcare investments and their partners' education, employment, and earnings (Darling-Fisher & Tiedje 1990; González et al. 2010; Gutiérrez-Domènech 2007; Bloemen 2008; Bloemen & Stancanelli 2009; Tanturri & Mencarini 2009; Wang & Bianchi 2009). Others, however, conclude that the association is not very manifest (Marsiglio et al. 1991; Yeung et al. 2001; Kitterød & Pettersen 2006).

In parallel to specialization and bargaining approaches, models attempting to explain the intra-couple division of labour by laying focus on time constraints have been developed. These contributions, grouped under the "time availability perspective"-label (for their original foundations, see Hiller 1984; Coverman 1985; England & Farkas 1986; for a review see Shelton & John 1996), link participation in unpaid work to the related demands placed on individuals and the time available for such tasks. Accordingly, variables such as the intensity of employment participation, or the presence, age and number of children in the household, are expected to be key predictors of domestic involvement.

Empirically, there is evidence relating all such factors to individuals' time allocation to unpaid work. Again, however, the degree to which this relation is evident for men varies between housework and childcare. Generally speaking, the time availability

approach does not seem very successful in explaining male housework involvement. Some adaptation in this sense has been observed following large changes in time availability (Gershuny et al. 2005). For both men and women, paid work hours show a negative association with housework dedication. However, the relation between women's labour supply and their male partners' housework time is not straightforward. Likewise, in the case of men, the presence of children does not seem so consistently linked to housework effort as it is for women (Shelton & John 1996). All in all, male housework participation seems relatively unaffected by time demands and time constraints, and is definitely less sensitive to these factors than women's own dedication (see Bianchi et al. 2000; Cooke 2007a; Esping-Andersen 2009).

Men's participation in childcare, on the contrary, appears more clearly connected to time-related demands, constraints and trade-offs. It has even been contended that, if economic variables have any effect on paternal childcare involvement, it is indirect and operates through decisions about paid work time (Hallberg & Klevmarken 2003). Indeed, the more hours fathers spend at work, the less engaged in childcare they seem to be (Aldous et al. 1998; Yeung et al. 2001; Stancanelli 2003; Aboim & Marinho 2006; Gutiérrez-Domènech 2007; Tanturri & Mencarini 2009; González et al. 2010). Those whose partners work longer hours, in contrast, exhibit a significantly higher dedication to their children; even though this effect seems weaker than that of fathers' own time at work (Aldous et al. 1998; Yeung et al. 2001; Stancanelli 2003; Kitterød & Pettersen 2006). The latter is particularly true in countries with high availability of childcare services, where the need to substitute for a working partner's hours is more limited (Hallberg & Klevmarken 2003).

The relation between the partner's labour force status and male childcare involvement, on its part, is not too clear. Some studies find evidence of greater paternal dedication when the mother is employed, yet others do not (see Yeung et al. 2001; Gaertner et al. 2007; Tanturri & Mencarini 2009). Such a relation may only be significant in families with high childcare demands (Aldous et al. 1998; Wang & Bianchi 2009). Regarding men's own position in the labour market, unemployed fathers tend to be more involved in childcare than employed ones when they have small children

(Marsiglio 1991; Gutiérrez-Domènech 2007). Particularly intense time demands, such as those stemming from having many children or very young ones, also tend to translate into greater childcare inputs by the father (Marsiglio 1991; Aldous et al. 1998; Yeung et al. 2001; Sundström & Duvander 2002; Stancanelli 2003; Gutiérrez-Domènech 2007; Bloemen et al. 2008; Paihlé & Solaz 2008; Tanturri & Mencarini 2009; González et al. 2010).

A caveat is in place regarding the possibility of underlying selection mechanisms. Decisions about market work and childcare time have been found to be strongly interdependent, as individuals can obtain process benefits from both (Hallberg & Klevmarken 2003). Accordingly, those fathers who are more predisposed towards nurturing from the start will most likely choose to work fewer hours. Both decisions may be explained by unobserved characteristics such as, for instance, a more egalitarian value orientation. Still, this does not rule out that time availability, or the lack thereof, also exert a significant effect of their own.[10]

The time-availability framework has been criticized for not explaining why time constraints affect men's domestic production differently than they affect women's (Shelton & John 1996). Partly as a result of this appreciation, and partly as a more general critique to economic explanations of the intra-household division of labour, a more recent line of research – often identified as the "doing gender" perspective – has drawn attention to the importance of social norms and gender attitudes. This theoretical account places focus on the construction, expression, and reproduction of gender relations through social interaction. Such processes occur against the backdrop of normative ideals on the appropriate roles of men and women. Consequently, the latter will not only come to be reflected but also actively *enacted* in the intra-couple division of

[10] In fact, the relevance of time constraints related to the type of job and work schedule indicates that such is the case. Men employed in the public sector devote significantly more time to childcare than others (Stancanelli 2003). So do those holding white-collar or teaching jobs, while fathers with very time-demanding occupations – such as managers, independent professionals or entrepreneurs – show a lower degree of involvement. Finishing work after 6 p.m., working over 45 hours a week or having so-called "split shifts" (long working days with a large break for lunch) also seem to affect male childcare time negatively (Gutiérrez-Domènech 2007; Tanturri & Mencarini 2009; González et al. 2010).

work (see Berk 1985, West & Zimmerman 1987; Brines 1994; South & Spitze 1994).[11]

In its original formulation, as well as in a substantial amount of later empirical work, the doing gender approach has tended to emphasize the norm-driven construction and reproduction of traditional gender relations within couples. Accordingly, attention has primarily been directed towards how men affirm a conservative gender identity by doing less housework and childcare, while women in turn hold on to the role of caregivers and domestic workers – even when structural circumstances should in theory encourage them to behave otherwise (see for example Bittman et al. 2003; Killewald & Gough 2010). Nevertheless, since gender is far from a static phenomenon, the theory also leaves room for the dismantling of conventional roles in social interactions, including those that occur in the household sphere. It has been noted that such interactions not only can reinforce inequalities through the recreation of traditional gender stereotypes, but also potentially give rise to other types of gendered behaviour, reduce the importance of gender differences, and even eliminate the latter. As indicated by the more recent term "undoing gender", these kinds of transformative behavioural processes could even come to undermine normative conceptions of gender, laying the basis for further change at the individual and structural levels (Deutsch et al. 2007; Risman 2009).

By themselves, variables related to the construction and reproduction of gender roles fail to provide a comprehensive account of individuals' domestic involvement. In this sense, the doing gender approach has not proven entirely satisfactory as a general explanatory perspective for the intra-household division of labour (Esping-Andersen 2009). Nevertheless, it provides a useful theoretical framework for understanding why processes at the behavioural level do not always go hand in hand with changes at the structural and situational level.

[11] Illustratively, it has been observed that when women contribute more than their partners to the households' total income, their relative housework dedication also increases. This runs counter to what specialization and bargaining models would envisage, and to what actually seems to happen until a certain relative earnings threshold is reached. Underlying such behaviour would be a will to compensate for the couple's deviation from traditional gender roles (Bittman et al. 2003).

Empirically, gender-related factors have been noticed to mediate the influence of other important variables on the distribution of paid and unpaid work, as well as to affect the latter directly. Aspects such as the interaction between the partners' respective gender values (Greenstein 1996), expectations about masculinity (Evertsson & Nermo 2004; Thébaud 2010), or early socialization into egalitarian roles (Gupta 2006) have been found relevant for understanding the division of housework in various macro- and micro-level contexts. For example, in settings where traditional conceptions of masculinity prevail, men who are economically dependent on their partners have been observed to diminish their housework effort; plausibly to make up for a departure from established gender norms (Brines 1994; Bittman et al. 2003; Thébaud 2010).[12] In turn, men in couples where both partners hold egalitarian values tend to do more housework than others (Greenstein 1996), as do partnered men having grown up with an employed mother and a present father. (Gupta 2006).[13]

Similarly, gender attitudes have been shown to impinge on men's participation in childcare. Fathers holding less traditional values and those with higher education – which is frequently associated with

[12] While, as noted above, the literature provides several examples of so-called "gender deviance neutralization" or "compensatory gender display", research has come to challenge the general validity of this argument on methodological grounds. Gupta (1999) noted that the inclusion of the small percentage of men that were most dependent on their wives altered related results. More recently, Killewald & Gough (2010) have argued that once non-linearities in the relation between female absolute earnings and their housework time are considered, findings are no longer consistent with the compensatory gender display hypothesis. Sullivan (2011) provides further quantitative and qualitative evidence indicating that, in the case of men, such behaviour is restricted to a very small proportion of individuals.

[13] It is also worth mentioning the importance of gender-related policies at the macro-level, which both affect male housework participation and mediate the influence of micro-level variables. Illustratively, men have been found to be more involved in domestic work in societies that protect women's economic position in the event of a divorce (Cooke 2007b) or whose public policies support gender equality (Hook 2006; Smith & Williams 2007; Knudsen & Wærness 2008; González et al. 2009). Moreover, a gender egalitarian societal context has been found to strengthen the equalizing effects of factors related to female economic resources, time availability and gender attitudes at the individual level (Evertsson & Nermo 2004; Fuwa 2004).

more egalitarian attitudes (Brines 1994) – show greater engagement in related activities (Aldous et al. 1998; Yeung et al. 2001; Bulanda 2004; González et al. 2010). The linkage appears even stronger when both the father and the mother have a high level of education (Tanturri & Mencarini 2009). In fact, recent work suggests that it is not education per se, but rather in interaction with homogamy, that crucially influences variation in men's childcare involvement. Homogamy shows opposed effects on childcare across education levels: when the two partners are low-educated, there is less caring activity and the latter is distributed less equitatively. In contrast, highly educated couples provide more intensive care and share tasks in a more egalitarian way (Bonke & Esping-Andersen 2011). This said, in order not to unduly reduce the effect of education to a matter of gender values, it is important to note that it may also capture different preferences or attitudes in other respects. Educated parents could be more aware of the importance of time investments in children (Bianchi et al. 2000; Tanturri & Mencarini 2009). They may also have greater educational and social expectations for theirs (Breen & Goldthorpe 1997 quoted in González et al. 2010), and thus become more engaged in their upbringing.

Indeed, some authors have recently underscored the importance of individual preferences for domestic involvement. Although the economic literature on the division of labour has also considered this variable tangentially, both specialization and bargaining approaches have placed their emphasis on relative market productivities. Empirical evidence shows, nonetheless, that the partners' preferences regarding childcare can significantly determine whether specialization takes place or efforts are made jointly within the couple (Bonke & Esping-Andersen 2011). They could also be an underestimated variable in frameworks attempting to explain time allocation to unpaid work more generally.

1.3.2 Determinants of female work attachment and earnings outcomes

The second aim of the thesis is to analyze the explanatory power of male domestic behaviour for women's labour supply and earnings. In order to obtain a clear idea of how to model these two dependent

variables, as well as of the covariates that are to receive attention, it is necessary to examine the existing literature on these phenomena.

Starting with women's employment participation, there is a considerable body of literature on the topic. Early work was largely focused on gender differentials regarding labour supply, employment characteristics and pay (see for instance Lloyd & Niemi 1979; Beller 1982; Reskin 1984; Bakker 1988), as well as cross-country variations in female employment rates. At the same time, however, some authors started to highlight the heterogeneous behaviour of women themselves. A variety of employment trajectories in terms of number, length, and timing of periods spent in and out of paid work were identified. Particular attention was paid to employment decisions around family-building events such as marriage or childbirth (Elder & Rockwell 1976; Shapiro & Mott 1979; Gordon & Kammeyer 1980; Sørensen 1983; Morgan & Hock 1984; Rexroat 1985; Smith Avioli 1985; Moen & Smith 1986; Kempeneers & Lelièvre 1991; Joshi & Hinde 1993). Later studies incorporated additional dimensions to the analysis, such as the intensity of employment dedication and occupational mobility (Berger et al. 1993; Bernardi 1999; Drobnič et al. 1999).

While these works highlighted the heterogeneity of women's – and especially mothers' – labour supply, the explanatory framework known as "preference theory" (Hakim 1996; 2000; 2002) made a particular contribution in this respect. It emphasized the theoretical weight of paying heed to such variation and the complexity of women's work trajectories throughout the life course. More crucially, it questioned the widespread depiction of women's labour market incorporation as a generalized, uniform progression towards the intense and continuous work attachment characteristic of men.

At the heart of this approach lies a distinction among three groups of women showing substantially different employment patterns: a minority of home-centred individuals who make, at some point, the decision to stay out or abandon paid employment; another minority of work-oriented women who engage in continuous, full-time careers; and a majority of so-called "adaptive women" who exhibit a less intense labour market dedication as they seek to balance work with family responsibilities. The latter type of trajectory – which allows for a wide range of choices, from alternating periods in and

out of employment to working reduced hours – is claimed to have become increasingly common in advanced societies.

Preference theory attributes the heterogeneity of women's labour supply to attitudinal orientations towards work, family, and gender roles. Advances in contraception, the equal opportunities revolution, the growth of white-collar occupations and jobs for secondary earners, and the increasing importance of personal values for lifestyle choices are claimed to have provided room for women to choose their degree of dedication to family versus work. Different employment choices would thus be explained by the heterogeneous *preferences* of women themselves (Hakim 1996; 2000).

Empirically, there is some support for this type of attitudinal explanations. It has been observed that gender values influence women's commitment to paid employment, and thus their labour supply patterns (see for example Bernardi 1999; Hakim 2002). However, despite its merit for explicitly placing the heterogeneity of women's behaviour and attitudes at the heart of female labour supply analysis, the preference-based approach is not unproblematic as a theoretical account (see Crompton & Harris 1998). It could be criticized for not conceptualizing adequately women's career orientation.[14] Moreover, a too rigid dichotomization between work- and family- oriented women does not seem too adequate for societies where most women wish to have both. This generalized preference for work *and* children would place the majority of women in post-industrial societies in the exceedingly broad category of "adaptive individuals". From this perspective, preference theory would have a hard time capturing and explaining actual heterogeneity.

Other criticism directed against this framework is that individual preferences, while relevant, can far from always be assumed to play a central role in decision-making (Crompton & Harris 1998). One of the main claims of preference theory is that lifestyle preferences

[14] It could be argued that the fact that women work part-time or make career breaks does not necessarily reflect a low degree of work commitment. There is evidence indicating that women with demanding family obligations often maintain a solid subjective commitment to paid work; even if they eventually can not uphold an intense employment dedication for practical reasons or because they prioritize their children (Moen & Smith 1986; Bianchi et al. 2000).

are taking precedence over economic, social, demographic and institutional factors (Hakim 1996; 2000). However, while women in contemporary Western societies have greater room for making preference-based choices than those in other spatial and temporal contexts, the importance of situational and structural conditions can hardly be dismissed as secondary.[15]

In fact, a substantial amount of research underscores the weight of individual-, household-, and societal-level incentives and constraints for women's employment behaviour. Much of this work stems from standard economic theory of labour supply. A central question in this literature is how individuals allocate their time between home and market production. In a way, thus, it examines the other side of the coin of the couple specialization literature already reviewed.

A very influential approach has been the "New Home Economics framework" based on Mincer's (1962; 1963) and Becker's (1965) work. It assumes individuals to be rational utility maximizers, and to derive such utility from the consumption of commodities produced using inputs of market and non-market time. All income obtained from market production is in turn assumed to be spent on market goods, and all non-market time is taken to be devoted to the production of commodities.[16] Accordingly, individuals are expected to make labour supply decisions on the basis of the combination of market and non-market time that reports them greatest utility. Two key elements in participation decisions are individuals' budget constraints – which delimit the range of combinations of market and non-market time among which they can choose – and their tastes and preferences expressed through indifference curves. Utility is

[15]Crompton & Harris (1998) offer an interesting illustration of how women's time allocation decisions are shaped by a continuous interplay of preferences and contexts. In a cross-national study based on biographical interviews, they show that women's employment orientation changes over time, influenced by the surrounding structure of incentives and constraints. To put it briefly, preferences can simply not be regarded as exogenous.

[16] This summarized overview is based on a simplified adaptation of the framework put forward, among others, by Blau et al. 1998. There are, of course, more complex versions of New Home Economic labour supply models. Nevertheless, for purposes of expository parsimony and in order to focus on individual rather than family-level decision-making, I choose to draw on this specific account.

maximized at the point where the budget constraint cuts the "best" – or highest possible – indifference curve. The slope of this curve at the point corresponding to 0 hours of market time, on its part, is the so-called *reservation wage* of the individuals in question – that is, the lowest wage at which they would be willing to work. In sum, individuals' employment participation is modelled as a function of the value they assign to time spent in and out of the labour market.

If we are to understand women's labour supply, a crucial question is thus the following: which variables influence the value of their market and non-market time, and in which direction? Regarding the value of time spent in the labour market, a core variable in economic analyses has of course been the wage rate offered. All else equal, an increase in the latter can be expected to raise the opportunity cost of time spent out of paid work. Empirically, earnings have been found to exert the hypothesized positive influence on female labour supply, although their significance seems to be decreasing (Goldin 1994; Del Boca et al. 2000).[17]
Education can also be theoretically presumed to affect female labour supply. A higher educational level is potentially associated with greater market productivity, and thus with higher earnings. Furthermore, since highly skilled jobs are usually linked to more rewarding working conditions, education may also contribute to increasing the non-monetary value of employment participation (Blau et al. 1998). In empirical studies, indeed, it is one of the variables most consistently associated with women's work attachment, while it also mediates the influence of other variables. For instance, the labour market participation of highly educated women is only negatively affected by the presence of children if these are very young. In the case of women with a low educational level, this effect is consistently negative and significant, with independence of the children's age (Del Boca et al. 2009). Still, a word of caution is needed regarding the positive relation between women's education and their labour supply. Sometimes it may actually be reflective of preference-based self-selection – strongly career-oriented women, or those who from the start plan to devote a

[17] In the same vein, at the contextual level, joint taxation systems that penalize two-earner households – and specially secondary earners, which women still tend to be – have been found to have a negative effect on female employment participation (Aaberge et al. 2005).

substantial fraction of their lives to paid employment, are likely to also make greater educational investments. Furthermore, a low level of education may also influence work attachment negatively by reducing the probability of holding a permanent contract or finding a new job in case of unemployment (Blau et al. 1998)

What is known, in turn, about the factors determining the value of women's time out of paid employment? The latter can be expected to be affected by two types of variables, besides preferences and tastes[18]: the availability of other income than that resulting from own market work, and the existence of particular demands – for example, domestic ones – placed on individuals' non-market time. Theoretically, increases in income should raise the demand for all the commodities from which individuals obtain utility, including those produced or consumed using non-market work. In previous research, nevertheless, the impact of non-market income on female labour supply has proven small. In addition, the employment participation of women seems to be becoming less sensitive to the partners' earnings, and far more dependent on their own economic prospects (see Blau et al. 1998; Del Boca et al. 2009).

When it comes to the effect of domestic demands, the presence of children is crucial, and so are the possibilities to balance work with related responsibilities. The likelihood that having children affects women's work attachment negatively increases with the number of children and decreases as the latter grow older (Del Boca & Pasqua 2005; Del Boca et al. 2009). Readily available, affordable and good quality childcare increases significantly the labour supply of mothers (Blau & Robins 1989; Blau et al. 1998; Kimmel 1998; Del Boca et al. 2009). So do flexible work arrangements, parental leave, and the availability of non-precarious part-time jobs (Blau et al. 1998; Del Boca & Pasqua 2005; Del Boca et al. 2009).

As explained, besides these situational variables, economic models of female labour supply also consider the role of individual preferences, which shape the indifference curves of each woman regarding employment participation. Empirical research supports the expectation that these should be important. For instance, more

[18] These will in turn often reflect internalized gender norms, and thus come to be enacted in more or less traditional behaviour.

or less traditional attitudes appear a significant determinant of women's employment tracks (Bernardi 1999; Hakim 2002).

Beyond showing heterogeneous labour supply patterns, women also exhibit diverging earnings trajectories. In this respect, there are significant differences between women who at some points choose to become mothers and those who do not. Of course, this phenomenon – usually known as "the motherhood penalty" or "family gap" – is likely to be related to differences in labour supply between mothers and non-mothers. Indeed, this is the explanation traditionally proposed by human capital theory. According to this framework, the motherhood penalty would stem from childbearing-related employment interruptions, which would lead to skills atrophy and human capital depreciation. In addition, the mere anticipation of such breaks could lead women to select jobs with less development potential and flatter experience-wage profiles. Last but not least, motherhood-related employment interruptions might be interpreted by employers as signs of weak career commitment. All these mechanisms could translate into comparatively worsened earnings prospects (see Mincer & Polachek 1974; Mincer & Ofek 1982; Albrecht et al. 1999).

While there is empirical evidence supporting the contentions of human capital theory, a considerable share of the motherhood penalty remains unexplained (Blau et al. 1998; Budig et al. 2001; Anderson et al. 2002). This is the case even after controlling for unobserved heterogeneity (Avellar & Smock 2003). Some authors have therefore proposed additional explanatory mechanisms such as discrimination (Correll et al. 2007), the exchange of pay for family-friendly work conditions (Becker 1985, Maani & Cruickshank 2010), or productivity losses related to the "double burden" faced by working women (Becker 1985; Budig & England 2001). In recent years, increasing attention has been directed towards the potential importance of domestic demands. A consistently negative relation has been found between women's domestic dedication and their earnings. It seems particularly strong for routine tasks traditionally carried out by women, those performed at the margins of the working day, and childcare related ones (see f.i. Noonan 2001; Stratton 2001; Shirley & Wallace 2004; Bryan & Sevilla-Sanz 2008). This association seems to stand tests of endogeneity bias, and it is not only driven by unobserved characteristics (Maani

& Cruickshank 2010). Some empirical studies, moreover, have already related women's housework time to the motherhood penalty more specifically (Phipps et al. 2001; Kühhirt & Ludwig 2012).

1.4 Structure of the thesis: motivation and focus of the three empirical papers

Following this introductory chapter, the thesis will be structured in three empirical papers – each with its own theoretical and methodological sections. These will lead to a final chapter of conclusions and suggestions for further research. The three papers are interrelated in several ways. The first one treats men's domestic involvement as dependent variable. Its responsiveness to changes in different situational variables is assessed, with a particular focus on the significance of the female partners' employment dedication and economic position. The second and the third one reverse this relationship and examine the influence of men's household behaviour on the female partners' work attachment and earnings. These two papers, in turn, complement each other as they explore different effects of male domestic inputs on female labour supply. As will be shown below, the three studies seek to address particular gaps in the literature on couple specialization and women's employment participation previously reviewed.

1.4.1 The first empirical paper: What elicits change in men's participation in housework and childcare?

Couple specialization research provides valuable foundations for understanding men's participation in unpaid work, as well as for modelling how it can be linked to their female partners' economic position. Specialization and bargaining approaches, on the one hand, and the time availability perspective, on the other hand, provide theoretical and empirical support for this connection. However, the existing literature on the intra-household division of labour, and of men's domestic involvement more specifically, suffers from a major shortcoming: it has paid surprisingly little attention to how individuals' domestic participation increases or decreases throughout their life course. As already noted, it is

theoretically and methodologically biased towards a static approach – it assumes men's behaviour to be largely stable over time, and it is fundamentally based on cross-sectional data.

Admittedly, regarding male unpaid work, this perspective may have some empirical justification. It has been observed that the elasticity of men's housework effort to several variables – such as time at work, own income and the presence of children – is relatively limited (Akerlof & Kranton 2005); not least in comparison to that of women's (South & Spitze 1994; Gershuny et al. 2005; Cooke 2007a; van Soest & Stancanelli 2010; Kühhirt 2011). Even the few analyses having adopted a longitudinal approach suggest a fair degree of stability in men's domestic effort over time. Kühhirt (2011) and Schober (2011) find traditional, rather stable patterns of male participation in connection to the transition to parenthood. Grunow et al. (2007; 2012) note that, when a certain division of labour becomes established within the couple, it tends indeed to remain relatively stable. However, before such equilibrium is attained, change does take place – in their data, in the form of a movement towards diminished housework participation with respect to the earliest stages of the union. Moreover, an overall picture of domestic inertia throughout men's life course does not make it less interesting to examine whether, when and how such trends can be broken.

At any rate, such average trends towards stability may have conveyed an impression of rigidity of male domestic participation, encouraging the assumption that men will only alter their behaviour after very drastic modifications of their personal circumstances. The latter could, in turn, have bolstered a methodological focus on cross-sectional comparisons across space and time, to the detriment of insights on the micro-dynamics of intra-couple change. As noted, this is precisely one of the core issues this thesis seeks to address, by looking at how men respond to – inter alia – variations in the economic resources and time availability of their female partners. It should be borne in mind that both these aspects are tightly related to the latter's position and engagement in the labour market.

Accordingly, the first paper of the thesis (chapter two) analyzes which economic and time availability-related variables elicit increases and decreases in men's housework and childcare

participation. To this end, use is made of longitudinal panel data allowing yearly observation of couples. Furthermore, the possibility of behavioural responses not only to major situational changes, but also to smaller adjustments in the individuals' and their partners' circumstances is considered. This is important, since the picture of general stability yielded by earlier research may partly stem from not paying heed to the latter. It could also be a consequence of an exceedingly large focus on relative measures of domestic involvement – which are likely to be more driven by the evolution of women's inputs that by that of men's. By directing attention to what causes change in men's *absolute* levels of housework and childcare, the paper also makes a contribution in this respect. Finally, it examines whether there are significant variations in domestic adaptation between men that can be assumed to have different unobserved preferences – stemming, for instance, from more or less egalitarian values – or be subject to diverging homogamy-related couple dynamics.

1.4.2 The second and third empirical papers: Does male domestic involvement influence women's work attachment and earnings after family-building?

From the literature on female labour supply and earnings outcomes – especially in connection to family-building – two facts stand out. First, the extent to which domestic demands have to be reconciled with paid employment has proven of crucial importance. Second, while this relation has been acknowledged, focus has been on women's own behaviour – namely on whether they have to assume childcare responsibilities or devote more or less time to housework. As already explained, virtually no consideration has been given to the potential relevance of the partners' own contribution to domestic work.

This lack of attention to men's housework and childcare participation is puzzling. Theoretically, many contributions – based on Becker's (1981) neoclassical theory of the family as well as on later bargaining, time-availability, and gender-centred approaches – have modelled women's employment as tightly connected to their own and their partners' participation in unpaid work. For some

reason, nonetheless, time allocation to unpaid work – and specially men's – has predominantly been dealt with as dependent variable. Empirically, there is already much research indicating that variables that reduce the domestic burden of working women are highly relevant for their employment and wage trajectories. As noted, female labour supply is encouraged by affordable, good-quality childcare and flexible work arrangements making it easier to combine family responsibilities with paid work (Blau et al. 1998). Similarly, public policies in this direction have been noted to reduce the motherhood penalty (Hardoy & Schøne 2008; Budig et al. 2010). There are good reasons to believe that the partners' domestic involvement could have a similarly positive effect, especially throughout the family-building years. After all, it would also diminish the domestic demands that women must reconcile with paid employment, and make it easier for them to balance both spheres of life.

The second empirical paper of the thesis – that is, chapter three – examines the potential influence of male domestic behaviour on the continuity and intensity of women's work attachment. It assesses whether men's housework and childcare time affects their female partners' propensity to exit paid employment or abandon full-time work, respectively, after two central family-building events – namely marriage and childbirth. To this effect, event history analysis techniques are applied to longitudinal spell data. Attention is also paid to the possibility of concurrent decisions about paid and unpaid work through simultaneous equations models.

Finally, chapter four – the third empirical paper – focuses on the importance of men's domestic involvement for women's earnings development in connection with motherhood specifically. However, since earnings outcomes are tightly connected to the continuity and the intensity of labour supply, it also furthers the insights obtained in the previous one regarding the significance of male behaviour for female work attachment. It examines, first, whether male domestic effort affects mothers' income by altering their proclivity to make employment breaks or working time reductions over a longer period following childbirth. Second, it looks at the year-to-tear wage impact of variations in men's housework and childcare time. This latter stage of analysis aims to capture a possibly more direct,

shorter-term effect on the female partners' earnings, as well as to relate it to the intensity of the women's employment participation.

1.5 Data and methods

The research problem analyzed in this thesis has a dynamic nature. In order to understand how men's unpaid work and their female partners' employment and earnings are interrelated, it is necessary to explore relations between variables over time, for several reasons. First and foremost, it is the only way to draw conclusions that go beyond mere correlation – playing with temporal order makes it substantially easier to assess the direction of effects. Second, doing so will also help to address potential problems of reverse causation, simultaneity of relations, endogeneity, and selection bias. These thorny methodological issues, as well as the data and techniques used to deal with the latter and achieve the objectives of the thesis, will be presented in what follows.

1.5.1 The German Socio-economic Panel and main variables of interest

The thesis draws on the German Socio-economic Panel (SOEP 1984-2009), a longitudinal survey data set making it possible to follow individuals, their partners, children and households from year to year. Its target population are residents of both West and East Germany (the latter were first included in the panel 1990). The 25 waves this study is based upon yield an initial sample of 66,189 individuals.

This particular data set was chosen for two fundamental reasons. To begin with, it provides rich information over long periods of time on most of the behavioural, socioeconomic and demographic variables of interest for this thesis. It offers namely yearly data on – inter alia – time use[19], labour supply, earnings, and other relevant micro-level

[19]Housework and childcare measures in the SOEP are based on the weekly hours reported by the individual at the time of being interviewed. They may thus be subject to errors of recollection and even to over-reporting (Lee & Waite 2005;

variables. In addition, it also contains the sampled individuals' retrospective employment, marital, childbearing and family histories in the form of spell data. Accordingly, it facilitates the use of different methodological techniques, from panel data models to longitudinal event history analysis.

The thesis revolves around *change* in three key variables: domestic involvement, labour supply, and earnings outcomes. A word is in place regarding their operationalization and the related information that can be obtained from the data set. Starting with male domestic involvement – which is treated as both dependent and independent variable –, it is measured as the number of hours spent by individuals in housework and childcare on a typical weekday[20]. The concept of housework is restricted in the analysis to routine household tasks (e.g. cooking, washing the dishes, doing the laundry, cleaning) and does not include running errands, yardwork, or doing repairs, despite the fact that such information is available in the data set. Underlying this decision is the fact that core housework activities traditionally performed by women are the ones of greatest relevance for the purposes of this thesis. They are, after all, those in which male participation has traditionally been scarcest. Accordingly, they should be in the spotlight if we seek to understand what propels change in men's domestic involvement. Likewise, men's dedication to such activities – as well as childcare – seems most important in terms of reducing the domestic burden of

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Kan 2008). Using a regular time use survey based on time diaries would have been a better alternative in this sense, and it could also have provided more fine-tuned measures of time allocation (e.g. of routine vs non-routine childcare). To the best of my knowledge, however, there are no time use surveys simultaneously providing longitudinal information on all the socioeconomic variables of interest for this thesis. At any rate, potential over-reporting seems to be most problematic when it comes to describing absolute time use trends. In multivariate regression analysis, in contrast, it does not seem to alter either the sign or the statistical significance of coefficients to any relevant degree (Kan & Pudney 2008 quoted in Kühhirt 2011).

[20] It should be noted that the SOEP also contains information on housework and childcare dedication on weekends. However, these data are not consistently available for all waves, wherefore I have chosen to stick to measures of domestic effort on weekdays. In any event, what happens during working days is what should matter the most in terms of the intersection between paid and unpaid labour that lies at the heart of the thesis. Separate housework and childcare measures are only available from year 1985 onwards.

women, and thus of enhancing their labour supply and earnings prospects. Depending on whether focus is on the intensity of domestic inputs or on their change over time, measures of both their levels and increments are used in the different chapters.

Women's labour supply is measured in several ways. In chapter two, where this variable is presented as one possible factor affecting male domestic involvement, it is measured both as average working hours in a typical week and as year-to-year shifts between different employment situations (full-time work, part-time work, and unemployment/other non-employment). Chapter three, which instead treats female work attachment as dependent variable, profits on the rich spell data provided by the SOEP, and operationalizes change in labour supply as the rate of transition between particular occupational states: employment and non-employment, on the one hand, and full-time employment and other states (part-time work, non-participation), on the other hand. The first set of transitions intends to capture individuals' propensity to make changes in the continuity of labour supply after marriage and childbirth, while the second one is aimed at variations in the intensity of employment participation.

In chapter four, women's labour supply is modelled as an intermediate variable between men's domestic involvement and their female partners' earnings. Again, several operational indicators are used: the frequency of transitions to a variety of labour market states (full-time work, part-time work, maternity leave, non-employment, and unemployment), the cumulated time spent in each, and the women's average weekly working hours measured from year to year.

The concept of female earnings outcomes, in turn, is restricted to refer specifically to the net labour income from paid work[21] obtained by individuals over time. In chapter two, where its relevance as independent variable is assessed, it is considered in absolute terms but also as a fraction of the total couple income, given the theoretical importance of women's relative resources for

[21] It is measured in Euro in the data set. Throughout the thesis, log income is used so that a relative increase of the same size in income will always translate into the same increase of the variable.

men's domestic involvement. Chapter four, which instead focuses on its role as dependent variable, examines the effect of different variables – male domestic involvement being the central one – on two particular earnings development indicators. The first one is based on increments in labour income over the period following childbirth through which individuals can be observed[22]. The second one consists of the wages obtained in the market the year following measurement of the potentially relevant independent variables.

1.5.2 Techniques of analysis and methodological pitfalls: endogeneity, simultaneity and selection issues

All the empirical chapters start with a descriptive overview of the main variables and relations of interest. Since these are straightforward and presented in detail in the methodological part of each chapter, this section will focus on the multivariate techniques of analysis intended to grasp, or at least approximate, causal relationships. As will be shown, each of the research questions under study raises a recurrent methodological concern: namely the possibility of *endogeneity*. Formally, this term denotes the econometric problem that occurs when an independent variable is correlated with the error term in a regression model, which manifests itself in an incorrect inference of the coefficients of the explanatory variables. A frequent source of endogeneity is a bi-directional causal relation in which changes in the dependent variable feed back into the independent variable(s). This complicates the estimation of the regression coefficients, as it is difficult to isolate the effect of a change in an independent variable keeping all other factors constant.

Besides measurement error and *simultaneity*[23] *or reverse causality,* endogeneity has another possible cause: namely *omitted variables*

[22] For each observation, the increment figure has consequently been divided by the number of years through which the individual in question is followed.

[23] Of course, simultaneity does not always entail endogeneity. Two or more independent variables may move together across the sample and make it difficult to determine the coefficient associated to each – we may then speak of co-linear effects. Simultaneity-driven endogeneity, in contrast, entails that the independent

(Wooldridge 2002). The tight connection between paid and unpaid work decisions, as well as the fact that both are partly driven by unobserved mechanisms, make precisely the latter two issues a continual challenge throughout the analysis. In what follows, the specific nature of related concerns in the empirical chapters will be illustrated, as well as the procedures used to deal with them.

Chapter two focuses on the triggers of change over time in male housework and childcare participation. Accordingly, recourse is made to techniques of dynamic analysis of panel data, profiting from the possibility to observe modifications of individuals' behaviour and surrounding circumstances from year to year. Since the object of analysis is *within-subject* variance in the relations between the variables of interest, fixed effects models (FE) are performed (as opposed to random effects models, which would also take into account the variability occurring across subjects). This technique has an additional advantage: it makes it possible to control for unobserved heterogeneity, which is a potential source of omitted variable bias. In the particular case of this paper, the latter is an important benefit, given that unobserved characteristics – i.e. individual attitudinal orientations – may influence the dependent variable. To give a more concrete example, some men might be more prone to experience increases in their domestic participation at given points in time on account of attitudinal factors we do not observe, as could be a more egalitarian predisposition. Not less importantly, the very same factors may simultaneously influence the independent variables – they could, for instance, make these men more likely to simultaneously reduce their work commitment, or to have selected a partner with a greater probability to experience upwards shifts in economic resources. It could be tempting, and theoretically sustainable, to suspect a direct causal link between the two latter variables and changes in such men's domestic involvement – however, it would be a spurious one if the noted attitudinal selection mechanisms were at play, and estimates would be biased. The FE model, by construction, partials out from the estimation the effect of time-constant variables – as certain attitudinal orientations can be assumed to be – thus eliminating this type of selection problem.

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and dependent variable's values are contingent on each other, as they are determined virtually in parallel feeding back into one another.

Nevertheless, while the FE model controls for unobserved heterogeneity capable of affecting the outcome of interest (and even the values of the explanatory covariates), there is one related aspect it does not tackle. The potentially mediating influence of unobserved characteristics on the effect of other predictors on the dependent variable is not controlled for. In order to deal with this shortcoming, the same models are run for subsamples of men that could be expected to show different degrees of "domestic responsiveness" to the same situational changes.[24] Since more or less egalitarian gender relations could be central, subgroups have been chosen on this basis: regression models are performed on men in high versus low educational homogamy couples, in cohabitation versus marital unions, and in households from East and West Germany.[25]

Last but not least, there is one additional issue to address – namely that of reverse causality. In their simplest formulation – incorporating level-based values of the variables of interest – FE models estimate how much the dependent variable deviates from its individual average value when covariates increase or decrease their levels (also with respect to an individual average). However, statistically significant coefficients do not necessarily indicate that a change in the dependent variable results from the covariates' departure from their average levels. Change in the outcome variable may actually have occurred far earlier in time, and there is no telling about this from the models' results – these are, per se, merely indicative of the strength and type of association. The procedure chosen to circumvent this problem has been to run models based on year-to-year variations in both male domestic effort and the explanatory variables. This entails that all types of changes that can be related to each other are located within the same time span (the

[24]This approach is, in practice, equivalent to introducing interactions in the models, but has the advantage of not adding a large number of additional covariates to the analysis.

[25] The two types of homogamy are associated with opposite degrees of traditionalism in terms of gender attitudes and roles. Individuals in cohabiting unions tend to show less traditional values than those who get married. In turn, East Germany's history of social and institutional support to female employment participation during the communist era could have resulted in a more generalized normative support for an egalitarian division of labour.

year in question). Of course, this does not automatically exclude the possibility of endogeneity. On the contrary, simultaneity of changes in time allocation to household tasks and economic or employment-related variables is likely to bring along such problems – intra-couple decisions about paid and unpaid work may, under such circumstances, be notably hard to separate from each other. Still, it seems easier to reason theoretically about the most plausible direction of causality if the situational and behavioural changes that are to be related do not lie too distant from each other in time. After all, if changes in the two types of variables could occur within a very wide time span, the possible linkages between them could be much more varied and far more difficult to conjecture about.[26]

Chapter three examines whether men's domestic behaviour can affect their partners' proclivity to leave paid employment or shift to part-time work after marriage and childbirth. Again, we are faced with endogeneity problems derived from omitted variable bias. These have to do with unobserved heterogeneous preferences regarding future work and family dedication, which may in turn result in partner selection. Career-oriented women are likely to choose partners who can support them in their professional ambitions after family-building. Conversely, traditional, very family-oriented ones will more probably select men who readily assume the role of breadwinners and allow them to reduce their own employment participation. As this chapter assesses effects on women's propensity to make employment shifts building on retrospective spell data, event history models seem the most suitable analytical approach. In comparison to the aforementioned FE

[26] An illustrative example of such reasoning can be the following: it seems sensible to assume that a certain decrease in men's housework is not likely to result in a woman automatically leaving employment or reducing her working time; which would be the reverse causality scenario if both changes are measured within the same, relatively limited period of time (a year). Under such circumstances, it appears more plausible that the more drastic change of an employment shift – probably needing greater anticipation and solid motives to be implemented – has instead resulted in a variation in the partners' domestic effort. After all, the latter can be put into practice more immediately. If the possible time span separating both changes was far larger, in contrast, the direction of causality would not seem so straightforward. Many other options could be equally plausible – for instance, a situation of decreased male domestic effort, if sustained consistently over a longer period of time, could indeed come to result in the partner leaving employment or reducing work hours at some point.

regressions, however, they have the drawback of not providing simple ways to deal with unobserved heterogeneity and resulting selection-derived issues. The strategy chosen to handle this problem has been the inclusion of control variables that proxy as closely as possible heterogeneity in terms of work and family orientation.[27]

Additionally, the event history models have been built in a dynamic way by means of episode-splitting, a technique which divides employment spells into yearly subepisodes[28]. This allows for a temporal analysis with covariates that may change values from year to year. Being able to measure change in both the dependent and independent variables opens up the possibility of capturing relations between them that are probably not just due to selection. Illustratively, selection of a more or less collaborative partner (in accordance with a more or less career-oriented woman's preferences) should entail that each partner has a given propensity to participate in housework and childcare during the woman's employment spell. In a way, this type of selection could be conceptualized as some sort of "anticipated equilibrium" between her dedication to paid work and his dedication to unpaid work – especially as both decisions are often taken simultaneously around the time of union entry or childbirth. Were we to assume that women, on account of diverging preferences about future employment trajectories, generally select themselves into more or less egalitarian partnerships, we could expect this relation to be fairly static and time-independent. Differently put, mean levels of the independent variable (male domestic involvement) would relate in the same way to those of the dependent one (female employment transition rates) all along the women's duration in employment/full-time work. Consequently, observing co-variability of both the dependent and independent variables across time would suggest that the relation between them goes beyond selection mechanisms. Ultimately, one could argue that if partner selection takes place based on anticipation of a preferred employment trajectory, it must be precisely because the partners' behaviour has the potential to

[27] Namely the cumulated years of education and work experience (corrected by age) at marriage and childbirth, as well as their age by the time of these life course events.

[28] To put it more plainly, this procedure amounts to a longitudinalization of the spells data. It makes it possible to analyze whether changes in the covariates at given points in time alter the probability of employment transitions.

exert a direct influence on women's possibilities to pursue her option of choice.

Reverse causality and interdependence, nonetheless, remain an issue. The noted simultaneity in the partners' decisions about paid and unpaid work renders it difficult to make inferences on the direction of effects. This is valid even in the event of finding relations between the independent and dependent variables that are not driven by selection. Decisions on shifts in both male domestic effort and in female labour supply could be made in parallel at some point during a given employment episode, yet give the impression that the former kind of change precedes the latter simply because it materializes more quickly. The EHA techniques used in this chapter seek to minimize this problem by explicitly modelling time-sequencing. On performing the episode-splitting, consideration has been given to the dates of interview corresponding to each individual, in order to make sure that the information contained in the independent variables is always previous to the employment transitions of interest. Furthermore, the models not only consider the values of the covariates immediately prior to the transition closing the episode – they also paid heed to the history of each process up to that point in time. Differently put, the episode-splitting technique permits estimation of how a given process (in this case, men's domestic participation over time) affects the rate of change in a parallel one – namely women's labour supply (for greater details on this method, see Blossfeld et al. 2007). Simultaneous equations models (SEM) could have seemed a logical complement to this procedure. Nevertheless, they would have required an arduous, complex process of longitudinalization and subsequent pooling of the original spells data this chapter draws upon, as well as running at least one additional model for each employment transition of interest. Given the magnitude of such tasks, they seem beyond the scope of a single chapter.

Chapter four analyzes the relation between men's domestic participation and their partners' earnings outcomes after childbirth. First of all, it tests whether the former exerts an indirect influence on the latter by affecting the women's cumulated labour supply throughout a period of time (almost 9 years on average) following birth. To this end, OLS models are run to estimate the linkage between fathers' domestic inputs during the first three years of life

of the child and subsequent work attachment by the mothers; following individuals for as long as possible after their earliest observable birth[29]. Additionally, it is examined whether increments in mothers' earnings over the observation window are related to the very same labour supply indicators. This assessment is complemented by a shorter-term approach that explores whether fathers' domestic involvement also affects mothers' earnings more directly. In this case, the potential importance of mothers' working hours as intervening variable is analyzed. So is the interaction of male domestic effort with children-related variables that could result in a wage penalty for mothers. At this stage, individuals are followed from year to year using fixed effects models, given that focus is, again, on within-subject change.

Once more, the issues of endogeneity and selection bias call for attention. Basically, the concerns in this chapter are similar to those already present in the preceding one: women might select themselves early in life into certain employment trajectories – leading to particular earnings prospects – and, on entering a union, into partnerships expected to be supportive of their plans. Regardless of whether this is the case, moreover, decisions on paid and unpaid work are likely to be made simultaneously during the observation period. The approaches chosen to tackle these aspects have already been described. The first stage of the analysis incorporates control variables intended to act as proxies of unobserved characteristics in terms of career orientation[30]. Futhermore, they also include a measure of the fathers' housework involvement prior to childbirth with a view to capturing partner selection. The fixed effects models directly address the problem of underlying selection bias in the last part of the analysis; given that they by construction control for unobserved heterogeneity. The simultaneity issue is, as in chapter three, managed by paying attention to temporal order. In the longer-term stage of the analysis, the dependent work attachment variables are lagged three years

[29]Several measures are used to tap this concept – namely the number of employment breaks as well as the cumulated time in non-employment, maternity leave, and part-time work.

[30] In this case, those included are experience in full-time work corrected by age, the women's age at first birth, and whether they have higher education

forward with respect to the independent one. In the fixed effects models, earnings outcomes are lagged one year forward.

1.5.3 Germany as a critical case

The analysis is exclusively based on data from the German Socioeconomic Panel. Underlying this choice is its particular suitability for the purposes of this thesis, given that it not only offers longitudinal data on its key variables covering long periods of time, but also particularly rich information on employment histories.

Focusing solely on German data, however, raises questions about the generalization potential of results and compels consideration of the importance of the institutional and social context. The German welfare state is usually ascribed to the category of corporatist or conservative ones; characterised by institutions and policies that favour the preservation of the traditional family (Esping-Andersen, 1990). Childcare provision has traditionally not been well developed, and tax and family policies support a traditional division of labour (Drobnič et al. 1999). In addition, women who work when they have young children find little social approval (Alwin, Braun & Scott 1992), and there is a significant normative pressure for men to assume the role of primary breadwinners (Blossfeld et al. 1996). As a result, the latter are likely to uphold traditional behaviours in the household sphere, while women's work attachment is very strongly influenced by their position in the life cycle. It is common for German women to be employed full-time until they get married or have their first child, to take a several years long break from paid work, and then return to the labour market through part-time employment when all parental leave has been used up or when the youngest child has reached school age (Drobnič et al. 1999).

The strong normative and institutional pressure for a traditional intra-household division of labour could make it particularly difficult for the relations under study to show up. Men could be inclined to adhere to a relatively passive role in the household sphere, regardless of the partners' employment behaviour and economic status. Conversely, women are likely to reduce their work

attachment after marriage, and especially so after childbirth, regardless of how male partners behave. However, this might not necessarily be a drawback but rather play to the advantage of this study by conferring Germany the character of a critical case. If it turns out that the relationships of interest show up in this data, despite the strong forces pushing men and women to pursue traditional time-allocation paths, they will probably be more evident in other settings. An exception could perhaps be societies where the state actively supports egalitarian behaviours in the household and in the labour market, such as the Scandinavian countries. In such contexts, how the partner behaves and his economic position may be less decisive in relative terms.

There is another upside to working with SOEP data. By offering information on both West German and East German respondents, it provides a contextual variability that it is very interesting to explore. East Germany – given its social and institutional backing to women's participation in paid employment during the communist period – might still be characterised by a lesser degree of normative support for a traditional division of labour. Since previous studies based exclusively on West German data (Grunow et al. 2007; 2012; Kühhirt 2011) suggest that families and their functioning remain very traditional, it seems important to analyze whether there are any substantial differences between the two regions regarding the interdependence of men's household behaviour and women's position in the labour market.

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2. FINE-TUNING OR SHOCK RESPONSE? UNDERSTANDING MEN'S DOMESTIC PARTICIPATION FROM A DYNAMIC PERSPECTIVE

ABSTRACT

This paper examines how men adapt their housework and childcare participation to modifications of different magnitude in their own and their partners' circumstances. Its aim is to understand which kind of situational changes elicit increases and decreases in male domestic effort. Particular attention is paid to the potential weight of shifts in the female partners' employment dedication and economic position. The analysis is based on fixed effects panel regressions performed on yearly longitudinal data from the German Socio-economic Panel (1984-2009). The results reveal that men's domestic behaviour responds to both smaller and major variations in time availability and economic resources. Shifts in the female partners' relative contribution to household income emerge as a particularly relevant factor. Men who could be expected to hold more egalitarian attitudes, as well as those living in low education homogamous unions characterized by traditional dynamics, show a more limited responsiveness to situational changes.

2.1 Introduction

The complex nature of couple specialization calls for approaches that follow causal processes over time. The aim of this paper is to fill a gap in the literature regarding the within-couple dynamics of male domestic inputs. It will seek to determine not just what factors bring about changes in men's absolute levels of housework and childcare, but also the kind of adjustments that different variables produce, and how outcomes vary for different types of men.

There already exists a large body of research on the gender division of labour and, by extension, on male participation in housework and childcare. Nevertheless, most of this work has addressed couple specialization from an exceedingly static perspective. Theoretically, many studies seem to build on an implicit assumption that the intra-household distribution of labour – and even more so men's own domestic contribution – is mostly preference-based, established in connection to union formation, and hardly subject to any relevant variation over time. At most, the possibility of change is contemplated as a potential consequence of major life course events such as the transition to parenthood. Whether this is the predominant type of individual behaviour, or adjustment to surrounding circumstances continuously takes place, however, remains an empirical question. Moreover, while this notion of domestic inertia might have been valid for settings where the traditional male breadwinner model was predominant, it is doubtful that it can be taken for granted any longer. An erosion of traditional specialization patterns is, to a larger or smaller extent, underway in most post-industrial societies. One of its manifestations could be a greater propensity by men to adapt their domestic participation to both smaller and greater situational changes, as well as to the behaviour, characteristics and demands of their partners.

Methodologically, probably as a consequence of the above-mentioned assumption about the nature of male domestic involvement, previous research has largely built on cross-sectional data. This has resulted in a predominance of snapshot-based comparisons of couple specialization and its determinants across time and space. To the limited extent to which longitudinal data has been used, it has mainly been done to assess aggregate variation in the gender division of labour over time, or to examine changes in average specialization levels within couples. Nonetheless, recent research (Cooke 2007a) has identified that variation in male domestic participation not only has a significant across-couple component, but also an evident within-couple one. The latter entails that substantial modifications of men's individual domestic effort do occur over time. There is thus a clear need for work that focuses on subject-level dynamics of change. This paper intends to make such a contribution.

Admittedly, the picture described above has recently started to change. Increasing attention has been drawn towards the importance, in terms of altering the distribution of domestic work, of marital transitions and childbirth (see Sánchez & Thomson 1997; Gupta 1999; Gjerdingen & Center 2004; Grunow et al. 2007; 2012; Baxter et al. 2008; Kühhirt 2011; Miller 2011; Moreau & El Lahga 2011; Schober 2011). Some authors have also started to look at the influence of shifts in relative economic resources (Evertsson & Nermo 2007) and of changes in employment status (Gershuny et al 2005). Nevertheless, most of this later life course-oriented research draws on very small samples, two-wave panel data, or relatively short observation windows. Studies following couples over larger periods of time (Grunow et al 2007; 2012; Kühhirt 2011) are a rare exception. More crucially, there is still little understanding of the extent to which individuals adapt their unpaid work to adjustments in their economic and labour market conditions. As noted, focus has been on the importance of key family events – notably the transition to parenthood –, while the significance of modifications in other situational variables has received much less consideration. The few contributions having looked into the latter have used qualitative covariates that only capture major variations in either relative resources (Evertsson 2007) or employment patterns (Gershuny et al. 2005). Competing explanations have not really been tested against each other to assess their respective significance and disentangle different effects.

Furthermore, those previous efforts having come closest to examining longer-term time allocation dynamics while paying simultaneous attention to different theories (i.e. Grunow et al. 2007; 2012) suffer from a shortcoming. They have namely used relative shares of housework participation as dependent variable. While such proportional measures are undeniably adequate for gaining insights on the gender division of labour, they are also likely to be reflective, perhaps to an exceedingly large degree, of female domestic behaviour. Equalization regarding housework has been found to be comparatively more driven by a reduction in women's participation than by an increase in male inputs (Goldscheider & Waite 1991; Shelton & John 1996; Bianchi et al. 2000). This means that analyses based on relative involvement, which conflate men's time allocation to unpaid work with their female partners', offer little actual insight on what induces (or fails to induce) minor

adjustments or major shifts in male domestic effort itself. Last but not least, there is a need to incorporate developments in childcare to the picture, especially considering that this is the domestic-related area where men's contribution has risen most evidently (Esping-Andersen 2009).

This paper will address the aforementioned issues by examining several aspects of the micro-dynamics of change in male unpaid labour. First, it will examine what propels increases and decreases in men's housework and childcare participation. Second, it will pay special attention to whether male domestic work only responds to major situational changes, or also to smaller adjustments in their own and their partners' economic resources and time availability. Third, it will assess whether there are differences regarding domestic adaptation between men that can be reasonably assumed to have different unobserved preferences or be subject to diverging homogamy-related couple dynamics. More indirectly, thus, the findings obtained will help to shed further light on another important issue – namely the actual importance of (male) partner selection for couple specialization.

2.2 Theoretical framework, earlier research and empirical focus

Over the past decades, many research efforts have been carried out to identify the micro- and macro-level determinants of couple specialization. Nonetheless, there remains much ground to be explored if we are to understand how individuals' dedication to unpaid work evolves over time. This section will briefly review the main theoretical approaches used to analyze the gender division of labour. In addition, it will summarize the empirical findings obtained to date regarding men's domestic involvement specifically. Finally, the precise focus and research questions at the heart of this paper will be spelled out.

2.2.1 Perspectives on time allocation to unpaid work within the couple

The intra-household division of labour has attracted much attention from both economic and sociological perspectives. Starting with the former, the literature was long influenced by Becker's (1981) theory of the family, which treats partners' as rational individuals striving after joint utility maximization. Specialization and exchange models based on this framework attributed the partners' time allocation to different activities to a logic of comparative advantages. Men were expected to specialize in market work – as they generally made greater educational and training investments – while women would specialize in home production. Briefly put, the original predictions of this approach were consistent with the male breadwinner model (Esping-Andersen 2009).

As women entered higher education in growing numbers and gained a stronger foothold on the labour market, however, traditional specialization was no longer given (Blossfeld & Drobniç 2001). Simultaneously, specialization and exchange models were increasingly criticized for – inter alia – disregarding the possibilities of separate utility functions, conflicting preferences, and changes in comparative advantages (Blau et al. 1998; Esping-Andersen 2009). Accordingly, alternative approaches placing negotiation between the partners at the heart of the analysis came to gain salience.

Transaction and bargaining models (for an overview of their theoretical grounds, see for instance Lundberg & Pollak 1996) assume partners to have individual utility functions based on their distinct preferences. When the latter collide, the final outcome is determined through a bargaining process with a given threat point (usually interpreted as union dissolution or a non-cooperative equilibrium within the union, see Lundberg & Pollak 2001). Since individuals with greater bargaining power will be able to invoke more credible threats, the partners' relative resources – which can be financial, occupational, social, and of other kinds – are of fundamental importance in this approach. When applied to the intra-household division of labour, this perspective assumes that

domestic work is considered unappealing by both partners. Consequently, those commanding greater relative resources – who are most frequently men – will bargain themselves into doing less related tasks than their counterparts (Shelton & John 1996).

Other explanatory frameworks have instead underscored the weight of time constraints and gender attitudes for the division of labour within the couple. The time availability perspective (Hiller 1984; Coverman 1985; England & Farkas 1986; for a review, see also Shelton & John 1996) links individuals' dedication to unpaid work to the related demands they face and the time they have at their disposal. Crucial variables in this sense are, for instance, the presence of children – as well as their age and number – and the intensity of dedication to paid work. The "doing gender" approach, in turn, has placed social norms and gender values in focus. Its basic claim is that normative conceptions of gender typically come to be expressed and reproduced through the distribution of work between partners (see for example Berk 1985; West & Zimmerman 1987; Brines 1994; South & Spitze 1994). The persistence of traditional gender norms in modern societies would thus explain why women still devote comparatively more time to domestic work than men, while the latter are generally keen to assume the role of breadwinners. Nevertheless, this theoretical perspective leaves open the possibility of change through both the transformation of social norms and the adoption of new interactional behaviours that further undermine traditional ideologies (Deutsch et al. 2007; Risman 2009).

The couple specialization literature constitutes a fundamental theoretical ground for any effort aimed at understanding individuals' time allocation to unpaid work. As already noted, however, this paper will not lay focus on the partners' domestic involvement in relation to each other, but rather on absolute levels of male housework and childcare. It is thus essential to examine what previous research has found on this matter specifically. As noted, the evolution of relative measures of domestic effort is likely to be more reflective of changes in women's behaviour than of those concerning men's. This makes it particularly important to bring male domestic inputs to the heart of the analysis. The central question is: when and why do men embrace, alternatively shun, domestic work?

2.2.2 Men's housework time: the weight of the partners' resources

Regarding male housework specifically, most of the predictors highlighted by the different approaches to couple specialization have received some degree of empirical support. First and foremost, a positive relation has been found between men's housework time and the female partners' financial and occupational resources (Deutsch et al. 1993; Presser 1994; Evertsson & Nermo, 2007; Bloemen & Stancanelli 2009; González et al. 2009), as both specialization and bargaining frameworks would envisage. This said, some authors have observed that when women's relative earnings exceed a given upper limit – half of the couple's total income – the association with greater housework effort by the male partner is no longer a fact (Bittman et al. 2003).

A few contributions have also pointed at the importance of time availability-related variables and domestic demands (e.g. Coverman 1985; Presser 1994). Indeed, some adaptation over time to changes in such circumstances has been observed (Gershuny 2005). On the whole, nevertheless, time availability explanations do not appear too appropriate for accounting for men's housework levels. The latter seem relatively impervious to time demands and time constraints, and definitely more so than women's own domestic effort (Bianchi et al. 2000; Cooke 2007a; Esping-Andersen 2009). Similarly, gender-related mechanisms hardly provide on their own sufficient explanation to men's housework dedication. Still, they have proven relevant mediators of the effect of other variables. Illustratively, in settings characterized by traditional expectations about male roles, men have been found to reduce their housework dedication if they become financially dependent from their partners. Such behaviour, it has been contended, is likely explained by a will to compensate for a deviance from traditional gender norms (Brines 1994; Bittman et al. 2003; Thébaud 2010). Male housework behaviour seems also affected by the interaction of the two partners' respective gender values. When both couple members show egalitarian values, men become comparatively more engaged in domestic tasks (Greenstein 1996).

Summarily put, those variables which seem to correlate with male housework involvement most consistently are the female partners' absolute and relative resources; even though they interact with time-availability and gender-related factors. This suggests that bargaining theories may be, to date, the most promising avenue for seeking further insights on male dedication to core housework activities. It is also coherent with the fact that such tasks are generally perceived as unattractive and directly avoided by many.

2.2.3 Fathers' involvement in childcare: facing the test of time constraints

The determinants of male childcare dedication deserve a mention of their own, since this type of unpaid work is qualitatively very different from routine housework. Childcare activities are generally considered more attractive (Coverman & Sheley 1986; Hallberg & Klevmarken 2003; Paihlé & Solaz 2008), and the costs of neglecting them are considerably higher (Aldous et al. 1998). Hence, the two phenomena must be treated as analytically distinct.

Previous work points at the existence of different profiles regarding men's participation in childcare: some fathers are truly committed to co-parenting responsibilities, others merely participate to a limited degree in a selection of tasks, and there are even some who hardly devote any time to child rearing activities (see Yeung et al. 2001). The question of which factors underlie individual variation in men's child-related involvement is thus fundamental.

Specialization theories based on the notion of comparative advantage do not seem particularly suitable for explaining male participation in childcare. Earnings and income differences have only shown a slight effect on fathers' childcare inputs (Hallberg & Klevmarken 2003). Furthermore, it has been noted that the association with wages is positive on weekends, yet negative on weekdays (Yeung et al. 2001). More importantly, even when a positive relation between men's childcare involvement and the wages of their partners can be identified, it is still the latter who devote most time to related activities; no matter their earnings

power and occupational status (Yeung et al. 2001; Bloemen & Stancanelli 2009).

A priori, bargaining models could appear even less adequate for predicting male childcare involvement. After all, they build on the assumption that bargaining occurs over activities that both partners regard as unappealing. Childcare, on the contrary, is frequently found pleasant by both men and women (Hallberg & Klevmarken 2003). Still, there are some related, less gratifying routine tasks that are more likely to be bargained over in a similar way as housework more generally (Esping-Andersen 2009). Moreover, in dual-earner couples where mothers face a significant double burden, those with greater resources could anyway have an interest in negotiating a more egalitarian distribution of childcare.

Empirically, in any event, there is moderate support for the hypothesis that male childcare investments should be fundamentally determined through bargaining processes. In some studies, the childcare dedication of fathers does seem to increase with their partners' wage (Bloemen 2008; Bloemen & Stancanelli 2009; Esping-Andersen 2009). Additionally, some authors have found father involvement in childcare to be positively associated with the mothers' employment (Darling-Fisher & Tiedje 1990; Tanturri & Mencarini 2009; Wang & Bianchi 2009) and educational attainment (Gutiérrez-Domènech 2007; González et al. 2010). In other work, however, the relationship between men's childcare participation and the female partners' resources is not fully as evident (see for instance Marsiglio 1991; Yeung et al. 2001; Kitterød & Pettersen 2006).

It has been suggested that economic variables only affect men's childcare inputs indirectly; by influencing decisions about time spent at work (Hallberg & Klevmarken 2003). This is in line with the more solid empirical support that time availability theory has received regarding male childcare, contrary to what has been found in the case of housework. A consistently negative relation has been observed between the hours fathers spend in paid employment and their childcare dedication (Aldous et al. 1998; Yeung et al. 2001; Stancanelli 2003; Aboim & Marinho 2006; Gutiérrez-Domènech 2007; Tanturri & Mencarini 2009; González et al. 2010). Conversely, paternal involvement in care has been noted to

correlate positively with the mothers' own time at work, although the strength of this association seems somewhat weaker (Aldous et al. 1998; Yeung et al. 2001; Stancanelli 2003; Kitterød & Pettersen 2006). A positive relation between maternal employment and male childcare participation has been identified in families with intense childcare demands (Aldous et al. 1998; Wang & Bianchi 2009). Under such circumstances, moreover, unemployed fathers have also shown greater engagement in nurturing activities than employed ones (Marsiglio 1991; Gutiérrez-Domènech 2007).

Of course, the relations just noted could largely be driven by selection mechanisms. Fathers who spend comparatively less time at work when they have children probably have a greater predisposition to become involved in their upbringing. Likewise, they might hold more egalitarian values that make them both more likely to devote time to childcare and to select a partner with a strong foothold on the labour market. Nevertheless, the significance of the work schedule and the sector of employment indicate that time availability factors also have an independent influence themselves. Men – and women, for that matter – who finish their work after 6 p.m. or have split shifts show a strongly reduced dedication to primary quality childcare (Gutiérrez-Domènech 2007; González et al. 2010). Fathers employed in white-collar, teaching, or public sector occupations allocate significantly more time to child rearing than others; whereas those holding very time-demanding jobs seem the least involved (Stancanelli 2003; Tanturri & Mencarini 2009). Moreover, intense time demands such as those stemming from having many or young children have also been associated with increased paternal participation in childcare (Marsiglio 1991; Aldous et al. 1998; Yeung et al. 2001; Sundström & Duvander 2002; Stancanelli 2003; Gutiérrez-Domènech 2007; Bloemen et al. 2008; Paihlé & Solaz 2008; Tanturri & Mencarini 2009; González et al. 2010).

Lastly, the importance of gender attitudes for paternal time investments also deserves attention. As should hardly be surprising, men with less traditional attitudes have proven more likely to be active, caring fathers (Aldous et al. 1998; Bulanda 2004). Since a higher level of education is often associated with a more egalitarian orientation (Brines 1994), it has also been observed to correlate with more intensive care engagement, even when other factors are

controlled for (Yeung et al. 2001; González et al. 2010). When both couple members are highly educated, the relation is strongest (Tanturri & Mencarini 2009). This said, the positive association between education and male childcare may not merely be reflective of egalitarian gender values. Higher educated individuals also tend to regard childcare as an active developmental input (Craig 2006).

2.2.4 Men's unpaid work from a dynamic perspective: a need to understand the sources and nature of within-couple change

From the literature reviewed, two facts stand out: first, the weight of the female partners' resources for men's time allocation to domestic work suggests that the latter is subject to negotiation. Second, next in importance – or even more important in the case of childcare – are factors related to the availability of time for unpaid labour, and the magnitude of the demands placed upon such time. In this light, it seems striking that the couple specialization literature has laid so little focus on how individuals' domestic inputs change throughout their life course. After all, bargaining within couples is most often a dynamic process that unfolds over time, and whose outcomes are plausibly revised now and again. The circumstances surrounding such processes, moreover, are themselves susceptible to substantial modifications over the years.

As already noted, however, contributions that approach the intra-household division of labour from a dynamic perspective are surprisingly scarce. This is even more so if one seeks to separate the effect of different variables on male domestic effort from the more manifest influence they have on female behaviour.

It must be acknowledged that the methodologically static approach to men's participation in household tasks may have some empirical rationale. The elasticity of men's domestic involvement seems generally limited, especially in comparison to that of women (South & Spitze 1994; Akerlof & Kranton 2005; Gershuny et al. 2005; Cooke 2007a; Gupta & Ash 2008; van Soest & Stancanelli 2010; Kühhirt 2011). The few studies that have followed couples over a longer period of time also point in this direction – in average terms,

the distribution of unpaid work between partners tends towards stability both throughout marriage (Grunow et al. 2007; 2012) and after childbirth (Kühhirt 2011; Schober 2011). Nevertheless, such overall patterns do not preclude individual adjustments, within particular couples, to changes in surrounding circumstances. Indeed, it has been observed that men do adapt their domestic behaviour to variations in their own and their partners' employment status. However, the fact that such changes do not necessarily occur in an immediately manifest manner, but rather as a gradual "lagged adaptation", (Gershuny et al. 2005) may make it harder to ascertain that they actually take place.

It is against this background that the need to carefully trace micro-level processes of change in male behaviour becomes most evident. There are several reasons for giving more consideration to this issue. First, precisely because evidence has shown a large degree of stability in men's individual domestic involvement, it becomes interesting to examine when and how such inertia is disrupted. In addition, the stationary picture yielded by previous research might partly stem from overlooking, methodologically speaking, continuous, minor adjustments in men's unpaid work. It could also be a consequence of an exceedingly large focus on relative measures of domestic engagement – which, as explained, are likely to be more driven by the evolution of women's inputs than by that of men's.

It is thus high time to pay greater attention to the possibility of quantitative variations in men's domestic effort in response to modifications of situational variables. Very little is still known about the impact of exogenous shocks different to the transition to parenthood – which might not even be exogenous to the actual or foreseen intra-household division of labour to begin with. In addition, it is important to analyze whether the associations between male domestic inputs and their partners' economic and employment position revealed by cross-sectional studies also hold from a longitudinal perspective. Were it to be so, it would have interesting implications – the relation between these phenomena could more easily be given a causal interpretation. Most crucially, this would offer important insights on the actual capacity of women to influence the behaviour of men in the domestic sphere.

In more general terms, this paper aims to shed light on whether, when and how men living in unions modify their housework and childcare involvement. Specifically, it will consider three possible scenarios, regarding both the degree of change and its relation to previous variations in individual circumstances:

- *Men's participation in unpaid work might experience virtually no change over time, registering only minor, non-significant variations throughout the course of the unions analysed*

- *Men's participation in unpaid work might undergo processes of systematic adjustment as crucial covariates also experience variation over time.*

- *Men's participation in unpaid work might only change visibly as a response to major modifications of their surrounding circumstances.*

Assessing to what extent each of these developments obtains support will hopefully yield a more accurate picture of the dynamics of men's domestic behaviour. Ultimately, the purpose is to understand not only when individuals increase or decrease their housework and childcare inputs, but also under what conditions they do so.

2.3 Data and methods

Examining the dynamics of male unpaid work in the ways explained above requires data that fulfils several conditions. First of all, it must have a longitudinal design that permits an assessment of temporal relations. Secondly, quantitative information on relevant variables is essential for distinguishing minor adjustments from more drastic modifications. The German Socio-economic Panel (SOEP) complies with these requirements while providing the necessary information on time use, socioeconomic and family-related variables. For the purposes of this paper, data stretching from 1984 to 2009 will be used.

2.3.1 Design and analytical strategy

The analysis will be conducted in two steps. To begin with, a descriptive assessment of the evolution of the domestic behaviour of partnered men over a longer period of time will be performed. Individuals will be followed from the year before union entry up to 8-10 years later. The purpose is to examine whether male participation in unpaid work is – on average – marked by relative stability, as previous studies have suggested, or whether specific processes of change become discernible once quantitative measures of absolute effort are used. A distinction will be made between different types of union[31], and attention will be paid to crucial life course transitions such as marriage and the birth of the first child[32].

Subsequently, the responsiveness of male domestic effort to different types of variables with explanatory potential will be analyzed by means of regression analysis. The fixed effects model (FE) has been selected as data analysis technique for several reasons: first, it suits the purpose of this study particularly well, as it is intended to explore only within-subject variance in the relations between the independent and the dependent variables. Second, it makes it possible to control for the influence of individual unobserved characteristics, such as preferences and other selection-

[31] To this end, individuals having entered their first co-residential union – be it a marital or a non-marital one – after their incorporation to the panel are analyzed. Since there are not many such couples that can be followed for 10 years, the subsamples used at this stage of the descriptive analysis are rather small (379 individuals entering a marital union; 59 entering a cohabitation one)

[32] For those individuals who undergo a cohabitation phase prior to their marriage with the same partner, the subsample analyzed adds up to 264 individuals. In this case, the cohabitation period has been limited to three years in order to make sure that it is a temporary phase and not a long-lasting alternative to marriage. Couples have moreover been followed over a period of five years after their transition to marriage. As regards domestic effort around the transition to parenthood, the descriptive analysis draws on subsamples of individuals having experienced their first birth within the framework of marital or non-marital co-residential unions (327 cohabiting men, 385 cohabiting women, 1394 married men, and 1786 married women, respectively, at the time of childbirth). In this case, the evolution of individuals' domestic effort over five years before and after first births will be assessed.

related variables. The model can namely be specified, in a compact way, as follows:

$$Y_{it} = \beta \cdot X_{it} + \alpha_i + u_{it}, \quad t = 1, 2, \ldots, T \quad ,$$

where the *i* is an index specifying the individual while *t* specifies time. In this set of equations Y_{it} denotes the values of the dependent variable, X_{it} are vectors of independent variables with β the associated vector of coefficients, the α_i are the unknown intercepts corresponding to each of the n individuals in the sample, while the u_{it} are the error terms. The α_i represent time-constant characteristics that are different for each of the analyzed subjects and whose effect is to time-demean the rest of the variables of the model. Since there is an α variable for each individual, these capture all the within-subject variability that is constant over time. The remaining effects, whose strength is measured through the β coefficients, are variations with respect to the mean levels over time corresponding to each individual. This allows us to obtain efficient estimates of the net effect of time-varying predictors, while getting rid of the omitted variable bias contained in the fixed effects.

Two variants of the FE regression analysis are performed, correcting for first-order serial correlation when necessary.[33] The first model is based on level-measures of the predictor and the outcome variables. It is basically aimed at answering the question – for each individual – of how much the dependent variable changes, with respect to its average value, when covariates increase or decrease their levels (also in relation to an individual average). Nevertheless, this type of model does not guarantee that changes in the dependent variable are associated with either previous or at least parallel changes in the covariates of interest. In fact, a deviation of Y from its average value occurring many years before a given deviation of X from the mean could still be registered as a significant association between changes in both variables. In order to minimize this problem by locating all types of changes within the

[33] This correction entails, in some cases, a loss of observations, wherefore the size of the subsamples analyzed will vary among different model specifications.

same time span, subsequent models are instead based on year-to-year increments of both predictors and outcome variables.

Granted, this procedure does not necessarily get rid of potential issues of reverse causality. Still, it is easier to argue against the latter on theoretical grounds when changes are fairly simultaneous in time than when large time periods separate them. Illustratively, it seems less likely that a woman would automatically register a large decline in income or abandon paid employment because her partner suddenly reduces his housework effort than that she would do so after sustaining such a situation for a while. At any rate, models based on year-to-year increment measures have the advantage of permitting a direct assessment of men's fairly immediate behavioural responses, in terms of domestic effort, to changes in their surrounding circumstances.

2.3.2 Specification of variables

The dependent variables at the heart of this study – men's housework and childcare levels and their year-to-year increments – draw on survey questions on the number of hours spent in the two kinds of tasks on a typical weekday. Information on weekend inputs has not been included as it was not available for all years. As far as housework is concerned, moreover, only routine household chores (washing, cooking and cleaning) are considered, as it is these core activities that tend to be at the heart of intra-household conflict and negotiation. It should be noted that questionnaire-based time use information such as the one used in this study has certain limitations as compared to that obtained from time diaries. First of all, questionnaire data shows a tendency for some overestimation relative to time diaries' information, which seems particularly true for men's self-reports on time spent on domestic activities (Lee & Waite 2005; Kan 2008). This measurement bias – largely stemming from the systematic and random errors associated with recalling – entails that the figures on housework and childcare hours reported may be somewhat higher than those actually invested in practice. Nevertheless, it has been found that conclusions on trends over time, ordinal relations, statistical significance, and the sign of estimated coefficients in regression models are generally reliable

even if questionnaire data is used (Juster, Ono & Stafford 2003; Kan & Pudney 2008; all quoted in Kühhirt 2011; see also Schulz & Grunow 2011). In addition, the FE method eliminates from the regression models the measurement error derived from time-constant over-reporting (Kühhirt 2011).

The independent variables included in the analysis are related to the main theoretical perspectives within which couple specialization can be framed, as explained in previous sections. To begin with, attention is paid to those aspects that specialization and bargaining frameworks, respectively, regard as fundamental – namely the absolute and relative resources of the partners. The regression models incorporate thus measures of the absolute log net income – and its increments between year t-1 and year t – of the individuals and their partners[34]. In addition, the share of the total couple income brought in by the analyzed individuals and its year-to-year increments are included to tap both smaller and greater variations in relative income. The relevance of absolute and relative resources in terms of occupational prestige[35] is assessed in a similar manner. In order to capture the effect of major shifts in economic resources and bargaining power, moreover, some of the models include dummy variables registering whether the male or the female partner starts earning more than 50% of the couple's income.

The time availability perspective is incorporated through measures of each partner's weekly paid work hours and their increments between year t-1 and year t. Again, the idea is to capture the effect of both smaller and greater modifications. Particularly large shifts in the individual or the partner's working time are considered by including transitions between different employment states in some of the models[36]. Likewise, childbirth is included as a source of major variation in time demands; distinguishing between first and higher order births. In addition, there are two fundamental time-related variables whose potential relevance must be contemplated: the female partner's own domestic effort (or its variation between

[34] The original income variable is measured in monthly euros.

[35] This variable is based on Treiman's Standard International Occupational Prestige Scale (SIOPS).

[36] The states considered are full-time work, part-time work, unemployment and other types of non-employment (e.g. illness, disability, education, housewifery, maternity or paternal leave…)

time t-1 and t), and the use of external housework or childcare services. There is evidence that recourse to outside help is associated with higher levels of male childcare involvement (Esping-Andersen 2009), and it could reasonably be expected to influence men's housework share in some direction as well.

Unfortunately, the data set does not provide complete information on the externalization of housework – related measurements cover far from all waves and they have not even been carried out regularly. As the proportion of missing cases is substantial and multiple imputation would require the use of covariates that are central in the explanatory models, it is not possible to include such a variable. Fortunately, however, there is available information on whether couples with children make use of external childcare, which can partially make up for this shortcoming.

While the FE model already deals with the issue of individual preferences and values inasmuch as it controls for time-constant, unobserved heterogeneity, it does not provide any information on whether related variables mediate the effect of other predictors. For instance, since education has often been put in relation with less traditional gender attitudes, men having completed higher education may show different domestic responses to situational changes than men with a lower education level. Similar arguments could be made about men living in unions where both partners have an either high or low level of education, as the two types of homogamy tend to correlate with opposite degrees of traditionalism in gender relations. Consideration should also be given to the nature of the union. It has namely been observed that cohabiting couples tend to adopt a more egalitarian distribution of domestic work than married ones (see f.i. Batalova & Cohen 2002; Baxter 2005).[37] Working with German data, it is additionally important to consider the effect of the macro-level context. East Germany – given its social and institutional backing to women's participation in paid employment during the communist period – might still be characterised by a lesser degree

[37] This is assumed to be partly due to their holding less traditional values, and partly a consequence of such partnerships' frequently functioning as partner selection processes (Heuveline & Timberlake 2004; Domínguez 2012). In fact, it has been noted that the transition to marriage sometimes marks a shift to more traditional gender roles (Gupta 1999).

of normative support for a traditional division of labour. Since previous studies based exclusively on West German data (Grunow et al. 2007; 2012; Kühhirt 2011) suggest that families and their functioning remain in this sense very traditional, it seems important to analyze whether there are any substantial differences between the two areas.

All the attitude-related variables just mentioned could be included interacted with crucial resource or time-availability variables. Nevertheless, this would entail introducing a very large number of covariates in the models. It seems thus more adequate to run separate models for different types of men and assess whether there are any visible variations in their responsiveness to change in their surrounding circumstances. Last but not least, a number of controls will also be contemplated: namely the total number of children, the presence of children under 3, the partners' ages and square ages, and the duration of the union.

2.4 Analysis and main findings

2.4.1 Union-entry, family-building and men's average dedication to unpaid work

A first glimpse at the domestic behaviour of individuals before and after entering their first co-residential union reveals, on the one hand, the already well documented gender gap. As can be observed in figure 2.1, a non-egalitarian distribution of unpaid work is the norm in non-marital as well as marital unions. In both cases, in fact, a remarkable distance between male and female housework dedication can already be observed the year preceding union entry, when women's effort more than doubles men's.[38] Nevertheless, the

[38]Those men having chosen cohabitation as a first and long-lasting union alternative perform, on average, 0.92 hours of housework on a typical weekday the year preceding union entry. The equivalent figure corresponding to men who will get married instead is somewhat lower; 0.76. The daily housework hours of women who will enter non-marital and marital unions, respectively, add up to 1.86 and 2.05.

gap becomes particularly wide after the transition to marriage. Married couples, moreover, appear to rapidly establish a very traditional arrangement. Within these unions, women's housework increases sharply and almost constantly during the first stages of marriage – which for many will coincide with the childbearing years –; thereafter remaining fairly stable at above three hours a day. Men's effort, on its part, decreases somewhat during the first year of marriage and remains fairly constant at below an hour a day on average; never surpassing premarital levels. This picture of stability and strong traditionalism is in line with the one yielded by studies using different data on German couples (see Grunow et al. 2007; 2012).

On the other hand, there are interesting contrasts between married individuals and those who choose to live in a co-residential partnership as an alternative to marriage. Men who opt for cohabitation already exhibit comparatively higher levels of housework the year before union entry (year 0 in the figure), which could be suggestive of selection mechanisms related to less traditional attitudes. Nevertheless, it must be noted that pre-union housework levels are very low – on average, less than one hour per day – both for those men who will enter partnerships and for those who will get married. At any rate, there are some visible differences between the two groups after union formation. While the housework involvement of cohabiting men also decreases in the earliest stages of the union, it generally tends to be higher. More crucially, it seems to experience more evident fluctuations over time; which might suggest a somewhat greater responsiveness to changes in external circumstances and demands. This said, the figures make it manifest that the most significant differences in terms of average housework participation are not found between cohabiting and married men, but rather between women in the respective types of union. Throughout most of the period observed, married women perform at least one extra hour of housework than their cohabiting counterparts.[39]

[39]This may have to do with the fact that women choosing cohabitation as an alternative to marriage in Germany are very likely to hold less traditional values than those who get married. This could of course influence their housework effort directly, but also indirectly through a comparatively greater participation in paid employment.

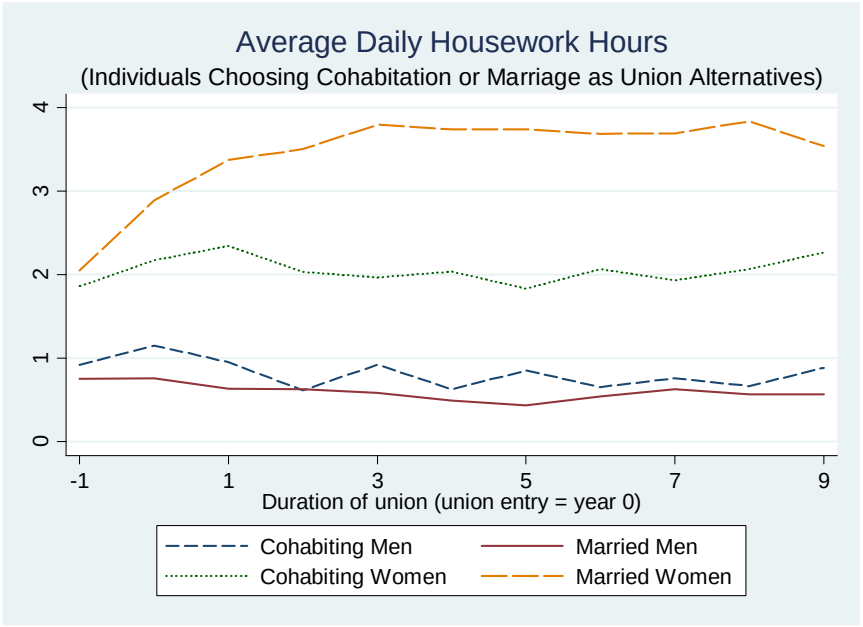

Figure 2.1. Hours devoted to housework – on average and on a typical weekday – by individuals establishing marital and cohabitation unions, respectively, as first and long-lasting choices of co-residential partnership.

Figure 2.2 offers an overview of the average evolution of daily housework for individuals who start a partnership as cohabitants and get married after three years. The purpose with having such a short cohabitation time-span is to capture the behaviour of individuals who do not choose cohabitation as an alternative to marriage, but rather use this type of union as a transitional phase towards the latter. As can be seen, men for whom cohabitation is just a prelude to marriage show at union entry – time 0 – lower mean housework levels (0.91 hours) than those for whom cohabitation is an alternative to a marital relationship (1.15 hours). At the same time, they seem to devote slightly more time to housework than those who get married right from the start (0.76 hours).

It is worth noting that those men who could be termed "transitioners" also experience a clear decrease of their housework effort following the shift from cohabitation to marriage. Differently put, a male move towards more traditional behaviour in the first stages of marriage occurs regardless of whether there is a previous

cohabitation phase or not. Men who enter marriage directly, nevertheless, register consistently lower levels of housework.

Of course, the aforementioned findings are merely descriptive and based on fairly restricted samples, wherefore they should be interpreted with uttermost caution. Moreover, mean male housework levels are generally very low – for men, they hardly reach a daily hour of housework, regardless of the union entry pattern – and the greatest participation differences occur indeed among women. Still, men who opt for cohabitation as a stable arrangement do seem to behave, on average, somewhat differently than those for whom cohabitation is a transient phase and, most specially, than those who enter marriage directly. This could be indicative of the importance of selection and unobserved heterogeneity. There is a fair possibility that the former men are less traditional in their preferences and gender attitudes than the two latter. At any rate, this is something that must be subsequently explored by means of a more rigorous multivariate analysis.

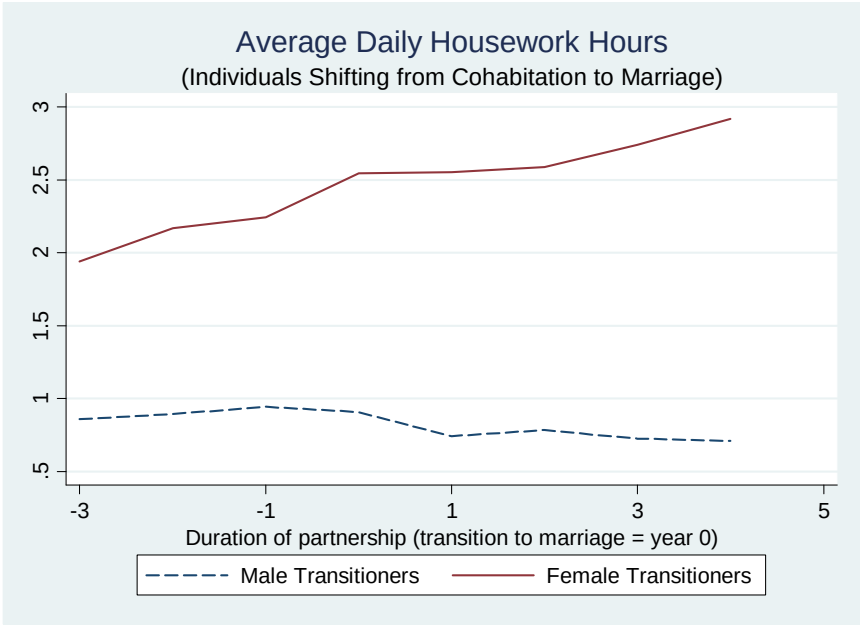

Figure 2.2. Hours devoted to housework – on average and on a typical weekday – by individuals who start cohabiting and then make a transition to marriage with the same partner.

Before taking a more comprehensive look at the relations between male domestic effort and different types of explanatory variables, however, it should be useful to examine the former's evolution around the transition to parenthood. After all, first births have a strong theoretical potential to alter men's and women's dedication to unpaid work.

Figure 2.3 shows patterns in this respect for men and cohabiting individuals. Married men are found to reduce their housework participation slowly yet consistently from the time they become parents. Interestingly enough, the behaviour of cohabiting men – which exhibit higher initial levels of effort – is somewhat different. While their average housework time also experiences a certain decrease in the first year after childbirth, this trend is subsequently reversed and their housework dedication tends to increase back to pre-birth levels.

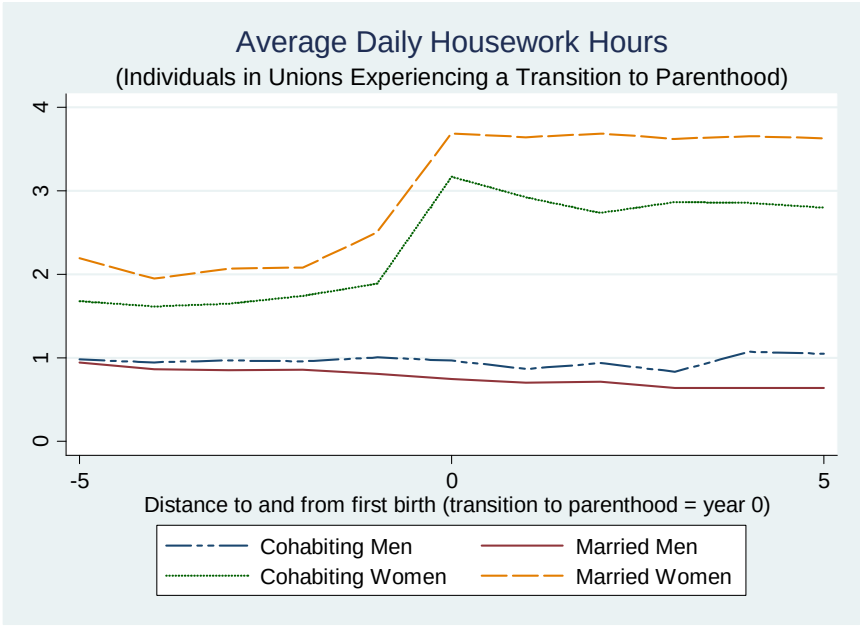

Figure 2.3. Hours devoted to housework – on average and on a typical weekday – by individuals who experience the transition to parenthood within a marital or cohabitation union.

This said, it is important to note that men becoming parents within marital as well as non-marital unions display largely constant

housework levels over time, which on average do not exceed the one daily hour-threshold. In other words, it is once again women who alter their behaviour most evidently following motherhood. As can be observed, female housework effort increases then very markedly within both marital and cohabitation unions.

This gender gap is even more obvious in figure 2.4, which illustrates the evolution of childcare. While both married and cohabiting women devote a substantial amount of daily hours to related activities during the child's first years of life, men's effort is generally three times lower[40].

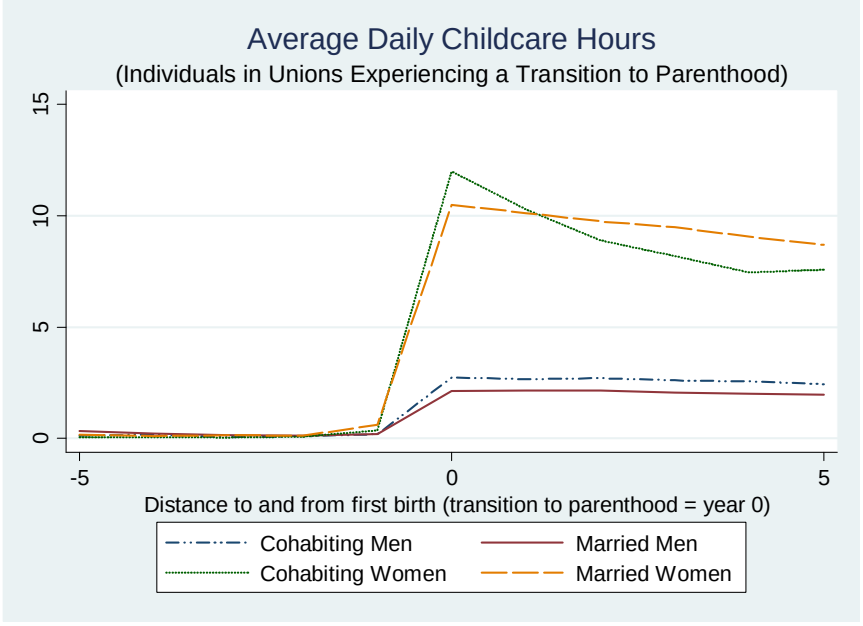

Figure 2.4. Hours devoted to childcare – on average and on a typical weekday – by individuals who experience the transition to parenthood within a marital or cohabitation union.

[40]The average childcare effort of both married and cohabiting mothers falls within the range of 7-11 hours a day during the first five years after childbirth. In contrast, the average childcare effort of cohabiting men over the equivalent period lies at around 2.6 daily hours and is even lower (2 hours) in the case of married men.

The average childcare time of cohabiting and married men only increases noticeably over their first year of parenthood. Thereafter, it remains virtually unchanged over time. Of course, during the years immediately following childbirth, the marked behavioural differences between fathers and mothers are likely to be driven by the fact that the latter are on maternity leave. It is nonetheless interesting to note that they tend to persist further along in time, even if the disparities become somewhat smaller.

2.4.2 Understanding changes in the domestic participation of men living in unions

This section presents fixed effects models assessing the relation between within-subject change in economic resources and time availability, on the one hand, and variations in men's domestic effort, on the other hand. Table 2.1 puts forward models (1-2) where levels of the dependent and independent variables have been included in their linear form, with a view to capturing adaptation to smaller changes in key covariates. As can be observed, male housework and childcare behaviour seems to respond to variations in the main predictors of interest. When men's absolute log earnings increase with respect to their average value, their housework and childcare dedication – also relative to their individual average – decreases. Rises in the (generally female) partners' log income, in turn, appear associated with increases in male housework participation. This said, it is changes in relative economic resources, rather than in absolute ones, that seem most capable of affecting men's dedication to domestic tasks. When men's share of the couple's total earnings increase – or, differently put, when their partners' bargaining power diminishes – their housework and childcare hours experience a significant, negative, and more visible change.

Variations in men's housework and childcare, on their part, also show statistically significant relations to modifications of their own and their partners' employment dedication. Apparently, men's housework and childcare participation decline as their working time increases, and it intensifies when it is the partners' work hours that rise. Both first and higher order births seem significantly associated

with rises in male housework and childcare with respect to the individuals' average levels. Having children under 3 also seems to increase men's housework. In contrast, the use of external childcare does not appear to bear any significant relation to male domestic participation levels.

It is worth mentioning that when the partners' housework and childcare effort intensifies with respect to their average values, a similar phenomenon is observed for men. This relationship could also seem puzzling a priori. Nevertheless, the partners' housework and childcare covariates might be acting as proxies for increases in domestic demands that elicit responses from both partners. Indeed, when they are taken out of the models the figures suggest that they are partially capturing the effect of children-related variables, as the latter intensifies. Male domestic effort, lastly, seems to diminish as union duration increases. This could be a result of reduced housework and childcare demands as children grow older, or reflect increased traditionalization of family roles as a union becomes consolidated.

As explained in the methods section, the aforementioned models measure change in the dependent and independent variables as deviations from the average values assigned to each individual. These deviations may occur at whatever point in time in the observation window corresponding to each individual. There is a more direct way to register within-subject change and give it a specific temporal framework – namely to measure the increments between year t-1 and year t. The models presented in table 2.2[41] – as well as those which will subsequently follow – are run according to this principle.

[41] Except for the fact that increments-based instead of level-based measures are used, the list of covariates included is basically the same as that of models 1 and 2. In models 4a and 4b (as well as in subsequent ones), the external childcare variable has finally not been included on account of its proving consistently non-significant. Neither is there a children under three variable as all those couples having experienced a birth between year t-1 and year t will also automatically undergo a change in this respect. Lastly, year-to-year increment based-models do not control for age as the latter will automatically increase by 1 unit at each measurement interval for all individuals, and there are no theoretical reasons to believe that age levels themselves should lead to any particular year-to-year kind of change in male domestic effort.

Findings from models 3 and 4 – where increments in the dependent and independent variables are also measured in a continuous, linear way – show only very slight differences with respect to the level-based ones previously put forward. Second and higher order births no longer exhibit a statistically significant effect on men's childcare time. In general, nonetheless, the findings corroborate that variations in economic resources and time availability go hand in hand with changes in male domestic dedication. When men's absolute earnings experience an increase, both their housework and childcare effort tend to diminish. The effect is particularly manifest when it is their relative income that goes up. A similar observation can be made when their working hours rise. Conversely, a linear increase in the partners' working time seems to translate into enhanced male housework and childcare participation.

The occurrence of a first order birth is accompanied, as could be expected, by a significant increase in male childcare involvement. Nevertheless, the significance of this effect disappears as the increment of relative income is introduced in the model. This is probably due to the decrease in relative economic resources often experienced by women in connection with the transition to motherhood. This said, it should be noted that the variables measuring rises in the partners' domestic effort – which show a consistently positive effect on men's own housework and childcare time – appear indeed to be capturing increased domestic demands associated with births. When they are excluded from the models (results not presented), the effect of births is generally intensified, and second and higher order births regain their statistical significance for men's childcare effort.

Table 2.1: Fixed effects regression of men's housework and childcare levels on key resource and time-availability covariates; continuous measures (standard errors are presented within brackets)

	HOUSEWORK		**CHILDCARE**	
	Model 1a	**Model 1b**	**Model 2a**	**Model 2b**
Log earnings	-0.074*** (0.004)		-0.129*** (0.011)	
Share of couple income		-0.680***(0.035)		-1.016***(0.107)
Partner's log earnings	0.007* (0.003)	-0.026***(0.003)	0.034*** (0.008)	-0.0002 (0.008)
Occupational prestige	0.0003 (0.001)		0.0002 (0.002)	
Partner's occupational prestige	0.001 (0.001)		0.0001 (0.002)	
Occupational prestige differential		-0.001 (0.001)		-0.0004 (0.001)
Work hours	-0.007*** (0.001)	-0.009***(0.001)	-0.012*** (0.002)	-0.015***(0.001)
Partner's work hours	0.007*** (0.001)	0.004*** (0.001)	0.005** (0.002)	0.002 (0.002)
First birth	0.072*** (0.028)	0.076*** (0.027)	0.332* (0.138)	0.114 (0.136)
Number of children	0.017* (0.008)	0.017* (0.008)	0.174*** (0.027)	0.171*** (0.026)
Partner's housework/childcare	0.015*** (0.003)	0.013*** (0.003)	0.055*** (0.003)	0.052*** (0.003)
Children under 3	0.094*** (0.018)	0.086*** (0.017)	-0.006 (0.040)	-0.009 (0.039)
External childcare			-0.014 (0.028)	-0.011 (0.027)
Duration of union	-0.014*** (0.002)	-0.016***(0.002)	-0.035*** (0.009)	-0.036***(0.008)
Age	0.028*** (0.003)	0.041*** (0.003)	0.149*** (0.011)	0.163*** (0.010)
Square age	-0.0002*** (0.000)	-0.000***(0.000)	-0.002*** (0.000)	-0.002***(0.000)
Constant	0.431*** (0.040)	0.473*** (0.037)	-0.043 (0.107)	-0.085 (0.102)
Fraction of total variance due to fixed effects	0.427	0.457	0.533	0.546
Number of observations	60647	53793	24723	24016
Number of subjects	8526	8354	4811	4762
***** p≤0.001**	**** p≤0.01**	*** p≤0.05**		

A priori, the fact that changes in the dependent and independent variables are registered within the same time period could raise issues about the direction of causality. Still, the nature of the variables considered as well as the size of the coefficients obtained make it more plausible that changes in male domestic behaviour are responses to rather than causes of variations in income and time availability. For instance, it seems highly unlikely that a slight reduction of men's housework could elicit a visible increase in their relative earnings. Were this to happen, moreover, the effect should go through either their own or their partners' working hours, which are already controlled for. The relation between decisions on paid and unpaid work time is of course trickier, but again, it seems that shifts in the analyzed men's domestic effort are of such magnitude that they should not lead to substantial variations in working hours. As for the possibility of unobserved underlying factors influencing both types of variables simultaneously, those that are time-constant are already controlled for through the use of fixed effects.

Returning to the issue of the effects' magnitude, it seems acknowledgedly minor for all these continuously measured covariates. To illustrate, an increase by one hour in the partners' daily paid work time would be associated, according to the coefficient presented, with an increase by just a few minutes in men's housework, which is of course negligible. So would an increase by 10% in the partner's share of couple income. This would appear to confirm the general stability of male housework and childcare, as well as their relative imperviousness to minor adjustments in surrounding conditions. Nonetheless, while this interpretation might be reasonably founded, there are two caveats regarding an automatic reading of the coefficients as very small effects.

The first one has to do with the way in which the dependent variables have been measured. Since the survey questions they draw on only allow for hourly variations in daily housework and childcare, only men experiencing such (relatively large) variations are actually taken into account when increments in domestic dedication are assessed. Differently put, smaller and probably more frequent adjustments – e.g. by half an hour a day – of male domestic effort are automatically excluded from the analysis. If

they were also considered, the magnitude of the coefficients would very likely be larger. The latter should therefore not be taken at their face value. Secondly, the low coefficients could also be partly due to the fact that relations between the covariates noted and changes in male domestic effort may not necessarily be linear. It is thus important to see what happens when changes in covariates surpass a given threshold. As observed above, male housework is most evidently responsive to variations in relative rather than absolute income – it seems probable that the key to visible change in domestic effort are income shifts of such magnitude that they can substantially alter power relations within the couple. Likewise, changes in paid work hours may only elicit manifest responses in terms of unpaid work when they free or claim enough time to actually make a real difference for domestic dedication. Such might be the case when the individual or the partner make a transition from a given employment state to another.

Table 2.3 presents models (5a, 5b) examining the importance of major changes in relative earnings – either the individual or the partner start earning more than 50% of the couple's income – for men's housework and childcare behaviour. When men's own earnings experience a rise that entails surpassing the noted threshold, male housework time decreases significantly. More crucially, when it is the female partner that becomes the main economic provider, a similar relation is found and male childcare time increases as well. The effect is, in fact, particularly evident regarding the latter. It would seem, in other words, that the analyzed women are successful at negotiating greater domestic involvement from their partners when they move into a position of economic superiority. The fact that the simultaneous evolution of each of the partners' working time is controlled for strengthens this interpretation.

Tables 2.4 and 2.5, on their part, consist of models (6-7) revolving around the importance of different employment transitions – made by either the individual or his partner – for the year-to-year evolution of male housework and childcare, while simultaneous variations in terms the other partner's resources are also controlled for. Results from models 6a and 7a suggest that men's housework and childcare behaviour indeed responds visibly to substantial variations in their own time availability. Several transitions between

Table 2.2: Fixed effects regression of men's housework and childcare year-to-year increments on year-to-year resource and time-availability variations; continuous measures (standard errors are presented within brackets)

	Δ HOUSEWORK				**Δ CHILDCARE**			
	Model 3a		**Model 3b**		**Model 4a**		**Model 4b**	
Δ Log earnings	-0.078***	(0.005)			-0.151***	(0.013)		
Δ Share of couple income			-.746***	(0.047)			-1.092***	(0.131)
Δ Partner's log earnings	0.001	(0.004)	-0.029***	(0.004)	0.027**	(0.010)	-0.010	(0.010)
Δ Occupational prestige	-0.001	(0.001)			-0.002	(0.003)		
Δ Partner's occupational prestige	0.001	(0.001)			-0.002	(0.003)		
ΔOccupational prestige differential			-0.001	(0.001)			-0.001	(0.002)
Δ Work hours	-0.005***	(0.001)	-0.008***	(0.001)	-0.011***	(0.002)	-0.014***	(0.002)
Δ Partner's work hours	0.006***	(0.001)	0.003***	(0.001)	0.005**	(0.002)	0.002	(0.002)
First birth	0.110*	(0.050)	-0.051	(0.060)	1.039***	(0.272)	0.370	(0.267)
Higher order births	0.106*	(0.044)	0.127**	(0.048)	0.076	(0.081)	0.046	(0.080)
Δ Partner's housework/childcare	0.017***	(0.003)	0.011***	(0.003)	0.040***	(0.004)	0.038***	(0.004)
Duration of union	-0.001	(0.002)	-0.001	(0.002)	-0.011	(0.007)	-0.010	(0.006)
Constant	0.007	(0.015)	0.007	(0.015)	0.015	(0.051)	0.007	(0.050)
Fraction of total variance due to fixed effects	0.151		0.183		0.239		0.250	
Number of observations	47165		40418		19627		18762	
Number of subjects	7225		6900		3949		3873	
***** p≤0.001**	**** p≤0.01**		*** p≤0.05**					

Table 2.3: Fixed effects regression of men's housework and childcare year-to-year increments on year-to-year resource and time-availability variations; major discrete changes in relative earnings (standard errors are presented within brackets)

	Δ HOUSEWORK Model 5a	**Δ CHILDCARE Model 5b**
Starts earning > 50% of couple income	-0.104***	-0.119
	(0.028)	(0.088)
Partner starts earning > 50% of couple income	0.118***	0.315***
	(0.000)	(0.081)
Other Δ in relative earnings (reference)		
Δ Partner's log earnings	-0.002	0.023*
	(0.004)	(0.010)
ΔOccupational prestige differential	-0.001	-0.001
	(0.001)	(0.002)
Δ Work hours	-0.013***	-0.021***
	(0.001)	(0.001)
Δ Partners' work hours	0.005***	0.005*
	(0.001)	(0.002)
First birth	0.103*	0.360
	(0.048)	(0.281)
Higher order births	0.078	0.039
	(0.043)	(0.080)
Δ Partner's housework/childcare	0.009**	0.037***
	(0.003)	(0.004)
Duration of union	-0.001	-0.010
	(0.015)	(0.006)
Constant	0.006	0.005
	(0.015)	(0.048)
Fraction of total variance due to fixed effects	0.183	0.250
Number of observations	40418	18762
Number of subjects	6900	3873
***** p≤0.001**	**** p≤0.01**	*** p≤0.05**

different employment states are significantly related to increases in men's housework and childcare participation, even after controlling for the partners' working hours, economic resources and domestic inputs. Shifts from full-time work to unemployment and other non-employment situations show the largest positive effects on male

Table 2.4: Fixed effects regression of men's housework and childcare year-to-year increments on year-to-year resource and time-availability variations; major discrete changes in the individual's employment situation (standard errors are presented within brackets)

	ΔHOUSEWORK	**ΔCHILDCARE**
	Model 6a	**Model 7a**
Shift from full-time to part-time work	0.273***	0.040
	(0.067)	(0.233)
Shift from full-time work to unemployment	0.878***	1.609***
	(0.037)	(0.111)
Shift from full-time work to other non-employment	0.732***	1.782***
	(0.043)	(0.169)
Shift from part-time to full-time work	-0.131	-0.851***
	(0.077)	(0.227)
Shift from part-time work to unemployment	0.910***	0.937*
	(0.138)	(0.465)
Shift from part-time work to other non-employment	0.027	1.129**
	(0.071)	(0.389)
Shift from unemployment to full-time work	-0.895***	-1.616***
	(0.045)	(0.123)
Shift from other non-employment to full-time work	-0.832***	-0.953***
	(0.069)	(0.187)
Shift from unemployment to part-time work	-0.323**	-1.275***
	(0.109)	(0.364)
Shift from other non-employment to part-time work	-0.348**	-0.971**
	(0.080)	(0.342)
Other* Δ *in work hours (reference)		
Δ Partner's work hours	0.005***	0.005**
	(0.001)	(0.002)
Δ Partner's log earnings	0.006	0.026**
	(0.004)	(0.010)
Δ Partner's occupational prestige	0.001	-0.002
	(0.001)	(0.003)
First birth	0.113*	0.910***
	(0.048)	(0.265)
Higher order births	0.102*	0.063
	(0.043)	(0.082)
Δ Partner's housework/childcare	0.018***	0.044***
	(0.003)	(0.004)
Duration of union	-0.001	-0.007
	(0.002)	(0.006)
Constant	0.004	-0.023
	(0.014)	(0.050)
Fraction of total variance due to fixed effects	0.130	0.219
Number of observations	53811	21504
Number of subjects	7972	4204
*** **p≤0.001**	** **p≤0.01**	* **p≤0.05**

domestic participation. They namely appear to increase men's housework time by almost one extra daily hour, and their childcare inputs by almost two. In the case of housework, a positive – yet smaller – effect is already noticeable even when the transition is made from full-time to part-time employment.

Shifts from part-time work to non-employment situations, on their part, also lead to increases in male domestic involvement. Men's housework time goes up by almost one extra daily hour for those men that make a transition to unemployment. Participation in childcare, in turn, experiences an even greater increase when men enter unemployment as well as other kinds of non-employment episodes. Hardly surprisingly, transitions from non-employment to employment offer the inverse mirror image of the aforementioned effects. When men make a shift from unemployment to full-time work, both their housework and their childcare time experience significant decrease – by almost one and two hours, respectively. The effect of transitions to other non-employment situations is somewhat smaller in the case of childcare, but remarkable (by almost one hour) and statistically significant nonetheless. The transition from part-time to full-time employment is also related to a visible decline in men's involvement in childcare. Transitions to part-time work from inactivity situations, finally, also appear to exert a negative impact on the domestic participation of men. Their housework time is reduced by around twenty minutes when they leave non-employment episodes, and the effect on their childcare time is more than three time stronger. All in all, effects tend to be larger regarding childcare. This might have to do with this variable's showing both higher average values and greater year-to-year variability than housework for the analyzed men. It is important to note that even after controlling for all these possible male employment transitions, increases in the female partners' working time retain a positive and statistically significant effect on men's housework increments.

Models 6b and 7b (see table 2.5) show what happens when it is the partner who makes considerable shifts in her working time; this time controlling for her domestic involvement as well as men's own working hours and economic resources. First of all, it is worth noting that, while men's domestic behaviour also seems to respond to variations in the partners' employment status, the magnitude of

Table 2.5: Fixed effects regression of men's housework and childcare year-to-year increments on year-to-year resource and time-availability variations; major discrete changes in the partner's employment situation (standard errors are presented within brackets)

	ΔHOUSEWORK Model 6b	**ΔCHILDCARE Model 7b**
Partner shifts from full-time to part-time work	-0.024	-0.017
	(0.036)	(0.101)
Partner shifts from full-time work to unemployment	-0.289***	-0.578***
	(0.050)	(0.145)
Partner shifts from full-time work to other non-employment	-0.190***	-0.303*
	(0.043)	(0.142)
Partner shifts from part-time to full-time work	0.070*	0.085
	(0.036)	(0.091)
Partner shifts from part-time work to unemployment	-0.100	-0.296*
	(0.057)	(0.147)
Partner shifts from part-time work to other non-employment	-0.032	-0.129
	(0.031)	(0.073)
Partner shifts from unemployment to full-time work	0.290***	0.434**
	(0.061)	(0.161)
Partner shifts from other non-employment to full-time work	0.457***	0.960***
	(0.058)	(0.125)
Partner shifts from unemployment to part-time work	0.010	-0.108
	(0.056)	(0.131)
Partner shifts from other non-employment to part-time work	0.042	0.239***
	(0.027)	(0.054)
Other Δ in partner's work hours (reference)		
Δ Work hours	-0.005***	-0.010***
	(0.001)	(0.002)
Δ Log earnings	-0.083***	-0.171***
	(0.004)	(0.011)
Δ Occupational prestige	-0.001	-0.003
	(0.001)	(0.002)
First birth	-0.065	0.893***
	(0.050)	(0.231)
Higher order births	0.066	0.097
	(0.036)	(0.066)
Δ Partner's housework/childcare	0.016***	0.045***
	(0.003)	(0.003)
Duration of union	-0.0003	-0.010*
	(0.002)	(0.005)
Constant	0.001	0.013
	(0.012)	(0.037)
Fraction of total variance due to fixed effects	0.136	0.244
Number of observations	67400	29330
Number of subjects	9519	5396
***** p≤0.001**	**** p≤0.01**	*** p≤0.05**

the changes – at least as reflected in the coefficients – appears smaller than when it is men themselves that undergo employment transitions. This said, men appear to decrease their domestic effort significantly when their partners leave paid employment. As women make shifts from full-time work to a non-employment situation of any kind, male dedication to housework and childcare is visibly reduced. Female transitions from part-time work to unemployment also translate into diminished childcare involvement by men. It should be noted, in contrast, that when the partner merely reduces her employment dedication from full-time to part-time work, the coefficients do not show statistical significance. Shifts towards greater female involvement in paid work appear to elicit clear responses in terms of male domestic effort. Partner transitions from non-employment – of whatever kind – to full-time work are associated with clear increases in men's housework and childcare participation. When women move from inactivity to part-time work, male involvement in childcare also experiences a rise. A partner shift from part-time to full-time employment, in turn, seems to increase men's housework time. Overall, it is important to highlight that women's employment behaviour seems to have a relatively greater impact on men's childcare dedication than on their housework time, even if it seems to affect both phenomena.

Attention should be drawn to some interesting findings across models 6 to 7 regarding the impact of childbirth. First births are consistently accompanied by increases in men's childcare time from the year in which they take place to the next one. Their effect on housework is less remarkable and its statistical significance disappears once that female employment transitions are controlled for. Second or higher order births, on their part, appear to affect male domestic participation to an even lesser degree. Again, however, this seems due to the fact that the evolution of the partners' domestic effort – displaying positive and significant coefficients – captures their effect. When the increments of the mothers' own housework and childcare time following such events are excluded from the models (results not shown), these types of birth are indeed associated with statistically significant increases in men's dedication to both activities. In addition, the positive effect of first births on male childcare becomes then stronger.

The possibility of reverse causality should not be a large concern when large shifts in time availability are treated as independent variables. After all, it is unlikely that changes by – at most – a couple of extra daily hours of male domestic participation should rapidly induce radical labour supply decisions such as the partner's move from full-time work to non-employment. Transitions from and to unemployment, in turn, are in most cases probably exogenous. As for births, the decision to have a child may of course be conditional on an actual or expected division of labour (see Brodmann et al. 2007). Still, given that the models analyze change within yearly time-periods, such a decision must generally precede the registered variations in men's domestic participation.

2.4.3 The weight of unobserved heterogeneity

As previously explained, one of the reasons for using fixed effects regression is that it is particularly suitable for focusing on within-subject change. A not less important motive is that it also makes it possible to control for unobserved heterogeneity that could underlie variations in the phenomenon under study. A look at the tables presented above reveals that when the dependent variables introduced in the models are housework and childcare levels, fixed effects explain a significant share of their total variation (around half in both cases, see models 1 and 2). When the dependent variable is instead measured as year-to-year increments (models 3-7), there is still a fraction of the total variation that is due to fixed effects, yet the figure is remarkably lower (between 13% and 25%). Such a difference is natural – part of the unobserved heterogeneity in the sample is already inbuilt in the year-to-year increments; given that each increment is measured with respect to the same individual's previous value. In themselves, fixed effects in the increment-based models would only account for those variations between individuals, in terms of how much (more) they increase or decrease their domestic participation from one year to another, that are not explained by the covariates included in the models.

There is nonetheless another dimension of unobserved heterogeneity that can not be captured by the fixed effects model – namely its influence on how much, or how little, different

individuals respond to changes in the covariates having proven of interest. In this respect, it is differences between men having been exposed to a more traditional versus a more egalitarian socialization – or simply holding more traditional versus less traditional values – that appear of greatest potential relevance. Attention has consequently been paid to whether the men have or not completed higher education, to whether they are cohabiting or married, and whether they live in East or West Germany. Those previously mentioned models focusing on responses to major shifts in relative resources and time availability have been run for men pertaining to each of these groups. The same procedure has finally been followed for men living in low-education homogamy versus high-homogamy unions, in order to assess the effect of more versus less traditional couple dynamics. Tables 2.6 and 2.7 present the main results from these models.

To make a long story short, the most remarkable finding on comparing the aforementioned groups of men is that those who could be expected to hold or have come into contact with less traditional gender values (that is, the ones with higher education, cohabitors, those living in East Germany and those in couples with high-level educational homogamy) indeed behave differently than the rest of the sampled individuals. To begin with, the housework and childcare behaviour of men in the "less traditional" groups does not appear to be as influenced by the distribution of economic power within the couple as it is in the case of other men. In fact, as far as childcare is concerned, the effects of large shifts in relative resources are not even statistically significant.

In general terms, these individuals also seem somewhat less responsive to changes in their own, and especially the partners', labour market status. This is most visible for the least radical transitions (e.g. those between full-time and part-time or part-time and non-employment). In the case of childcare, nevertheless, some subgroups – cohabiting men, those with university studies, and those living in high educational homogamy unions – show a comparatively diminished responsiveness even to larger shifts in the partners' labour supply.

There are no remarkable differences among subsamples of more and less traditional men concerning the evolution of their

housework involvement after childbirth. None of the groups exhibits statistically significant housework variations after births once shifts in the individuals' and their partners' relative resources and employment behaviour are controlled for. In contrast, most subsamples show substantial childcare increases in connection to first births, and in the case of cohabiting men, also following second- and higher order births. Men living in low educational homogamy couples are the only ones who do not show any statistically significant reaction to first births. They even seem to significantly reduce their childcare time in connection to higher order births.

Men in the latter subsample, in fact, deserve a mention of their own. While they could be expected to hold particularly traditional values, they actually share with those subgroups assumed to be the more egalitarian ones a reduced responsiveness to major changes in situational conditions. This might of course seem puzzling, not least in the case of the latter subsamples of men, from which more innovative domestic attitudes are often expected. After all, one would imagine that more egalitarian men should respond more readily to increased housework and childcare demands. A plausible explanation, nonetheless, is that their domestic participation is less changeable because they automatically assume a greater share of domestic work no matter what. The opposite should in turn be valid for men in low education-homogamous couples – as they tend to be more traditional than average, their household effort would plausibly remain constant at low levels regardless of changes in surrounding circumstances.

Table 2.6: Main results of fixed effects regressions of men's housework year-to-year increments on year-to-year major resource and time-availability variations; between-group comparisons (results concerning control covariates are not presented on this table)

Δ HOUSEWORK	**High Edu.**	**Other edu.**	**Cohab.**	**Married**	**East Germany**	**West Germany**	**Homogamy high ed.**	**Homogamy Low edu.**
Major shifts in relative resources								
Starts earning > 50% of couple income	-0.053	-0.127***	-0.051	-0.111***	-0.111*	-0.098**	-0.050	-0.413*
Partner starts earning > 50% of couple income	0.098*	0.117***	-0.033	0.140***	0.067	0.162***	0.002	0.212
Major shifts in own time availability								
From full-time to part-time work	0.286***	0.184*	0.134	0.249**	0.154	0.252***	0.324***	-0.288
From full-time work to unemployment	1.155***	0.853***	0.810***	0.932***	0.883***	0.914***	1.202***	0.783***
From full-time to other non-employment	0.734***	0.657***	0.799***	0.657***	0.661***	0.665***	0.684***	0.067
From part-time to full-time work	-0.173	-0.189	-0.059	-0.172*	-0.329*	-0.123	-0.253*	0.242
From part-time work to unemployment	0.431	0.773***	0.379	0.756***	0.735***	0.651***	0.319	-0.018
From part-time to other non-employment	0.200*	-0.073	-0.148	0.052	0.211	-0.004	0.296*	0.034
From unemployment to full-time work	-0.960***	-0.933***	-0.710***	-0.930***	-0.909***	-0.922***	-0.857***	-0.731***
From other non-employment to full-time	-0.576***	-1.064***	-0.513***	-0.934***	-0.876***	-0.850***	-0.490***	-1.199**
From unemployment to part-time work	-0.213	-0.445***	-1.158***	-0.250*	-0.605***	-0.320**	-0.323	-0.937*
From other non-employment to part-time	-0.279*	-0.230**	-0.545**	-0.231***	0.070	-0.317***	-0.320*	-0.154
Major shifts in partner's time availability								
From full-time to part-time work	-0.006	-0.041	-0.059	-0.014	0.038	-0.060	0.031	0.417*
From full-time work to unemployment	-0.442***	-0.339***	-0.497***	-0.348***	-0.392***	-0.333***	-0.213	-0.510**
From full-time to other non-employment	-0.187**	-0.223***	-0.064	-0.220***	-0.083	-0.260***	-0.189*	-0.146
From part-time to full-time work	0.006	0.139**	0.120	0.102**	0.053	0.141***	0.045	0.307
From part-time work to unemployment	-0.160	-0.097	-0.012	-0.100	-0.165	-0.071	-0.058	0.012
From part-time to other non-employment	-0.051	-0.086*	-0.149	-0.039	0.140	-0.067*	-0.013	-0.191
From unemployment to full-time work	0.323**	0.319***	0.240	0.354***	0.280***	0.412***	0.395**	0.655*
From other non-employment to full-time	0.299***	0.437***	0.161	0.450***	0.159	0.558***	0.258*	0.482*
From unemployment to part-time work	0.162	0.009	-0.046	0.065	0.032	0.043	0.170	0.159
From other non-employment to part-time	0.050	0.067*	-0.016	0.059*	0.100	0.052	0.024	0.045
Births								
First birth	0.075	0.064	-0.033	0.089	0.029	0.079	-0.008	0.183
Higher order births	-0.015	0.075	-0.122	0.073	0.137	0.036	0.039	0.010
***** p≤0.001**	**** p≤0.01**			*** p≤0.05**				

Table 2.7: Main results of fixed effects regression of men's childcare year-to-year increments on year-to-year major resource and time-availability variations; between-group comparisons (results concerning other covariates and controls are not presented on this table)

Δ CHILDCARE	**High Edu.**	**Other edu.**	**Cohab.**	**Married**	**East Germany**	**West Germany**	**Homogamy higher ed.**	**Homogamy Low ed.**
Major shifts in relative resources								
Starts earning > 50% of couple income	0.129	-0.248*	-0.132	-0.131	-0.104	-0.169	0.268	-0.692
Partner starts earning > 50% of couple income	0.007	0.460***	0.051	0.344***	0.006	0.564***	0.081	-0.064
Major shifts in own time availability								
From full-time to part-time work	0.107	0.194	-0.156	0.150	0.035	0.163	0.483***	0.454
From full-time work to unemployment	0.695***	0.862***	0.851***	0.827***	0.429***	1.053***	0.561***	0.726***
From full-time to other non-employment	0.402***	0.554***	0.706**	0.448***	0.371***	0.545***	0.558***	0.272
From part-time to full-time work	-0.290**	-0.248	-0.348	-0.285**	-0.474**	-0.187	-0.474**	-0.740
From part-time work to unemployment	0.096	0.545**	0.708	0.317	0.310	0.421*	0.042	0.953
From part-time to other non-employment	-0.088	0.269**	0.031	0.148	0.114	0.149	-0.207	0.347
From unemployment to full-time work	-1.462***	-1.274***	-1.314***	-1.257***	-0.950***	-1.559***	-1.616***	-1.635***
From other non-employment to full-time	-0.595***	-1.007***	-0.823***	-0.788***	-1.211***	-0.619***	-0.310	-0.205
From unemployment to part-time work	0.101	-0.583***	-0.403	-0.520***	-0.561**	-0.502**	-0.019	-0.741
From other non-employment to part-time	-0.171	-0.160	-0.220	-0.166	-0.015	-0.202*	-0.267	-0.099
Major shifts in partner's time availability								
From full-time to part-time work	0.029	-0.013	-0.045	-0.005	-0.086	0.025	0.015	-0.101
From full-time work to unemployment	-0.274*	-0.329***	-0.116	-0.315***	-0.325***	-0.309**	-0.302	-0.506*
From full-time to other non-employment	0.066	0.223***	-0.117	-0.160**	-0.169	-0.122	0.364**	-0.783***
From part-time to full-time work	-0.093	0.087	0.056	0.024	-0.100	0.089	-0.069	-0.088
From part-time work to unemployment	0.020	-0.151	-0.473	-0.075	-0.252*	-0.003	-0.029	-0.158
From part-time to other non-employment	-0.101	-0.075	-0.244	-0.065	-0.156	-0.041	-0.080	-0.056
From unemployment to full-time work	0.082	0.328***	-0.089	0.362***	0.252**	0.337**	-0.031	0.108
From other non-employment to full-time	0.019	1.005***	0.713**	0.795***	0.716***	0.875***	-0.055	1.293***
From unemployment to part-time work	-0.022	0.144	0.647*	0.036	0.242**	-0.006	0.184	-0.206
From other non-employment to part-time	0.151**	0.212***	0.159	0.186***	0.394***	0.189***	0.061	0.419**
Births								
First birth	1.260***	1.443***	1.539***	1.360***	1.140***	1.410***	1.058***	0.435
Higher order births	0.037	0.061	0.784***	-0.014	0.151	0.003	0.035	-0.821***
***** p≤0.001**	**** p≤0.01**	*** p≤0.05**						

2.5 Conclusions and discussion

This paper has sought to understand whether men's domestic behaviour remains largely constant after union entry, or whether it rather adapts to modifications of surrounding circumstances. It has also examined what kinds of variables are capable of eliciting visible within-subject change in male housework and childcare involvement. Finally, it has assessed the domestic responsiveness of different type of men to fundamental situational changes. Particular attention has been paid to the potential importance of shifts in the partners' economic resources and time availability.

The descriptive findings point at traditional and largely stable patterns of male domestic participation, as already indicated by earlier studies using different German data and relative housework measures (Grunow et al. 2007; 2012). Men's housework effort tends to decline after union entry and remains thereafter fairly constant at low levels (on average, below one daily hour). The housework participation of men who choose cohabitation as an alternative to marriage is somewhat higher and also seems to experience more visible fluctuations over time. Apparently, the behaviour of men for which cohabitation is a transitional stage leading to marriage lies somewhere in between. Still, the samples analyzed in the two latter cases were too small to draw any definite conclusions. The transition to parenthood also seems to affect male housework negatively; especially in the case of married men. Male average childcare time, after an evident increase over the first year after childbirth, also tends to remain constant at generally low levels – two daily hours in the case of married men and slightly above two and a half hour for cohabiting ones.

The multivariate regression analysis has shown, nevertheless, that average trends towards stability do not preclude individual adaptation to changes in surrounding circumstances. On the contrary, men's housework and childcare does indeed seem to respond to variations in economic resources and time availability; two of the most common explanations for across-individual variance in domestic effort. Adaptation is of course most evident

when changes in the independent variables of interest are substantial. It is worth noting, for instance, that male participation in both housework and childcare seems very responsive to major alterations of the intra-couple distribution of economic resources. In this sense, moreover, it is the female partners' relative command of the latter that appears to be of greatest weight. When the partners start earning more than half of the household income, the analyzed men increase substantially their housework and especially their childcare involvement. Apparently, women are successful in negotiating greater domestic effort from their partners when they become the main economic provider, in line with what bargaining theory would predict.

One might be tempted to think that the causal relationship perhaps is the inverse one – major increases in women's relative resources could take place precisely because the male partner has previously altered his employment dedication, with automatic consequences in terms of unpaid work as well. Nevertheless, since the models already control for shifts in both partners' working time, it seems as though relative income variations really have an effect per se.

Substantial changes in employment dedication, on their part, have also proven to bring forth adaptation in terms of male domestic involvement. While this relationship had already been noted by earlier research (see Gershuny et al. 2005), the fact that the models presented in this paper simultaneously control for the partners' relative resources, working hours and own domestic inputs comes to confirm the independent effect of changes in time availability. As men's employment dedication changes, they also modify their domestic participation in the opposite direction. Unsurprisingly, the effect is particularly large after very drastic changes in labour market status – that is, transitions between full-time work and non-employment. Still, changes are also noticeable even after more moderate shifts such as movements from and to part-time dedication. It is interesting to note, however, that men's domestic behaviour seems visibly more affected by changes in their own employment dedication than to those experienced by their partners'. Furthermore, men's childcare time appears far more responsive to such time availability changes than their housework dedication. This is consistent with previous cross-sectional evidence and with

the fact that childcare is generally perceived as a more attractive activity than routine housework.

It is also worth highlighting the relations between childbirth and male domestic participation that emerge once the female partners' employment decisions and own housework and childcare effort are controlled for. A priori, first births seem to leave men's housework largely unaffected and lead to an increase in their childcare hours, in line with what the descriptive analysis already indicated. Second and higher order births, in turn, do not generally exhibit statistically significant effects on the evolution of male domestic effort. It should be underscored, nonetheless, that the introduction of measures of women's domestic effort in the models seems to be capturing a substantial part of the effect of births.

In sum, men's domestic participation seems to experience visible variation as very considerable changes in economic resources and time availability take place within the couple. The weight of the female partner's economic position merits particular attention. In accordance with what bargaining frameworks would predict, men's involvement in housework and childcare substantially increases when women move into a position of financial superiority within the couple. Furthermore, their employment behaviour is also capable of altering men's contribution to unpaid work – major shifts in their time availability also go hand in hand with changes in male domestic effort, although large paid work time variations experienced by men themselves prove even of greater weight.

In addition, the possibility of fine-tuned adjustment also to smaller variations in relative resources and time availability can not be ruled out either – the models do reveal significant relations with the expected coefficients and signs. As noted, however, the rather rough indicators of domestic effort used – which only register change measured in hours – call for extreme caution in drawing such a conclusion. As longitudinal time diary-based data becomes available, further research should be made to confirm or qualify the preliminary findings from this study. Efforts should also be directed towards performing the analysis on data from countries different than Germany – which is still largely characterised by gender-traditional family dynamics. Another interesting avenue for future studies, given the paths of "lagged adaptation" to some time

availability variables identified in previous work (Gershuny et al. 2005), would be to assess whether the relationships evidenced by this study are largely simultaneous and confined to the short-term, or rather exhibit longer lasting effects.

A final word is in place regarding the seemingly diminished responsiveness to situational change of men who could be expected to hold more egalitarian gender attitudes, and of those living in low-education-homogamous unions characterised by traditional dynamics. In the case of the former, the most logical explanation is that these men will tend to do more housework and childcare automatically, wherefore their behaviour should be less conditioned by what happens to their relative resources and time availability. In the case of the latter, the rationale would be the opposite – very traditional men will hardly engage in unpaid work to any significant degree, regardless of external incentives and constraints. An implication is of course that male partner selection can be crucial for future outcomes in terms of couple specialization, even though most men's behaviour apparently adapts to changes in resources and demands. This said, future work would gain valuable insights from also paying attention to the most extreme types of couple dynamics, trying to understand when and how certain arrangements become established within them, and how they evolve over time in interaction with other variables.

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3. THE WEIGHT OF A SHARED BURDEN: INFLUENCE OF MALE DOMESTIC EFFORT ON FEMALE WORK ATTACHMENT AFTER MARRIAGE AND CHILDBIRTH

ABSTRACT

This study examines the influence of male domestic behaviour on the continuity and the intensity of female labour supply after family-building. More specifically, it assesses whether men's participation in housework and childcare affects their partners' propensity to exit the labour market or abandon full-time work following marriage and childbirth. For this purpose, event history analysis is performed on longitudinal samples of individuals drawn from the German Socio-economic Panel (1984-2009). The findings indicate that higher male housework levels facilitate women's permanence in paid employment and full-time work after marriage. When children enter the picture, it is rather men's childcare time that is important, as it decreases the probability that the female partner will leave full-time employment in connection with motherhood. Women's decisions about labour market exit after childbirth, in contrast, do not appear significantly affected by male domestic effort, but rather by their own attitudinal orientation towards paid work.

3.1 Introduction

Work-family reconciliation dilemmas have acquired particular prominence in both societal and academic debates. Women's extensive labour market incorporation and the resulting increase in dual-earner couples have occurred against the background of slow changing institutions still based on traditional family models. As a consequence, female incursions into the workforce have more often than seldom been accompanied by time-related predicaments. These become particularly harsh for women aiming to combine motherhood with a professional career. Nevertheless, they are also more generally related to the double burden that stems from having

to perform paid and domestic labour. Difficulties to balance the frequently conflicting requirements of both dimensions are to a lesser or a greater degree present in all post-industrial societies. Very crucially, they have been found to have an impact on women's employment trajectories.

In fact, the existence of a strong relation between women's family and labour supply choices has long been documented. Neoclassical time-allocation models have treated both kinds of decisions as interdependent (Mincer 1963; Becker 1965; 1981; 1993; Willis 1973; Blau et al. 1998). Empirical evidence has confirmed that female work attachment is decisively influenced by key family-building events such as marriage and childbirth. This is particularly true of the latter, as the presence of very young children requires highly time-intensive care and overall greater domestic effort. Consequently, it frequently induces employment interruptions or makes part-time work comparatively attractive (see, for instance, Felmlee 1984; Hotz & Miller 1988; Blau et al. 1998; Drobnič et al. 1999; Del Boca & Pasqua 2005). This said, women aspiring to reconcile the experience of motherhood with participation in paid work are currently a majority (Hakim 1996a; Esping-Andersen 2002; 2009) and the strategies they resort to in order to do so are diverse. Contemporary female employment trajectories have indeed been observed to be largely heterogeneous (Hakim 1996a; 2000; 2002), and this is not less valid for mothers.

Such heterogeneity notwithstanding, it can still be stated that work-family trade-offs lead many women to make decisions that weaken their ties to the labour market. This is particularly evident if their employment trajectories are compared to those of men, or to those of women exclusively committed to a career (see, again, Hakim 1996a; 2000; 2002). From the body of research referred to above, it is possible to conclude that the greater the domestic and childcare-related responsibilities women face, the greater the risk that their labour force attachment is negatively affected. In this line, it has been found that reductions in the domestic workload – e. g. those resulting from children growing older (Drobnič et al 1999) or from access to affordable external childcare (Blau & Robins 1989; Blau et al. 1998; Kimmel 1998; Apps & Rees 2004; Del Boca et al. 2009) – indeed affect mothers' ability to maintain a strong foothold on paid work.

Against this backdrop, the purpose of this paper is to investigate whether men's domestic effort would also be capable of influencing female labour supply after family-building. Surprisingly enough, the topic has hardly received any attention, on account of a predominant interest in male housework and childcare as dependent variables (for exceptions, see Maume & Mullin 1993, González 2006). This study aims to place men's unpaid labour at the other end of the causal process. More specifically, it will explore its impact on the continuity and intensity of female employment participation both after union entry and following motherhood.

As will be shown, it seems reasonable to expect men's dedication to housework and childcare to reduce the direct opportunity costs of their female counterparts' labour market participation; especially – yet not solely – in connection to motherhood. In some particular cases, moreover, it could also have an additional positive effect on women's labour supply by decreasing the need for externalization of housework and childcare tasks, and thereby its associated more indirect costs. At the same time, it should be borne in mind that the potential consequences for men's own earnings – and thus, for total family income – of greater male engagement in unpaid work might also enter women's individual calculus and potentially reduce the aforementioned effects. Despite this consideration, there are overall good grounds to presume that men's domestic involvement could be as supportive of female work attachment as external arrangements. It would namely also make it easier to balance employment and family responsibilities, and contribute to reducing the so-called "double burden" of working women (Hochschild 1989; Presser 1994).

3.2 Family, work and the heterogeneity of female labour supply: theoretical framework and state of the field

Given the increasingly narrowing gender gap in terms of labour market participation in post-industrial societies, many of the past decades' related research was devoted to understanding the distribution of paid work between men and women. A substantial

amount of literature, nevertheless, gradually directed attention towards the diversity characterizing female labour supply patterns. Different kinds of employment trajectories were distinguished based on women's working schedules and their propensity to interrupt paid labour in connection with family-building (see for instance Gordon & Kammeyer 1980; Sørensen 1983; Christman, Morgan & Hock 1984; Rexroat 1985; Smith Avioli 1985; Moen & Smith 1986; Joshi & Hinde 1993; Berger et al. 1993; Drobnič et al 1999). More recent work added further details to the picture by looking at other aspects such as labour turnover and occupational mobility (Hakim 1996b; Bernardi 1999).

In sum, the aforementioned studies early underscored the heterogeneous nature of female employment behaviour. Moreover, they provided some explanatory perspective as the phenomenon was placed in close relation to family-building. It was not until the late 1990s, however, that the heterogeneity of women's labour market trajectories came to gain centre stage in sociological research. The work of Hakim (1996a; 2000; 2002) made a central contribution in this sense by underlining the need to being sensitive to such variation, and by constructing a theoretical framework centred on the diversity of women's preferences.

This line of research has emphasized the extent to which women exhibit more complex and disparate work trajectories than men, even in countries traditionally boasting a strong commitment to female employment and egalitarian principles, such as the Nordic ones. It has also noted that female employment patterns in post-industrial societies are becoming increasingly fragmented and discontinuous, as most women do choose to participate in the labour market, yet exhibit work patterns characterised by different degrees of intermittency and part-time dedication. In fact, according to this account, the upward trends in female employment registered over the past decades would not be fundamentally related to an increase in the number of women exhibiting a full-time, long-life commitment to paid work, but rather to the emergence of a part-time female workforce that only engages in full-time employment during certain periods throughout the life course. Understanding the extent, the nature, and the causes of this diversity is claimed essential to comprehend related phenomena such as gender

differences regarding job tenure, occupational mobility, work status, or wages (Hakim 1996a).

Given the focus of this paper – female employment behaviour following family-building, and its potential relation to male domestic involvement – the theoretical framework developed by Hakim around the heterogeneity of women's labour supply would seem a valid starting point for analysis. This is particularly so inasmuch as family-related aspirations are one of its key dimensions. As will be shown, however, the approach has both strengths and shortcomings that open up for a broader discussion on the variables underlying women's employment decisions – not least in connection to marriage and childbirth in particular.

3.2.1 Accounting for the heterogeneity of female employment behaviour: preference theory and its limitations

Hakim's preference theory (1996a, 2000) makes a fundamental distinction among a minority of home-centred individuals who devote their lives entirely to their family; another minority of employment-oriented women who give priority to heir career ambitions; and a majority of "adaptive workers" that seek in various ways to reconcile paid work with family life. [42] Needless to say, these three overarching categories of women exhibit substantially different labour supply patterns. Those within the first group never enter the labour market or decide at some point to exit it permanently, while those comprised within the second one follow full-time, life-long careers. Women assigned to the "adaptive" category, in turn, exhibit to different degrees a comparatively less intense dedication to paid employment; be it by alternating periods in and out of the labour market, or by working reduced hours.

[42] The first and the second group have been estimated to constitute between 10% and 30% of all women each, while the group of "adaptive women" is believed to make up between 40% and 80% of the female population of working age (see Hakim 2000). The exact percentages, of course, vary across countries as well as over time, and the three categories of women are present to a greater or lesser degree in different modern societies.

Such heterogeneity is put in relation with the diversity of women's value orientations regarding the gender division of labour, career commitment, and family-related roles. An explanatory framework is proposed based on the assumption that all women in post-industrial societies have a genuine choice regarding the intensity of their dedication to paid work and family.[43] Their *preferences* are deemed of fundamental importance, as they are claimed to materialise into distinct occupational decisions.

There is empirical evidence yielding a certain degree of support for this kind of attitudinal explanations. Gender attitudes in particular have been found to have significant bearing on women's inclinations in terms of work and family dedication, which in turn affect their employment trajectories (see for instance Bernardi 1999; Hakim 2002). As a theoretical framework, nevertheless, preference theory has a number of limitations. The fact that women work part-time or make career interruptions does not necessarily stand for a lower degree of work commitment. It has namely been observed that a significant share of women with pre-school children or otherwise demanding family obligations do maintain a solid subjective commitment to paid work (Moen & Smith 1986). Many times, they just might be unable to maintain a continuous and intense labour force attachment for practical reasons, or on account of their prioritization of their children (see Bianchi et al. 2000). Furthermore, the sharp distinction between career- and family-oriented women seems hardly suitable for societies where most women, as previously noted, indeed show a preference for both.

A fundamental criticism put forward against this theoretical perspective (see Crompton & Harris 1998) is that individual preferences can not be assumed to be determinant for women's employment decisions, even though they are likely to be of influence. Of course, it is hard to deny that women in post-industrial societies have gained substantial room of manoeuvre when it comes to making work and family-related choices. Still, arguing

[43]Such a choice is claimed to have been made possible by the emergence of a new societal scenario stemming from five crucial changes: the contraceptive revolution, the equal opportunities revolution, the expansion of white-collar occupations, the creation of jobs for secondary earners, and the growing importance of personal attitudes, values, and preferences for lifestyle choices (Hakim 1996, 2000).

categorically that lifestyle preferences are central to these decisions entails the risk of disregarding too promptly the role of more structural variables. Preferences can namely not be assumed to be exogenous. On the contrary, they are themselves affected and often even shaped by contextual aspects, such as public policies or societal norms. The latter, in turn, also influence the rational calculus women make with a view to putting their preferences into practice, as well as the actual alternatives they end up choosing among.

Granted, preference theory does not fully dismiss, at least in principle, the influence of either context or personal circumstances, even though it assumes that such aspects are becoming less important as compared to attitudinal orientations (Hakim 2000). In practice, however, this framework barely pays any attention to the significance of incentives and constraints at the individual and household level. The approach has been claimed to "go beyond economics" as it pinpoints the diverse nature of preferences among women (Hakim 2000). One might nonetheless wonder to what extent it is wise to leave economic calculus aside when dealing with preferences related to the allocation of time between paid and unpaid work. The latter may be very strongly affected by women's individual circumstances as well as by those of their partners; variables that lie at the heart of economic theories of labour supply. Furthermore, the claim that the importance of situational factors is decreasing is open to question – as will be subsequently shown, there is a considerable amount of evidence indicating that they remain of substantial weight.

3.2.2 Women's labour supply decisions: individual- and societal-level variables that enter the equation

Indeed, the labour market behaviour of both men and women has been intensely dealt with by economists over the past decades, due to a growing interest in the consequences of public policies and in the variables underlying changes in employment patterns (see for example Blundell & MaCurdy 1999). Mainstream labour supply theory provides thus a solid basis for analysing the kind of

variables, besides individual preferences, that are susceptible of affecting female employment behaviour.

At the core of this broad theoretical corpus lies the question of how individuals decide to distribute their time between paid and unpaid labour. One of the most widespread approaches to this issue has been the New Home Economics one, whose foundations were laid by Mincer's (1962; 1963) and Becker's (1965) work, and which models interdependent labour supply, household, and family decisions. Drawing on a simplified version (Blau et al. 1998) that makes it possible to concentrate on individual decision-making, four assumptions stand out as central in this perspective: i) individuals are rational and will seek to maximise their utility; ii) utility is obtained from the consumption of commodities – both good and services – that are produced through market and non-market inputs; iii) all income earned through market production is spent on market goods[44]; and iv) all non-market time is spent on the production of commodities[45]. Given all this, individuals are held to base their labour supply choices on the selection of the combination of market goods – that is, of market-time from which an income to spend on such goods is derived – and non-market time that entails utility maximization.

The decision to participate or not in paid employment – as well as the degree of participation[46] – depends thus on the comparison between the value of the time spent at the labour market (w) and the value placed on non-market time (w^*). To the extent that the former is higher than the latter, individuals will participate, and vice versa. Consequently, in order to understand women's employment patterns

[44] This assumption is made in order to get rid of the need to take into account saving and its determinants, as well as to make it possible to use the terms "market income", "market work" and "[the monetary value of] market goods" as equivalents; see Blau et al. 1998.

[45] This avoids, in turn, having to include leisure as a third element distinct from non-market time in the decision equation.

[46] It should nonetheless be borne in mind that "the hours decision"-equation – capturing the degree of participation – is somewhat more complex than "the participation decision"-one, as wage changes may entail mutually counterbalancing income and substitution effects whose net effect on behaviour is a priori indeterminate (given that the income effect would increase the demand for non-market time, while the substitution effect would result in an increase in market time; see Blau et al. 1998).

it is fundamental to know which variables affect the value they place on the time spent in each respective sphere; given the evident centrality of both to labour supply decisions. Needless to say, wage rates could be expected to play an essential role in the determination of the value of market time *w*. Empirical evidence confirms that they have a positive effect on women's employment choices, even if their weight vis-à-vis other factors appears to have diminished (Goldin 1994; Del Boca et al. 2000). Conversely, economic penalties such as those derived from certain taxation policies also have an influence on women's incentives to participate in the labour market. Especially in the case of low and middle incomes, systems that treat the individual – rather than the family – as a tax unit and do not penalize two-earner households are most supportive of female employment participation. It should be borne in mind that women – and most particularly mothers – are still very frequently secondary earners (see Blau et al. 1998; Aaberge et al. 2005).

Another variable of potential importance for the value that women assign to time spent in paid employment is education, which is usually positively linked to enhanced earnings prospects. To be sure, women having made greater educational investments have proven more likely to work and exhibit a comparatively stronger degree of labour force attachment, regardless of other situational variables (Del Boca et al. 2009). In many cases, of course, this relation will be selection-driven: employment oriented women are more likely to invest in their education in the first place. Nevertheless, it remains a fact that a high level of education itself tends to facilitate employment in more pleasant and advantageous conditions (Blau et al. 1998), which could raise the value of time spent at work even for women who had a relatively strong work orientation from the beginning.

The value of *w**, in turn, should be theoretically affected by the availability of other income sources than the individuals' own market earnings. In the case of women, however, this variable has only shown a limited effect on employment participation, which seems also increasingly responsive to their own economic prospects as compared to the partners' wages (Blau et al. 1998; Del Boca et al. 2009). It is rather the existence of domestic demands that appear to fundamentally determine the value of non-market time for women. To illustrate, having many or young children exerts a

negative effect on female employment participation that diminishes as they grow older (Del Boca & Pasqua 2005; Del Boca et al. 2009)[47] or when women have access to external services that substitute for their own care time (Blau & Robins 1989; Blau et al. 1998; Kimmel 1998; Del Boca et al. 2009). Similarly, access to good quality part-time jobs, parental leave, and flexibility at the workplace – all of which make it easier to reconcile employment with family life – have been found to affect mothers' labour supply positively (Blau et al. 1998; Del Boca & Pasqua 2005; Del Boca et al. 2009); even if they do so by affecting the value of *w* rather than that of *w**.

It is crucial to note that economic theory hardly disregards itself the importance of preferences. On the contrary, these are essential as they are the source of the indifference curves of each woman with respect to employment participation. The latter, in turn, are crucial for their final choices as they play a role in determination of utility maximization. Individuals' budget constraints demarcate all the combinations of market and non-market time from which they can choose, given their potential wages in the labour market and the non-labour income at their disposal. In economic models, utility maximization is given by the point at which the budget constraint cuts the highest indifference curve it can reach. Differently put, preferences are acknowledged to have a fundamental influence on the value that women assign to both market and non-market time.[48] In this sense, there should be no contradiction between preference theory and economic models of labour supply. The latter, however, reach further as they pay due consideration to the situational context in which these preferences emerge.

Furthermore, what should not be overlooked is that preferences can themselves be very context dependent; as they are often linked to social attitudes and norms. Gender values, for instance – not only a woman's, but also her partners' and those prevalent in her

[47] While the presence of children affects women's participation negatively on account of its increasing the value of non-market time, the inverse relationship may hold true as well – women with greater work commitment often decide to have fewer children (Blau 1998; Hakim 2000).

[48] The value assigned to non-market time *(w*)*, also known at the reservation wage, would be given by the slope of the highest possible indifference curve at the point where market time is equal to zero.

surrounding environment – could be expected to play a potentially important role for women's inclinations towards paid employment. Not only women who are themselves oriented towards paid employment, but also those socialized in environments with less traditional gender and family-related norms should attribute greater value to their labour market participation.

3.2.3 The missing pieces in the puzzle: bringing men's household behaviour into focus

To sum up, economic and sociological theory have thrown light upon a number of variables whose importance for female labour supply has been empirically corroborated. Nevertheless, there is as yet unexplored ground in the literature, particularly regarding the household context in which individual decision-making takes place. Undeniably, female labour supply choices have been related to the intra-household division of labour in earlier research. Not only neoclassical economic theory of the family (Becker 1981) but also later approaches, such as bargaining models and the "doing gender" framework, have treated women's employment participation as closely linked to their own and their partners' domestic behaviour. Still, while the interdependence between the partners' respective participation in paid and unpaid work has been acknowledged (see for instance Blossfeld & Drobnič 2001), the distribution of work in the domestic sphere has seldom been treated as independent variable. Most empirical studies dealing with intra-household time allocation have been fundamentally concerned either with describing trends in the division of unpaid labour, or with modelling and understanding its underlying causes (for some relatively recent examples, see Gershuny et al. 1994; Álvarez & Miles 2003; Bianchi et al. 2000; Breen & Cooke 2005).

Accordingly, the extent to which men become involved in domestic work has usually been dealt with as the phenomenon to be explained, rather than as an explanatory variable with the potential to influence non-domestic outcomes such as labour supply decisions. The effect of the division of household tasks on female labour supply has hardly been looked into in any systematic way. Admittedly, some contributions have examined the impact of

housework-related variables on employment decisions (for a review, see Shelton & John 1996), yet they have primarily focused on how women's own domestic engagement affects their participation in paid work. This uncovers a need to direct attention towards the possible influence of men's time use on their partners' work attachment.

It has been noted that the relative share of domestic work performed by men has increased. This trend is particularly evident regarding childcare as well as within couples where partners have higher education (see Gershuny 2007; Esping-Andersen 2009). Little is known, however, about the implications of such labour redistribution for women's own time use preferences and their possibilities to carry them out. A key question is whether the heterogeneity of female labour supply observed in modern societies could be related, to any significant extent, to variations in their male partners' domestic behaviour. A common argument in the economic literature is precisely that women's occupational choices in connection with family-building are negatively affected by their retaining primary responsibility for housework and childcare. This is not less true for dual-earner couples (Drobnič et al. 1999). In fact, while differences in work attachment between mothers of young children and other women have decreased over time (Leibowitz & Klerman 1995), those among the former who do not completely exit the labour market frequently end up opting for part-time employment (Blau et al. 1998).[49]

It seems thus timely to examine the relative importance of men's participation in unpaid work for their female partners' employment patterns. Building on the assumption that a greater degree of male domestic engagement should reduce the weight of demands placed on women's non-market time – and thereby the total opportunity costs of their employment participation – two related hypotheses will be tested:

[49] There are nonetheless noteworthy cross-country variations. For instance, fertility-related events have been found to exert a stronger negative influence on women's employment in Germany than in the US. In contrast with their American counterparts, many German abandon paid work for relatively long period of times when they become mothers, and they only enter part-time employment when their youngest child is old enough for school start (see Drobnic et al 1999)

H1: A higher degree of male involvement in housework – and in the case of the transition to parenthood, also in childcare – will result in comparatively greater ***continuity*** *of female work attachment following family-building events.*

H2: *A higher degree of male involvement in housework – and in the case of the transition to parenthood, also in childcare – will result in comparatively greater* ***intensity*** *of female work attachment following family-building events.*

These separate hypotheses are reflective of the distinction between "labour supply choices at the extensive margin" and "labour supply choices at the intensive margin" (Heckman 1993) that is frequently found in the theoretical economic literature on employment behaviour. The former makes allusion to entry- and exit-related decisions, as well as to those concerning the kind of employment individuals opt for. The latter refers to choices regarding the hours (alternatively weeks, or whatever other temporal measure is used) that will be devoted to paid work. As decisions concerning each dimension have been found to be governed by their own particular logic[50], it has not been uncommon to distinguish between "the participation decision" and "the hours' decision", respectively (see Blau et al. 1998). There are several mechanisms whereby men's domestic involvement could influence both decisions positively. Women who consider interrupting employment after marriage or childbirth may be less prone to do so if they anticipate that their partners will ease the burden associated with combining work and domestic responsibilities. Mothers might also feel less uneasy about staying at work if they know their children will receive a substantial degree of attention from their fathers; rather than or in addition to external caregivers. The presence of an engaged partner who actively devotes time to children and caring tasks may, moreover, have an additional positive effect on mothers' employment. It may namely make them more aware of the actual benefits for children of time with fathers and of a more egalitarian division of care and

[50] For instance, it has been noted that participation decisions are usually more responsive to wage and income variations than those related to the amount of hours devoted to paid work (Blau et al. 1998).

work. Similar arguments could be made regarding the decision to participate full-time rather than part-time in the labour market.

Understanding the extent to which women's employment decisions at key lifecourse stages are dependent on their partners' domestic behaviour seems particularly relevant against the backdrop of the economic theory of the family. According to the latter, partners will specialize in paid and unpaid labour, respectively, inasmuch as it is the most efficient productive strategy. In recent years, as a consequence of women's growing earnings capacity, complete or very marked specialization has become increasingly difficult; which has been claimed to reduce interdependence (Becker 1981; see also Blossfeld et al. 1996). It would be interesting to know, in this context, to what degree it has rather given way to a qualitatively new type of dependence between partners. When the basis for traditional specialization erodes, as women make greater human capital investments prior to family formation and men venture increasingly into the household sphere, the crucial issue is the following: do women make their employment decisions with independence of what their partners do, or does the latter's involvement in unpaid work fundamentally influence the former's capacity to keep a strong foothold on the labour market? Examining what happens in connection to family-building transitions, which are intimately linked to changes in the intra-couple distribution of labour, should be an adequate starting point for approximating this question.

3.3 Data and methods

Given the object of this study – the influence of male domestic effort on female employment patterns at key life course stages –, there is an evident need to resort to longitudinal data. The dynamic nature of behaviour relative to paid and unpaid work, as well as the close interrelations between the two phenomena, also call for this particular type of evidence – the direction of causality could obviously not be captured by means of cross-sectional analysis.

The German Socio-economic Panel (SOEP), a longitudinal dataset providing encompassing information on individuals, households

and families, seems particularly suitable for these purposes as it offers yearly records covering a long period of time – the first wave of interviews was carried out 1984, and the most recent one used in this analysis dates back from 2009. In addition to regular longitudinal data, the panel also makes available retrospective biographical information on a number of variables, including employment and family histories as well as social and parental background. This facilitates the use of life course analysis techniques and makes it possible to consider the influence of variables going long back in time. As will be discussed further on, the latter is particularly important for dealing with endogeneity and selection problems.

An empirical analysis of female work attachment could be performed from both a short-term and a long-term perspective. In this sense, the distinction between transitions and trajectories (Elder 1985) is crucial and might serve as basis for the application of distinct methodological strategies. In this paper, focus will be exclusively on the short-term – that is, on employment transitions (or the lack thereof) following marriage and childbirth. Event history analysis techniques will be used to understand discrete changes in women's employment situation after these life course events. The study will be structured, moreover, around the two dimensions of labour supply previously noted; namely *intensity,* operationalized in terms of full-time versus part-time or no time dedication, and *continuity*, measured in terms of participation in or exit from the labour force. The exact procedures resorted to in each part of the analysis will be described in greater detail further on.

3.3.1 Implications of focusing on German data

Analyzing data from Germany entails that certain considerations about the country's institutional and social context must be borne in mind. First of all, the German welfare state has traditionally been characterized by conservative family and tax policies that encourage a traditional division of labour. Neither institutions nor normative attitudes have been especially supportive of continuous and intense female labour market participation labour – rather, they have promoted their role as secondary earners (see Esping-Andersen 1990; Blossfeld et al. 1996; Drobnič et al. 1999). The supply of

childcare services has been generally low and characterized by limited, inflexible opening hours (Matysiak & Steinmetz 2008). As a result, it has been common for women to work full-time before family-building, make a several year long employment interruption in connection with childbearing, and enter part-time employment when children start in school or after extensive periods of parental leave[51] (Drobnič et al. 1999). In fact, for those German women who can rely on a partner for economic support, part-time work is the typical strategy for reconciling employment and family-life (Drobnič et al. 1999). This has been found to be the case even for women who have a higher earnings potential than their male partners'; which means that the division of labour in this country does not necessarily follow the logic of comparative advantage in human capital investments (Blossfeld et al. 1996).

East Germany deserves a mention of its own on account of its particular heritage from the communist era. The former GDR was characterized by high levels of normative and institutional support for female employment, and the vast majority of women combined family responsibilities with full-time work. After the fall of the Berlin wall, the West German legal and institutional framework was established in East Germany as well, yet a distinctive legacy in terms of more extensive childcare services and greater normative support for mothers' employment remains. It has indeed been noted that the negative impact of having children or a high income partner on women's employment is smaller in East Germany than in West Germany (Matysiak & Steinmetz 2008).

[51]German parents currently have the possibility of taking up to three years of partly remunerated parental leave. Both mothers and fathers are entitled to twelve months paid maternity/paternity leave which they can divide between them. The maximum duration of the joint leave is 14 months, receiving around 67% of their previous earnings (*Elterngeld*). If the father takes at least two months off, this leave is extended two additional months. Furthermore, both men and women can make use of two extra years of parental leave (*Elternzeit*). The latter is usually unpaid, although it depends on the couple's financial situation. However, these measures were not introduced until 2007. Prior to the Parental Leave Benefit Reform introduced that year – that is, throughout most of the period under study – the child-rearing benefits that parents were entitled to during the first two years of leave were means-tested and relatively scarce, encouraging a traditional division of the leave consistent with the breadwinner model (see Drobnič et al. 1999; Spiess & Wrohlich 2008; Geisler & Kreyenfeld 2011; García Díez 2010)

All in all, nevertheless, the aforementioned features of the German context will most likely make it difficult for the hypotheses at the heart of the analysis. While potential differences between the two aforementioned regions should be considered, social and institutional mechanisms can be generally expected to push for reduce work attachment after marriage, and especially after childbirth, regardless of how male partners behave at home. Still, this is not necessarily a downside for the purposes of this study. If male domestic behaviour, after controlling for other potentially relevant variables, eventually proves to have an effect on women's employment patterns in this country, it should be a genuine effect.

In addition, there are other aspects regarding the employment participation of German women that merit attention given the aim of this study. Human capital theory predicts that women with higher education should be less likely to abandon full-time work and more likely to return to the labour market after an interruption. In Germany, however, the level of education has not shown any significant effect on the decision to leave full-time employment (Drobnič et al. 1999) and, as noted earlier, the division of labour between partners can be hardly be assumed to follow the logic of comparative advantages. This being so, the influence of other variables such as time availability, or the weight of the domestic workload – which should be directly connected to the partners' degree of involvement in unpaid labour – becomes potentially very relevant. It seems particularly interesting, moreover, to examine what happens in this country to female employment patterns when men do not behave according to the pervasive traditional gender norms. In fact, German women's rates of reincorporation to paid work after an interruption have been found to be rising over time (Drobnič et al. 1999), which begs the question of the extent to which such changes are linked to transformations in male behaviour. Last but not least, since there is evidence of strong male partner effects on female employment patterns – those women whose partners' hold jobs with high occupational status, for instance, have been found to be more prone to abandon the labour market (Blossfeld et al. 1996) – a pertinent issue is whether the influence of the male partner is also related to his behaviour and not merely to his resources and characteristics.

3.3.2 Employment transitions after marriage and childbirth: sample characteristics, main variables and modelling approach

The first part of the analysis focuses on the effect of the main independent variable – partners' domestic behaviour – on women's propensity to interrupt paid employment in connection to marriage and childbirth. To this end, event history analysis (EHA) techniques are performed on two samples of women – initially consisting of 8034 and 3042 individuals, respectively[52] – having married or given birth between 1984 and 2009 and who were employed (either full-time or part-time) prior to these events. Cohabiting couples are not included in the former sample as the dataset does not provide related spell information. As to the latter, it encompasses all births, regardless of order, having taken place within the time span considered. Ideally, the analysis should have distinguished between first and higher order births, for two fundamental reasons: to begin with, the first birth might be of particularly large weight in terms of creating unprecedented domestic demands. In addition, its occurrence could bring about a division of labour within the couple that might be carried into later births. Unfortunately, it was not practically feasible to proceed in this way – the number of observations and thus of employment transitions following the first birth became too reduced, as many first births fell outside the time framework the study draws upon. For this reason, all births corresponding to a given individual are considered simultaneously as independent observations. If a transition out of full-time work has not taken place by the time a subsequent birth occurs for the same individual, the duration marked by the occurrence of the previous birth is regarded as right censored. This said, the number of children already present in the household is incorporated to the analysis. This is done to reduce potential problems related to the fact that the birth considered might not be the first for a given couple.

Since the first part of the analysis revolves around the continuity dimension of female labour supply – that is, around women's

[52] The figures subsequently presented in the regression models are lower due to missing values of different covariates.

propensity to abandon paid work after marriage and childbirth – transition rates to non-employment from either full-time or part-time work (put together as a single origin state) constitute the dependent variable. Maternity and parental leave, in the case they immediately follow an employment spell, are treated as a prolongation of the latter, as what is important is what happens in terms of return to paid work once the leave is over. The start of the employment episodes considered is marked by the date of marriage or that of childbirth, depending on the life course event that is in focus. Their end occurs when a transition out of work takes place, unless the episode is right censored.

The second part of the analysis examines the influence of male domestic effort on the intensity of women's work attachment. It focuses on permanence in full-time employment – given that such permanence can be particularly challenging to maintain after family-building; and very especially so in Germany – and follows essentially the same logic depicted above. Transition rates from full-time to either part-time or non-employment are treated, in this case, as dependent variable. It is obviously not unproblematic to lump together part-time work and non-employment into a single "out-of-full-time" destination state – not least as working part-time may serve very different purposes for different women; constituting a stable new arrangement for some and a temporary way of balancing work and family before returning to full-time for others. Nevertheless, distinguishing between transitions to different states would entail a too reduced number of observations in the models; while following women's behaviour in a longer-term perspective is beyond the scope of this paper. Focus is laid on relatively short-term behaviour after crucial family building events; taking as a point of departure the particular difficulties that women and specially mothers meet to maintain a strong foothold on full-time employment.[53]

As far as covariates are concerned, two groups can be distinguished. Firstly, the models contemplate certain time-constant characteristics of women of potential weight for their employment decisions – namely their level of education and their cumulated work

[53] In this case, initial sample sizes add up 5027 and 2103 individuals (for transitions out of full-time work after marriage and after childbirth, respectively).

experience at marriage and childbirth[54]. These variables are aimed at capturing selection effects related to attitudinal work orientation. Ideally, it would have been adequate to include other social stratification variables, such the socioeconomic status of the family of origin, or information on whether the individuals' own mothers had been employed. Nevertheless, this has not been possible as the incorporation of such covariates entailed a very substantial loss of observations. In addition, as it is not only women's own attitudinal characteristics that might be of relevance but also those of their partners, the latter's educational level by the time of marriage or childbirth is controlled for as well. So are education, age, and occupational prestige differentials between the male and the female partner.

The rest of the covariates incorporated are time-varying ones. In contrast to the former, they are not intended to capture selection, but rather the influence of situational variables that may change their value throughout the episodes analyzed. Among them are the woman's and the partners' log income, their ages – in linear and quadratic form –, the partners' working time, the total number of children in the household, the presence of children under three[55], whether the family is in charge of other types of dependants, and whether the couple lives in East or West Germany.

An important covariate to include in any analysis related to couple specialization is a measure of externalization of domestic work. Unfortunately, while the dataset provides some related information, more than 50% of the observations are missing for the individuals included in the analyzed samples. Moreover, measurements have not even been performed at regular intervals; which might have

[54] This variable takes into account in its construction the total time each individual has been, potentially or in practice, part of the active population. To this end, the measure of cumulated work experience provided in the dataset has been divided by the woman's age minus 15 by the time of marriage/childbirth. In the case of transitions out of full-time, focus is laid on how much experience in just full-time employment the women had prior to the family-building transitions of interest.

[55] The choice of the children under three-variable has to do with the particularly large domestic demands that their presence entails. It is also motivated by the strong normative pressures for German women not to work at all – or to do so to a very small extent – if their children have not reached that age (Kraus 2006).

allowed some imputation strategy such as assigning the closest value to the missing years. Complex multiple imputation techniques do not appear as a solution either. The variables one could typically use in the process – on account of their potential relation to the possibility of externalizing domestic tasks – are namely crucial covariates in all the models. As this would introduce enormous endogeneity concerns in the analysis, there is in practice little alternative to excluding this variable. In the case of transitions after childbirth, a measure of whether the couple has access to external preschool childcare is nonetheless included.

Last but not least, the main independent variables at the heart of this paper – namely those related to the male partners' domestic effort – are, of course, also time-varying. The models contemplate two different measures of housework[56] and childcare: on the one hand, their absolute levels at given points in time, and, on the other hand, their yearly increments[57]– be they negative or positive. They are based on a survey item asking each individual how much housework and childcare, respectively, he/she performed on a

[56]In this sense, a strict definition has been applied so that only core housework tasks – e.g. cooking, cleaning, washing - have been considered. Activities such as gardening, doing repairs or running errands, f.i. are not contemplated by the measure used.

[57] An explanatory note is in place regarding the construction of models where measures of domestic effort-increments are included. In such models, missing values of the male housework and childcare increments variables – which, obviously, correspond to the first year of the employment episode(s) observed for a given woman – have been set to 0 for several reasons. First of all, keeping them as missing would have entailed a loss of observations – and thereby transitions – that is too substantial in relation to the number of covariates incorporated to the analysis. Secondly, and more crucially, this would have introduced an important bias, as precisely those cases where an employment transition takes place right at the beginning of the episode would have been lost. In view of such constraints, the decision to set to replace missing values by the value 0 (no increment) was taken after checking carefully that this did itself did not bias the models in any relevant way. To this end, I looked at the distribution of the increment variables' values. It turned out to be a normal distribution where both the most frequent and the median value were in fact equal to 0. In addition, the models were run on the more reduced number of observations for which the increment variable was not missing, without any significant alteration of the main and most central results. After having taken these two precautions, I believe it can be concluded that setting missing values to zero for this specific variable contributes to making these models more robust rather than to distorting them.

typical weekday. Information on effort on weekends has not been considered as it is not available for all the years analyzed.

The method of analysis chosen are Weibull-type event history models, which make it possible to consider the possibility of monotonically increasing or decreasing – that is, non-constant – transition rates over time[58]. In order to easily incorporate time-dependent variables, the technique of episode splitting has been applied (for a detailed description of the latter see Blossfeld; Hamerle & Meyer 1989; Blossfeld & Rohwer 2002; Blossfeld et al. 2007). Each of the episodes examined has been split into a number of sub-spells of around 12 months of duration taking into account the dates in which each individual was interviewed each year, in order to guarantee that no information posterior or simultaneous to the transitions out of full-time employment is contained in the covariates. The latter is important in order to ensure a certain causal ordering of processes. Furthermore, this is of even greater weight in the light of the specific courses of male and female behaviour considered, which could otherwise raise issues of parallel development, feedback effects, and reverse causation. The episode-splitting technique – indeed denominated a causal approach for analyzing parallel and interdependent processes (Blossfeld et al. 2007) – is helpful in this sense, as it allows the model to consider not only the values of the independent variables at the point in time immediately prior to the transition that ends the episode, but also the history of the process up to that moment (Blossfeld et al. 2007).

Given the latter, it can also be argued that the construction of the models makes it possible to meet endogeneity and selection-related concerns in the following way: paid and unpaid work decisions taken simultaneously at some point – most likely, at a time coincident with or proximate to couple formation or a child's arrival – should manifest themselves as a static relationship between the

[58] Several formulations of the piecewise constant exponential model have been tested as well, yet they have not proven as adequate as the effect of specific temporal intervals tended to mask that of key family-building related covariates, such as the number of children and their age. In all other respects, nevertheless, the results of both types of models were essentially similar. Moreover, further examination of the figures yielded by the life tables the descriptive analysis is based on indicates that the Weibull function adequately captures temporal variation in the transition rates of interest.

covariates of interest and the dependent variable throughout the episodes under study. That is to say, the mean levels of the main independent variables (male housework and childcare effort) and those of the dependent one (female employment transition rates) would be related in the same manner from that point and all along the women's duration in employment (or full-time employment in the case of the *intensity* dimension). Such would also be the case if those women most/least interested in continuing to work (or, again, to work full-time when the *intensity* dimension is assessed) automatically selected partners who are going to engage comparatively more/less in domestic work. Since the main covariates of interests are time-varying, their being statistically significant would thus indicate that deviations from the aforementioned predetermined mean levels indeed affect the employment transition probabilities that constitute the dependent variable. In fact, the episode-splitting has been performed in smaller (yearly) sub-episodes precisely with this in mind – the purpose is to capture how for the same individual changes in the covariates at given points in time result in somewhat later changes in transition rates. Statistical significance of male domestic effort with a negative sign (as expected in hypotheses 1 and 2) would mean that a given and same woman will have a lower probability of transition at a point in time when her partner has shown greater participation in housework or childcare than at another point in time when he has registered lower involvement levels. This woman might even have selected a potentially collaborative partner beforehand as she planned on a full-time career. However, if the partner's domestic effort for some reason were to decrease or increase at some point during her full-time employment episode, the model will be able to capture any ensuing significant variations in her employment transition probability.

Acknowledgedly, this does not solve all the endogeneity and selection issues that the analysis might raise. It can not be completely discarded that decisions on male domestic involvement and female labour supply, respectively, are made simultaneously within the couple – employment choices could just take greater time to materialize. Nevertheless, the EHA procedures followed place the values of the independent variables clearly before those of the dependent one in the temporal chain, while also paying heed to the history of both. They thus leave open a realistic possibility that

developments in male domestic effort do in fact elicit female employment responses further along in time. Ultimately, moreover, even if decision simultaneity were to occur, it would not per se rule out the importance of male domestic behaviour for female labour supply patterns.

3.4 Results

3.4.1 A descriptive overview

As can be seen in figure 3.1, gender differences in the sample in terms of labour supply are already manifest by the time of marriage. Of an initial total of 14, 508 women, only slightly above one third were full-time employed when they got married. Part-time workers amounted to 21%, and a substantial proportion – 41% – were not employed. The picture corresponding to men is very different: the overwhelming majority of them held full-time jobs when they got married, 23% were in a situation of non-employment, and only a very small share (2%) worked part-time.

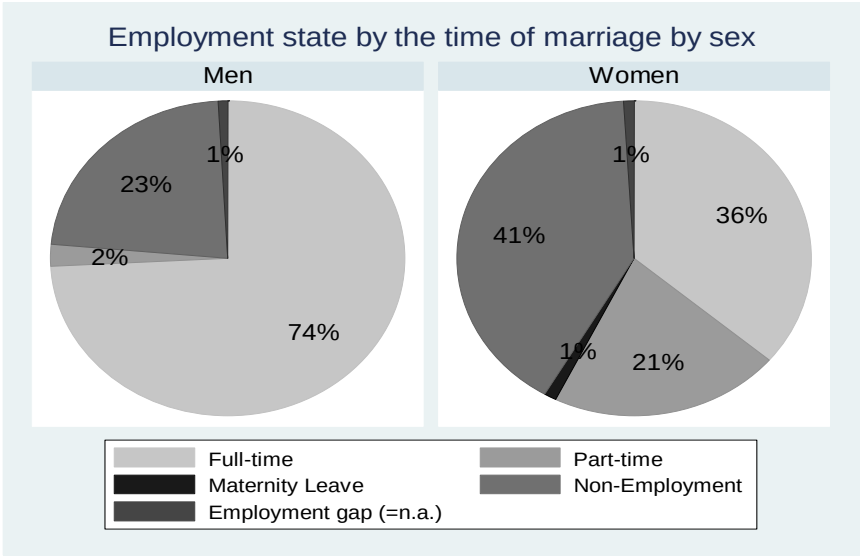

Figure 3.1. Employment state at the time of marriage by sex. Source: SOEP (1984-2009)

Figure 3.2 shows largely similar findings if employment status is assessed at childbirth – regardless of birth order – instead, although the share of men who is full-time employed by the time of this life course event is even higher (87%). It should be noted that the gender gap is not as large when only the transition to the first birth is analyzed; since a greater share of the sampled mothers (56%) were in full-time work prior to its occurrence, while male figures remain virtually unchanged. Nevertheless, it is still undeniably far from narrow.

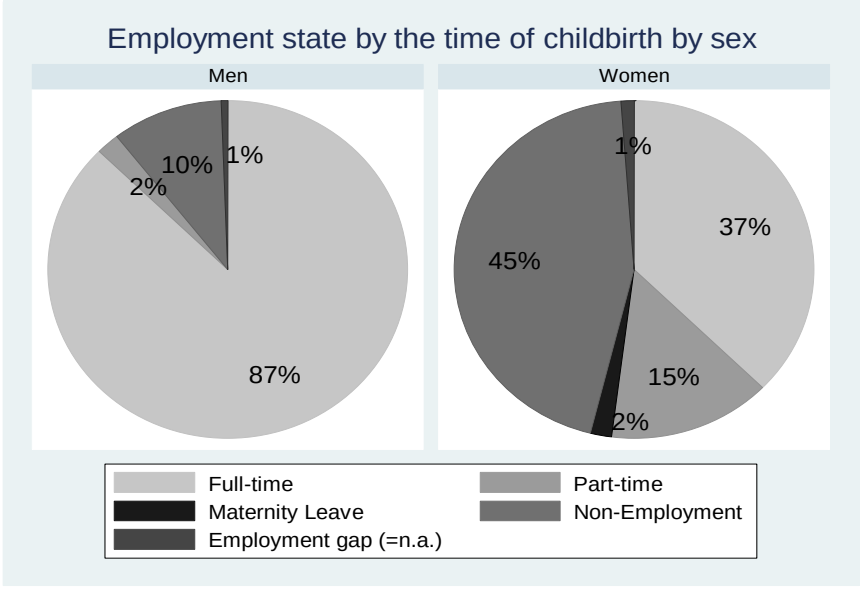

Figure 3.2. Employment state at the time of childbirth by sex. Source: SOEP (1984-2009)

If we focus on the proportion of women who were in a full-time spell at the time of marriage – which should include, in principle, those most work-oriented ones – it is interesting to note that 42% of the observations are censored. That is, either they remain in full-time all along the observation period, or there is no available information about subsequent employment spells. Of the 58% who reported having left full-time employment at some point after they got married, more than half – 32% of the total of women analyzed – abandoned employment completely, while the rest (26% of the total) went into part-time jobs. As far as childbirth is concerned, the figure of women abandoning full-time employment at some point

after that event (and hence after maternity leave) is as high as 70%. As many as 54% of these – and 38% of the total – shifted to part-time jobs, but a significant share (46% of the "out-of-full-time transitioners"; 32% of the sample) made a transition out of employment. In this sense, results are virtually the same regardless of whether focus is laid on first births or on transitions to motherhood of all possible orders. In both cases, almost two thirds of the previously full-time working women report having left this employment state after having a child, and above one third of all previously employed women leave market work.

To sum up, employment interruptions in connection to marriage do not seem uncommon even among those previously full-time working women for which a greater degree of employment commitment could be presupposed. Perhaps unsurprisingly, they are even more frequent (37%) among women having worked part-time before getting married, which could be taken to corroborate their lower degree of labour force attachment. After childbirth and maternity leave, as confirmed by previous studies on Germany, the interruption of full-time employment is indeed the norm for those women having previously had such an employment spell, and many just end up leaving paid work completely.

In order to get a descriptive picture of the transition processes that constitute the dependent variable, the next step is the application of non-parametric estimation methods – more specifically, of life table-based survivor functions. Once more, remarkable gender differences are revealed. These are visible, to begin with, regarding the extent to and the pace at which previously full-time working individuals abandon this kind of employment after marriage (figure 3.3). After having been married for five years, 69% of the analyzed men remained within an uninterrupted full-time work episode. For women, the corresponding figure is only 42%. After ten years, the proportion of men who have not interrupted full-time employment at all after marriage is 53%, while it is as low as 25% in the case of women.

When it is childbirth rather than marriage that marks the beginning of the observation period (figure 3.4), the discrepancy between subsequent male and female labour supply is simply drastic. While

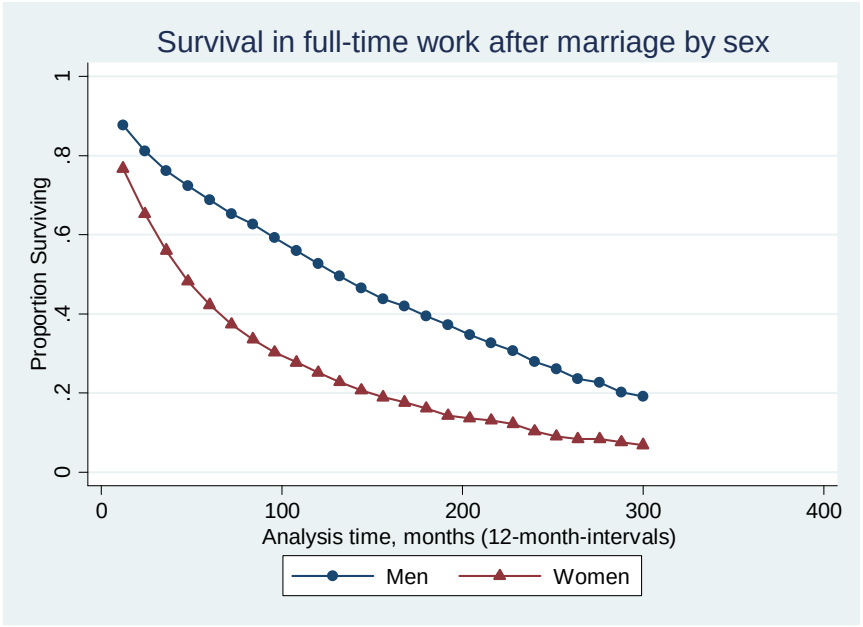

Figure 3.3. Survival in full-time work after marriage by sex. Source: SOEP (1984-2009).

– as could be expected – the vast majority of men remain in uninterrupted full-time employment after having a child (91% do so after one year; 67% after ten years), most full-time working women leave this type of employment within the first two years of childbirth. After 3 years, the figure has gone down to 27%. Given that such a period coincides with the maximum length of maternity leave – which, as noted in the methods section, has been incorporated to its previous employment spell – this entails in practice an overwhelming tendency to leave full-time work in connection with childbearing, as has already been well-documented in the previous literature on the German case. In fact, only one tenth of the sampled mothers remain in uninterrupted full-time work ten years after having a child. Survival rates for first-time mothers are only very slightly lower than those obtained when all order births are considered.

The gender differential actually diminishes when the focus is extended from transitions out of full-time work to transitions out of employment more generally. This is particularly true for labour

market behaviour after marriage; which indicates that comparatively fewer women leave paid work after union entry.

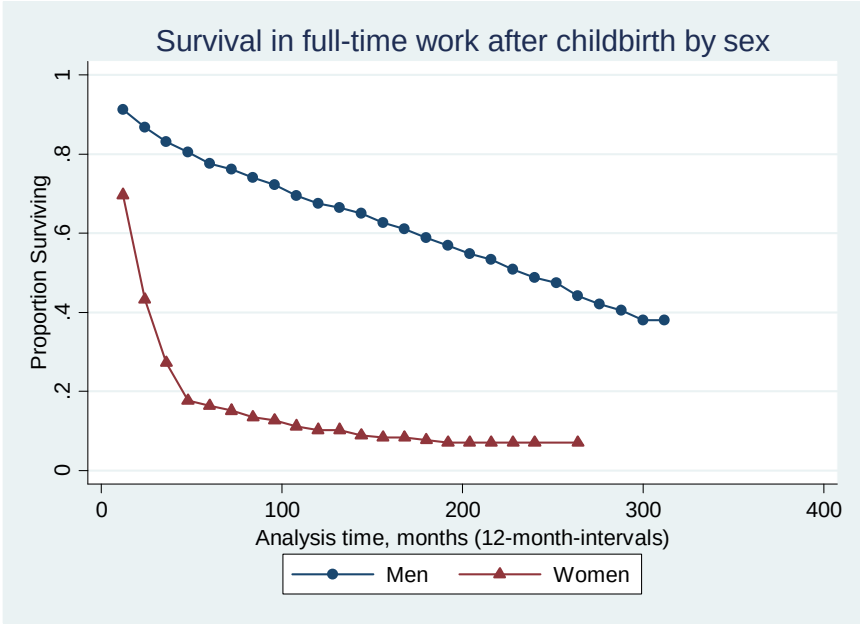

Figure 3.4. Survival in full-time work after childbirth by sex. Source: SOEP (1984-2009).

Figure 3.5 illustrates male and female survival in paid employment after marriage. As can be seen, male figures are not very different from those obtained when only transitions out of full-time work were considered. This is, of course, barely surprising given that most men were indeed full-time employed at marriage time. Men's survival rates in uninterrupted paid employment added up to 73% after five years of marriage, and to 58% after ten years. As far as women are concerned, it is worth noting that rates of survival in market work are not as high as men's, though they are – as could be expected – visibly higher than survival rates in full-time work specifically. Five years after marriage, 60% of the previously employed women remain in the labour market, and as many as 44% still have not made any employment interruption after ten years. These findings only come to confirm something that we already know from previous research – namely that working women in Germany typically switch to part-time employment after marriage,

rather than abandon the labour force altogether (see f.i. Drobnič et al. 1999); while not so many remain in full-time work.

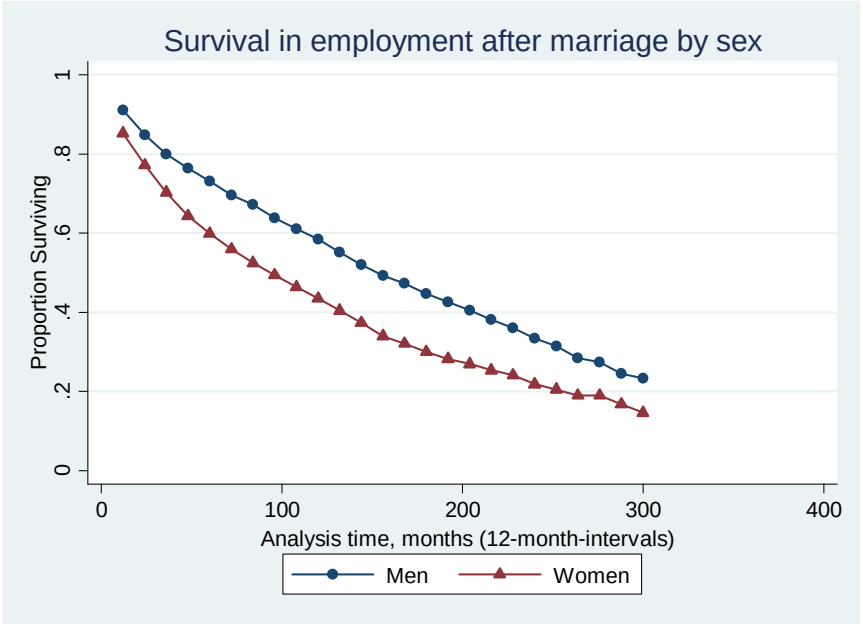

Figure 3.5. Survival in paid employment (be it full-time or part-time) after marriage by sex. Source: SOEP (1984-2009).

This said, the transition to childbirth (figure 3.6) is associated with far more marked differences in terms of male and female labour supply. Five years after having a child, 81% of the sampled men continued working without having gone through any employment interruption. After 10 years, the figure was still as high as 72%. In contrast, 57% of the sampled working women had interrupted employment at some point during the first five years following childbirth; while only 32% remained in uninterrupted employment once 10 years had gone by. When it is only behaviour after first order births that is examined, survival rates are somewhat lower for both men and women, but otherwise results are essentially similar.

Now, the interesting issue is whether male domestic behaviour after the crucial family-building events considered actually seems to make a difference for female subsequent employment behaviour. As can be seen in figure 3.7, during the first three years after marriage there is virtually no variation in terms of female transitions

out of full-time work that can be put in relation to male partners' housework effort. When the sample is divided into two distinct subsamples – based on whether husbands perform more or less housework than the average during the full-time spells in question[59] – no substantial differences can be found over this period. From the third year after marriage, however, the survival curves of the two subsamples start to diverge – rates of transitions out of full-time become higher for those women whose male partners perform less daily housework than the average, and the downward slope of their survival curves is also somewhat steeper.

It might thus be the case that male housework effort plays a certain role in facilitating female permanence in full-time employment after marriage – except, as noted, for a proportion of women that are bound to leave full-time work right after marriage no matter what. After all, even though the share that remains in uninterrupted full-time employment after 10 years is relatively low in both subsamples, the figure corresponding to women whose partners do

[59] This figure amounts, for men, to approximately 0.9 hours of housework on a typical weekday. The housework averages related to a given individual and spell on which subsampling builds upon have been formed as weighted averages, where more importance is given to later years in the spell. A simple way of constructing such averages, valid for spells of any duration, is to build a "running" weighted average that takes different values for each year of the spell and then keep the value corresponding to the final year. That is: if the total housework performed by the male partner at time (t) is denoted housework(t), a running average average(t) can be defined through the recursive formula average(t) = (average(t-1) + housework(t))/2, taking as the average corresponding to the first year of the spell the housework value corresponding to that year. If t=T denotes the final year in the spell, average(T) is kept as the final weighted average. One can of course argue that an ordinary average would have been the most straightforward choice. However, apart from being technically simple to implement, the weighted average has the advantage that it will give higher values to individuals which have increased their levels of housework during the spell. Of two partners with the same average levels of housework, but where one of them has higher levels towards the beginning of the spell and the other towards the end, this measure will favour the latter. It is important to note, moreover, that the weighted average is not biased towards any particular spell duration – for constant levels of housework, it will yield the same value regardless of the length of the employment spell.

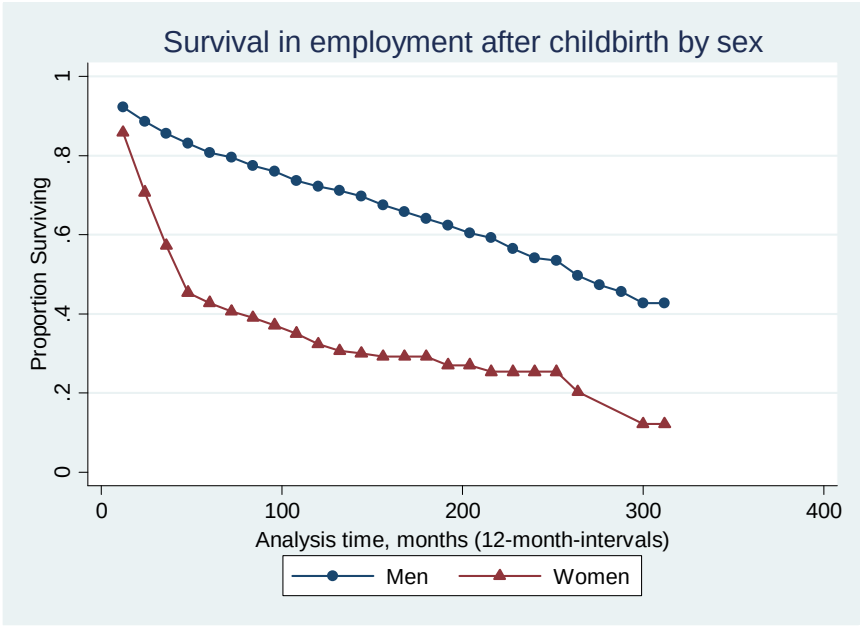

Figure 3.6. Survival in paid employment (be it full-time or part-time) after childbirth by sex. Source: SOEP (1984-2009).

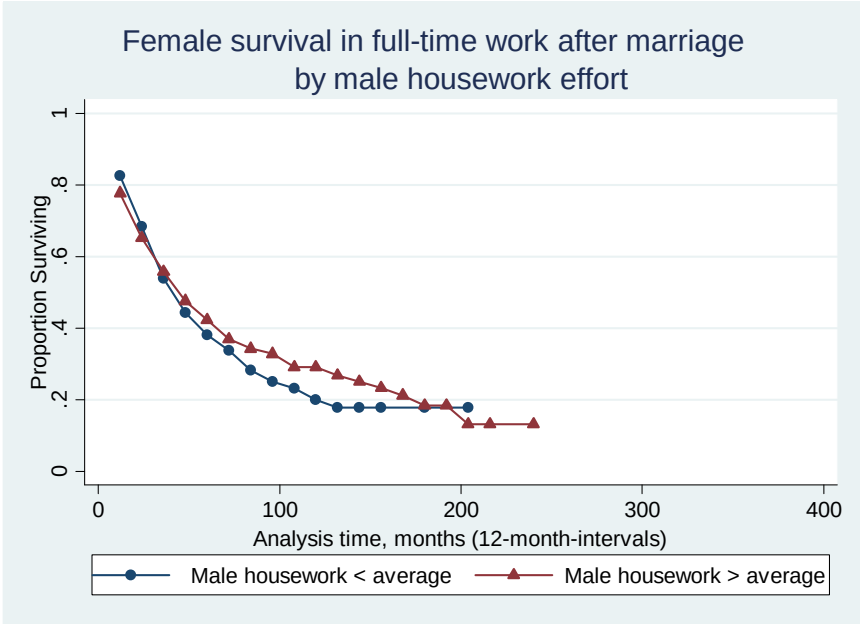

Figure 3.7. Female rates of survival in full-time work after marriage by male domestic effort. Source: SOEP (1984-2009).

more housework than average is larger (29%) than that obtained from the "less-than-average" group (20%). This said, such differences disappear in the long run.

When it comes to employment transitions after childbirth, it is not only men's housework effort that should be interesting, but also their childcare hours[60]. Thus, in the following non-parametric analysis they are both included in a joint domestic effort variable[61]. In this case, we see a difference between both subsamples from the very beginning of the observed episode. Of those previously full-time employed mothers whose male partners performed less housework and childcare than average since the child was born, almost 45% had left this type of employment one year thereafter. After three years, the proportion remaining in full-time work did not even amount to one fifth of the original total, and after six years 98% had abandoned full-time work. In contrast, while the majority of those with more participative partners also ended up leaving full-time employment at some point, they did so somewhat more gradually and to a lesser degree. One year after childbirth, as many as 77% continued to work full-time. In reality, most of these are likely to have been in maternity leave, as the figure falls down to 29% after three years. As can be seen in figure 3.8, nonetheless, a certain proportion (around 11%) end up staying in uninterrupted full-time employment throughout the years. Since remarkably fewer women exhibited such behaviour in the subsample corresponding to those with less engaged partners, it could indeed be the case that a greater degree of male domestic participation contributes to facilitating female permanence in full-time work.

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[60] Of course, this information should be interesting as well for those marriages leading to a birth or those in which children are present from the beginning. Nonetheless, for the sake of parsimony, when analyzing employment transitions after marriage, I have chosen to only consider the effect of male housework. Including childcare effort for a reduced subsample of marriages in which children are present already from the beginning or after a few years would be largely redundant, as this type of effort is already incorporated to the analyses dealing with transitions after childbirth, when it should be particularly crucial. It can be interesting, moreover, to isolate the effect of housework from that of childcare, as both types of unpaid labour have been found to be qualitatively very different (see f.i. Hallberg & Klevmarken 2003; Paihlé & Solaz 2008)

[61] The average value lies, for men, at 1.9 daily hours of joint housework and childcare effort.

When permanence in paid employment is analyzed, a largely similar picture is obtained; as shown by figures 3.9 and 3.10. Still, the differences between subsamples are in this case clearly less evident than when transitions out of full-time work are in focus. Over the first years after marriage, in fact, women whose partners do more housework than average show somewhat lower rates of survival in paid employment, even if this trend is later reversed. Overall, it seems as if men's domestic behaviour could be more relevant for the permanence of women in full-time work than in paid employment more generally.

The above considerations notwithstanding, it must be borne in mind that the descriptive analysis presented so far does not control for the potential influence of other variables. This calls for caution when it comes to inferring from the graphs whether there could be or not a relation between male unpaid work and female labour supply. It is time to move forward to a multivariate analysis that permits the incorporation of potentially relevant covariates, pays attention to temporal order, and thereby makes it easier to draw conclusions about causal relations between the two variables.

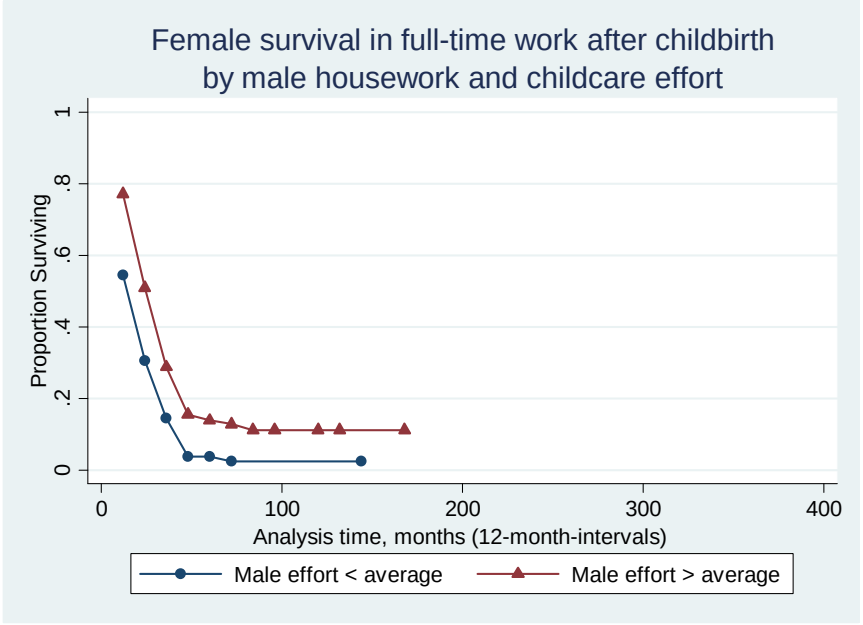

Figure 3.8. Female rates of survival in full-time work after childbirth by male domestic effort. Source: SOEP (1984-2009).

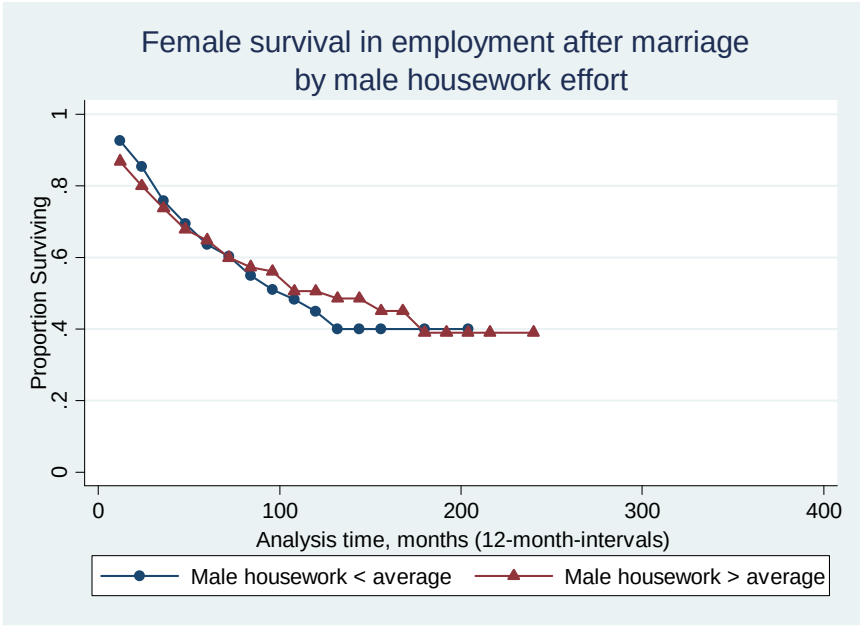

Figure 3.9. Female rates of survival in paid employment after marriage by male domestic effort. Source: SOEP (1984-2009).

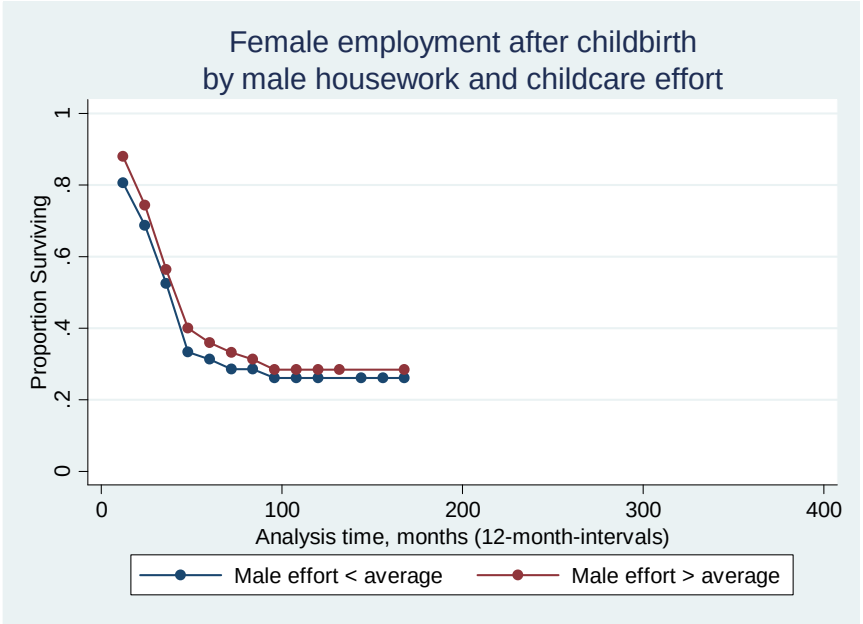

Figure 3.10. Female rates of survival in paid employment after childbirth by male domestic effort. Source: SOEP (1984-2009).

3.4.2 The continuity dimension: transitions from paid employment after marriage and childbirth

The multivariate analysis suggests that the decision to stay or not at work after union entry seems indeed responsive to male housework effort.[62] As illustrated by table 3.1, greater housework involvement by the male partner is consistently associated with a lower probability of transition out of employment. It is men's absolute housework levels throughout the employment episode, rather than how much they increase from year to year, that appear of relevance.

For the analyzed women, in addition, employment participation after marriage appears to be largely linked to monetary considerations. Very interestingly, it is not their relative resources but rather their own absolute earnings that seem to matter for the decision to remain (or not) in paid employment. Women showing comparatively higher income levels also exhibit significantly lower transition rates. In this light, it might seem puzzling that the partners' earnings also exhibit a negative association with women's propensity to leave the labour market. This finding could perhaps be reflective of selection mechanisms. Increasing evidence of positive assortative mating (see f.i. Nakosteen & Zimmer 2001; Nakosteen et al. 2004; Lefgren & McIntyre 2006) suggests that women with greater career ambitions could also marry men with comparatively higher earnings potential. Conversely, more traditional women with a low degree of employment orientation might end up with partners with less favourable labour market and earnings prospects on account of unobserved characteristics. Selection, in fact, appears a prominent determinant of women's employment participation decisions after marriage. Those with more cumulated labour market experience – in relation to their age – by the time they enter a marital union are significantly less likely to stop working thereafter.

[62] Childcare is not introduced in the models dealing with female labour supply after marriage, as not all couples analyzed have children. In some models, a confidence level of 90% has been taken to indicate statistically significant effects; given the reduced number of individuals and employment transitions analyzed, as shown in tables 1 to 4.

In some models, the same seems valid for education [63], which bears witness to the importance of earlier orientation towards paid work.

Apparently, living in East Germany is associated with a greater probability of interrupting employment after marriage. Counterintuitive as this finding might seem, it could reflect the solid establishment in West Germany of the "one-and-a-half-earner" model (Spiess & Wrohlich 2008), which generates incentives for women to work part-time after family-building and could make them relatively less likely to exit the labour market altogether. Hardly surprisingly, having children under three or the presence of other dependants in the household[64] also increase the probability of leaving paid work. The number of children, in contrast, is not consistently related with participation decisions, and when it reaches statistical significance (at the 0.1 level), it exhibits in fact a negative sign. As to the women's age, it shows an inverted u-shaped relation with the probability of employment interruption. The linear effect of her age shows a positive sign while that corresponding to its square term is negative. If we calculate where the top of the u-shape lies[65], we see that the figure adds up to 32.7 years. This means that the transition rate is, holding all other variables constant, at a maximum then. The further women are from that age, the less likely they are to interrupt employment after getting married. Differently put, the rates of transitions out of work would be lowest among women at the two ends of the age distribution[66].

If selection mechanisms seemed a powerful driving force in explaining women's employment exit after marriage, their relevance is even more evident when childbirth marks the beginning of the observation period (see table 3.2). The women's educational level and especially their cumulated work experience prior to the birth in question show clearly negative and significant associations with the probability of an employment interruption. These two variables can be taken to reflect selection mechanisms related to

[63] In this case, the relation only becomes apparent in some models at the 90% confidence level, but given N-size, not least in relation to the number of covariates, it seems reasonable to take it into consideration.
[64] Again, this relation is generally significant at the 90% level of confidence.
[65] Dividing the absolute value of the coefficient of the linear effect by the coefficient of the square effect multiplied by two.
[66] The age distribution ranges from 17 to 45 years.

human capital investments and attitudes towards paid work. In addition, it is worth noting that the partners' occupational prestige is positively related to the women's rates of transition out of employment. This finding could also be suggestive of the weight of attitudinal orientations. It might signal selection of men with high career ambitions into unions with traditional women that support their aspirations by assuming all domestic responsibilities – or, just as likely, it could stand for self-selection of these women into marriages with men in positions that guarantee their role as breadwinner. Absolute earnings still might have some negative impact on the analyzed women's propensity to leave employment after childbirth, yet the effect is smaller than in the case of employment exit after marriage and not patent in all models.

Neither male housework and childcare levels nor their yearly increments show the expected negative effect on the probability that women leave paid employment. In fact, yearly increments in male childcare are even positively associated with the latter. Nevertheless, this variable might just be capturing the effect of particularly high childcare demands. Having children under three, indeed, significantly increases the probability of making a transition to non-employment. In contrast, the coefficient of the number of children is negatively signed – those women who already have many children when they give birth to another one would actually be less prone to an employment interruption at this point. Puzzling though this finding may seem, it is likely to be another indication of strong selection dynamics being underway. After all, the analysis deals only with women who were working prior to the family-building transition of interest. A woman who participates in paid employment despite having a relatively large number of children can be assumed to have at least a certain degree of work commitment, wherefore it should not be too surprising that she chooses to remain at work even after having another one. All these results are maintained regardless of whether full models as those shown in table 3.2 are run, or whether they are slimmed down to more reduced versions with fewer, central covariates. The women's age shows similar effects as those described in the case of transitions out of employment after marriage.

Table 3.1: Effects on the rates of transition out of paid employment after marriage (Weibull models; standard errors within brackets).

	Model 1	**Model 2**	**Model 3**	**Model 4**
Partner's housework levels	-0.189** (0.065)	-0.172** (0.064)	-0.170** (0.064)	-0.186** (0.091)
Partner's housework Δ				-0.006 (0.064)
Log net earnings	-0.499*** (0.044)	-0.471***(0.058)	-0.475***(0.057)	-0.499***(0.043)
Partner's log net earnings	-0.124(*) (0.064)			-0.123(*) (0.064)
Woman's share of couple's earnings		-0.559 (0.441)	-0.509 (0.440)	
Education level at marriage	-0.064 (0.043)	-0.061 (0.043)	-0.057(*) (0.052)	-0.064* (0.043)
Work experience at marriage	-0.595** (0.218)	-0.474* (0.222)	-0.466* (0.223)	-0.595* (0.218)
Partner's education at marriage	0.021 (0.041)	0.004 (0.041)		0.021 (0.041)
Occupational prestige	-0.003 (0.005)	-0.002 (0.005)	-0.004 (0.006)	-0.003 (0.005)
Partner's occupational prestige	-0.002 (0.005)	-0.003 (0.005)		-0.002 (0.005)
Partner's working time	0.005 (0.005)	0.003 (0.005)	0.003 (0.005)	0.005 (0.005)
Number of children	-0.070 (0.056)	-0.091 (0.057)	-0.106(*) (0.057)	-0.070 (0.056)
Having children under 3	0.402** (0.131)	0.379** (0.131)	0.387** (0.131)	0.402** (0.131)
Other dependants in household	0.394(*) (0.236)	0.401(*) (0.236)	0.395(*) (0.236)	0.394(*) (0.236)
Couple living in East Germany	0.248* (0.118)	0.347** (0.120)	0.342** (0.120)	0.248* (0.118)
Education differential at marriage			0.001 (0.041)	
Occupational prestige differential			-0.003 (0.005)	
Age differential			-0.005 (0.012)	
Age	0.327*** (0.103)	0.319** (0.103)	0.181* (0.089)	0.327*** (0.103)
Square age	-0.005*** (0.002)	-0.005***(0.002)	-0.004** (0.001)	-0.005***(0.002)
Partner's age	-0.172** (0.065)	-0.180** (0.065)		-0.172** (0.065)
Partner's square age	0.002** (0.001)	0.002** (0.001)		0.002** (0.001)
Constant // Rate acceleration parameter (/ln_p)	-1.490 // -0.087*	-1.490//-0.087(*)	-2.964*// -0.086*	-1.496 // -0.087*
Observations: 9779 Subjects:3110 Failures:505	*** **p≤0.001**	** **p≤0.01**	* **p≤0.05**	**(*)p≤0.1**

Table 3.2: Effects on the rates of transition out of paid employment after childbirth (Weibull models, standard errors within brackets).

	Model 1		**Model 2**		**Model 3**		**Model 4**	
Partner's housework levels	-0.109	(0.107)	-0.100	(0.107)	-0.104	(0.108)	-0.069	(0.113)
Partner's housework Δ							-0.057	(0.093)
Partner's childcare levels	0.004	(0.046)	0.009	(0.046)	0.008	(0.046)	-0.064	(0.058)
Partner's childcare Δ							0.126*	(0.062)
Log net earnings	-0.153*	(0.077)	-0.077	(0.113)	-0.091	(0.113)	-0.146(*)	(0.078)
Partner's log net earnings	-0.060	(0.128)					-0.069	(0.125)
Woman's share of couple's earnings			-0.763	(0.707)	-0.734	(0.706)		
Education level at childbirth	-0.163*	(0.075)	-0.162*	(0.075)	-0.224*	(0.100)	-0.160*	(0.075)
Work experience at childbirth	-1.030*	(0.435)	-0.956*	(0.438)	-1.019*	(0.436)	-1.032*	(0.436)
Partner's education at childbirth	-0.039	(0.074)	-0.052	(0.074)			-0.051(*)	(0.074)
Occupational prestige	-0.003	(0.008)	-0.002	(0.008)	0.022*	(0.011)	-0.003	(0.008)
Partner's occupational prestige	0.025**	(0.008)	0.024**	(0.008)			0.025**	(0.008)
Partner's working time	-0.006	(0.008)	-0.007	(0.008)	-0.008	(0.008)	-0.007	(0.008)
Number of children	-0.226(*)	(0.112)	-0.248*	(0.120)	-0.269*	(0.121)	-0.190	(0.119)
Children under 3	0.486*	(0.232)	0.490*	(0.231)	0.406*	(0.231)	0.475*	(0.232)
External childcare (preschool)	-0.011	(0.182)	-0.020	(0.181)	-0.030	(0.180)	0.017	(0.184)
Other dependants in household	0.198	(0.347)	0.207	(0.345)	0.190	(0.342)	0.175	(0.347)
Couple living in East Germany	-0.407(*)	(0.250)	-0.331	(0.252)	-0.313	(0.252)	-0.414(*)	(0.250)
Education differential at childbirth					-0.052	(0.073)		
Occupational prestige differential					0.024**	(0.008)		
Age differential					0.001	(0.022)		
Age	0.441*	(0.186)	0.429*	(0.186)	0.300(*)	(0.172)	0.463*	(0.188)
Square age	-0.008**	(0.003)	-0.008**	(0.003)	-0.006*	(0.003)	-0.008**	(0.003)
Partner's age	-0.200(*)	(0.115)	-0.200(*)	(0.114)			-0.203(*)	(0.115)
Partner's square age	0.003(*)	(0.002)	0.003(*)	(0.001)			0.003 (*)	(0.002)
Constant // Rate acceleration parameter (/ln_p)	-5.625* // 0.088		-5.954* // 0.089		-7.225**/ / 0.085		-5843*// 0.096	
Observations:2486 Subjects:1223 Failures:182	***** p≤0.001**		**** p≤0.01**		*** p≤0.05**		**(*)p≤0.1**	

3.4.3 The intensity dimension: transitions from full-time employment after marriage and childbirth

When female work intensity rather than mere employment participation is placed in focus (table 3.3), a somewhat different picture emerges. Male participation in housework also seems to reduce the probability of transition out of full-time employment after marriage, but the significance of this effect is less evident than in the case of employment exit.

Monetary variables are very clearly associated with the women's probability of leaving full-time work after marriage. The higher the women's own earnings, the lower their transition rates, and male income shows the opposite effect. Nevertheless, transitions out of full-time work are not so influenced by the women's absolute earnings as by their relative economic position. The magnitude of their share of the couple's earnings is strongly and negatively related to the likelihood that they abandon full-time work. The significance of cumulated work experience prior to marriage – also with a negative sign – indicates that there could also be an element of self-selection into uninterrupted full-time trajectories. Still, the effect of this variable is around four times smaller than that of relative income, which indicates that survival in full-time employment is very much conditioned by economic considerations. It should be noted that the women's educational level is not significantly associated to their propensity to remain in full-time work, which has already been observed in earlier research and seems to be fairly specific for Germany (see Drobnič et al. 1999).

As could be expected, those women who have children under three experience a considerably greater risk of transition out of full-time employment. The non-linear effects of age, in turn, are largely similar to those observed for transitions out of employment more generally – the youngest and the oldest women analyzed show lowest risks of transition out of full-time work.

The models focused on women's transitions out of full-time after childbirth (table 3.4) yield negative and statistically significant coefficient for men's childcare levels. Male housework involvement, on its part, does not seem important in this respect. Neither are, ostensibly, yearly increments of men's domestic effort. In fact, the most decisive variable for women's permanence in full-time work after childbirth appears to be their relative earnings. The greater their share of the couple's total income, the smaller their propensity to make a transition to part-time work or non-employment. The women's absolute earnings seem also relevant to some degree, yet their effect is smaller and not so consistent across models. The partners' income shows no apparent relevance for women's decisions to stay in or leave full-time work after having a child.

It is very interesting to note that selection-related variables – such as education or cumulated work experience – do not exhibit any significant effect on women's propensity to leave full-time employment after childbirth. The number of children, however, shows a statistically significant, negative coefficient. This finding, as already noted, might itself represent a selection effect – those women who work full-time despite having many children could have a relatively greater predisposition towards intense employment participation. Nonetheless, it might also reflect a greater need of two full-time salaries in order to meet a large family's economic demands. Having children under three, once more, increases considerably the probability of abandoning this type of employment, and the effects of age are those already noted. As a final observation, it should be underscored that living in East Germany seems to reduce the probability of an exit from full-time work after marriage.

Table 3.3: Effects on the rates of transition out of full-time employment after marriage (Weibull models; standard errors within brackets).

	Model 1	**Model 2**	**Model 3**	**Model 4**
Partner's housework levels	-0.111(*) (0.060)	-0.104(*) (0.060)	-0.105(*) (0.060)	-0.107(*) (0.059)
Partner's housework Δ				-0.009 (0.059)
Log net earnings	-0.511*** (0.057)	-0.314***(0.085)	-0.313***(0.084)	-0.511***(0.056)
Partner's log net earnings	0.265** (0.097)			0.266** (0.098)
Woman's share of couple's earnings		-2.184***(0.487)	-2.153***(0.487)	
Education level at marriage	0.020 (0.041)	0.031 (0.041)	0.042 (0.049)	0.020 (0.041)
Work experience at marriage	-0.572* (0.227)	-0.520* (0.226)	-0.512* (0.228)	-0.573* (0.227)
Partner's education at marriage	0.011 (0.041)	0.011 (0.041)		0.011 (0.041)
Occupational prestige	-0.007 (0.005)	-0.004 (0.005)	-0.009 (0.005)	-0.007 (0.005)
Partner's occupational prestige	-0.005 (0.005)	-0.006 (0.005)		-0.005 (0.005)
Partner's working time	0.001 (0.005)	-0.002 (0.005)	-0.002 (0.005)	0.001 (0.005)
Number of children	0.014 (0.058)	0.007 (0.058)	-0.001 (0.057)	0.014 (0.058)
Children under 3	1.050** (0.114)	1.036*** (0.115)	1.041*** (0.115)	1.049*** (0.115)
Other dependants in household	-0.460 (0.412)	-0.484 (0.412)	-0.496 (0.412)	-0.460 (0.412)
Couple living in East Germany	0.085 (0.115)	0.083 (0.114)	0.079 (0.113)	0.085 (0.115)
Education differential at marriage			0.010 (0.041)	
Occupational prestige differential			-0.006 (0.005)	
Age differential			-0.017 (0.012)	
Age	0.290** (0.098)	0.284** (0.098)	0.183* (0.085)	0.290** (0.098)
Square age	-0.004** (0.001)	-0.004** (0.001)	-0.003* (0.001)	-0.004** (0.001)
Partner's age	-0.120* (0.060)	-0.126* (0.061)		-0.120* (0.060)
Partner's square age	0.001(*) (0.001)	0.001(*) (0.001)		0.001(*) (0.001)
Constant // Rate acceleration parameter (/ln_p)	-4.567**//0.158***	-3.01*//-0.15***	-3.6**// -0.16***	-4.579** // -0.158***
Observations: 6287 Subjects:1960 Failures:505	*** **p≤0.001**	** **p≤0.01**	* **p≤0.05**	**(*)p≤0.1**

Table 3.4: Effects on the rates of transition out of full-time employment after childbirth (Weibull models, standard errors within brackets).

	Model 1		**Model 2**		**Model 3**		**Model 4**	
Partner's housework levels	-0.195	(0.091)	-0.021	(0.091)	-0.021	(0.092)	-0.023	(0.095)
Partner's housework Δ							0.044	(0.102)
Partner's childcare levels	-0.123*	(0.053)	-0.123*	(0.053)	-0.127*	(0.053)	-0.167**	(0.063)
Partner's childcare Δ							0.092	(0.064)
Log net earnings	-0.214*	(0.082)	-0.071	(0.105)	-0.086	(0.104)	-0.204**	(0.083)
Partner's log net earnings	0.252	(0.161)					0.239	(0.160)
Woman's share of couple's earnings			-1.218(*)	(0.677)	-1.173(*)	(0.674)		
Education level at childbirth	0.051	(0.069)	0.058	(0.069)	0.111	(0.088)	0.053	(0.069)
Work experience at childbirth	-0.257	(0.419)	-0.237	(0.417)	-0.271	(0.417)	-0.257	(0.419)
Partner's education at childbirth	0.066	(0.071)	0.063	(0.071)			0.063	(0.071)
Occupational prestige	0.002	(0.007)	0.003	(0.007)	-0.001	(0.009)	0.002	(0.007)
Partner's occupational prestige	-0.010	(0.008)	-0.005	(0.008)			-0.005	(0.006)
Partner's working time	-0.006	(0.006)	-0.009	(0.008)	-0.011	(0.008)	-0.011	(0.008)
Number of children	-0.335**	(0.122)	-0.338**	(0.123)	-0.339**	(0.123)	-0.303*	(0.123)
Children under 3	0.980***	(0.251)	0.963***	(0.251)	0.968***	(0.251)	0.970***	(0.251)
External childcare (preschool)	0.119	(0.205)	0.129	(0.205)	0.107	(0.205)	0.145	(0.208)
Other dependants in household	-0.623	(0.587)	-0.639	(0.587)	-0.665	(0.587)	-0.629	(0.587)
Couple living in East Germany	-0.601**	(0.205)	-0.614**	(0.205)	-0.600**	(0.201)	-0.614**	(0.205)
Education differential at childbirth					0.060	(0.070)		
Occupational prestige differential					-0.005	(0.007)		
Age differential					0.022	(0.020)		
Age	0.481**	(0.182)	0.493**	(0.183)	0.331*	(0.156)	0.487**	(0.183)
Square age	-0.008**	(0.003)	-0.008**	(0.003)	-0.005*	(0.002)	-0.008**	(0.003)
Partner's age	-0.247(*)	(0.137)	-0.249(*)	(0.138)			-0.243(*)	(0.139)
Partner's square age	0.004*	(0.002)	0.004*	(0.002)			0.004**	(0.002)
Constant // Rate acceleration parameter (/ln_p)	-7.752** // 0.151*		-6.66**//0.149*		-8.23***//0.144*		-7.803// -0.158**	
Observations:1308 Subjects:773 Failures:208	*** **p≤0.001**		** **p≤0.01**		* **p≤0.05**		**(*)p≤0.1**	

3.5 Conclusions

It is now time to pull all the strings together and return to the two hypotheses formulated in section 2. The first of them posited that a higher degree of male domestic effort would translate into greater female work attachment, in terms of continuity, following crucial family-building transitions such as marriage and childbirth. According to the results presented, male housework levels appear to have a positive effect for women's permanence in paid employment after they get married. When men's housework effort is comparatively high, the probability that their female partner will leave her employment is reduced. Conversely, low levels of male involvement in housework seem capable of bringing on their spouses' movement out of employment, all else equal. When the importance of this variable is assessed following the birth of a child and within different types of union, however, it does not appear to be of relevance. Neither does male childcare show any significant effect in this regard. It seems indeed as though the forces driving women to leave paid employment after having a baby are to be found somewhere else.

The women's attitudinal orientation towards paid employment seems to be the most powerful determinant of the continuity of women's work attachment after entering a marital union and becoming mothers, as witnessed by the importance of their previous human capital investments through education and earlier work experience. This is particularly valid for transitions to non-employment after childbirth. This does not mean, nonetheless, that situational incentives and constraints are not important too – as has been shown, absolute earnings also exert some influence on the decision to exit paid employment, as does the fact of having very young children.

The second hypothesis conjectured that male domestic effort would also have a positive effect on the intensity of female labour supply after marriage and childbirth, understood in terms of women's permanence in full-time employment. The findings obtained yield support for this proposition, even though the kind of male domestic work that seems of relevance varies depending on the family-

building event in focus. When the analysis revolves around women who have entered a marital union, regardless of whether they end up having children or not, men's housework levels appear as a variable capable of reducing the probability that they will leave full-time employment. When the models only consider women having had a child – with independence of the kind of union within which the birth occurs –, in contrast, it is male childcare time that proves important. Of course, this variable might have shown a significant effect as well had it been tested on a subsample of full-time working women who enter a marital union and subsequently have children. At any rate, what matters in this context is that higher levels of male domestic effort do seem to reduce the probability that full-time working women diminish the intensity of their employment dedication after family-building.

As has been shown, selection-related mechanisms appear to underlie to a large extent women's proclivity to leave or not paid employment once they get married or become mothers. While they are also present in the decision to remain or not in full-time work after marriage, their relative importance is far less clear, and they do not prove decisive for women's permanence in full-time employment after childbirth. In contrast, the intensity of female labour supply after the two lifecourse transitions in focus has seemingly very much to do with economic motivations. Women's relative earnings, in this sense, emerge as central. Results indicate, moreover, that their own and their partners' income in absolute terms are important too; at least when the behaviour of both potential mothers and non-mothers is examined after entry into marriage.

More specifically, it would seem as though the analyzed women fundamentally decide whether they remain or not in full-time work on the basis of what is for them financially advantageous or viable. Accordingly, if they have favourable conditions in terms of absolute earnings, they are comparatively more likely to continue working full-time after marriage. On the other hand, the likelihood that they do so is reduced as the partners' income itself increases. This could suggest that those who can afford leaving full-time employment after union entry would, in general terms, readily make such a decision. The strongly negative effect of the women's relative earnings on their rates of transition out of full-time work also points

in this direction – women are clearly more reluctant to leave full-time employment after family formation if a substantial share of the households' economy depends on their income. Another possible explanation, nonetheless, is a selection effect. Women who value particularly high their economic autonomy may namely both choose to remain in full-time work under any circumstances and simultaneously manage to secure a generous salary.

At any rate, it is interesting to note that female relative income is the sole economic variable capable of affecting women's survival in full-time work after giving birth. This could be taken as an indication, again, of a generalized preference towards shifting to part-time jobs or non-employment in connection with motherhood, in accordance with the German social and institutional context and the strongly normative culture of motherhood it is characterized by. The clearly negative impact of having children under three on women's survival in both full-time work and employment more generally bears witness to the latter. It is very illustrative, at the same time, that living in East Germany – where the combination of full-time work and family responsibilities was common and encouraged throughout the communist period, leaving a particular legacy in terms of institutions and social norms – diminishes the probability of abandoning full-time employment after childbirth.

To sum up, male domestic behaviour does appear to exert some influence on both the continuity and the intensity of female labour supply following family-building. After marriage, women's permanence in full-time employment, as well as their participation in paid work more generally, seems to be facilitated by greater housework involvement by their partners. When focus is laid on the period following the birth of a child, however, it is rather men's childcare effort that seems to matter by supporting mothers' full-time dedication to paid work. In contrast, women's decision to participate or not in paid employment after having a child follows a logic of its own, and is apparently unresponsive to the partners' degree of domestic involvement. In this sense, the women's own preferences and attitudinal work orientation come out as central.

These findings notwithstanding, the importance of monetary considerations for the analyzed individuals' labour supply choices after family formation must be underscored. Women's earnings

appear to condition all the types of employment decisions examined. The continuity of employment participation, however, is fundamentally affected by absolute wages, while the intensity dimension has more to do with the women's income relative weight for the household's economy. In fact, this could suggest that the women under study tend to remain in paid employment as long as they find it financially advantageous, while they only would stay in full-time work in case they find it necessary to sustain the family budget. Such an interpretation would be consistent with the typically German picture of a female part-time workforce throughout the family-building lifecourse stages.

All this said, it must be borne in mind that the temporal, conceptual, and contextual focus of this paper is very specific. Further research should be made that looks into the relative importance of male time use versus selection and income variables in other institutional and normative settings. It is namely possible that the effects of male domestic effort surface more clearly in societies where women do not have so strong incentives to reduce their labour supply after union entry and family formation. On the other hand, men's behaviour might prove less relevant where institutions already make it easier for women to combine employment and domestic responsibilities. Beyond shedding light on this issue, additional studies should also examine the rationale behind female labour supply decisions from a longer-term perspective, and not just following family-building related events.

3.6 References

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4. MOTHERS GAIN FROM FATHERS' STRAIN: EFFECTS OF MALE DOMESTIC INPUTS ON FEMALE EARNINGS OUTCOMES AFTER CHILDBIRTH

ABSTRACT

This paper analyzes the influence of men's household involvement on their partners' earnings outcomes after motherhood. Drawing on human capital theory, it proposes that fathers' domestic inputs should enhance mothers' earnings by reducing, over the long run, the number and length of periods spent out of employment or in part-time work. An additional, more direct effect is also hypothesized following Becker's theory of work effort. It is expected that men's participation in housework and childcare should, on an everyday basis, free time and energy for women to invest in paid employment. OLS and panel regression models with fixed effects have been performed on data from the German Socio-economic Panel (SOEP, 1984-2009). Results support both hypotheses: male housework reduces the duration of childbirth-related career breaks, while fathers' childcare proves crucial for the establishment and maintenance of full-time employment participation patterns. Male domestic inputs seem thus capable of reducing the economic penalties linked to motherhood.

4.1 Introduction

One of the topics attracting greatest attention in female employment participation research is the wage penalty associated with childbirth. There is consistent evidence that working mothers generally earn less than their childless counterparts (see f.i.Waldfogel 1998; Budig et al. 2001). The size of the so-called "motherhood penalty" or "family gap" depends on exactly how it is estimated. Moreover, both its magnitude and its relation to specific variables vary across societies. Still, there seems to be agreement that it is lowest in countries providing high institutional support for work-family

balance (Budig et al 2010; Misra et al. 2011). Illustratively, if focus is laid on Europe, it has been estimated that mothers with a medium-level of education in Germany and the Netherlands have earned at age 45 between 42% and 63% of the figure corresponding to their childless counterparts. In the UK, the gap seems somewhat lower yet nevertheless remarkable – the equivalent figure ranges between 58% and 67%. In the Scandinavian countries, in contrast, the distance is visibly smaller: mothers within the aforementioned group and at the noted age would have earned between 80 and 91% of the amount corresponding to comparable non-mothers (Sigle-Rushton & Waldfogel 2007).

Within the framework of human capital theory, the motherhood penalty has been fundamentally attributed to family-related employment interruptions. There are several mechanisms through which this relation would operate. Firstly, employment breaks are associated with skills atrophy and human capital depreciation. Secondly, they entail missing out on a period of additional work experience. Thirdly, the anticipation of such interruptions would lead some women to select jobs with less potential for training and flatter earnings-experience profiles. It has also been suggested that motherhood-related workless intervals could be interpreted by employers as signs of weaker career commitment (Mincer & Polachek 1974; Mincer & Ofek 1982; Albrecht et al. 1999). Finally, attention has been drawn to the possibility of endogeneity and selection bias, as women with relatively worse earnings prospects may also have children at higher rates (Budig & England 2001).

Although human capital variables do account for part of the motherhood penalty, a substantial share of the latter remains unexplained after controlling for skills and work experience (Blau et al. 1998; Budig et al. 2001; Anderson et al. 2002). In fact, even after controlling for unobserved heterogeneity, an additional penalty seems to remain for each child (Avellar & Smock 2003). It has been argued that this residual pay gap could result from a combination of work interruptions and breaks in schooling, as well as from foregone work experience during studies (Staff & Mortimer 2012). Other research, nonetheless, has gone beyond human capital explanations; pointing at mechanisms such as discrimination (Correll et al. 2007), the trading-off of pay for family-friendly jobs (Becker 1985; Maani & Cruickshank 2010), or productivity losses

related to the double burden working mothers still face (Becker 1985; Budig & England 2001). It is important to note that not only employment interruptions but also reductions in working time are associated with a wage penalty during the childbearing years (Connolly & Gregory 2008).

In this context, explanations considering time allocation to unpaid work have started to gain salience. It is well known that the transition to parenthood entails a considerable increase in women's domestic effort, while such is not generally the case for men. The latter's behaviour exhibits considerable stability following childbirth, and some authors have even found a tendency towards the adoption of more traditional couple specialization patterns (Baxter et al. 2008; Kühhirt 2011; Schober 2011; Grunow et al. 2012). For women, there is empirical evidence of a negative relation between domestic work and earnings (see f.i. Coverman 1983; Shirley & Wallace 1984; Hersch & Stratton 1997; Noonan 2001; Bryan & Sevilla-Sanz 2008). This association seems particularly evident for routine tasks traditionally performed by women (Noonan 2001), those carried out at the margins of the working day (Stratton 2001; Bonke et al. 2005; Bryan & Sevilla-Sanz 2008), and those having to do with childcare (Shirley & Wallace 2004). A few studies have already linked female housework time to the motherhood wage penalty specifically (Phipps et al. 2001; Kühhirt & Ludwig 2012). It has been underscored, moreover, that the negative relation between women's housework and wages stands tests of endogeneity bias, and that it is not merely a product of unobserved characteristics (Maani & Cruickshank 2001).

Despite increased attention towards the connection between female housework and earnings, only scant consideration has been given to the role of men's domestic inputs. However, the latter could potentially have an impact on the earnings of women, and especially on the wage penalties associated with motherhood. As noted, evidence suggests that the "family gap" is reduced by public policies encouraging balance between work and family, such as extensive childcare provision (Hardoy & Schøne 2008; Budig et al. 2010; Petersen et al. 2010; Misra et al. 2011). Mothers' earnings prospects should equally benefit from their partners' housework and childcare involvement, as the domestic demands that are to be reconciled with market work would thereby be eased. A couple of

contributions with a broader focus have considered this possibility, finding positive associations between the partners' childcare time and women's earnings (see Coverman 1983 and Shirley & Wallace 2004). Nevertheless, they have clear limitations regarding the establishment of causality. Both draw namely on cross-sectional data that make it difficult to deal with endogeneity and selection concerns. Furthermore, and very crucially, they do not delve into the mechanisms through which the partners' behaviour could be of relevance.

The aim of this paper is to address such gaps in research by analyzing, from a longitudinal perspective, the effects of male domestic participation on women's earnings developments in connection with motherhood. It will adopt both a longer-term and a shorter-term approach: on the one hand, it will assess the influence of the male partner's household behaviour over a sustained period of time. On the other hand, it will look at its year-to-year impact on women's earnings. Moreover, it will assess the extent to which fathers' behaviour affects the income of mothers by altering their propensity to make career breaks or reduce their time and effort in paid work. In sum, several pathways through which male domestic inputs could affect female earnings will be looked into.

4.2 Human capital theory: a framework for assessing indirect effects of male domestic inputs on female earnings

As noted, human capital theory (Mincer 1962; Mincer 1974; Mincer & Polachek 1974; Becker 1993; for a review of its fundamental concepts see also Blau et al. 1998) is useful for understanding what causes at least part of the motherhood penalty. Within this framework, work attachment is central. Human capital models build on the notion that individuals not only increase their productivity by means of formal education, but also through skills directly acquired at work. The latter encompass formal training as well as informal learning and the development of abilities through experience. In turn, earnings are seen as a function of the human capital stock – consisting of the aforementioned educational investments and skills – that individuals accumulate over time. A lower degree of labour

force attachment, as that resulting from employment interruptions, will consequently be associated with reduced acquisition and upgrading of market skills, as well as with depreciation of existing ones. It should thereby lead to comparatively worse earnings prospects.

Moreover, there are additional mechanisms believed to reinforce the negative effects on skills – and hence on earnings – of reduced work attachment. For individuals committed to continuous employment trajectories, human capital investments can usually be assumed to be greatest at the early stages of their career, and then decline gradually over the life course. For those with weaker labour force attachment, however, the story is a different one. Since the returns to human capital investments are reaped at work, a shorter expected or actual duration of employment will entail fewer incentives to devote resources to skill enhancement, for both workers and their employers. This means that individuals anticipating discontinuous employment might be less prone to invest in training, which will also influence their subsequent wage development (Mincer & Polachek 1974; Blau et al. 1998). They may as well select jobs requiring lower levels of skills. As a result, these individuals can be expected to exhibit less predictable wage curves than the former. They might even have a relatively higher starting wage and subsequently experience a flatter earnings trajectory, due to reduced promotion opportunities (Datta Gupta & Smith 2002). It is also possible that they make greater skill investments at later stages in life (Mincer & Polachek 1974).

These theoretical assumptions have implications regarding the earnings of working women who choose to become mothers. The latter's work attachment is often reduced over the childbearing years; be it through sustained career breaks, through shifts to part-time employment, or simply by the fact that childbirth tends to be followed by a period of leave of variable length. Now, a crucial question in the context of this paper is the following: does the partners' domestic behaviour have any effect on the number and duration of such reductions in work attachment? If such were the case, one could expect it would influence mothers' post-birth human capital development, and thus indirectly their earnings evolution. Fathers' housework and childcare inputs should help diminish the intense domestic demands faced by mothers in

connection with childbearing, and thereby lower the opportunity costs of their simultaneous dedication to paid work. In other words, they could have the same positive effect on female labour force attachment as work-family reconciliation policies, and thus contribute to reducing the motherhood penalty. Accordingly, the ensuing hypothesis will be tested:

> *H1*: *Greater domestic effort by fathers following childbirth will be associated with fewer and shorter employment breaks by their female partners, as well as with a lesser frequency of part-time work. Indirectly, it will have a related positive effect on mothers' earnings outcomes.*

To illustrate summarily the potential relations at play, one could take as a point of departure Mincer & Polachek's (1974) women's wage equation, which explicitly models intermittent work experience and can thus be regarded as particularly valid for working mothers relative to non-mothers. In a simplified form, this earnings function can be written as follows:

$$\ln E_t = \ln E_0 + r\,s + r\sum_i a_i e_i \qquad (1)$$

where e_i denotes the duration of the *i*th time segment – a participation or non-participation episode of a total of *n* such intervals – and a_i is the rate of net human capital investment throughout the episode *i*[67]. It is important to note that the latter can be positive – in periods of skills upgrading – but also negative; for instance when skills depreciation takes place in connection with a period of non-participation in market work. E_0 are initial earnings, *r* is the rate of return to human capital investments, and *s* is intended to represent schooling .

In order to model some of the mechanisms through which the partner's domestic inputs could potentially affect mother's earnings at time *t,* the earnings function (1) could be rewritten so that

[67] Rates of net investments in human capital over participation and non-participation periods are, for simplifying purposes, assumed to be constant throughout a given episode yet differing among episodes, see Mincer & Polachek 1974.

episodes of participation and non-participation are clearly distinguished from one another:

$$\ln E_t = \ln E_0 + rs + r\sum_{j=1}^{n_h} h_j dh_j + r\sum_{k=1}^{n_m} m_k dm_k \qquad (2)$$

In this reformulation, n_h stands for the total number of non-participation episodes in which the individual has been exclusively dedicated to home production, while n_m denotes the total number of episodes in which the individual participates in the labour market. Accordingly, h_j refers to the rate of human capital investment corresponding to the non-participation episode *j*, and m_k to the rate of human capital investment achieved at the market work episode *k*. The respective duration of such episodes, in turn, are denoted by dh_j and dm_k. Now, if we focus on the variable at the heart of this paper – the partner's inputs in terms of home production – and name it *ph*, we could first of all hypothesize that it influences the duration of the women's non-participation and participation periods so that:

$$\frac{\partial dh_j}{\partial ph} < 0\,, \frac{\partial dm_k}{\partial ph} > 0\,, \text{ and possibly even } \frac{\partial m_k}{\partial ph} > 0 \quad ,$$

That is to say, we could expect greater partner inputs in housework and childcare to result in shorter episodes of exclusive dedication to home production by working mothers. Conversely, they should lead the latter to spend longer periods in the labour market, and they might even affect their rates of human capital investment at work if, as human capital theory predicts, women anticipate less prolonged employment breaks. This effect could be reinforced by the fact that the partners' domestic involvement would presumably have an impact on the number of participation and non-participation periods itself; increasing n_m and decreasing n_h, and thus also contributing to the anticipation of stronger labour force attachment by the analyzed individuals.

The exposed relations, however, only contemplate potential effects of male domestic behaviour on motherhood-related career interruptions. Still, women's transitions to part-time employment could also be argued to affect – at least in terms of intensity – their work attachment and hence their human capital investments. A straightforward way to capture this mechanism is to model a_i – the rate of human capital investment through the episode *i*, in the original wage equation (1) – as a function of, inter alia, the total number of hours spent at work, so that:

$$a_i = r_h + r_m tm_i$$

In this linear model, r_h would be the rate of return to capital investments while in home production (which should be negative), r_m would stand for the rate of return to human capital investments while in the labour market (which would, in turn, obviously be positive according to human capital theory), and tm_i refers to the number of hours devoted to paid work by individuals. It could be expected that the partner's domestic participation should affect the latter so that

$$\frac{\partial tm_i}{\partial ph} > 0$$

In sum, the human capital development of the analyzed women over a given period – or episode either in or out of the labour market – will be affected by: i) how profitable it is for them to invest in human capital while being at home or at work, respectively, and ii) the number of hours they spend at work in case the time segment in question is a participation period. This latter variable could plausibly respond to male housework and childcare participation, as a shared domestic burden should in principle diminish the need for shifts to part-time employment following motherhood.

4.3 Becker's model on the allocation of effort: a more direct link between unpaid work and wages – but where are the partners?

Fathers' domestic behaviour might well affect mothers' earnings through the noted human capital-related mechanisms. Nevertheless, it could also have a more direct effect independent of career breaks and shifts to part-time employment. In order to make it surface, one could draw on Becker's (1985, 1991) model on the allocation of work effort. This theoretical approach was precisely aimed at going beyond human capital explanations when accounting for the remaining gender gap in earning. It could thus reasonably be applied to the family gap as well. Its fundamental contention is that a significant share of the variation between the earnings of men and those of women results from differences regarding work effort. The latter, in turn, is assumed to be directly influenced by domestic responsibilities – women are posited to economize on their market work effort due to the very energy-consuming demands they usually face regarding home production. Such demands are also claimed to leave them less time for paid employment, as well as to limit their access to jobs involving travel, longer working days or peculiar schedules (see also Maani & Cruickshank 2010). These arguments could certainly be made extensive to the motherhood penalty – in fact, the "family gap" seems an ideal object to test them upon, since the transition to motherhood is so time- and energy-demanding in domestic terms. The negative association between housework and earnings found in previous research appears indeed concentrated in young and middle-aged women (Maani & Cruickshank 2010), which supports the idea that the childbearing stage is particularly critical.

There is a need for empirical research that brings the mechanisms underlying the relation between housework and wages to the fore. The reason is that a large proportion of the motherhood penalty, as noted, does not seem explained by human capital factors. Besides the possibility of discrimination, it has been suggested that part of the answer may lie in a decrease in productivity following childbirth (Budig & England 2001). Acknowledgedly, some studies dealing with the linkages between housework, work effort and wages find no conclusive evidence in this respect (see f.i. Stratton et al. 2001).

Nevertheless, as good measures of work effort are hard to find – many of those used are not unproblematic in terms of measurement error or endogeneity bias – there is ample room for further research that explores this connection (Maani & Cruickshank 2010). Most previous efforts aiming to do so have focused on the association between women's wages and their housework dedication. Investigating the role of men's behaviour in this sense, however, might be a more potentially fruitful avenue. It will get directly at the crucial matter, namely the extent to which mothers have to deal alone with family demands that limit the time and energy they can allocate to market work. Specifically, the following hypothesis will be tested:

> *H2: Men's domestic inputs following childbirth will show a positive effect on female wages even after controlling for human capital variables, women's previous employment trajectories, and unobserved heterogeneity.*

Were this more direct effect between male domestic inputs and female earnings to surface, it could be suggestive of the work effort-related mechanism just noted. Exactly how men's domestic inputs would come into the process can be depicted drawing on Becker's (1985) equation on the allocation of effort, which for a single individual could be rewritten as follows:

$$eh_i\, th_i + em_i\, tm_i = E_i \qquad (1)$$

Accordingly, the effort each individual puts into home and market production per unit of time – eh_i and em_i, respectively –, in interaction with the time devoted to each activity (th_i and tm_i) gives us his or her total energy supply E_i. The latter is assumed to be fixed. We can also assume, for simplicity purposes, that all the time that individuals have at their disposal is either allocated to home production or to market work. This obviously means that an individual's market work time would be equivalent to the share of his or her total time supply (t_i) that is not devoted to unpaid work tasks:

$$tm_i = t_i - th_i \qquad (2)$$

Now, we can again follow Becker, who models the full income of an individual as a function of the wage rate function, his or her available time, the effort supplied per unit of time, and non-work related income such as transfer payments or property. In his approach, full income is claimed to be achieved when all time and effort are devoted to market work. On this basis, the wage an individual obtains from paid employment could similarly be formulated as:

$$W_i = wm_i(em_i, X_i)tm_i \qquad (3)$$

In this specification, as in Becker's original income equation, it is assumed that the wage market rate, or the earnings obtained per hour of work, (wm_i) is *not* dependent on the number of hours spent in the labour market (tm_i). Here it is modelled as a function not just of work effort per hour, but also of a vector of other factors (X_i), which may be observable or not, and which will include, inter alia, human capital. The key question at this point is how male housework and childcare inputs could enter the analyzed women's wage equation. In this sense, it is important to note that the partner's domestic behaviour, just as the total energy allocated by individuals to any task, could be broken into an effort per time unit component and a time one. In what follows, however, the focus will lie on the latter – the total number of hours devoted to home production by each individual's partner, which could be labelled pth_i – since there are no available longitudinal measures of effort that are distinguishable from time dedication and suitable for the purposes of this paper.

A simple way to start is to hypothesize a possibly negative relation between the analyzed mothers' time in home production and the time their partners devote to such tasks, so that[68]

[68] The possibility of a lack of an effect of men's domestic inputs is still contemplated in this operator for several reasons: firstly, some individuals may have such preferences regarding their own domestic dedication that their housework and childcare time is not altered by external circumstances. Such could be the case of women holding very high domestic standards, or those who are reluctant to relinquish responsibility over certain tasks. In addition, as will be

$$\frac{\partial th_i}{\partial pth_i} \leq 0 \qquad (4)$$

While a symmetrical inverse relationship between the domestic time dedication of the partners and that of the women can certainly not be assumed, the expectation of a negative association seems still justified from several theoretical perspectives. Time availability theories (see f.i. Coverman 1985; England & Farkas 1986; Hiller 1984) that posit a rational allocation of time to housework depending on the household members' availability to embrace such tasks and the amount of work that is to be done would easily lead to such a prediction – if one of the partners increases his participation in unpaid work, the other could reasonably be expected to decrease hers at least to some degree, given that the total amount of tasks that are to be performed is limited. Even Becker's (1981) microeconomic theory of couple specialization would suggest such an outcome – if both partners seek to maximize efficiency and output, the more he engages in housework and childcare, the less she should have to specialize in these tasks. Although such arguments would be qualified by "doing gender" approaches, according to which some women would not necessarily respond in this way but rather be reluctant to hand over household responsibilities (Allen & Hawkins 1999), this is not by far a general occurrence. In fact, cumulative research finding that female housework time correlates positively with men's hours in paid employment and negatively with the latter's domestic engagement (Bianchi et al. 2000) rather points at the proposed relationship.

If we combine (4) with equation (2) – according to which all hours that are not allocated to unpaid work will be devoted to paid employment – we can conclude that, if the partners' housework and childcare time may negatively affect the hours mothers spend in home production, they should also influence the time they will spend at work so that

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subsequently shown, women who do respond to an increase in the partner's domestic contribution may sometimes do so by reducing their own domestic effort per hour rather than the total time they spend in home production.

$$\frac{\partial tm_i}{\partial pth_i} \geq 0 \qquad (5)$$

Based on the aforementioned arguments, it could be contended that greater involvement in housework and childcare by fathers should make it easier for mothers to devote more time to the labour market, as well as to engage in work-related activities that require longer, odder or more flexible schedules. According to the wage model (3), this should affect their total earnings positively. In Becker's account, nonetheless, the effect of housework on wages would not take place only via time, but also via effort per time unit; as also reflected in the assumed functional form of the individual's wage. The issue is thus whether the partners' time allocation – given a lack of direct measures of their effort per hour – could also plausibly affect the analyzed women's effort per time unit in the labour market. Here, as in Becker's model, the individual's total time and effort per hour supplies are assumed to be fixed. In principle, one could hypothesize the following relations between the fathers' time dedication to housework and childcare and the mothers' allocation of effort per hour of work in home production:[69]

$$\frac{\partial eh_i}{\partial pth_i} \leq 0 \qquad (6)$$

We could expect mothers to invest less effort per hour in housework and childcare if the partners increase their time in domestic participation, at least if we assume a fixed demand for energy derived from housework and childcare needs, as well as a fixed time supply t_i. The rationale is simple: if a given amount of tasks has to be performed within a household, the more they fall exclusively on one of its members, the more effort she will have to invest per hour to guarantee that all tasks can be completed in the available time. In

[69] Again, the possibility of no effect is considered, on the same grounds that were valid for the operator (4): some women, due to strong preferences or high domestic standards, may simply not vary their own household effort even if the partner invests more time in related tasks. Furthermore, as clarified further below, the effect of an increase in the father's domestic inputs may sometimes take place via a reduction of the mother's own household time and have no substantial impact on her related effort per hour.

contrast, if her partner is already taking part of the workload, carrying out the remaining share in the interval of time at her disposal should require a less effort-intensive dedication.

Does this automatically mean that the mother will invest more effort per hour in the market and also enhance her earnings prospects through this mechanism? Not necessarily. Granted, Becker does contend that women decrease their effort at work when they face particularly large household demands. Conversely, one could imagine that a reduced domestic burden should automatically lead to increased market effort. This is of course true if we are talking about effort in broad terms, as referred to by the previously presented concept E_i. As this total energy supply is taken as fixed and expected to be allocated between home and the market, it is only logical to assume that the energy (effort) that is not spent in housework and childcare (EH_i) will be instantaneously devoted to paid employment (EM_i), so that

$$EM_i = E_i - EH_i \qquad (7)$$

A similar assumption, however, can not be made regarding effort *per time unit* (that is, eh_i and em_i). The reason is simple and is already to be found in equation (1), which is, in fact, another writing of the just presented expression. E_i – and, of course, its components EH_i and EM_i in (7) – are namely a simultaneous function of *both* time and effort per time unit, which as (1) shows relate to each other interactively. Consequently, it is not given that an increase in the father's domestic inputs will translate into greater market effort per hour by the mother via a reduction of the mother's home equivalent. This is of course a possibility, yet there is a caveat – it presupposes that the mother does not substantially alter her allocation of *time* between home and market production. However, as we have seen, this is only one plausible outcome. Another one – which also seems most likely in the light of earlier research – is that the individual's household time will actually diminish to some extent in response to the partner's increased domestic inputs, leaving more time for market work. A priori, this makes the picture a bit more complicated. Following the line of reasoning exposed

above regarding domestic work, it could be tempting to argue that an increase in the individual's available time for paid employment could, in some cases, result in a decrease in her market effort. At least if the demands that are to be met at work remained unchanged, an individual might theoretically choose to enhance her market effort via a substantial increase of her working time; even if this entails that her effort per hour diminishes. Going back to the wage model formulated in (3), one could thus be quick to predict a negative influence of such a decrease on earnings, while the rise in market time should, on the other hand, have a positive effect. The crucial question is, could a greater domestic participation by the father still be expected to have a net positive impact on the mother's earnings?

At this point, it is time to recapitulate. From what has been exposed, three types of responses[70] to increased partner inputs in home production may be hypothesized: i) the mother reduces her own housework and childcare time, but her domestic effort per hour remains in effect unchanged; ii) the mother reduces the effort she puts into such tasks per time unit, but does not substantially alter her household time; iii) she reacts to the decreased domestic demands on her total energy supply E_i by reducing to some (variable and a priori undetermined) extent *both* the number of hours devoted to home production and the effort invested in the household per time unit.[71]

In terms of predicting a potential effect on wages, the first scenario seems the trickiest one. In principle, an increase in the mother's market time should push towards higher earnings. As noted, however, her effort per hour at work could in theory decrease as a consequence and pull the wage in another direction. This said, an argument can be made that the total effect on earnings should be positive on pure rationality grounds: we could expect that an

[70] As noted, the domestic behaviour of a proportion of very strongly "home-oriented" women may be impervious to the partners' contribution. Nevertheless, these are likely to be a small share of the women under study, given that the paper deals with mothers of relatively young children who choose to remain at work.

[71] The possibility of scenarios ii and iii entails that the sign of the effect of an increase in father's domestic time on women's home (and thus market) effort per hour is a priori undetermined.

individual who chooses to participate in paid employment despite facing a large domestic burden – as mothers of young children can be assumed to do – will seek to maximize the utility yielded by her time allocation to the market. Consequently, she will never rationally want to diminish her market hourly effort so much that the increased time investment facilitated by her partners' behaviour does not pay off financially. The second outcome also leads to the expectation of a positive effect on the mothers' earnings. After all, if she reduces her domestic effort per hour while her time is maintained, her total effort/energy supply in home production (EH_i) decreases, leaving greater such resources for the market (EM_i). Since her household time is unchanged, this increase in market effort should take place via increased effort *per hour* on the job, which in principle could be conductive to a higher wage. Lastly, the third possible course of action would also be consistent with a positive impact on wages. If both her domestic time and effort per hour fall, the mother can be expected to devote more time and – not surely, but very likely – also greater effort per hour to paid employment. Of course, she might hypothetically choose to enhance her total supply of effort in the market only via time, leaving her job effort *per hour* unchanged or even letting it fall. However, this is hardly a realistic possibility if we assume, again, that we are dealing with rational, utility-maximizing individuals. Given the significant time crunches associated with the combination of work and motherhood, and the fact that t_i *and* e_i are fixed and scarce resources, it would be evidently less costly to seek an equilibrium between an increase in work hours and a rise in effort per hour than to only focus on the first of the two.

4.4 The importance of selection and the specificity of the German case

To sum up, it has been hypothesized that men's domestic behaviour after childbirth may affect their partners' earnings in two ways: first, by influencing their human capital development through its impact on their employment interruptions or part-time work intervals. Second, by impinging on the time and effort mothers can allocate to the labour market when at work. Several variables of

importance for the wage rate, however, have been acknowledged to be potentially jointly determined at an early stage in women's work trajectories. Women anticipating large domestic demands – i.e. those planning on having children – may from the beginning follow particular educational paths and look for jobs that offer greater flexibility and more family-friendly working conditions; even at the expense of their income prospects. Key decisions about their future involvement in paid and unpaid work may thus be taken simultaneously (see Maani & Cruickshank 2010); the same will obviously apply to human capital investments. This leaves us with two additional possibilities. The first one is that female earnings are in fact independent from the behaviour of the partner. Women's wage trajectories after childbirth could be fundamentally determined by self-selection into certain jobs, as well as into greater or lesser employment dedication and human capital investments; regardless of the partners' domestic inputs. It is also possible, however, that the partners' domestic involvement shows an effect on female wages consistent with hypothesis 1 and/or 2, but that they act as an intermediary variable mediating the effect of unobserved heterogeneity in terms of work and family orientation. Differently put, men's domestic behaviour could bear a significant association to female earnings, yet be in fact reflective of unobserved characteristics bringing forward, inter alia, selection into partnerships that are more or less supportive of mothers'. These two scenarios are worth bearing in mind throughout the analysis, in order to facilitate a correct design and interpretation of models.

Before moving forward to the analysis, some observations are pertinent regarding the fact that it will draw solely on German data. The latter should hardly be a problem given that German women have been found to face a significant motherhood penalty, in comparison to those in f.i. Scandinavia, the US, and the UK. In Germany, the "family gap" has been estimated to lie in the range 9%-18% per child (see Ondrich et al. 2001; Kunze 2002; Gangl & Ziefle 2009; Gash 2009). This should guarantee enough variation in terms of female earnings to be able to draw conclusions about the factors impinging on their development. It is also interesting to note that, in this country, the motherhood penalty does not seem as strongly associated with work interruptions and mobility into family-friendly jobs as in other societies. It has been proposed that discrimination could be a key variable instead (Gangl & Ziefle

2009). It is my argument, however, that couple specialization and the intense domestic demands that German mothers are likely to face may be more crucial. The frequent slide into traditionalism by German couples in connection with childbirth (Grunow et al. 2007; 2012; Kühhirt 2011) would suggest this is an actual possibility. Recent research on (West) Germany has already shown that women's housework and childcare time contributes to explaining part of the motherhood penalty, especially for mothers of very young children (Kühhirt & Ludwig 2012). This makes the German case a particularly interesting one for the purpose of testing the role of men's domestic behaviour on "the family gap." It is worth mentioning the limited availability of day care slots with flexible, long schedules that truly respond to the needs of working parents (Kreyenfeld & Hank 2000; Hank & Kreyenfeld 2004); which could make the potential importance of fathers' involvement even greater.

4.5 Design, data and methods

The analysis builds on longitudinal data from the German Socio-economic Panel (1984-2009) and is conducted in several stages. First of all, as an illustration of the motherhood penalty among the women under study, it provides a descriptive overview of the average earnings curves of working mothers and non-mothers. To this end, married and cohabiting women are followed from the year before union entry and over the subsequent decade. The distinction between mothers (376 individuals) and non-mothers (84 individuals)[72] rests on biographic information on the total number of children that a woman has had by the end of the 10-year-observation window. That is, those classified as mothers may have children at any stage within the observed time frame, or even bring them into the union. It should be noted that the calculation of the

[72] These subsamples are small due to the very restrictive set of conditions imposed: only working women who were full-time employed at union entry, and who enter into unions that can be observed from their inception and over at least 10 years are included. The rationale behind focusing on full-timers is to avoid the inclusion of women who from the beginning exhibit a comparatively weaker attachment to paid employment; as those working part-time before union entry could be assumed to do. After all, the primary interest is in what happens after family-building to the earnings of women initially showing a relatively strong degree of work commitment.

average earnings corresponding to each of the years elapsed since union entry is based exclusively on log net income from paid work. Only values above 0 – that is, those corresponding to employed women who are not on leave – have been considered at each point in time. All the sampled women were working full-time the year they got married or started cohabitation.

The next step is to perform a similar analysis focusing on the transition to motherhood and distinguishing among women with less versus more collaborative partners in the domestic sphere (two subsamples of 234 and 137 individuals, respectively). The average earnings of these two groups of mothers are followed from the year before their first birth and up to ten years thereafter. The mothers' partners have been classified as non-collaborative versus collaborative on the basis of their average hours of joint housework and childcare on a typical weekday over the 10-year period. The threshold set for this purpose corresponds to the mean of all male partners' domestic effort over the same observation window – namely 2.61 hours when both housework and childcare are taken together. This dichotomization between collaborative and non-collaborative men is thus intended to provide a baseline for subsampling mothers according to whether their partners put in comparatively more or less domestic effort. All the analyzed women were in full-time employment before giving birth to their first child. In addition, some descriptive statistics are presented, in order to provide a glimpse of the labour market behaviour of each group of women throughout the observation window.
After this descriptive outline, multivariate regression models are performed to offer a more rigorous account of the extent to which fathers' domestic behaviour affects mothers' earnings outcomes. Different approaches are followed to test each of the hypotheses. Since H1 expects that the effect of male domestic behaviour should be indirect and take place via its influence on female cumulated labour supply, the first stage of the analysis examines whether the increment of earnings over time is indeed related to the number of employment breaks as well as the spent duration in non-employment[73], maternity leave, and part-time work. In other words, it is tested whether the so-called "women's wage equation" actually

[73] Maternity leave is not included in this category. Neither are unemployment periods, for which a control variable is incorporated.

holds for the analyzed sample. In accordance with the original model's formulation (see the theory section), the increment between the initially observed log net income and that corresponding to the end of the observation window[74] is taken as dependent variable. Only partnered women who were working[75] prior to childbirth are included in the sample, and they are followed for as long as possible[76] from their earliest observable birth[77]. The main independent variables are the labour supply covariates noted above; in the form of their cumulated value between the beginning and the end of the observation window. In addition, certain variables susceptible of affecting the development of female earnings over time are included as controls – time spent in unemployment, skills upgrading[78], shifts in occupational status, the existence of previous children, the occurrence of further births, and a measure of the women's log net income prior to the birth in question. The latter, along with her age (in its linear and square form) is incorporated to take into account where the woman was on the age-wage curve when she had the child marking the start of the observation window.

[74] The original income variable takes a missing value – which could be replaced by the value 0– when the individual is not working. In order to be able to calculate how each woman's earnings profile has changed over time even if she turns out not to be working the last year she is observed, the log net income variable has been corrected so that it takes the latest registered value. Implicitly, this correction entails that workless intervals would give rise to a wage increment equal to 0. This is not an unproblematic assumption, since human capital depreciation could in fact lead to negative increments after some (undetermined) time. It is thus worth bearing in mind that, due to this possible bias, the effect of time spent out of employment on women's earnings may be stronger than observed.

[75] Either full-time or part-time.

[76] On average, the women are followed for 8.9 years (median = 7) from the birth marking the beginning of the observation period. Having observation windows of different length for different women should not be problematic at this stage of the analysis, since both the dependent and the independent variables take the form of increments measured over the same period of time.

[77] Ideally, all women would have been followed from their first birth. Nevertheless, as will be shown in the descriptive analysis, this would have left us with a far too reduced sample of individuals.

[78] A skills upgrading index has been constructed, based on increases in educational level and cumulated time in vocational training throughout the observation period.

The second step in testing H1 is to analyze whether the specific labour supply variables proving relevant for the sampled women's earnings developments are themselves affected, in the expected direction, by male domestic behaviour. This question is also approached from a longer term perspective. It is examined whether fathers' housework and childcare time over the first three years of life of the child show any enduring influence on mothers' subsequent employment behaviour. The three-year threshold has been chosen on several grounds: first, this early childhood stage entails particularly intense domestic demands, and can be therefore crucial for women's concurrent and future labour supply decisions. Second, three years is the maximum length of parental leave with a workplace guarantee in Germany, and the age at which children generally can start *kindergarten*. Slots in so-called *krippen* for younger children are notably scarce, and there is a strong normative pressure for German mothers to stay at home and take care of the child during its first years of life (Drobnič 2000; Spiess et al. 2003)

Accordingly, the (now dependent) labour force variables are in turn lagged three years forward – only their cumulated value from year t+3 until the end of the observation window (year t+x) is taken into account. Female career breaks or part-time shifts should namely be particularly interesting, from the point of view of long-term work attachment, after the early childhood stage. In principle, male domestic involvement over the first years of life of the child is likely to send the women a powerful signal of their subsequent family-related commitment, and thereby influence their later labour supply over time. The sole exception to this procedure is maternity leave, whose cumulated duration is analyzed as dependent variable during the whole observation period. The rationale for doing so is that the vast majority of working women giving birth will immediately take some maternity leave – while not so many would shift to part-time work or exit employment at that point –, and men's domestic involvement right after childbirth may very crucially influence the length of such leave. Of course, durations in maternity leave further along in time than the initial three years will be related to further childbirth events. They might thus not necessarily have so much to do with the fathers' involvement after the previous birth than with how he behaves after the one in question. Still, earlier behaviour could also send important signals

in terms of what to expect, wherefore these later episodes of leave are also included in the maternity leave-dependent variable.

It is important to note that, at this stage of the analysis, all the variables observed over time and up to the end of the observation window are weighted by the number of observed years. This is done in order to correct for the fact that different individuals are followed over periods of time of different length. The aforementioned models control for variables capable of affecting labour supply behaviour – namely the number of previous children, the occurrence of further births, the women's latest registered income right before measurement of the dependent variables, the partners' earnings, access to external childcare throughout the observation period[79], and whether the couple lives in East Germany[80]. In addition, a measure of previous experience in full-time work weighted by age[81], the women's age at first birth, their occupational status prior to the birth, and whether they have higher education are included to control for unobserved heterogeneity in terms of work-family orientation. Women who postpone motherhood tend namely to be more employment-oriented than those who have their first child at higher ages. So do those having made greater educational and occupational investments before becoming mothers.

There is an important qualification to make regarding the possibility of simultaneous, interdependent decisions on women's labour supply and men's domestic behaviour. It is namely very possible that men might become less involved in the domestic sphere just as their partners decide to leave paid employment or work fewer hours. Conversely, fathers may show greater domestic effort during

[79] Unfortunately, data on external domestic help was unavailable due to a large share of missing values.

[80] The employment behaviour of East and West German women is likely to differ due to distinct institutional and social legacies in terms of support for female labour supply. While the West German type of conservative welfare state has long encouraged a traditional male breadwinner model, female employment levels were high in the former GDR; characterized by extensive childcare provision and institutional support for working mothers (Matysiak & Steinmetz 2008).

[81] More specifically, this measure consists of the cumulated experience in full-time work prior to the earliest birth observed divided by the woman's age minus 15 years (since the latter figure marks the age at which individuals start being regarded as part of the active population).

the first years of life of the child precisely because the mother has decided to work full-time. To address this concern, the same models are re-run incorporating the mothers' working hours at year t+2 (that is, in the third year of life of the child and prior to observing the dependent variables). This makes it possible to consider both the probable simultaneity of the partners' paid and unpaid work decisions, and the potential importance of such early choices for mothers' subsequent labour supply behaviour. If fathers' domestic effort initially shows a statistical effect on the latter, several outcomes are possible after controlling for the mothers' labour supply at time t+2: the first one is that such an effect is replaced by that of this variable. In this case, it could be concluded that male behaviour matters inasmuch as it conditions the labour supply patterns that mothers establish early, and which tend to persist over time. The second scenario is that men's domestic inputs retain an effect over the mothers' subsequent labour supply even after introducing the noted control. Such a finding would suggest that men's early domestic involvement exerts an influence of its own on later female behaviour – regardless of whether a given employment pattern has already been established –, probably by generating expectations on how fathers will behave throughout the years, or even persisting patterns of male domestic participation. Finally, it is possible that the statistical significance of male domestic effort disappears when female labour supply at time t+2 is controlled for, but that this variable does not show any significant effect itself on mothers' subsequent employment trajectories. This would merely indicate that fathers' unpaid work and mothers' paid work are tightly linked over the early childbearing stage, while none of them conditions future behaviour.

As to H2, since it expects that the effect of fathers' behaviour on mothers' earnings will be more direct – through its influencing female work effort virtually on an everyday basis – it is tested following a short-term approach instead. Those couples having children at some observable point in time are followed yearly for as long as possible[82]. This part of the analysis assesses the influence of male housework and childcare hours at year t on female earnings at year t+1; given that salary reviews following the evaluation of performance at work are likely to be implemented in the ensuing

[82] Again, from their earliest observable birth within the panel.

year. In order to control for the effect on earnings of the women's previous employment trajectories, models include measures of cumulated experience in full-time versus part-time work, as well as of time spent in unemployment[83]. In addition, paying attention to the most recent time intensity of women's employment participation is substantial at this stage, as it is one of the two main mechanisms through which male behaviour is expected to have an effect on female earnings. Consequently, two versions of the models are run: one which does not control for the total number of hours the woman works at time t and another which incorporates this variable. If male domestic participation were to show the expected direct effect on female earnings at time t+1 and the latter disappeared when controlling for the previous years' working hours, it could be concluded that the effect would be taking place via the time component of female work effort (see theory section). If, in contrast, a residual effect of male domestic participation were to remain, we could have to do with the "effort per time unit" – related mechanism. In whichever case, the analysis will be wrapped up by a final, more dynamic approach which examines the relationship between increments in male domestic participation and variations regarding the relevant mechanisms hypothesized to be at play.

The models control for other variables capable of affecting the year-to-year development of female earnings, such as upward and downward shifts in occupational status[84], educational and skills upgrading, the length of time with the same employer, recent job changes or shifts to part-time work, access to external childcare, the number of previous children, and whether children under three are present in the household. In addition, the partner's childcare time is interacted with births and children-related variables. The purpose is to see whether male childcare is capable of reducing the possibly negative impact on the mother's earnings of particularly demanding situations in terms of care, such as having a newborn child, children under three, or a large number of children.[85]

[83] All these variables have also been divided by the age of the individuals minus 15.

[84] It is particularly important to control for occupational downgrading since such shifts often accompany motherhood or transitions to part-time employment (Connolly & Gregory 2008).

[85] The same interactions have not been introduced regarding housework, for one reason – it is not given that having many children or very young ones

Potential concerns in terms of underlying selection bias are more easily addressed in this part of the analysis through the used of fixed effects (FE) regression. FE models focus exclusively on *within-subject* change in the relation between the variables of interest, and take the following form:

$$Y_{it} = \beta \cdot X_{it} + \alpha_i + u_{it}, \qquad t = 1,2,...,T$$

As can be seen, the values of the dependent variable *Y* for each individual at each moment in time (as specified by the indexes *i* and *t*) do not only relate to those of the independent variables and their associated coefficients $(\beta \cdot X_{it})$, but also to a number of unobserved, time-constant characteristics corresponding to each individual and specified as the vector of unknown intercepts α_i. In FE regression, the dependent and independent variables are demeaned using the specific mean for each unit. Since the vector α_i is fixed, this demeaning process – known as the *within transformation* – entails that it is eliminated from the model, so that the net effects of the time-varying independent variables can be estimated through OLS. This is in practice equivalent to controlling for unobserved heterogeneity.

The most relevant of these models will also be run for subsamples of high- and low-skilled women (a distinction operationalized as having completed or not higher education), since their earnings are likely to respond differently to family-related variations in their labour supply[86]. Attention is also paid to the public versus private-

automatically entail a significant increase in the housework burden relative to other situations, whereas they for sure entail an automatic, more objective increase in care-related demands.

[86] High-skilled women who make motherhood-related career breaks are likely to face relatively steeper declines in earnings since their skills depreciate more quickly due to technological progress. Studies have indeed found high-skilled women to face the greatest motherhood penalties (see Anderson et al. 2002; Shirley & Wallace 2004; Wilde et al. 2010). Conversely, maintaining a strong work attachment during the childbearing years entails particularly large benefits in terms of earnings for these women (Stewart 2011). It is thus interesting to examine whether their earnings also react distinctively to family-related variations in the everyday intensity of their labour supply while at work.

employment divide, as jobs in the public sector are generally easier to combine with motherhood on account of the flexibility they offer. This seems also valid for Germany (see Gangl & Ziefle 2009).

4.6 Main results

Figure 4.1 shows the average log net income curves of mothers and non-mothers over the first ten years from union entry. They draw on the average earnings registered each year for women who are at work. As can be seen, the "family gap" appears remarkable – the two subsamples are indeed characterized by clearly divergent earnings profiles, in line with earlier research and theoretical expectations.

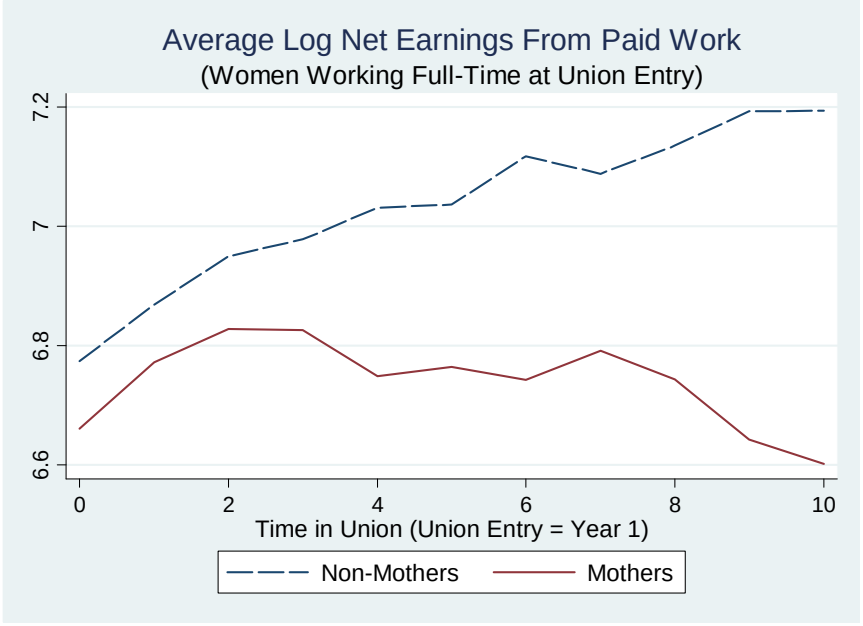

Figure 4.1. Average log earnings development over the first ten years of union of previously full-time employed mothers and non-mothers.

Those women who remain childless at the end of the observation window exhibit a wage trajectory that mimics the one typical for men (see f.i. Mincer & Polachek 1974, Mincer 1974 quoted in Willis 1991): their earnings tend to increase continuously over time,

yet at a gradually decreasing rate, which becomes particularly evident at the end of the observation period. In contrast, mothers' curves are closer to those typically hypothesized for women in previous research: they display a somewhat steeper earnings development at first and a remarkably flatter subsequent trajectory. This subgroup's average earnings already start growing at a decreasing rate at union entry. After an initial rise over the first year of union, moreover, they undergo a brief period of stagnation and subsequently start falling down. By the end of the observation period, they show a drastically negative tendency. It is worth noting that the two subsamples already exhibited different earnings levels the year prior to union entry, which is suggestive of selection mechanisms.

This paper's interest lies in the potentially alleviating influence of male domestic effort on the motherhood penalty. Accordingly, it is important to connect earnings trajectories to childbirth specifically, and to see whether men's household behaviour marks any difference among mothers following the transition to motherhood. Figure 4.2 depicts mothers' average earnings from the year before the birth of their first child and throughout the following decade. As noted, the women are classified in two groups according to their partners' average domestic effort all along the observation window. Interestingly enough, differences between the two groups of mothers are manifest. The two categories register nearly the same starting point in terms of average income, and they also experience a sharp decrease to virtually similar levels following childbirth. However, they differ markedly in their subsequent earnings trajectories. While the average earnings of working mothers with non-collaborative partners keep falling over the first three years after the birth, those of mothers partnered with more collaborative men start to grow quickly again already after the first year. Although they never come to regain their initial pre-birth levels and experience some ups and downs, they show nonetheless a generally upward tendency. For mothers with non-collaborative partners, in contrast, it takes longer time to exhibit a consistently growing pattern. Their wage profile, moreover, is significantly flatter over time – the income level they reach by the end of the observation window is only slightly higher than that registered a year after childbirth. The earnings of mothers with collaborative partners are visibly higher from the moment the child reaches the age of two,

and they also grow at an increasing rate by the end of the period. In sum, while all the women analyzed experience a clear economic penalty following the transition to motherhood, the latter seems less severe and enduring when the partner does more housework and childcare than the average.

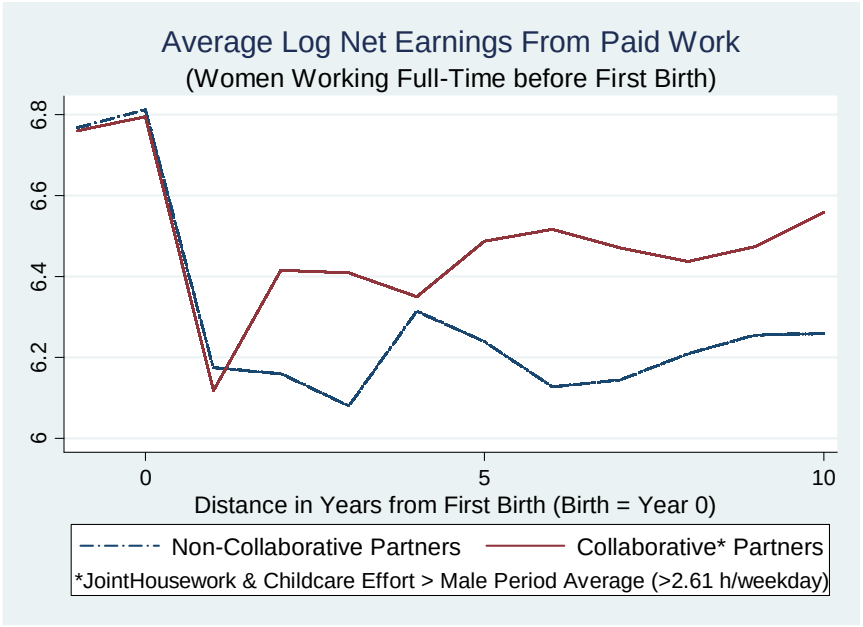

Figure 4.2. Average log earnings of previously full-time working women – grouped by the magnitude of the partners' domestic effort – from the year prior to the first birth and over the following decade.

Such earnings variations between the two subsamples of mothers might perhaps stem from differences in the intensity of their labour supply, which could be facilitated – or hindered – by the partners' domestic behaviour. Another possibility is that they are penalized to different degrees at each point in time due to longer or more frequent employment interruptions in previous years. Table 4.1 provides some comparative statistics illustrating the average employment behaviour of the two groups over the ten years following the transition to motherhood.

If we first focus on the continuity of labour supply – the key mechanism through which mothers' earnings would be affected, according to human capital theory – we observe that the two groups

do not differ markedly from each other regarding uptake of maternity leave. The mean number of transitions to maternity leave throughout the observation period is somewhat greater in the case of mothers with collaborative partners. Still, the variation between subsamples is minor (1.19 versus 1.31 transitions). In turn, mothers with non-collaborative partners exhibit slightly longer spells of maternity leave (21 months on average), yet again the figure corresponding to the other subsample of women is very similar (19.1 months). When attention is paid to the number of employment breaks not resulting from maternity leave, the picture changes somewhat, and a certain divergence between the two groups can be discerned. Mothers with non-collaborative partners tend to make more (1.69) employment interruptions than those with collaborative partners (1.27). Nevertheless, the duration of these employment breaks is virtually similar in both groups (20.7 and 20.9 months, respectively).

Behaviour differences between the two groups become more patent on examining the total intensity of labour supply throughout the 10-year period. To this end, the cumulated time in different types of employment situation by the end of the observation window has been computed. As can be seen, mothers whose partners can be classified as non-collaborative spend slightly more time in maternity leave – on average, a total of 34 months – than those with collaborative partners (almost 32 months). Furthermore, those in the former groups spend significantly more time out of paid employment (around 37 months, while the figure corresponding to the subsample with collaborative partners is almost one year lower). As another side of the same coin, the group of women whose partners show comparatively greater domestic involvement register nearly two complete years in full-time employment over the period. In contrast, those with non-collaborative partners do not even reach ten months in full-time work. There are also perceptible differences regarding the total time spent in part-time work – women with non-collaborative partners exhibit average cumulated period of almost 41 months in this kind of employment, while the equivalent duration for mothers with collaborative partners is 38 months. All in all, there are indications that women with non-collaborative partners show a lower degree of work attachment than those whose partners

Table 4.1. Average employment behaviour of partnered women who worked full-time before their first birth and who can be followed over 10 years thereafter.

	Mothers with Non-Collaborative Partners			Mothers with Collaborative Partners		
	$\bar{x}$	Median	Range	$\bar{x}$	Median	Range
Number of transitions to maternity leave over 10 years following first birth	1.19	1	0-4	1.31	1	0-3
Duration (in months) of each maternity leave spell	21	17	0-97	19.1	16	0-76
Number of transitions to non-employment over 10 years following first birth	1.69	2	0-8	1.24	1	0-7
Duration (in months) of each non-employment period	20.7	11	1-114	20.9	11	0-121
Cumulated months in maternity leave over 10 years following first birth	34.3	31	0-103	31.7	32	0-101
Cumulated months out of employment over 10 years following first birth	36.6	28	0-121	26.9	11	0-121
Cumulated months in part-time employment over 10 years following first birth	40.6	42	0-115	38.4	37	0-107
Cumulated months in full-time employment over ten years following first birth	9.9	0	0-121	23.6	4	0-116
Number of weekly working hours when employed	20.5	20	0.8-45	24.2	20	4-70
Weekly overtime (hours)	0.32	0	0-3.5	0.45	0	0-3.5
Mean age at first birth	27.4 years			27.3 years		
Number of subjects	203 women			123 women		

exhibit higher levels of domestic participation. It can also be observed that – when in employment – women with collaborative partners work on average almost four additional weekly hours than those with non-collaborative partners. The former seem also slightly more prone to do overtime work than the latter.

Without resorting to multivariate analysis, however, it is not possible to tell whether differences between the two groups – both regarding earnings and employment trajectories – are indeed related to the partners' behaviour. The descriptive analysis presented does not control for any other potentially important variables, including unobserved heterogeneity. Neither does it take explicitly into account where the different types of women are, on average, on the age-wage curve when entering a union or having their first child. The trajectories previously depicted could be merely reflective of selection-related mechanisms, such as differences in career commitment and human capital. Moreover, the same unobserved characteristics that may influence such aspects are likely to simultaneously determine the choice of a more or less traditional partner regarding the division of paid and unpaid work.

Model 1, presented on table 4.2, constitutes the first step in testing the indirect effect of male domestic participation suggested in H1. It follows Mincer & Polachek's (1974) female wage equation, and seeks to identify which specific labour supply and human capital variables influence earnings outcomes for women followed since their earliest observable birth. As can be seen, both the number and the cumulated length of employment interruptions that are not related to unemployment exert the expected negative influence on women's earnings development. Interestingly enough, the time spent in unemployment after the birth in question does not show a similarly significant effect. Hardly surprisingly, the cumulated time in maternity leave also impinges negatively on the earnings of mothers. There is also a certain economic penalty associated to the length of time spent in part-time employment, yet it appears to be smaller.

Table 4.2: Effects on female (log net) earnings increments throughout the observation window opened by their earliest observable birth

MODEL 1	**Coefficients**	**Standard Errors**
Number of transitions to non-employment	**-0.071***	*0.028*
Cumulated time in non-employment	**-0.014***	*0.006*
Cumulated time in maternity leave	**-0.059*****	*0.012*
Cumulated time in unemployment	-0.007	*0.017*
Cumulated time in part-time work	**-0.010****	*0.003*
Skills upgrading	0.070*	*0.027*
Shifts in occupational status	0.013***	*0.002*
Number of new births	-0.031	*0.031*
Number of previous children	0.110***	*0.029*
Being highly educated at birth	0.166***	*0.036*
Log net income before birth	-0.353***	*0.027*
Age at birth	-0.026	*0.031*
Squared age at birth	0.0003	*0.001*
Constant	2.881***	*0.458*
R-squared	*0.220*	
Number of subjects	*1570*	
*****p≤0.001 **p≤0.01 *p≤0.05 (*) p≤0.1**		

It is also worth noting that the women's income prior to the birth starting the observation period is negatively related to their subsequent earnings development. This should not be surprising, as this variable can be capturing where the women were on the age-wage curve when they had the child in question. The fact that the age variables included do not exhibit any statistically significant effects suggests that this is indeed what happens. Having further children during the observation period does not appear to exert any influence on earnings that is independent from the mothers' cumulated labour supply. Women with a comparatively larger number of previous children, however, show greater increments in earnings over the observation window. This finding might seem puzzling at first sight. Nevertheless, it is possible that these women are quicker to close the childbearing chapter of their lives and resume full-time employment comparatively sooner, which should give them better earnings prospects over time. A look at the data reveals that such is in fact the case. Women who are observed at higher parities (those with 1, 2 or 3 previous children)[87] register

[87] There are very few observations (6) corresponding to women who have more than three previous children.

more cumulated time in full-time employment over the observation period. As for other variables enhancing the analyzed individuals' earnings development, both being highly educated from the start and upgrading existing skills show a significant effect, just as human capital theory would predict. So do upward shifts in occupational status.

The interesting issue, now, is whether those labour supply related variables having proven significantly associated with a greater rise in earnings over the observation period are themselves influenced by the partners' domestic participation. Models 2a to 2d, presented in tables 4.3 and 4.4, regress fathers' housework and childcare time over the first three years after childbirth on each of these variables. The latter are, as explained in the methodological section, first measured from the fourth year of life of the child and up to the end of the observation period (and weighted by the number of observed years). In addition, model 2e (table 4.4) estimates the effect of male domestic effort on the fraction of time that women spend in full-time work.

As can been seen, male housework time immediately following childbirth correlates negatively with mothers' cumulated time in maternity leave throughout the whole observation period. This finding being a mere association, it could of course be interpreted in several ways: women may choose to stay longer in maternity leave when they know they can't rely on their partner to shoulder a fair share of the domestic burden. Conversely, men might just choose to invest less time in housework if they know that their partners will be at home and assume most of these tasks. The negative sign could also indicate that mothers' decision to spend comparatively shorter periods in parental leave and return to the labour market goes hand in hand by greater housework effort by the partner. Fathers' involvement in childcare does not appear to influence the cumulated duration of maternity leave, which is positively related to both the mothers' and the fathers' earnings, the mothers' occupational status, and the fact of living in East Germany. In contrast, those women with university studies, higher education, and greater full-time work

Table 4.3: Effects on continuity-related labour supply variables from time t+3 (the fourth year of life of the oldest child whose birth is observed)* and throughout the observation window
*Except for maternity leave, which is measured from the moment of birth
(Standard errors within parentheses)

	MODEL 2A: effect on fraction of observed time spent in maternity leave	**MODEL 2B: effect on frequency of transitions to non-emp. during observed time**	**MODEL 2C: effect on fraction of observed time spent in non-employment**
Partner's housework (first 3 years after birth)	**-0.020***** *(0.001)*	0.0002 *(0.001)*	**-0.008(*)** *(0.005)*
Partner's childcare (first 3 years after birth)	-0.0001 *(0.002)*	-0.0003 *(0.0004)*	-0.001 *(0.002)*
Own log income (latest registered) before start of observation window	0.098*** *(0.020)*	-0.005 *(0.003)*	-0.008 *(0.013)*
Partner's log income by start of observation window	0.015** *(0.005)*	0.0003 *(0.001)*	-0.004 *(0.004)*
Occupational status before measurement	-0.003*** *(0.001)*	-0.0001 *(0.0001)*	-0.002(*) *(0.001)*
Number of new births over observation window	0.072*** *(0.015)*	0.008** *(0.003)*	0.074*** *(0.012)*
Number of previous children	-0.023 *(0.030)*	-0.004 *(0.003)*	-0.006 *(0.023)*
External childcare	-0.276*** *(0.037)*	-0.012** *(0.004)*	-0.077*** *(0.016)*
Age at first birth	0.005 *(0.005)*	-0.001 *(0.001)*	0.0002 *(0.004)*
Higher education at birth	-0.086*** *(0.026)*	0.007 *(0.005)*	-0.027 *(0.021)*
Full-time work experience at birth	-0.315** *(0.106)*	-0.004 *(0.020)*	0.049 *(0.082)*
Living in East Germany	0.100*** *(0.026)*	-0.001 *(0.005)*	-0.061** *(0.021)*
Age	-0.048* *(0.024)*	-0.003 *(0.005)*	0.033(*) *(0.019)*
Squared age	0.001* *(0.0004)*	0.0001 *(0.0001)*	-0.001(*) *(0.0003)*
Constant	-4.211* *(1.725)*	0.059 *(0.326)*	0.536 *(1.332)*
R-squared	*0.153*	*0.034*	*0.127*
Number of subjects	*915*	*819*	*819*

*****p≤0.001 **p≤0.01 **p≤0.05 (*) p≤0.1**

experience prior to the birth observed show comparatively less cumulated time in maternity leave, which bears witness to the importance of unobserved characteristics regarding work orientation.

The frequency of employment interruptions by the mother after the child turns three is apparently unrelated to the fathers' previous levels of domestic participation. In fact, this covariate only correlates positively to the number of further births, and negatively to the use of external childcare. The total time mothers spend in non-employment from time t+3 until the end of the observation period, in contrast, seems negatively associated with the fathers' previous participation in housework. The relation is only significant at the 0.1 level. Nevertheless, given the reduced size of the sample (819 observations) it might be reasonable to take it into account; even though it disappears on controlling for whether the woman has already entered non-employment at year t+2 (results not shown). Mothers' duration in non-employment seems otherwise responsive to several variables affecting duration in maternal leave: namely the number of children, the use of external childcare, the women's occupational status before birth, and residence in East Germany.

It is more interesting to observe what happens when the correlates of mothers' cumulated time in part-time and full-time work, respectively, are assessed from t+3 onwards (table 4.4). The total time mothers spend in part-time work is positively related to their occupational status and the partners' earnings, and negatively associated to the number of previous children, the use of external childcare, the women's own income, and their full-time work experience prior to the birth in focus. Cumulated duration in full-time employment, on its part, is larger for those mothers who had higher education and greater full-time work experience at birth, for those living in East Germany, and those with higher earnings potential right before the start of the observation window. Higher age at childbirth is negatively correlated to the total time spent in full-time work, and so is the use of external childcare. The latter is perhaps due to the limited coverage in terms of schedule of kindergarten slots, especially in West Germany (Spiess et al. 2003). Now, the question is whether cumulated time in part-time versus full-time work also shows any statistically significant relation to the father's domestic involvement during the early childhood stage. The

Table 4.4: Effects on intensity-related labour supply variables from time t+3 (the fourth year of life of the oldest child whose birth is observed) and throughout the observation window

(Standard errors within parentheses)

	MODEL 2D: effect on the fraction of observed time spent in part-time employment	**MODEL 2E: effect on the fraction of observed time spent in full-time employment**
Partner's housework (first 3 years after birth)	0.005	0.006
	(0.006)	*(0.005)*
Partner's childcare (first 3 years after birth)	**-0.006***	**0.004***
	(0.002)	*(0.002)*
Own log income (latest registered) before start of observation window	-0.0169***	0.076***
	(0.036)	*(0.014)*
Partner's log income by start of observation window	0.005	-0.006
	(0.011)	*(0.005)*
Occupational status before measurement	0.002*	0.001
	(0.001)	*(0.001)*
Number of new births over observation window	-0.013	-0.060***
	(0.017)	*(0.013)*
Number of previous children	-0.057(*)	0.002
	(0.033)	*(0.026)*
External childcare	0.135***	-0.053*
	(0.023)	*(0.018)*
Age at first birth	0.001	-0.039***
	(0.001)	*(0.009)*
Higher education at birth	0.018	0.054*
	(0.029)	*(0.023)*
Full-time work experience at birth	-0.197(*)	0.299***
	(0.117)	*(0.091)*
Living in East Germany	-.179**	0.124***
	(.058)	*(0.023)*
Age	0.027	-0.013
	(0.028)	*(0.022)*
Squared age	-0.0003	0.0001
	(0.0004)	*(0.0003)*
Constant	-2.644	4.638**
	(1.897)	*(1.478)*
R-squared	*0.135*	*0.183*
Number of subjects	*819*	*819*

*****p≤0.001 **p≤0.01 **p≤0.05 (*) p≤0.1**

models presented show that it does. As can be seen in table 4, the father's childcare during the first three years of life of the child is

negatively associated with the cumulated time subsequently spent by the mother in part-time employment. In turn, the relation with the time she spends in full-time work after year t+3 is positive. This indicates that greater childcare effort by the father during the early childhood stage could indeed favour more intense female labour supply in subsequent years. An important issue, however, is how this happens: does the father's childcare time only matter as it allows the mother to early resume a relatively intense employment participation? Or is the effect of male behaviour visible further along in time, regardless of the mothers' employment situation when the child is still under three?

As explained in the methods section, this is tested by controlling for the mothers' working hours at year t+2 (that is, when the child has not turned three yet and right before the start of the observation window). When this variable is introduced in models 2d and 2e (results not presented for reasons of space), the statistical significance of the fathers' childcare time disappears, while the mothers' working hours at t+2 seem to take over its effect in the same direction. This suggests that male childcare plays a role by permitting mothers to establish early patterns of intense labour supply, which tend in turn to persist over time.

In sum, it appears that fathers' domestic involvement following childbirth could indeed exert the indirect influence on mothers' earnings hypothesized in H1.Greater male participation in housework seems capable of reduce the total time spent in maternity leave and out of paid employment by mothers. Fathers' childcare engagement is rather associated with less cumulated time in part-time work and greater full-time employment dedication. As hypothesized by human capital theory and shown by model 1, both phenomena are, in turn, ostensibly conducive to greater earnings increments over time.

As put forward in H2, however, male domestic participation could also have a more direct influence on mothers' earnings development that is not related to their longer-term patterns of labour supply as previously measured. A year-to-year fixed effects approach should be adequate for assessing this type of fairly immediate impact. To this end, models 3a and 3b are run on mothers' earnings throughout periods of employment. As can be seen in model 3a (table 4.5),

fathers' housework time at year t bears a significant and positive relation to the mothers' earnings the following year. In the case of male childcare, in contrast, the association turns out to be negative. Nevertheless, this counterintuitive finding is likely to be a product of including interactions of fathers' childcare with several children-related covariates, so that the negative relation that remains is the residual, direct effect of the childcare variable.[88] At any rate, it is important to note that fathers' childcare involvement appears to diminish the negative effect that children-related variables have on the mothers' earnings. For instance, having had a birth at year t is clearly associated with significantly lower earnings at year t+1 – even for women who were working at both times of measurement and who thus can be assumed to have had a short period of maternity leave. The same is valid for having a greater number of children or having children under three years old. However, the interaction of the fathers' childcare with these variables is positive and in the case of the latter two also very significant. This indicates that, while having many or young children does seem to hamper women's earnings progression, male participation in childcare could reduce part of this motherhood penalty.

For some reason, having access to external childcare at year t is negatively associated with the mothers' earnings levels the following year, which could seem theoretically puzzling. It is nonetheless possible that this variable is capturing the effect of having young children – older than three years old yet younger than six, which is the age at which school starts in Germany – , or that the coverage of childcare services for the analyzed sample is not extensive enough to facilitate the reconciliation of family with certain work commitments.

Hardly surprisingly, women's degree of work attachment up to the point of observation bears an evident relation to their earnings outcomes. The longer experience in full-time employment a woman has accumulated relative to her age, the higher her wages become. Long-term part-time work experience also seems to affect earnings positively, yet the effect is smaller. In addition, as women spend

[88] Excluding these interactions from the models confirms that such is indeed the case – the sign of the childcare variables turns then positive, even though it is not statistically significant.

longer time with the same employer, their earnings also tend to become higher. It is worth mentioning that this is so even controlling for their age (and thus for their position on the age/wage curve). The greatest positive effect on the mothers' income, in any event, seems to stem from their skills investments, here measured as cumulated time in vocational training (again, weighted by their age). In contrast, cumulated time in unemployment translates into lower income. So does having made a shift from full-time to part-time work at year t+1.

In sum, as could be theoretically expected, the analyzed women's earnings outcomes seem clearly related to their long-term labour market behaviour and skills upgrading. This notwithstanding, even after controlling for such factors and unobserved heterogeneity, childbearing-related variables seem still associated, for each individual, with an economic penalty. As noted, the fathers' childcare inputs apparently contribute to reducing this negative impact, and greater housework effort on their part in a given year is linked to higher mother earnings the year thereafter. Now, the key question is whether this effect takes place via the time and effort devoted to paid work on an everyday basis, as proposed in the theory section.

To shed light on this issue, model 3b (table 4.5) incorporates the number of hours spent at paid work on a typical weekday at year t by the women analyzed. As can be seen, when this variable is included, the effect of fathers' housework at time t on the mothers' earnings at time t+1 persists, yet its magnitude and statistical significance diminish. At the same time, the working time variable exhibits a positive and significant relation to female wages. This suggests that the effect of the male partners' housework on the latter indeed takes place via the woman's working hours.

The positive effects of the interactions of male childcare with the number of children and their (young) age, respectively, do not disappear either when incorporating working hours to the model. Again, nevertheless, both the size of the coefficient and the statistical confidence level become lower. Part of the attenuating effect of male childcare on the earnings penalty derived from

Table 4.5: Fixed effects regression of working mothers' earnings at year t+1 on fathers' domestic participation at year t, own previous and current labour supply, and potentially important birth-and children-related variables. *(Standard errors within brackets)*

	LOG NET EARNINGS AT YEAR T+1	
(All covariates measured at time t unless otherwise specified)	**MODEL 3A**	**MODEL 3B**
Working hours		**0.017***** *(0.001)*
Partner's housework	**0.025***** *(0.006)*	0.012* *(0.006)*
Partner's childcare	-0.031*** *(0.007)*	-0.018** *(0.007)*
Birth	-0.081* *(0.040)*	-0.054 *(0.039)*
Number of previous children	-0.213*** *(0.019)*	-0.105*** *(0.019)*
Children under 3	-0.155*** *(0.022)*	-0.070*** *(0.022)*
Partner's childcare * birth	0.012 *(0.009)*	0.011 *(0.009)*
Partner's childcare * number previous children	**0.015***** *(0.003)*	**0.008*** *(0.003)*
Partner's childcare * children under 3	**0.023***** *(0.006)*	**0.016**** *(0.006)*
External childcare (preschool)	-0.046*** *(0.014)*	-0.036** *(0.013)*
Full-time employment experience	1.026*** *(0.095)*	0.803*** *(0.092)*
Part-time employment experience	0.424*** *(0.110)*	0.333** *(0.106)*
Unemployment experience	-0.856* *(0.346)*	-0.177 *(0.334)*
Transition to part-time work at t+1	-0.222*** *(0.027)*	-0.332*** *(0.026)*
Upward shift in occupational status at t+1	-0.0001 *(0.019)*	0.006 *(0.018)*
Downward shift in occupational status at t+1	0.006 *(0.020)*	-0.005 *(0.019)*
New job at time t+1	-0.025 *(0.018)*	0.009 *(0.017)*
Length of time with the same employer	0.006*** *(0.002)*	0.005** *(0.002)*
Increase in level of education	0.074(*) *(0.040)*	0.068(*) *(0.038)*
Cumulated time spent in vocational training	2.032*** *(0.342)*	1.543*** *(0.329)*
Age	-0.006 *(0.010)*	0.015(*) *(0.019)*
Square age	0.0003*** *(0.0001)*	0.0001 *(0.0001)*
Constant	6.178*** *(0.154)*	5.235*** *(0.152)*
Fraction of variance due to fixed effects	0.661	0.627
R-square (within)	*0.115*	*0.180*
R-square (between)	*0.119*	*0.279*
Number of observations	*12057*	*12057*
Number of subjects ***** p≤0.001 ** p≤0.01 *p≤0.05 (*)p≤0.1**	*2240*	*2240*

having many or young children seems thus to occur via an effect on the mothers' working time.

In any event, for the aforementioned statements to hold true, one would still need to prove that an actual linkage between the father's domestic behaviour and the mother's working hours exists. The model presented in table 4.6 puts this relation to a test, also resorting to fixed effect regression focusing on within subject variation over time. [89] Model 3c regresses the analyzed women's working hours on several variables of potential importance for mothers' labour supply, including the partners' housework and childcare time. As can be observed, a very same woman works longer hours in years when her partner shows higher levels of housework participation. Such is not the case when male childcare levels are high – in fact, the sign corresponding to this variable is negative. Nonetheless, just as was the case in table 4.5, this is apparently due to the simultaneous inclusion of interactions between male childcare and children-related variables. The incorporation of such interactions confirms that fathers' childcare involvement is important inasmuch as it reduces the negative impact on mothers' working time of having many or young children.

Finally, model 3d (table 4.7) tests the relationship between men's domestic participation and their female partners working hours from a more dynamic point of view.[90] It examines whether increments in the former are accompanied by rises in the latter. It can indeed be observed that – all else equal – in periods when the father's routine housework time experiences greater increases, the mother's working hours also seem to go up. This effect is not visible regarding increments in male childcare, however, but this might be due to the strong correlation of this variable with other covariates in the model. The analyzed women's working time seems otherwise most responsive to no longer having very small children – the youngest child's turning three is associated with a significant rise in

[89] A correction for first order serial correlation has been performed on the model presented.

[90] In this case, the model is run from the year before the earliest birth observed. This is done to avoid the loss of observations that would otherwise result from not being able to give the increment-variables a value corresponding to time t right at the beginning of each individual's observation window.

Table 4.6: Fixed effects regression of employed mothers' working hours at year t on fathers' domestic participation, children-related variables, income level and work-related controls.

MODEL 3C	**WORKING HOURS AT YEAR T**	
	Coefficients	**Standard errors**
Partner's housework	**0.317*** **	*0.087*
Partner's childcare	-0.247*	*0.107*
Birth	0.396	*0.399*
Number of previous children	-5.900***	*0.389*
Children under 3	-2.025***	*0.333*
Partner's childcare * birth	-0.318**	*0.113*
Partner's childcare * number previous children	**0.094(*)**	*0.049*
Partner's childcare * children under 3	**0.318*** **	*0.081*
External childcare (preschool)	0.448*	*0.212*
Net log income	3.735***	*0.135*
Partner's net log income	-0.523***	*0.088*
Partner's working hours	0.085***	*0.011*
Occupational status	0.049***	*0.013*
Partner's occupational status	-0.021(*)	*0.011*
Time with the same employer	-0.080*	*0.036*
Educational level	0.153	*0.256*
Age	0.180*	*0.089*
Square age	-0.0001	*0.001*
Constant	6.538***	*0.324*
Fraction of total variance due to fixed effects	0.703	
R-square (within)	0.170	
R-square (between)	0.232	
Number of observations	11345	
Number of subjects	2054	
***** p≤0.001 ** p≤0.01 * p≤0.05 (*) p≤0.01**		

work hours – and to having just moved into a new job. Upward shifts in occupational status are also associated with greater increases in female working hours. The higher level of income the woman has herself reached, in turn, the smaller the year-to- year increments in her working hours. This is perfectly consistent with classic human capital theory. It is also possible that the woman's income at time t is capturing her working time the very same year (which is not included in the model due to its being strongly related to crucial covariates). It is logical to think that greater working time

at time t should permit smaller increments between t and t+1. Father income at year t+1 is also negatively related to mothers' increment in working time between t and t+1. After all, it is unlikely that the sampled women – being as they are mothers of young children – should increase very markedly their labour supply unless the couple faces a situation of economic need, once the other relevant variables in the model are controlled for.

Table 4.7: Fixed effects regression of the increment of employed mothers' working hours between year t and year t+1.

MODEL 3D	**Δ WORKING HOURS BETWEEN YEAR T AND YEAR T+1**	
	Coefficients	**Standard errors**
Δ Partner's housework between year t and year t+1	**0.183***	*0.085*
Δ Partner's childcare between year t and year t+1	-0.046	*0.046*
Birth	0.107	*0.527*
Youngest children has turned 3 at t+1	1.276***	*0.349*
Couple starts using external childcare at t+1	-0.826(*)	*0.438*
Δ Partner's working hours between year t and year t+1	0.013(*)	*0.007*
Own earnings at year t	-2.298***	*0.173*
Partner's earnings at year t+1	-0.282***	*0.059*
Δ Occupational status between year t and year t+1	0.057	*0.015*
Job change at year t+1	1.148	*0.301*
Constant	17.003	*1.225*
Fraction of total variance due to fixed effects	0.298	
R-square (within)	*0.033*	
R-square (between)	*0.010*	
Number of observations	*10036*	
Number of subjects	*2050*	
***** p≤0.001 ** p≤0.01 * p≤0.05 (*) p≤0.01**		

To sum up, findings indicate that fathers' housework time could indeed have the kind of more direct, positive influence on mothers' earnings hypothesized in H2. It appears that that this effect takes place via a greater intensity of the latter's employment participation

on an everyday basis, which is plausibly facilitated by greater male involvement in routine household tasks. FE models confirm that these relationships are present even controlling for unobserved characteristics that could be decisive for women's earnings prospects, labour supply decisions, and partner selection. This said, it should be underscored that this unobserved heterogeneity seems itself to play a very prominent role in determining earnings – above 60% of the variance among individuals in this respect is accounted for fixed effects in the models. The same is actually valid for working hours.

Before drawing any final conclusions, a word is in place regarding the links between fathers' domestic behaviour and mothers' subsequent earnings found for women with different levels of education and in different employment sectors. When the models are run for women with and without higher education, as well as for those working in the public versus private sector, respectively (results not shown), most findings are maintained yet some interesting nuances emerge. First of all, it seems as though the earnings of higher educated mothers are – relative to other variables such as cumulated work experience – less dependent on the partners' domestic behaviour on an everyday basis. The male housework variable does not show any statistically significant effect for these women, neither before nor after controlling for their working hours, even though the partner's childcare time still reduces the economic penalty associated with having more than one child. It is also worth noting that the negative effects of children-related variables on earnings appear to be greater for working women who have not completed university studies. Nevertheless, all these results must be interpreted with caution as there are only 661 women with higher education in the sample analyzed.

For women who work in the public sector, there is no significant relation between their earnings and the fathers' earnings. This said, father childcare time still interacts positively and in a statistically significant way with the negative income effects of having many children.

An interesting finding, moreover, is that when male childcare affects women's earnings via their labour supply, it seems to do so through different mechanisms for different women. In the case of

highly educated mothers, men's childcare time seems fundamentally to reduce the negative effects on working hours – and thereby earnings – of having many children. In the case of lower educated women, it rather appears to mitigate the impact of having children under three. This suggests that different mechanisms of motherhood-related economic penalization are at play for different educational and possibly occupational subgroups.

4.7 Conclusions and discussion

This paper has sought to analyze whether men's involvement in the household sphere affects their female partner's earnings outcomes once they have become mothers. By doing so, it aims to contribute to the emergent literature linking empirically the motherhood penalty to the domestic workload women face. The results obtained are in line with those of previous studies focusing on women's unpaid work – the domestic burden associated with routine housework and childcare tasks ends up affecting female earnings outcomes. This said, the findings yielded by the study introduce a new perspective by highlighting the importance of men's own domestic inputs.

To start with, it was hypothesized that fathers' domestic participation after childbirth would be associated with fewer and shorter employment interruptions by mothers, as well as with a lesser frequency of part-time work. Following classic human capital theory and especially Mincer and Polachek's (1974) women's wage equation, the expectation was that male household involvement would have an indirect positive effect on female earnings through those mechanisms.

While skills investments and unobserved heterogeneity regarding work orientation appear crucial for mothers' earnings outcomes, the findings obtained also provide support for the aforementioned hypothesis. For the specific sample of women analyzed, earnings developments after having a child seem most negatively affected by the number and length of employment breaks that are not related to unemployment, and, to a somewhat lesser extent, by the total time they spend in maternity leave and part-time work. Although the

number of employment interruptions has not proven associated with male domestic behaviour following childbirth, fathers' housework time seems to reduce the amount of time mothers spend in maternity leave and, over the course of time, out of the labour market. Higher levels of male childcare involvement the first three years of life of the child, in turn, appear to favour greater full-time employment participation – as opposed to part-time – in subsequent years. They seem to do so by early allowing the establishment of a comparatively more intense pattern of labour supply by the mother, which tends to persist over time.

In addition, a more direct effect of male domestic involvement on women's earnings was also hypothesized drawing on Becker's (1985) theory of work effort. It was proposed that men's time dedication to household and care-related tasks should, on an everyday basis, contribute to freeing time and energy for women to devote to paid employment. Through this particular mechanism, it was expected that fathers' engagement in housework and childcare should contribute to reducing the wage penalties faced by mothers; often associated with the intense domestic, time-related demands derived from having children. For the hypothesis to be confirmed, such a relationship should be observable even after controlling for the mothers' human capital, previous labour supply trajectories, and unobserved heterogeneity. Although the role of the latter variables is indeed very substantial, the fixed effects models performed on mothers during working periods reveal that fathers' housework is also likely to have the hypothesized effect on female income. Women with children tend to get higher earnings if the partner has been comparatively more involved in routine housework tasks the preceding year. Moreover, since the statistical significance of male housework is reduced as the woman's simultaneous working hours are controlled for, it seems most likely that it affects mothers' income by facilitating more intensive labour supply. Further fixed effects models exploring the linkage between levels of male housework and female working hours, as well as that between increments of the two, confirm that the two variables are tightly related. Even though the simultaneity of the measurement does not allow conclusions on which variable first affects the other, it seems safe to assume that a certain degree of father housework involvement at least facilitates a more intensive employment dedication by the mother.

In brief, the more direct relations between male domestic dedication and female earnings put forward in H2 also appears substantiated by the findings obtained. Male housework seems of greatest relevance on a year-to-year basis and when mothers with a different number of previous births and with children of different ages are analyzed. Nevertheless, while a similarly general effect does not directly surface for fathers' childcare involvement, this variable also affects mothers' labour supply and income by interacting with the number and age of children in significant ways. Male childcare time reduces the negative effect on earnings of both additional children and having children under three. These positive interaction effects partially seem to operate via a decreased need for reduction of the mothers' working time. The latter, indeed, experience lower child-related decreases when the partner shows greater levels of childcare involvement. However, the mitigating impact of male childcare on the wage penalties associated with having many and young children is visible even after controlling for the mothers' working hours. This points at other penalty-reducing mechanisms than an intense time dedication to paid work – for instance, it could be a matter of schedules, flexibility, reduced absences to take care of ill children, and so forth.

A task for further research, beyond confirming the relationships here suggested, is precisely to shed greater light on the exact mechanisms underlying them. An intriguing issue, for instance, is exactly why male domestic participation the first three years of life of the child is associated with better female outcomes in terms of labour supply – and thus of earnings – in subsequent years. Is it because a certain division of labour quickly tends to become established following the birth of each child, or is it rather a matter of signalling commitment by the father?

The analysis presented also raises new questions that require deeper examination, either on larger samples of individuals or on complementary qualitative data. For instance, one might wonder why male childcare involvement appears to increase the cumulated duration in full-time work over the long run, whereas it rather is male housework that lowers the probability of reduced working hours on an everyday basis. Of course, these somewhat disagreeing results may just be due to having adopted different perspectives to

test H1 and H2 – one of cumulated measurements of qualitative variables over time; another based on year-to-year, linear and quantitative developments. It could also have to do with the fact that the influence of male childcare time, in H2, is already captured by its mitigating effect on the impact of having children. Still, the decision to spend greater or shorter periods in part-time work – as opposed to full-time employment – and that of investing or not an extra hour at work on a short-term basis are qualitatively different decisions. As such, they could also plausibly have different determinants. It seems reasonable that aspects related to the possibility of covering childcare demands over the long run is most vital to mothers' decision to work part-time instead of full-time. In contrast, the extent to which daily routine housework needs are met could well set the threshold for working an additional hour or two.

Last but not least, subsequent studies should aim at pinpointing the unobserved characteristics proving fundamental for women's earnings outcomes in this analysis and in so many previous ones. A particularly fruitful avenue would be to spell out the widely used yet still vaguely defined concepts of work versus family orientation; identifying better their human capital and labour supply manifestations from the transition to adulthood and all along the family-building lifecourse stage.

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5. GENERAL CONCLUSIONS AND DISCUSSION

The aim of this doctoral thesis has been to gain insights on intra-couple linkages between male participation in unpaid work and female employment and economic position. Laying focus on the time-demanding family formation lifecourse stage, it has sought to understand how men's and women's decisions to allocate time to each respective sphere are influenced by the partners' behaviour in the other. On the one hand, the responsiveness of men's domestic participation to changes in their female partners' labour supply and economic resources has been analyzed. On the other hand, the reverse relation has also been examined. Attention has been paid to how the continuity and the intensity of women's work attachment are connected to their male partners' household involvement over time, while looking into the impact this in turn has on their earnings outcomes.

This study breaks new ground, theoretically and methodologically, as it has approached the linkages between men's domestic participation and women's economic trajectories from a dynamic perspective. As has been noted, previous research efforts on the topic had, with very few exceptions, been based on cross-sectional data or aggregate evidence. In contrast, this thesis has scrutinized the two-way connections between the aforementioned phenomena at the micro-level and over longer periods of time. It has done so, moreover, focusing on a country in which gender relations are still comparatively traditional. The latter has posed a good challenge for the hypotheses tested, inasmuch as German men and women are likely to be driven towards traditional behaviours by institutional constraints and social norms. Ultimately, the purpose has been to uncover to what extent processes related to participation in paid and unpaid work are interdependent within couples. The following sections will address this question and review how different theories fare in the light of the analyzed evidence and the results obtained.

5.1 Doing little gender: the responsiveness of male domestic effort to shifts in each partner's economic resources and employment dedication

One of the core questions motivating this thesis has been the possible role of women's economic revolution as a driving force behind men's increasing domestic participation. This study has drawn attention to intra-couple relations between both phenomena over time; seeking to establish whether the cross-sectional associations found between women's economic position and men's domestic involvement also hold from a longitudinal perspective. Chapter two – the first empirical paper – has accordingly examined the year-to-year evolution of male participation in housework and childcare from the time of union entry. The primary aim has been to assess whether men's domestic behaviour is affected by smaller versus radical variations in the individual's and especially the partner's circumstances. The potential importance of changes in the female partner's economic resources and labour supply has received special attention; given the theoretical weight of her bargaining power and her time availability for meeting household demands. Furthermore, the possibility of diverging responses to such variables by men holding potentially different types of gender attitudes – or living in more or less egalitarian partnerships – has also been considered.

All in all, what can we say about the adaptation of men's domestic participation to situational changes that occur within the couple? And what conclusions can we draw against the background of previous theories and empirical research on the topic? Two fundamental findings emerge from the analysis: first, male housework and childcare involvement is indeed responsive to both minor and major shifts in surrounding circumstances. Second, modifications of the partners' economic position and employment behaviour are, among other factors, key predictors of such responses.

Both results come to substantiate earlier theoretical claims fundamentally resting on cross-sectional evidence – namely the

importance of relative resources and time availability. Previous research had identified such factors as predictors of differences across men regarding domestic effort. The longitudinal analysis performed in this chapter corroborates that they also explain intra-individual variation. Major changes in the distribution of economic resources within the couple elicit clear responses in terms of male domestic involvement. In this sense, the female partners' situation is crucial. When women place themselves in a position of economic superiority, in accordance with the predictions of bargaining theories, they seem successful in negotiating greater domestic involvement from their partners, as both male housework and childcare substantially increase. The fact that unobserved heterogeneity and shifts in the two partners' working time have simultaneously been controlled for strongly suggests we are observing a bargaining power-related effect.

On the other hand, visible shifts in the individual and his partner's time-availability also result in modifications of male domestic involvement; with independence of economic resources or unobserved characteristics. Men's housework and childcare time diminishes as their dedication to paid work increases, and it also responds – although to a smaller degree – to changes in the female partner's employment participation. Time availability variables seem to have a stronger impact on men's childcare involvement than on their housework effort, reflecting the greater elasticity and the more rewarding character of the former type of domestic work.

An important implication of these findings is that they question some assumptions about the nature of men's unpaid work that had been gaining leverage in recent years. One is that of its inertia towards entrenched traditionalism after family-building transitions. Granted, a look at average trends in male domestic participation seems to confirm the picture of relative stability and traditional behaviour revealed by previous longitudinal work on couples in Germany (Grunow et al. 2007; Kühhirt 2011; Grunow et al. 2012) and the UK (Schober 2011). When focusing on men's mean housework and childcare levels over a prolonged period of time, we similarly observe that they tend to lie fairly constant at low levels. Nevertheless, on detailed examination of what happens from year to year at the intra-couple level, we note that visible change does in far occur over the short-run – and it does so following different types of

alterations of the partners' respective circumstances. While the analyzed individuals show average low levels of household involvement, they do increase substantially their domestic dedication under various circumstances; for instance when the female partners' time availabililty is reduced, or when she is able to re-negotiate the distribution of work on account of increased earnings power. It should be underscored, moreover, that both adaptation to major shocks and fine-tuned adjustments to more subtle situational changes seem to occur.

Very crucially, the abovementioned results cast doubt on another established notion – namely that of men's "doing gender" in the traditional sense implied in the gender deviance neutralization hypothesis. This perspective expects that when women strengthen their foothold on the labour force and enhance their economic status men will reduce their domestic participation to compensate for such a deviance from traditional gender norms. In line with recent research that has challenged the compensatory gender display argument (Killewald & Gough 2010; Sullivan 2011), the findings yielded by this study do not provide any evidence of such behaviour being at play. Quite the opposite, women's economic empowerment comes out as a mighty driving force behind increases in male household involvement at the couple-level. It is precisely related shifts that elicit clear surges in men's housework and childcare dedication.

5.2 Preferences are hardly enough: men's domestic involvement as a facilitating factor for women's labour supply and economic success

Male involvement in unpaid work has proven clearly influenced by the female partners' employment dedication and economic resources. It is now time to reflect on the conclusions that this thesis allows on the opposite causal relation. The second and third empirical papers – chapter three and chapter four, respectively – have explored this question from different perspectives. To begin with, chapter three has provided evidence that men's domestic participation facilitates the uninterrupted permanence of women in the labour market and in full-time work after family-building. If we

focus on the continuity dimension of female employment – what is frequently termed "the participation decision" in labour supply economics –, we note that it does seem affected by male housework involvement after union entry. The probability that the analyzed women will at some point leave paid employment after marriage is actually reduced as long as the partners show relatively large levels of participation in routine housework tasks. As these levels rise within a very same couple over time, moreover, the likelihood of female employment exit is lowered further. When they decrease, conversely, the probability that the female partner will subsequently stay in paid employment is automatically reduced. In contrast, male domestic effort does not appear relevant for women's decision to exit or not paid employment after childbirth. In this respect, it is rather the women's attitudinal orientation towards paid work – mainly proxied by their previous human capital investments – that appears determinant. It must be underlined, nevertheless, that the participation decision has also shown a relation to economic considerations and the number of children the couple has.

If we rather concentrate on the intensity dimension – the decision to remain or not in full-time work after marriage and childbirth –, the main conclusion to be drawn from chapter three is that male domestic participation indeed matters. Higher levels of male routine housework are not only associated with a lower propensity by women to leave paid employment after marriage, but also with a greater probability that they will not interrupt full-time work. Once the couple decides to have a child, however, it is male childcare time that is crucial for continued full-time employment participation by the mother. The extent to which women have economic incentives to remain in full-time work has also proven important after both lifecourse events.

Chapter four deepens these insights on the enhancing role of male domestic effort for women's economic position; as it has approached its influence on female labour supply from further angles, and linked it to the earnings penalties derived from having children. Taking Mincer & Polachek's (1974) women's wage equation as point of departure, it hypothesized that men's domestic involvement should have an indirect positive effect on female earnings, as it could reduce the number and length of periods spent out of employment and in part-time work following childbirth. The

analysis has shown that male housework the first years of life of the child actually contributes to limiting the total time that women spend in maternity leave and out of paid work. This result is consistent with the role it was found to play in facilitating female permanence in employment after marriage in chapter three. Men's childcare involvement, in turn, has again proven linked to the intensity of female labour supply after childbirth. Women whose partners were comparatively more engaged in childcare over the early childhood stage have been found to spend more cumulated time in full-time work in subsequent years. Apparently, father involvement in childcare exerts such an effect by facilitating the early establishment of patterns of relatively intense labour market participation. Both the reduction in time spent out of employment by mothers and their increased participation in full-time work have been found to have a positive impact on their earnings trajectories over the course of time.

Building on Becker's (1985) theory of work effort, chapter four also explored a more direct effect of fathers' domestic participation on mothers' earnings. Greater domestic involvement was expected to increase the latter, as it would give the female partners more time and energy to invest in paid employment. After controlling for the mothers' human capital, earlier employment trajectories, and unobserved characteristics through fixed effects models, such a positive relation between fathers' housework involvement and working mothers' earnings the following year has been verified. Furthermore, the analysis has provided strong indications that such a relation takes place via an enhancement of women's labour supply from year to year. As to the role of fathers' childcare time, it has also proven to reduce the negative impact of having many and young children on the mothers' earnings. To some extent, this positive effect also seems to take place via an increased intensity of the mother's time dedication to paid work. Nevertheless, as its statistical significance persists even after controlling for her working hours, other penalty-reducing mechanisms – such as greater flexibility to accept certain schedules, work overtime, or reduced absenteeism – are likely to be involved too.

These results throw us right into the well-trodden debate about the importance of preferences versus structure for the economic trajectories of women over the childbearing years. This thesis can

contribute to this discussion with several insights. First, while attitudinal work and family orientations are undeniably relevant – as confirmed by the importance of unobserved heterogeneity as well as educational and occupational investments –, they seem most decisive before family-building. After union entry, and especially once children enter the picture, the couple's structure of incentives and constraints becomes instead fundamental. Within it, moreover, men's domestic behaviour acquires a critical catalyzing role for the employment behaviour of those women having shown an initial orientation towards full-time employment. The probability that they subsequently maintain strong ties to the labour market is clearly modified depending on the male partners' household behaviour. The more domestic responsibilities the partner assumes, especially regarding childcare, the easier it seems for women to uphold an intense employment participation and return to full-time work after childbirth-related interruptions. On the contrary, even women originally inclined towards full-time employment end up reducing their work attachment if they live in partnerships where most of the domestic burden falls on their shoulders. In other words, an early egalitarian attitudinal orientation, as that reflected by strong educational and occupational investments, can hardly guarantee women an independent and strong economic position if domestic responsibilities are not shared between the partners when they start a family. Furthermore, as earnings prospects are so tightly connected to the intensity of labour supply, male domestic involvement within the partnership surfaces as a factor to take into account if we are to understand – and address – the motherhood penalty.

5.3 What we can conclude and what remains to be explained: final remarks and suggestions for further research

To sum up, this study confirms the interdependence between, on the one hand, women's economic position and work attachment, and, on the other hand, their male partners' housework and childcare dedication. The different techniques applied throughout the thesis permit, in some respects, fairly steadfast conclusions about causal processes at the micro-level.

The fixed effects regressions performed in chapter two have made it possible to study the responsiveness of male domestic effort to shifts in women's economic resources and time availability, as this technique controls for the effect of unobserved heterogeneity that could be underlying both types of change. The event history analysis with episode splitting used in chapter three, in turn, facilitates the conclusion that higher or lower levels of male domestic involvement affect the probability of an employment transition. This approach is based on the measurement of the effect of independent variables only up to the employment transition of interest. Accordingly, it permits a clear temporal ordering of the values of the independent variables and that of the transition in question; the former being previous to the latter. What has been modelled is a causal story in which the independent variables – male housework and childcare levels – are directly related to transition rates (which encode conditional probabilities that a transition will take place during the coming time unit, given that it has not yet occurred). A surge in the transition rate stemming from certain values of the independent variables does not necessarily entail that a transition to another employment state happens automatically; rather that the probability of survival in the initial state is reduced. Against this background, it seems quite reasonable to assume that male housework and childcare participation is being adequately conceptualized as cause, while the reduced or enhanced female permanence in a given employment state would be the effect. It should be borne in mind that the independent variables not only explain periods characterized by high transition rates, but also the opposite, as certain configurations of the explanatory factors can imply prolonged episodes with a relatively low probability of transition. Chapter four, on its part, has also resorted to temporal order to assess the effects of male domestic involvement on female earnings after childcare, and it has controlled for the effect of unobserved characteristics by means of similar models as those used in chapter two.

In sum, we have grounds to state that male domestic involvement and female employment and economic position mutually affect each other. What is left unresolved, however, is the issue of a possible simultaneity of decisions within the couple regarding these two dimensions. This simultaneity may go as far back in time as to the

moment of partner selection and establishment of the partnership in question. Women are namely likely to choose partners that support them in their employment and family aspirations, while men could also base their domestic involvement choices on their expectations regarding their partner's behaviour and needs. Both partners may well agree early not only on a given division of labour, but also on the terms in which it will or not be altered in the future. As such initial choices are likely to be contingent on the partners' respective attitudes with regard to family, employment, and gender roles, this problem is certainly minimized in models that control for unobserved heterogeneity. Such a safeguard mechanism, however, is not enough to resolve simultaneity predicaments. As has been patent in several steps of the analysis, at some points it is difficult to establish what comes first – a decision by the male partner to increase (or decrease) his domestic effort, or a decision by the female partner to intensify (or reduce) her employment participation. Very likely, both decisions will be made at the same time within a process of joint negotiation. A task for further research is precisely to look into such negotiation dynamics, in order to understand how these decision processes unfold. A key question to shed light on is that of when men take the initiative to alter their domestic effort to facilitate their partners' work attachment, and under which circumstances they simply respond to variations in the latter. Another potentially fruitful way to go could be to estimate jointly men's domestic participation and women's labour supply equations. This would offer insights into the extent and the way in which the two variables are in fact endogenous and simultaneously determined.

What we know at this point, at any rate, is that men's domestic involvement and women's labour supply and economic resources necessitate each other. As has been shown, men's housework and childcare time hardly reaches high levels over time unless the female partner is in a position to negotiate greater male involvement, or generates a time-availability dilemma through her participation in paid work. Conversely, it will be tough for women to maintain sustained and intense employment participation over the family-building years, as well as to enhance their economic prospects, unless they are backed by a partner that assumes a fair share of the large domestic responsibilities associated with this lifecourse stage.

In terms of policy and social implications, the straightforward consequence of the noted findings would be the following: a gender egalitarian division of labour should not be so hard to establish in post industrial societies, if promoted actively. The positive effects of increased male participation in unpaid work and the intensification of female labour supply would namely reinforce each other. In many ways, the Scandinavian countries already represent a good example in this respect. The results presented also indicate that policies seeking to promote female employment and equality at the workplace, as well as to reduce the gender and family gaps, will hardly bear the desired fruits unless they are backed by measures that facilitate gender equality in the household. In this sense, actions aimed at strengthening men's active role as fathers – such as extended paternity leaves – and at normalizing and easing the sharing of domestic and family responsibilities seem crucial. Differently put: unless the female double burden is overcome by a more equal distribution of unpaid work within couples, women will continue to face remarkable obstacles to gain a strong labour market position without renouncing to their family aspirations; no matter how much it is pleaded for gender equality in economic life.

This said, an important task for future research is to establish to what extent the results and conclusions yielded by this thesis are generalizable to other contexts than the fairly gender-traditional German one. It is possible that male domestic effort is less responsive to the behaviour and characteristics of the female partner in settings characterized by early socialization into more egalitarian gender roles, such as the aforementioned Scandinavian countries. The supporting role of men's housework and childcare involvement for female labour supply could similarly be less crucial in societies that already provide sufficient institutional backing for women's participation in paid employment. An alternative possibility, of course, is that effects are even more evident in contexts that are not characterized by strong gender norms and an entrenched culture of motherhood discouraging of female employment when children are small.

Given the linkages observed between men's participation in unpaid work and women's position in the labour market, efforts should also be made to examine the consequences of male domestic behaviour

in other respects. Does men's responsiveness to domestic demands also impact female occupational status and mobility? What happens to fertility in families where the male partner shows comparatively large involvement in housework and childcare? How are men's own career and earnings trajectories themselves affected by their engagement in the household sphere? Conversely, it is important to gain further knowledge on the circumstances that make men more versus less prone to adapt their domestic behaviour to different needs and situational changes. Likewise, there is much scope for analyzing the individual-level factors making female work attachment more or less dependent on the partners' conduct. In fact, a limitation of this thesis is that the conditions imposed by the objectives of the analyses have often restricted them to fairly small subsamples of couples. This has made it difficult to explore such questions by means of interactions. Accordingly, future work should aim at establishing how the presented results hold when differentiating by education level or field, occupational sectors, parity, and other potentially relevant factors.

5.4 References

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