Converging Times

Parenthood, time allocation and the gender division of labour in Sweden 1990-2010

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2016

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Acknowledgements

Although I am (much) greyer of hair than my main supervisor Maria Stanfors, she is considerably wiser in the academic realm and I am extremely appreciative of her support, dedication and sincere interest in my development throughout the past five years. Thank you also to Sol Juarez, my assistant supervisor who provided valuable feedback throughout the process.

I would also like to thank the Anders Nilsson and Mats Olsson who served as Head of Department of Economic History and took what I would consider an interest in my well-being that is above ordinary. Thank you also to Tommy Bengtsson, Martin Dribe and Kirk Scott, who have served as directors for the Centre of Economic Demography. Thank you also to Madeleine Jarl, Birgit Olsson, Kristin Fransson, and Anneli Nilsson Ahlm, for their support over these years.

I extend a special thanks to Ann-Zofie Duvander and Jonas Helgertz for their thorough review and valuable feedback on an earlier draft of this thesis. During my time in Lund I have also benefited considerably from being surrounded by a large and very competent cohort of PhD students, and any effort to thank each individual who helped me along the way would be very superficial. Joseph Molitoris has been a great support and office-mate. Thank you also to Björn Eriksson, who I continually bounce questions off of and who continues to reply thoughtfully.

Thank you also to my family members, especially Laura, for your love and support every day.

List of Papers

I.   Neilson, Jeffrey, and Stanfors, Maria (2013). Re-traditionalisation of gender relations in the 1990s? The impact of parenthood on gendered time use in three Scandinavian countries. *Journal of Contemporary European Studies,* 21(2): 269-289.

II.   Neilson, Jeffrey, and Stanfors, Maria (2016). Time alone or together? Trends and tradeoffs among dual-earner couples in Sweden 1990-2010. Unpublished manuscript.

III.   Neilson, Jeffrey (2016). Overworked and underslept? The changing sleep patterns of men and women in Sweden 1990-2010. Unpublished manuscript.

IV.   Neilson, Jeffrey (2016). The division of paid labor over the family cycle: a cross-European perspective. Unpublished manuscript.

1. Introduction

Over the 20th century, the labor force participation rate of women rose continually and dramatically. In the early phase of this historical process, men dominated the public sphere and women oversaw the private sphere of household and family, creating gendered separate spheres, which have continually been unraveling throughout the century (Stanfors & Goldscheider, 2015). Although the male-breadwinner society was the prevailing familial model throughout most of the 20th century, in recent decades, the dual-earner household has overtaken the traditional male-breadwinner construct throughout Europe and North America (Adema & Whiteford, 2007), with Sweden having shifted towards the dual-earner, dual-carer society earlier than most countries (Lewis, 1992; Gornick & Meyers, 2003). Sweden's shift in this regard was realized by mothers of young children having become increasingly employed outside the home, a very recent historical phenomenon, the economic and social implications of which are still unfolding at the turn of the 21st century.

From the 1960s to 1990, this transition from male-breadwinner to dual-earner intensified, driven by revolutionary changes in women's roles in the public sphere (Goldin, 1990), but this was not met with equal adjustments in the private sphere. Although there is evidence that men's and women's time allocation in paid work and household work has trended towards convergence (Bianchi, Robinson & Milkie, 2006; Gershuny, 2000), change to date has been driven by women, whose behavior has changed to a greater extent than men, whose adaptation in the household has lagged, while women have continued to be the primary caregivers to children. This lagged behavioral response of men in the household has been a source of tension between the sexes, as women have disproportionally shouldered a double-burden of dual roles at work and at home (Hochschild & Machung, 2012; Sayer, 2005). This has coincided with increased conflicts inherent in combining work and family, issues which more commonly impact women than men (Jacobs & Gerson 2001, MacDonald, Phipps & Lethbridge, 2005). These conflicts have slowed gender equality in the labor market, requiring,

in most national contexts, family policy responses in how to reconcile work-family conflicts and how to ameliorate differentials between men and women at both work and home, an area where Sweden, and its neighboring countries, have been progressive and comprehensive, comparatively. Although convergence in men's and women's time allocation is far from complete, parenthood remains arguably the key potential barrier to continued convergence, as it has traditionally been a major cause of gender differences in time allocation across all countries. There are signs however that over the 1990s in Sweden, parenthood began to impact men and women much more similarly than previously (Dribe & Stanfors, 2009).

This recent historical development motivates the empirical focus of this thesis, which is to investigate how parenthood impacts men's and women's time allocation and the gender division of labor from 1990 to 2010. Sweden serves as the focal point, while making cross-country comparisons to provide a multi-faceted perspective of changing dimensions of time allocation between men and women in the labor market and household. The comparative view can improve our understanding of a recent historical period, for contemporary society, and provides inputs for viewing changes which may be forthcoming in Sweden and elsewhere. The multi-country studies investigate the impact of parenthood on the division of labor across Scandinavian and European countries, while Sweden-specific studies closer investigate work-family balance issues that require better understanding within Sweden, while contributing to international debates on the topics of spousal time allocation, child (time) investments, and the changing sleep patterns of men and women, maintaining a gender perspective throughout the analysis. Moreover, this thesis documents the changing behavior in the labor market and household of both women and men, which will reveal changes that are unchartered territory in certain regards.

1.1 Aim

This thesis aims to examine to what extent gender and parenthood affect different types of time allocation during this period, both in the labor market and household. How men and women allocate their time faces tradeoffs which both vary, and are continually changing across time and space. By examining the impact of parenthood using several approaches, the aim is to

provide a multi-dimensional explanation for changes which took place between 1990 and 2010 in Sweden. Contrasting different national contexts captures trends and differences relating to institutional settings which may affect the manifestation of gender and parenthood in time use patterns. The thesis papers combine sociological and economic perspectives, while relating to a mostly sociological literature base, with an emphasis on change over time.

1990 to 2010 Sweden serves as an interesting case study for several reasons. First of all, a new equilibrium in men's and women's roles are being ironed out in this period (Esping-Andersen, 2009; Stanfors & Goldscheider, 2015). Comparative research has shown the gender convergence in time use has progressed further in Sweden than many other countries (Gershuny, 2000; Anxo et al., 2011; Kan, Sullivan & Gershuny, 2001), yet few studies have utilized the Swedish Time Use Surveys to analyze this phenomenon. Although Sweden has been regarded as one of the most "woman-friendly nations" (Nyberg, 2000) where the compatibility between work and family life is more easily achieved (Gornick & Meyers, 2003), issues concerning work-family compatibility should not be overlooked, especially given that the dual-earner normative is a relatively new phenomenon, and a large proportion of the workforce must reconcile work and family responsibilities. Gender equality has long been a political priority in Sweden, exemplified by policy developments over the last 40 years which have aimed at better enabling equal opportunities for men and women to divide market and non-market work more equally. Only recently has evidence shown parenthood has begun to impact men's and women's time allocation more equally (Dribe & Stanfors, 2009), a very new development which has numerous implications and requires further understanding.

This thesis proceeds with a two-part overarching research question: at the turn of the 21st century, is the time allocation of men and women continuing to converge? If so, can parenthood be seen as a barrier, or possibly even a driver, of convergence?

1.1.1 Outline of the thesis

This general theme is explored via the following more detailed research questions from each of the four papers.

1. Paper 1 asks whether parenthood impacted the time allocation of men and women more similarly by the end of the 1990s in Norway and Finland, than it had a decade previously. Having young children at home generally strengthens a traditional household division of labor, although evidence from Sweden suggests that during the 1990s parenthood affected men's and women's time use more similarly by the end of the decade. Since the 1990s were an economically turbulent period in Sweden, this paper asks whether similar developments occurred in neighboring Norway and Finland, the latter of which also experienced a large financial and economic crisis. Since Norway was not affected by economic crisis in a similar manner, we aim to differentiate inter-country patterns in time use connected to economic crisis, or societal change towards gender equal outcomes. Using multivariate Tobit regressions, this multi-country examination of the gender division of labor provides contextual and relational evidence of Nordic developments, a sensible entry point in assessing the time allocation differences between men and women.

2. Given the increased labor market attachment of women, and particularly mothers, in recent decades, Paper 2 asks how has the time allocation of partnered men and women in Sweden changed between 1990 and 2010 across four dimensions – time spent alone, with one's partner, with children only, and as a family? Are couples in Sweden spending less time together exclusively, with their children, and as a family, than previously? Women's increased work orientation means time has to be traded off against other activities, which raises the question of whether an advanced dual-earner society increasingly substitutes paid work for time spent with family members. Since paper one provided further evidence that structural changes are occurring in the time allocation of men and women with children, a natural outcome of these changes are that who couples with and without children are spending time with has also changed, which may have numerous consequences, such as less time spent investing in children, or less interaction with one's partner.

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3. Paper 3 asks whether the sleep patterns of working men and women changed in Sweden between 1990 and 2010, investigating whether the quantity of sleep declined for women in particular, but also men, during a period many regard as one of increasingly prevalent sleep deprivation. In addition to the quantity of sleep, the paper investigates whether disruptive night sleep has increased over time, and whether there are gender differences in this regard. The increased paid work orientation of mothers provide motivation for better understanding how the sleep patterns of working men and women may have changed in this period, and how sleep may have gendered outcomes. Although overworked and underslept is a popular depiction of working life at the turn of the 21st century, especially for working women, there is little empirical support to substantiate these claims.

4. To what extent does parenthood impact the division of paid labor across European countries between 2004 and 2008? This paper examines the employment and weekly work hours of coupled men and women, and broadens the cross-country comparative perspective, including 25 European countries which adhere to different welfare regimes (Esping-Andersen 1990), and places the Swedish, and Nordic division of paid labor into context with European counterparts.

1.2 Key terms

Before progressing into the thesis some terminology should first be clarified. The term work will appear often, but should be differentiated by market (for pay) and non-market (non-paid). Market work may be termed work, paid work, or employment, while non-market work will be identified either generally or by sub-types, such as housework, childcare, and other non-work activities performed without remuneration. In broadest terms, the division of labor refers to the division of market and non-market work. The household division of labor refers to the division of market and non-market work between men and women. The term parent will refer to an individual who has children, be they biological, adoptive, or step-children. In a statistical sense however, parents are defined as those who are living with children under the age of 19 in the home. Since in most of the data used, it is not possible to identify those with children no longer living in the

household, this leads an under-counting of true parents in the data due to false negatives[1]. Childcare is the action of looking after children, regardless of whether the action is performed by an individual or at a day-care centre. Day-care centres will often be referred to as public childcare or childcare services.

The key independent variable used in each paper derives from the age of the youngest child in the home. In papers 2-4, I term this variable family cycle. Each paper explicitly states how and why the variable is designed, but it's intended to capture the impact of parenthood on men and women using separate categories which imply a different stage of life, as it relates to constraints, the division of labor and female labor supply. Various meanings and uses of the term life cycle exist across the social sciences by field of discipline and over time (O'Rand & Krecker, 1990), thus I hesitate to use such a term.

1.2.1 Gender and gender equality

Although the terms gender and sex are often used interchangeably in everyday life, this thesis should be interpreted by differentiating the two terms, whereas sex will refer to biological differences (e.g. women can bear children, men cannot), and gender, a catch-all social construct resulting from historical and social circumstances which transcribe certain behaviors to be considered masculine or feminine, the meaning of which is transforming across time and space. For example, the minutes spent performing housework differs between men and women, and this gap between men and women differs between Italy and Sweden. In this example, statistically speaking, differentiating by sex/gender isn't important because the number of misclassified individuals is small, yet the differentiation is useful for interpretation, if we believe these differences are driven by biology or social context (Jacobsen, 1994, pp. 5-6). Large differences between men's and women's time allocation comparatively across countries, and in recent decades, the convergence of men's and women's time allocation (Gershuny, 2000), indicate that such differences are largely explained by contextual, rather than biological factors.

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[1] These two ambiguities, as it relates to parents and parenthood, are prevalent throughout most related literature.

The concept of gender equality refers to women's and men's rights, responsibilities and opportunities, which should not depend on whether they are born male or female. In Sweden and many other countries, equality of opportunity is a political objective, but they do not always lead to gender equal outcomes. This thesis is interested in studying such outcomes, with a focus on gender equality of time allocation, which could be defined in two ways; men's and women's time being equal within specific activities (i.e. paid work, housework, or childcare), or equality when, for example, men's and women's total combined time in paid work and housework sum to the same (Van der Lippe et al., 2010; Folbre & Bittman, 2004). This thesis explores gender equality based on type of activity, because these differences have more meaning and implications, such as an unequal division of household labor can constrain the ability to invest in human capital, or earn income (Becker, 1981). Furthermore, the major consequence of parenthood is not how it effects total time of men and women, but how time of men and women becomes allocated across a variety of activities (Dribe & Stanfors, 2009).

Gender, gender equality and the division of household labor are deeply inter-connected, as gender has overwhelmingly been the key determinant explaining the household division of labor in recent decades (Coltrane, 2000). Such divisions construct gender within the family, especially during certain life course stages, leading to socialization forces which can reproduce across generations an unequal division of work (Evertsson, 2006; Hochschild & Machung, 2012). The resiliency of gender norms has lead some to argue that the gendered division of domestic labor will persist until we see an evolution in men's gender ideology (Breen & Cooke, 2005). Each society has an economic and gender structure (Risman, 2009), and changing gender norms, especially evident in the Nordic countries, suggest that gender may become less explanative once a more egalitarian equilibrium has become dominant (Esping-Andersen, 2009; see also Esping-Andersen et al., 2015).

1.3. Context

Throughout most of the 20th century, the male-breadwinner structure was the prevailing familial model in Sweden and most industrialized countries, but this wasn't always the case. This structure emerged when

industrialization separated the workplace and family, which created a new family pattern whereby men worked in the factory and women stayed at home, which differed from the agricultural household economy whereby men and women worked together to ensure the family's survival (Brewster & Rindfuss, 2000; Costa, 2000; Magnusson, 2000; Stanfors & Goldsheider, 2015). Industrialization did create new jobs in manufacturing and services for both men and women, but the shift away from agricultural work was less straightforward for women, who faced discrimination and social taboos concerning the employment of married women (Goldin, 2006; Stanfors & Goldsheider, 2015). Industrialization arrived somewhat late to Sweden, although it developed swiftly and the transition can ultimately be considered a success story (Schön, 2011). The process of industrialization and urbanization lead to fertility declines, and more household goods and services were produced outside the home. Although industrialization increased women's paid work, the new industrial society enhanced men's position of power relative to women, as women were paid less, had to care for the family alongside new work roles, and when unemployment increased women were expected to make way for the "family breadwinners" (Magnusson, 2000, pp. 141-142). For many women, combining childcare and economically productive paid work became increasingly incompatible as industrialization proceeded (Brewster & Rindfuss, 2000). This new structure defined a clear and gendered time allocation within households, with men specializing in bread-winning and women in household production.

Women have nevertheless always worked. The conceptualization of market work outside the home, however, means that much of women's productive activities were under-countered and lack from the historical records (Costa, 2000; Stanfors, 2014). Women's connection to the formal labor force has increased remarkably over the 20th century in Sweden (see Figure 1).

Figure 1.
Labor force participation rates in Sweden (ages 16-64)
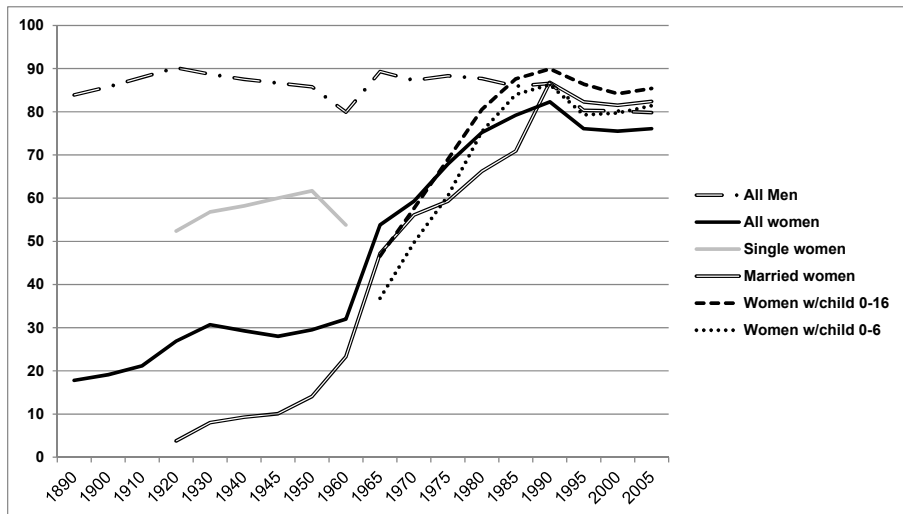
Notes: Figures from 1920 to 1960 refer to gainful employment of women aged 15+, and due to a definition change in 1963 are not fully comparable to labor force participation rates from 1965 to 2005. Since 1989 "married women" includes cohabitating.
Source: Stanfors, 2014.

From 1890 to 1920, rising female labor force participation was driven by single women, who became increasingly urban and more likely to work for pay in services and industry (Stanfors 2003). The "family breadwinner" ideal emerged before with industrialization, but the "housewife" emerged as a generally accepted phenomenon after the First World War (Magnusson, 2000), which explains why labor force participation rates of married women remained low between 1900 and 1950. In this period, married women often combined childrearing with unpaid family work, as women's reproductive responsibilities and marriage bars were impediments to more widespread increase in women's market work (Stanfors & Goldsheider, 2015). In 1927 the state reformed schooling, enabling girls to study the same curriculum as boys in subsidized public schools, which was a pre-requisite for taking further studies which better prepared women for their roles as workers (Stanfors, 2003). As the first half of the 20th century developed in Sweden, women working in the labor market became the new normal, although developments were more gradual than in the latter part of the century.

1.3.1 The transition from male-breadwinner to dual-earner society

During the 1960s through 1990, dramatic change in female labor force participation in Sweden was driven compositionally by the increased proportions of mothers entering the labor force. Much of this change was driven by women's increased relative wages, and greater proportions of women attained higher levels of formal education for successive birth cohorts (Stanfors, 2003). This period coincided with the spread of household technologies that reduced the drudgery of housework and saved households many weekly hours (Svensson, 2008). Although this period's increasing female labor force participation trend took place across most countries (Figure 2), change in Sweden was intense, whereby between 1960 and 1990 the number of employed women rose by 1.2 million, during a period where the female population aged 16-64 grew by only 250 thousand[2]. This propelled Sweden to the international forefront concerning women's labor market attachment and to a majority dual-earner society somewhat earlier than most other wealthy countries.

The 1970s were unique in that women with young children entered the labor force *en masse* in Sweden, the majority who worked part-time (Anxo, 2009; Stanfors 2003), and the proportion of women who work part-time steadily increased over the period, before it began to decline in 1982 (Stanfors, 2003, p.123). Change in this period was less extensive for men, who participated in the labor market to a similar extent as previously, although the nature of jobs were changing. Since industrialization, the dominant conception of fathers has been as breadwinners, which began to shift in the 1970s, when the idea of a nurturing father involved in children's daily lives re-emerged (see Lamb, 2000 for an historical review). Men's labor force participation in a sense is taken as given historically, and has fluctuated between 80 and 90 percent from 1870 onwards (Figure 1). However, men's hours worked have declined over the second half of the century, having reduced eight hours per week from 1963 to 1988, with an additional 5 hour reduction between 1989 to 2004 (Stanfors, 2014). In the 1980s women experienced a growth in full-time work, likely a result from

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[2] Sweden's female population aged 16-64 in 1960 was 2,466,125 and in 1990 was 2,716,178 (Statistiska centralbyrån (SCB)). According to Stanfors, 2014 (Table 2), the number of employed women in 1960 was 948,000 and the number of employed women in 1990 was 2,152,000.

the high demand for labor (Stanfors, 2003). This period gave rise to the modern welfare state in Sweden, which from the late 1960s to the 1990s became increasingly comprehensive and gender equal in its design (Magnusson, 2000; Stanfors, 2014).

Figure 2.
Female labor force participation rates for women, select countries

1.3.2 Changes in family behavior in Sweden

During the transition from male-breadwinner to dual-earner society, numerous changes occurred within the family. The nuclear family became increasingly unstable and less common, evidenced by rising divorce rates, increased non-marital cohabitation, more single parenting, delayed transitions into marriage and childbearing, sub-replacement period fertility rates, and smaller family sizes. These changes occurred within Sweden and internationally, and have often been associated with women's rising labor force participation and greater economic independence (Van de Kaa 1987; Stanfors & Goldscheider, 2015).

In the mid-1980s, scholars synthesized these changes and posited the theory of the Second Demographic Transition (SDT) (Lesthaeghe & Van de Kaa, 1986; Van de Kaa, 1987; Lesthaeghe, 1991). The first demographic transition marked a shift from pre-industrial to industrialized society, and a transition from high to low birth and death rates, motivated by modernization and economic change. The SDT theorized that family changes have been primarily driven by value shifts towards rising aspirations for higher order needs and greater self-actualization, which supersede the desire to formulate families. Those who formulated the SDT stated explicitly that Sweden was a frontrunner comparatively regarding the changes spreading throughout European and western societies (Laesthaege 1991, 2010). Compared with other countries, factors where Sweden stood out included higher rates of cohabitation (Kiernan, 2004), increased age at first marriage and greater postponement of first childbirths (Sobotka & Toulemon, 2008) and extra-marital births and divorces (van de Kaa, 2002). It should be mentioned that a competing view for interpreting family changes in recent decades has been put forth by several scholars of the gender revolution, who have argued that components described by the SDT reflect early stresses on the family imposed by revolutionary changes in women's roles (see Goldscheider, Bernhardt & Lappegård, 2015; Stanfors & Goldscheider, 2015), which has created an "unstable equilibrium" via a historical shift to a new gender regime (Esping-Andersen, 2009). The SDT literature focuses on a shorter view of history, largely comparing recent family developments to the baby boom era, while the gender revolution literature takes the longer, more structural view, from pre-industrialization to present (see Goldscheider & Stanfors, 2015).

Since many family changes occurred somewhat earlier in Sweden, it's important to mention how these developments relate to the 1990s and

onward, the period of this study, as smaller, more selected families, may explain changes observed. Although total fertility rates have fluctuated up and down throughout the 20th century in Sweden, a two-child norm in completed fertility has existed continually from early in the century (Stanfors, 2003, pp. 98-9), and near-replacement cohort fertility has been achieved by cohorts born up until the 1970s (Oláh & Bernhardt, 2008). More recently, total fertility rates have revived in Sweden, as well as other countries with high female labor force participation, a shift which some have attributed to changes in gender role attitudes (Arpino, Esping-Andersen & Pessin, 2015). The divorce rate in Sweden experienced strong growth over the early 20th century, but actually tapered off after the 1974 liberalization of divorce laws, and annual divorce rates have fluctuated up and down slightly between 1990 and 2010 (Sandström, Stanfors & Andersson, unpublished). Marriage has also seen a modest revival in Sweden from the late 1990s to 2008 (Ohlsson-Wijk, 2011). In sum, from 1990 to 2010 men and women in Sweden continue to formulate cohabitating and married relationships, form families and raise children, thus the shift towards smaller and fewer, more selected families, should not have changed noticeable during this period of study.

1.3.3 Institutional developments

Certain institutional developments in Sweden are contextually relevant in how they can influence the time allocation of both women and men in the labor market and household. Roughly 50 years ago, in the late 1960s, Swedish family policies as we know them today emerged, as the government adopted a policy aimed towards providing women and men with equal opportunities in economic and social life, which emphasized equality in both the labor market and household (Stanfors, 2003, p.103) . An important change was the 1971 taxation shift from a joint to individual system, which reduced women's marginal tax rates thus increasing their market wage rate, which aimed at reducing the employment rate and wage differentials between men and women. In 1974, Sweden became the first country to extend parental leave rights towards men, which came alongside an improved cash benefit, with remuneration based on income, which incentivizes labor market attachment prior to childbirth (Stanfors, 2003, p.90). Fathers' uptake has risen gradually, from less than 1 percent from 1974 to 24 percent by 2011 (Statistics Sweden, 2014), thus mothers have

always used the majority of leave available. Parental leave was extended in 1978 to 9 months, eight of which were at 90 percent of previous earnings and one low flat-rate month, with the flexibility of saving 3 months until child is 8 years old. In 1979 all employees with children under age 12 were granted the legal right to work part-time (75% of full-time hours) until the child is 12. Gender equality was advanced by a 1980 anti-discrimination act which banned employment discrimination based on gender, and in 1983 a new agreement on gender equality with unions was made. Other policies introduced recently aim to moderate the household behavior of men, such as a first fathers' quota month in 1995, the second father's quota month in 2002, and the 2008 gender equality bonus, and men have responded behaviorally to some degree, with the possible exception of the more recent equality bonus (Duvander & Johansson, 2012). This is by no means an exhaustive account of policy developments, but the point is that the combination of these initiates have aimed to enhance gender equality by providing men and women with more equal opportunities for labor market participation and individual economic autonomy, which have a long history in Sweden, comparatively speaking.

Since 1943 Sweden has had some form of government-subsidized day care for children. Growth in the number of childcare facilities was slow initially, and accelerated especially during the 1970s when it became a political priority (Stanfors, 2003. P.88). The increasing supply of child care thus lagged the rise in female labor participation, yet the system did expand from the 1970s onwards to the late 1990s, and the gaps between demand and supply of daycare places narrowed (see Bergqvist & Nyberg, 2002 for a thorough discussion of child care developments from the 1970s to 1990s). Childcare costs, as a percentage of earnings, are low in Sweden in this period by comparison across the OECD (Immervol & Barber, 2005). As we move into the period of this study, 1990 to 2010, the increasing access to affordable, high quality childcare is relevant, as empirical evidence showing childcare policies are a main determinant of mothers' employment and hours worked in cross-national perspective is growing in the literature (De Henau et al., 2010; Uunk et al., 2005). Table 1 shows how the proportion of children in public childcare has risen since the 1980s; the change between 1995 and 2010, from 48 to 83 percent, is dramatic, an increase which should reflect an increased work intensity for mothers of young children in this period.

Table 1.
Proportion of children aged 1-5 enrolled in public child care (percent)

1980	1986	1990	1995	2000	2005	2010
30[a]	47[a]	49[b]	52	66	77	83

Notes: Figures are a percentage of all same-aged children in the population. [a] 1980 and 1986 figures for children aged 3 months to 6 years [b]1990 figure for children aged 0-6 years. Proportions include childcare run by the municipality and privately.
Source: 1980 & 1986 (Bergqvist & Nyberg, 2002; 1990 Nyberg, 2004; 1994-2011 Skolverket, 2016)

1.3.4 The period of study: 1990 to 2010

This thesis focuses on men's and women's time allocation between 1990 to 2010 in Sweden and comparatively, an interesting period with regards to globalization, technological and institutional changes, and labor market developments. Although women's market work at the turn of the 21st century is ubiquitous (Costa, 2000), and the dual-earner household has overtaken the traditional male-breadwinner household in both Europe and North America (Adema & Whiteford, 2007), these structural changes have caused a disequilibrium in gender roles (Esping-Andersen, 2009) which have not stabilized. This period of the ongoing gender revolution involves women's continued behavioral changes in the labor market and household, as well as men's (Goldscheider, Bernhardt & Lappegård, 2015; Stanfors & Goldscheider, 2015), a structural change with numerous implications for the economy, society, and the family. This period has also seen a worldwide expansion of higher education enrollments (Schofer & Meyer, 2005), which has implications concerning gender relations, as both men's and women's higher education levels have been associated with great egalitarian attitudes (Goldschider, Bernhardt & Lappegård, 2015), as well as more equal division of work hours and housework (Evertsson et al., 2009).

The 1990s were a dramatic period in Sweden, beginning with a red-hot economy that quickly cooled with the 1991 economic crisis, described as one of the "Big 5" crises of the 20th century (Reinhart & Rogoff, 2013) and one where full-employment in Sweden was severely disrupted. 1990 marked when women's mass entry into the labor market had peaked in terms of labor force participation in Sweden (Stanfors, 2014) and the U.S. (Goldin, 2006), and when labor participation differences between men, women, married women, and women with children became marginal in Sweden (Figure 1). Aggregate statistics however can be misleading, and the dramatic rise in women's labor participation in Sweden overstates equality

in hours spent actually in market work (Jonung & Persson, 1993; Stanfors, 2014). Thus a more nuanced view of time allocation is required to better understand recent historical developments.

Time use data can be informative in this regard, as it can illuminate changes ongoing that are masked by aggregate statistics. Between 1990 and 2010 in Sweden, women's share of part-time employment declined from 81 to 63 percent, and part-time employment as a share of women's total employment declined from 26 to 19 percent[3]. This suggests the working day of women with children has intensified, as part-time work has traditionally been a key strategy for alleviating conflicts between work and family for women. This increased work intensity can be examined by looking at the proportion of working mothers engaged in paid work over the course of a typical workday (Figure 3).

Figure 3.
Percentage of employed women with children performing paid work by time of day, 1990/91, 2000/01 and 2010/11
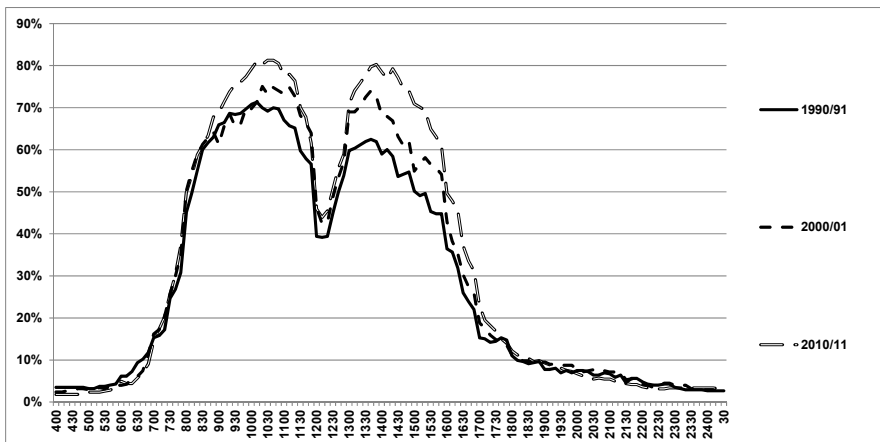
Notes: The percentage working was calculated at each 10-minute interval of the day using Monday-Thursday observations only for employed women aged 20-64 with children under age 18 living in the household.
Source: Calculated using Swedish Time Use Survey (SWETUS), 1990/91, 2000/01 & 2010/11.

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[3] OCED Incidence of FTPT employment - common definition
http://stats.oecd.org/Index.aspx?DatasetCode=FTPTC_I# Accessed 2016-03-04

This figure provides one snapshot of how the proportion of women with children engaged in paid work throughout 10-minute intervals of a typical workday increased between 1990/91, 2000/01 and 2010/11. Men with children's pattern (not shown) did not change notably between waves, but is most similar to women in 2010/11, supporting the notion of a convergence of men and women with children's paid work between 1990 and 2010.

The SWETUS data can also inform regarding the number of activities individuals fit into a typical workday, including how this may differ between men and women and how it may have changed between 1990 and 2010. Figure 4 shows that within each family cycle category, women's day is more fragmented than men's. There has been a secular increase in the number of activities men and women perform in a day, and the average time spent per activity has declined. This fragmentation of a typical work day, however, increased between 1990/91 and 2010/11 for men and women with and without children, illustrating that in this period time has become more fragmented in general, but that parents with young children slice their day into more parts that others. One aspect of this increased fragmentation of the day is due to changing sleep patterns, which are examined in paper 3. Figures 3 and 4 exploit an informative aspect of the time use surveys, and provide some evidence that the daily lives of working women with young children have intensified over this period.

Figure 4.

Number of daily weekday time diary episodes and average minutes per episode, aged 20-64 men and women, by family cycle stage and year
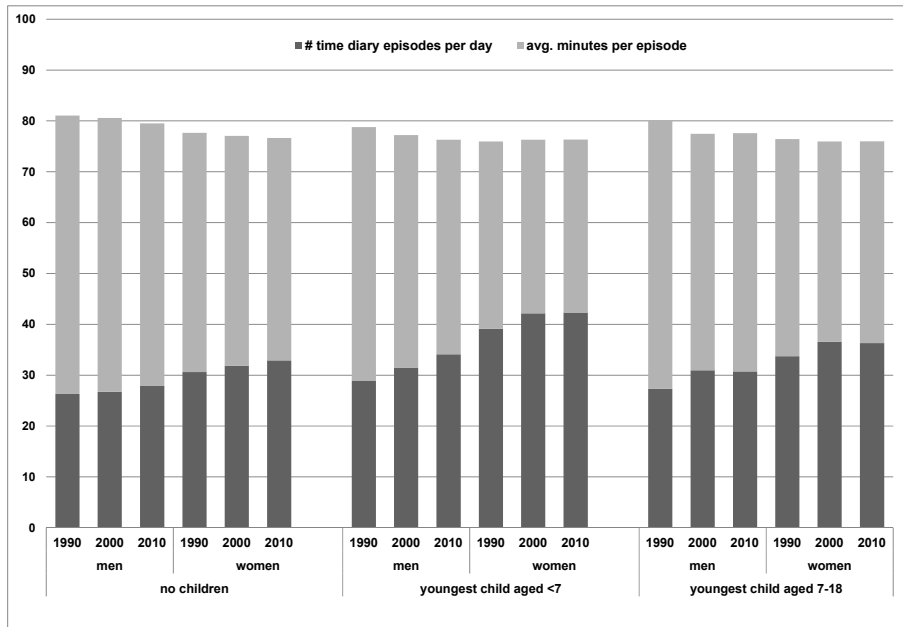
Notes: Calculated using Monday-Thursday observations only for working men and women aged 20-64 with children under age 18 living in the household.
Source: Authors' calculations using Swedish Time Use Survey (SWETUS) 1990/91, 2000/01 & 2010/11.

1.4 Theoretical framework

This thesis will analyze the time allocation of men and women grounded in neoclassical economic theory, while giving consideration to the role that gender plays, in the context of institutional factors which mitigate these relationships.

The basic tenets of neoclassical economics are that individuals make decisions under conditions of scarcity, based on full information, rationality, and utility maximization. Scarcity relates to the inability to afford everything, the primary constraint impacting decision-making at the individual, household and societal levels. Rational decision making assumes

most people behave rationally in a consistent manner, using all information available to them, including foresight to make decisions which maximize well-being or utility (Jacobsen, 1994). The challenge of best allocating resources under constraints, with the goal to maximize well-being, relates to the concept of opportunity costs, or what is given up by choosing one alternative over the other (Blau, Ferber, & Winkler, 1992).

The secular decline of the paid work week over the 20th century brought an increased interest to the allocation of time of households, and Gary Becker's economic time allocation theory became a foundational theory for analyzing time between market and non-market activities (Becker, 1965). It was in accordance with the standard economic model of labor supply, which models employment as a choice between market work and leisure, determined by individuals' preferences for work compared to leisure, the market wage and unearned non-labor income. The opportunity cost of not working is the market wage rate, which reflects an individual's education, experience and skill, thus higher wages reflect greater employment and or paid work hours, an upward-sloping supply curve for individuals, assuming labor markets are competitive (Jacobsen, 1994; Stanfors, 2014). The standard economic model of labor supply, which modelled paid employment as an alternative to leisure, doesn't distinguish between work at home and leisure, and is thus inadequate for modelling the choice function, especially of mothers, who trade off time between market work, leisure and home production (Gronau, 1977; Kimmell & Connelly, 2007). This shortcoming was addressed by Gronau (1977), who extended the standard labor/leisure model to include housework, which better suited analyzing time budget data.

Neoclassical models of family behavior examine the family as an economic firm-like production unit which divides time between market and non-market activities towards maximizing family well-being (Becker, 1965, 1981)[4]. In this neoclassical model, households are both producing and consuming units, and derive utility from selecting their optimal combination of commodities (Blau, Ferber & Winkler, 1992[5]). Commodities are produced by combining market goods and services and the time of

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[4] The seminal first work regarding the allocation of time was Gary Becker's Theory of the Allocation of Time (1965), while Becker's Treatise on the Family (1981, enlarged 1991) synthesized various works which founded the New Home Economics.

[5] This section draws considerably from the standard account provided in Blau, Ferber and Winkler, 1992.

household members. In its simplest form, the neoclassical model of the family assumed that men and women make informed decisions that resulted in maximizing family utility, whereby commodity production can achieve efficiency gains via a traditional division of labor whereby the husband specialized in paid work and the wife specialized in home production (Blau et al. 1992). This is based on the theory of comparative advantages (Becker, 1981), whereby decisions on paid work and housework are contingent on household partners' marginal productivity in the labor market and household work. Men's typically higher wages relative to women tilt the forces of specialization towards men in paid work and women in home production, such as housework and childcare. The gains to specialization, at least in the short term, are strongest when children are young, but in the long run may not be efficient, if resorting to a traditional division of labor reduces women's access to market opportunities and skill acquisition, reducing long-term earnings (Blau et al., 1992). Because gender wage differentials exist, this specialization can persist even amongst couples with gender-equal ideals or equal levels of education, if a more equal division of labor is costly in financial terms. This process describes feedback loops, which Becker mentions could be triggered by biological differences which assign women to childbirth, and whereby joint economies between caring for newborns and performing housework increase women's relatively productivity in these areas. In recent decades, women's rising education levels and career-orientation increase their opportunity cost of not working, predicting a more equal division of labor over the period.

In reaction to the specialization model, which didn't account for differentiating utility functions of each partner, bargaining models were developed, providing a more gender-neutral account of specialization theory, whereby the time allocation of individuals is considered based on the partners' relative bargaining power. Bargaining models can be cooperative or non-cooperative, whereby total household utility is a function of either partner's utility functions, or where one's utility supersedes the other (Lundberg & Pollak, 1996; see also Manser & Brown, 1980). This is thought to be dependent on what each has to trade and on the living standard that could be obtained outside the partnership, overcoming a shortcoming of common preference models (Lundberg & Pollak, 1996). The bargained outcome of intra-household time allocation is affected by the relative earnings of each partner. Again, given gender earnings differentials, this leads to power differences in bargaining (Thomson, 1990), especially since housework differs from market work in that its exchange value is lower

(Brines, 1994). Thus specialization and bargaining models assign men to more paid work and women to more household production, and vice versa. The specialization model was formulated during the period when the male-breadwinner household model was the dominant familial organizational structure in the post-war period until the 1960s, a familial structure which has become less prevalent ever since (although not equally across countries). As such, it predicts gains from specialization based on productivity-related traits, whereby high earning men would marry women with higher productivity in home production (cf. Lam, 1988), which is at odds with current trends of educational assortative mating[6]. It seems clear over time that, with greater provision of goods and services in the market, gains to specialization have decreased (Lundberg & Pollak, 2007), a transformation away from specialization characterized by production complementarities (Becker, 1973), towards partnerships characterized by consumption complementarities (Mansour & McKinnish, 2014; Stevenson & Wolfers, 2007).

Although the neoclassical framework has been criticized, it does serve useful as laying the foundation for analyzing the division of labor (Jacobsen, 1997). The time allocation of men and women has been described by other processes as well, such as sociological theories also predict a division of household labor related to the relative resources of spouses and what can be negotiated out of, (Blood & Wolfe 1960; Brines 1993; Shelton & John 1996), as well as time availability (Coverman, 1985). Time availability theory suggests that couples will allocate time towards household production based on their partner's relative hours spent in the labor market (Bianchi et al, 2000; Coverman, 1985), a theory difficult to investigate empirically using cross-sectional data due to the endogeneity between paid work and housework in a constrained 24-hour day period[7].

The bottom line is that bargaining and specialization models, as well as sociological theories, predict an unequal division of labor between men and women. Time allocation is largely determined by gender, and has considerable empirical support in the surrounding literature concerning the division of household labor (Coltrane, 2000; Esping-Andersen et al. 2013; Hook, 2006; Gershuny, 2000). That women have been found to perform

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[6] Positive educational assortative mating has been increasing in the U.S. and throughout Europe over this period (see Blossfeld, 2009; Schwartz, 2013).

[7] See Lam, McHale & Crouter, 2012 for a review of longitudinal studies, which tend to have smaller sample sizes.

more housework than men even when bargaining power (i.e. income and education) is equal (Evertsson & Nermo 2007; Tichenor 1999) shows that gender strongly influences time allocation in ways unexplained by rational decision-making via specialization and bargaining based on resources.

The previously described neoclassical framework forms the basis for the empirical chapters of this thesis. The papers will also include institutional qualifiers which may mediate the theoretical framework in real life. The cross-European study in chapter 4 will frame its analyses using Esping-Andersen's welfare regime typology which describes three typical welfare states; the social democratic, corporatist and liberal (1990, 1999). The welfare regime context can alter the specialization and opportunity cost framework by incentivizing family households to decrease market work or increase nonmarket work (De Henau et al., 2010; Jacobsen, 1994). The state doesn't directly transfer time to individuals, but rather, it transfers money, goods and services that free up especially women's time in household production (Goodin, Rice, Parp & Eriksson, 2008, p.133). This impacts determinants of women's labor supply, such as flexibility of working time arrangements, taxation of second earners, childcare subsidies, child benefits and parental leave, levels of female education and overall labor market conditions (Jaumotte, 2003). Many of these determinants feedback and can provide multiplier effects, such as a welfare state expansion of social services, allowing women to work while creating a labor market to work within (Esping-Andersen, 1990). Regimes can also incentivize changes in men's behavior via gender-neutral or dual-earner dual-carer policies (Gornick & Meyers, 2003), which can also impact men's time in housework (Hook, 2006).

1.5 Previous research

1.5.1. The allocation of time

How individuals allocate time across a variety of activities provides valuable inputs into our understanding of human behavior, both past and present. Ever since the advent of industrial paid labor, human activity became measured and remunerated largely by the clock, and the colloquialism "time is money" has rung true (Szalai, 1966). Time differs

from money however, in that it is finite and more equally distributed within societies - everyone has 1440 minutes in a day. The use of time changes with technology; the television and mobile phone created new opportunities to spend time in different ways. Individuals continually encounter tradeoffs in how to allocate their time; more time spent in one activity means something else has to give, which could be performing less other activities, performing other activities for less time, or some combination thereof. Such activities can be thought of in terms of market and non-market, or other mutually-exclusive categories based on realms of necessity, which include economic (paid work), social (unpaid household labor, childcare), biological (sleep and personal hygiene) and what remains as discretionary (Ås, 1978; Goodin et al., 2008)[8]. Of these four categories, time spent in the biological has changed the least over time, between countries, and between men and women in recent decades (Gershuny, 2000).

Women's rising labor force participation in the late 20th century created an increased interest in how women and men allocated their time in the private sphere of the household. This provided motivation for Gary Becker's theory of the allocation of time (1965), which inspired numerous investigations into changes in household behavior, such as de Vries' (1994) articulation of the industrious revolution. Others brought much needed attention to the shortcoming of national accounts, which don't measure non-market work, which is largely performed by women (Waring & Steinem, 1988). The value of this unaccounted labor has been estimated to range between one-third and half of all OECD economic activity[9], which questions the reliability of traditional measures of well-being, such as GDP per capita (Miranda, 2011).

Although what happens in the private sphere is economically substantial and relevant, disagreement concerning long-run trends in time spent performing household production arises due to a lack of comprehensive data on time allocation (Ramey, 2009). One example is the debate concerning 20th century technological changes in productivity-enhancing domestic appliances, and whether they did in fact save households time. Some argued that between 1926 and the 1970s, women's housework did not decline, but was simply reallocated to a broad range of activities (Vanek, 1974; Cowan, 1983), a surprising finding considering

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[8] Most time use research, in recent decades, has categorized activities along these domains.

[9] These estimates are likely an under-estimation because household production by those younger than 15 and older than 64 were not accounted for.

technological progress and declining fertility in the period, which was later termed the "Cowan paradox" (Mokyr, 2000). Swedish households over the 20th century reduced time in home production by half over the 20th century, although short term patterns are less clear (Svensson, 2008).

In the 1960s international time use data sets emerged and more comprehensive measurements of domestic activities were featured in a variety of studies in the 1970s (Stanfors & Goldsheider, 2015; see Marini & Shelton, 1993 for a review of early studies). Most nationally-representative evidence of trends in time allocation came from the mid-1960s to present, and key trends are worth mentioning. As the proportion of working mothers increased substantially in the second half of the 20th century in Sweden and elsewhere, the initial increase in women's market hours was met with modest declines in women's time spent doing unpaid work, and many argued this did not decline enough to compensate (Bianchi 2000; Coltrane, 2000; Gauthier, Smeeding & Furstenberg, 2004; Gershuny, 2000; Sayer, 2005). Time spent performing housework has been converging between men and women, yet women have generally reduced their housework hours to a greater extent than men's increases (Bianchi, Robinson & Milkie 2006; Coltrane 2000; Gershuny & Robinson 1988). That growth in women's employment has not been matched by similar adaptations in household production has been termed a "lagged adaption" (Gershuny, Godwin & Jones, 1994).

Childcare is another form of non-market work. From the 1960s to 2010, there has been a general increase in the time both mothers and fathers spend performing childcare (Gauthier et al., 2004), and overall time spent with their children, increases which are most evident from the 1990s to early 2000s (Bianchi, 2000; Aguiar & Hurst, 2007). This increase has sometimes been referred to as the rise of (time) intensive parenting, which seemed to have begun in the 1990s with higher educated parents, the causes of which have been debated but include selection effects, income effects, rising safety concerns, more flexible work schedules and competitive forces (Guryan, Hurst & Kearney, 2008; Bianchi et al., 2006; see Ramey & Ramey, 2009 for a discussion on the debate). Fathers have been more inclined to increase time with their children than time in housework (Hook & Wolfe 2012).

A current debate regarding men's and women's time allocation is whether gender convergence will continue, or whether the gender revolution

has stalled, the central theme of this thesis[10]. Proponents of convergence argue that considerable evidence shows the time use of men and women and the division of labor has been converging, and this convergence should continue, as younger generations are more likely to apply gender equal ideals than their predecessors (Robinson & Godbey, 1997; Gershuny, 2000; Dribe & Stanfors, 2009; Stanfors, 2014). Alternatively, others have asked whether the gender revolution has stalled (Hochschild & Machung, 2012; Hook, 2006; England, 2010), since change, especially among men, has been slow. Arguably, how parenthood impacts men's and women's time allocation is likely the most important determinant of whether gender convergence will continue or stall. A vast literature has shown that parenthood is a profound barrier to continued convergence, as parenthood generally intensifies gendered time use patterns and strengthens a more traditional division of labor, whereby mothers perform more housework and childcare and men specialize by doing more paid work (see Bianchi, 2000; Bianchi, Robinson & Milkie, 2006; Sayer, 2005 (US); Craig, 2006 (Australia); Hallberg & Klevmarken, 2003 (Sweden); Gershuny & Sullivan, 2003 (international comparisons); Anxo et al., 2011; Kan, Sullivan & Gershuny, 2011 (regime-type perspective). In most studies in recent decades, men with young children perform a smaller share of household labor than childless men (Coltrane, 2000). As mentioned previously, evidence from Sweden found that over the 1990s this pattern began to change, whereby parenthood circa 1990 reinforced a traditional division of labor, but this was not the case in 2000, when parenthood impacted the division of labor of men and women in a more similar manner (Dribe & Stanfors, 2009).

Cross-country research in the gender division of labor can illustrate important differences based on contextual factors. There is a body of research that suggests a Nordic pattern was already emerging in the early 1980s, as married men in Sweden performed a slightly higher share of housework than men in the U.S., Norway, Australia or Canada (Baxter, 1997; see also Wright et al., 1992). Haas (1981) also showed around 1980 that roughly 17 percent of Swedish couples reported having an egalitarian division of labor, which was more than U.S. couples, although women did more cooking in 82 percent of couples. Circa 2000 the majority of Danish

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[10] The convergence literature in fact focuses on three aspects of time allocation which have converged since the 1960s; across countries, social-class and gender (cf. Gershuny, 2000).

couples adopted an equitable and egalitarian household division of labor, but this was not the case in Britain or Spain (Esping-Andersen, Boertien, Bonke, & Gracia, 2013). Previous research shows the degree which men and women specialize varies across countries (Gauthier et al., 2004), and over the life cycle across countries (Yeung et al., 2011). Cross-country variation in how parenthood affects the division of labor has been related to the welfare regime in question (Sullivan & Gershuny, 2001; Neilson & Stanfors, 2014) and work-family policies available which can reduce work-family conflicts and increase men's housework (Anxo et al., 2011; Craig & Mullan, 2010; Hook, 2006). Fathers are nowadays expected to provide more physical and emotional care of children and have more egalitarian relationships with their partners than previously (Hook & Wolfe, 2011). Changing household behavior of fathers has been studied much less than women's changes, although it is generally understood that men's behavior in the household is changing.

1.5.2. Work-family conflict

The increasing proportion of working mothers and transition to dual-earner society has increased work-family conflict, an issue which entered the societal lexicon in the late 1960s[11]. This literature originally focused on working mothers and various issues surrounding their labor market participation, income, and well-being (see Bianchi & Milkie, 2010 for a review). The number of individuals dealing with such issues have increased over time (Nomaguchi, 2009), and such conflicts are often intense (Hochschild & Machung, 2012), and have been more closely linked to the well-being of mothers than fathers (Nomaguchi, Milkie & Bianchi 2005; Bianchi & Milkie, 2010). The growth of dual-earner households with children implies that although secular work declines have occurred in the 20th century, in actuality women's hours have increased, with stagnant or modest declines for men on average, while the combined hours that couples and parents contribute have generally increased in recent decades (Gershuny, 2000 on international developments; Jacobs & Gerson, 2004 on the U.S; Stanfors, 2014 on Sweden), leaving less time available for other

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[11] Google Ngram viewer, a database of over 5 million books published from 1800 to 2008, shows the term work-family balance first appeared in English books in the mid- to late-1960s.

activities. This change has been associated with increased time pressure and levels of stress, yet the impact on well-being can vary considerably across countries, depending on family-friendly policies and local traditions (Perrons, 2007). Such policies tend to fall under the umbrella of being family friendly when they reconcile the conflict between work and family life (Kamerman, Neuman, Waldfogel, & Brooks-Gunn, 2003).

For men, excessive work hours and demands have been the traditional source of work-family conflict. For women the sources have generally been more complex, but include conflict between the dual-roles faced by women, who despite increased career-orientation and greater working hours than in the past have continued to be the primary caregiver to children while performing a greater share of the housework burden than men. Both the workplace and the family have been coined as "greedy institutions" in that they demand much of our time, especially during prime years of family formation and career mobility (see Glass & Camarigg, 1992). Research has shown that within family demands, work and parenthood are prioritized over other allocations of time, including leisure (Voorpostel, van der Lippe, & Gershuny, 2009; Wight, Raley, & Bianchi, 2008). Work-family research is generally concerned with the well-being of individuals. One important aspect of well-being is time spent with children (Juster & Stafford, 1985, Robinson & Godbey 1997), and some have calculated time investments in children under 18 in Sweden to be over 20 percent of GDP (Klevmarken & Stafford, 1997).

This thesis will investigate in two papers work-family conflict related issues which require further empirical inputs for Sweden in this period. The first aspect of well-being includes with whom working couples spend their time with (i.e. partner, family members, children, or alone), which has implications on the economy and family life, including individual well-being and the well-being of children (Klevmarken & Stafford, 1997). Most related research comes from outside Sweden, and has shown that in recent decades spousal interaction has declined (Amato et al., 2007; Dew, 2009); and many report lacking time for themselves (Phipps, Burton & Osberg, 2001) and as a family (Bianchi et al., 2006). Time use evidence has found parents have continued to prioritize family time, despite their combined work hours having increased over time (Genadek, Flood, & García-Román, 2015; Gershuny, 2000; Sayer, 2005), but surveys indicate that a majority would like more time with their family, not less (Bianchi et al., 2006).

Another aspect of well-being in the work-family literature relates to sleep, the only activity individuals spend roughly one third of their lives

doing. The ability of working individuals to get sufficient sleep has large-scale economic and societal health implications. Research supports the notion that paid work hours and sleep are highly and inversely correlated (Basner et al., 2007), indicating that women's increased work orientation may have implications. Although sleep is a biological necessity, there is mounting evidence that it both responds to economic incentives (Biddle & Hamermesh, 1990), and is shaped by social roles, such as caregiving for children in the night which disproportionately impacts mothers (Arber, Hislop, Bote and Meadows, 2007; Burgard, 2011; Maume et al., 2009). Further inputs into this topic in Sweden are required, especially since women report much higher levels of fatigue than men in this period (Stenbeck & Persson, 2006), and having children has been associated with women's higher work absenteeism, but not to men's absenteeism (Angelov, Johansson, Lindahl & Lindström, 2011).

1.6 Data

This section begins with a discussion of historical developments of time use surveys, before describing the three main micro-level data sets used in this thesis, including their merits, limitations, and depth in terms of coverage and level of detail. This discussion includes motivation for why each data set was chosen for the specific paper of the thesis.

Time use surveys are well-suited for measuring patterns of time allocation and generating a better understanding of economic decision-making processes (Sevilla-Sanz, 2014). In recent decades an increased demand and interest in the study of time allocation has occurred, especially cross-country comparative research, which has been attributed to the pioneering work of Hungarian Sociologist Alexander Szalai, who was instrumental in initiating a multi-national comparative time use research project at a 1964 symposium, whereby twelve Eastern and Western European countries pledged to carry out parallel time-budget[12] surveys using agreed methods of sampling, interviewing and data coding[13] (Szalai,

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[12] The often-used terminology in the past was "time-budget survey", but I wish to avoid using this term as this thesis examines how individuals allocate or spend their time, not how they budget (i.e. plan) to spend their time.

[13] Although eight countries attended the 1964 symposium, four others soon joined the project for 12 initial countries, which included Bulgaria, Belgium, Czechoslovakia, France, East

1966; Juster & Stafford, 1991). Although household time allocation studies date back to the early 20th century in several countries including the U.S. U.K., and Russia, this multi-national project was by far the most ambitious to date[14]. This morphed into the Multinational Time Use Survey (MTUS), spearheaded by Kimberly Fisher and Jonathan Gershuny, which includes over 60 data sets from 25 countries between 1961 and 2015, with several new data releases planned for 2016. A primary objective of this project is to enable cross-country comparability through the harmonization of variables and data sets. All countries which conduct time use surveys, including Sweden, base their study design, data collection, categorization and coding according to Eurostat guidelines aimed at creating comparable time use statistics (Eurostat, 2004). Because time use surveys are very demanding of respondents' time, most countries conduct nationally-representative cross-section time use surveys every five (e.g. Canada, Netherlands, Spain, UK) or every 10 years (e.g. Finland, France, Germany, Italy, Norway, Sweden), with the U.S. being an exception, conducting surveys in 1965, 1975, 1985, 1992-95, 1998-2001, and the American Time Use Survey (ATUS), has surveyed individuals every day from 2003 to 2014 and made micro data readily available to journalists, academics, policy makers and researchers. In recent years the Republic of Korea, Israel, and South Africa have added data sets to the MTUS project.

Time use surveys possess both merits and shortcomings. They contain very rich information on non-market activities compared to most other data sources, but at the tradeoff of covering a short period of time, typically one or two 24-hour period(s)[15]. The short time period infers that activities performed less often than daily, such as volunteering or taking a vacation, are under-reported. Information which can be extrapolated include the average time in activities and the percentage performing such an activity, and can inform regarding numerous economic activities (e.g. unpaid labor, work scheduling, commuting times), family and work-life domains (e.g. division of labor, childcare, time spent with family members), health (e.g. sleep, physical activity), among others. There is a consistent lack of

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and West Germany, Hungary, Peru, Poland, the Soviet Union, the USA and Yugoslavia (Szalai, 1966).

[14] See Pentland, Harvey, Lawton & McColl, 1999 for a comprehensive review of early 20th century studies.

[15] The Netherlands time use surveys are an exception, where individuals complete 7 days of time diaries, which comes at the cost of high levels of non-response (see Appendix A Table A2 for non-response across countries).

reporting of activities such as crime, violence, sex and drug abuse. Recall bias is an issue in surveys, but time diaries have short recall periods as they are reported either the survey day or a day later, which may minimizes bias compared to retrospective questionnaires (Robinson, 1985). Time diaries are generally considered the gold standard in measuring household activities, both for their reliability and validity (Juster & Stafford 1985, Robinson & Godbey, 1997). Their supremacy concerning paid work however is debated; some have argued that individuals exaggerate their weekly hours of paid work in retrospective surveys, deeming time diary estimates to be more accurate (Robinson & Bostrom, 1994), while others have demonstrated that claims of the superiority of time diary data are perhaps not substantiated, and should be viewed as supplementing, rather than supplanting evidence (Jacobs, 1998). Using U.S. data, this exaggeration of long paid working hours increased between 1965 and 1985 (Robinson & Bostrom, 1994), and was greater at the higher end of the distribution, possibly due to long work hours' perceived higher social status (Robinson & Godbey, 1997). A follow-up study found this over-estimation still exists, although it has reduced marginally (Robinson, Martin, Glorieux, & Minnen, 2011). More recently, longitudinal data with both a questionnaire and time diary component found both men and women overstated housework and childcare considerably in questionnaires, but paid work differences between the two formats were negligible (Yavorsky, Kamp Dush, & Schoppe-Sullivan, 2015). Time use data can also feature less heaping within dependent variables, as the influence of socially desired responses are limited by the constraints of a 24-hour diary window. Paper 3 shows how this may be beneficial for studying sleep, where time diaries reduce heaping on common responses of 7 or 8 hours per night considerably. The primary shortcoming of time use surveys is that longitudinal data rarely exist, largely because they are burdensome and would result in high sample attrition (Gershuny, Bittman & Brice, 2005). The data sources used also do not contain information on subjective well-being, so it is not possible to determine to any degree whether the individuals enjoyed the activities performed.

This thesis utilizes three data sets, two of which are time use surveys, which will next be described in greater detail. The main data source is the Swedish Time Use Survey (SWETUS), cross-sectional nationally-representative surveys conducted by Statistics Sweden in 1990/91, 2000/01 and 2010/11, used in papers 2 and 3 which examined Sweden only. The first two waves of this data set have been harmonized and appended into the Multinational Time Use Surveys (MTUS), enabling cross-country

comparisons over the same time period which is utilized in Paper 1, thus results from Sweden can be contextualized with other Nordic countries to untangle a few empirical questions. SWETUS data contain more detailed activity information than MTUS due to harmonization with over 100 activity categories, whereas MTUS aggregates activities into 41 or 69 categories. Thesis papers on Sweden specifically use SWETUS for its richer information, while MTUS is better-suited for cross-country comparative studies.

1.6.1 Data sources

The Swedish Time Use Survey (SWETUS), conducted by Statistics Sweden, is the main thesis data source, used in Papers 2 and 3. Despite a growing interest in time use, SWETUS remains relatively unexplored, and currently the most recent wave (2010/11) has not been subject to any empirical analyses beyond descriptive tabulations (see SCB.se, Mohlén 2012). SWETUS data contains three cross-sections from 1990/91 (N=7,787), 2000/01 (N=7,955) and 2010/11 (N=6,477). The age of respondents was 20-64 in 1990/91, 20-84 in 2000/01 and 15-84 in 2010/11. The stated main purpose of the 2010/11 time use survey was to study equality between women and men from a time management perspective (Mohlén, 2012). SWETUS waves feature similar numbers of observations throughout each month of the year and day of the week, to account for seasonal and day-typical effects which may be present. The surveys were conducted September 1990 to May 1991, October 2000 to September 2001, and April 2010 to March 2011. Nearly all respondents completed one 1,440-minute weekday (Mon-Fri) and one weekend day (Sat or Sun) time diary, reported in 10-minute intervals. The survey design was stratified random sample, and non-response was accounted for by using individual sampling weights provided by Statistics Sweden (see Rydenstam 2003:121-122; Mohlén, 2012, pp. 126-132) to ensure samples were representative of the population. In 2000/01 and 2010/11, the partners of some randomly selected individuals were asked to also complete surveys. These sample sizes however are smaller, so Papers 2 and 3 utilized the larger sample of individuals, meaning results were for coupled individuals, not true couples per se. Time diary data was supplemented by Statistics Sweden with interview and register data on socioeconomic and demographic variables. Sampled individuals from the time use surveys cannot be followed longitudinally in the Swedish registers.

The validity and reliability of the data are tested using a variety of robustness checks in each paper.

The *Multinational Time Use Survey (MTUS)* was used for Paper 1, which incorporated six waves of harmonized MTUS data (World 5.5 – release 2, see Fisher, Gershuny, Altintas & Gauthier, 2012 for survey documentation) for Sweden (1990/91 and 2000/01), Norway (1990 and 2000), and Finland (1987 and 1999). These data included information on how respondents spend their time on various market and non-market activities (summed into 41 or 69 harmonized time use categories). In all surveys the working age population is covered, although certain surveys also contained respondents at younger and older ages. Most MTUS surveys were conducted at the individual level, although certain countries performed household surveys. Each wave of MTUS data is accompanied by survey documentation, available on the MTUS web-site (www.timeuse.org[16]).

Compared to the SWETUS data, MTUS contains fewer activities and there are less explanatory variables to explore, a trade-off of the cross-country harmonization process. MTUS data include a dummy variable to indicate low quality diaries, defined as any which contain either 91+ minutes of missing time, fewer than 7 episodes, are missing two or more of four basic activities (eating/drinking, sleep, personal care and exercise or any form of travel) or missing age or sex information.

The EU Statistics on Income and Living Conditions (EU-SILC) was used for Paper 4, which examined the division of paid labor in a cross-European perspective, data very suitable for such a multi-country analysis. EU-SILC collected comparable micro-data for most European countries on income, poverty and social exclusion, including data on all individuals in the sampled households (European Commission, 2008). This paper pooled five cross-sections from 2004-2008, and analyzed a large sub-sample of coupled men and women with and without children for 25 countries. True couples could be identified using spouse/partner ID variables, and mothers and fathers could also be linked to information on their own children living within the household. Although EU-SILC featured longitudinal information, the 4-year rotational panel structure captured transitions to parenthood for relatively few individuals, thus the pooled cross-sectional approach better suited Paper 4's research questions.

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[16] This web-site serves as a valuable resource linking together a community of researchers from a variety of disciplines, whose common denominator is a shared data source.

EU-SILC differed from MTUS and SWETUS in that rich information on time allocation in the household, such as housework and childcare, were not available. However, this data set has more detailed information on couple characteristics, and more specific information on the age of the youngest child within the home (quarter of birth). Combining the child's quarter of birth with other data on within-country compulsory school ages enabled a more precise construct of the family cycle variable than the other data sets allowed for. This is relevant for studying family cycle stages comparatively across countries, since formal schooling begins within a range of age 4-7 across European countries. Paper 4's focus on the division of paid labor used variables on individuals' employment status, and regular weekly hours of paid work, so the time dimension could remain in focus. In this regard, I use this data to examine paid work, and use the time use data to investigate non-market work, in line with the earlier discussion that time diaries are more reliable for household time allocation; whereas work hour estimates are more similar comparing questionnaires and time use surveys.

These three data sources were chosen based on the research questions in each paper. While each has its merits, taken together they are able to explore the issue of parenthood and gendered time allocation from a variety of perspectives, using individual level data with greater detail for Sweden-specific papers, and harmonized time use and survey data for cross-country comparative papers. Throughout the thesis, I also use aggregated data from a variety of sources, such as Statistics Sweden (SCB), the World Bank, the OECD, the Swedish Register of Education (Utbildnigsregistretet) and Eurostat.

1.6.2 Response rates

SWETUS response rates were 75 percent in 1990/91, 59 percent in 2000/01 and 41 percent in 2010/11. This decline, especially in 2010/11, is reflective of survey-response trends in Sweden and internationally of both government and non-government issued surveys (De Leeuw & De Heer, 2002; Keeter et al., 2006)[17]. The literature on survey non-response indicates that individuals with disabilities or unemployed, or those with a foreign first language, are less likely to complete surveys. Although declining response rates are of

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[17] Non-response can be due to noncontact or refusal, and intercountry non-response differences seem to be driven by changes in refusal, not noncontact (Groves, 2006).

concern for social scientists, their impact on survey quality or representativeness may not be as detrimental as generally assumed (Curtis, Presser & Singer, 2005; Keeter et al., 2006; Rindfuss et al. 2015). Some have found low response rates did not lead to biased multivariate results; although bias was found for univariate distributions of some sample characteristics (Rindfuss et al., 2015). No paper deals with non-response of time use surveys specifically; although the American time use survey's main stated reason for non-response is survey burnout (U.S. Bureau of Labor Statistics and U.S. Census Bureau, 2015)[18].

Weighting adjustment is the most important technique to correct for any potential nonresponse bias (Bethlehem, Cobben & Schouten, 2011). Statistics Sweden provided such sampling weights for each time use survey, and how these weights were constructed are explained in greater detail in Statistics Sweden's survey documentation (for weighting methodology see Rydenstam 2003:121-122; Mohlén, 2012 pp. 126-132). In each paper using SWETUS data, weights were applied for the results presented. An alternative approach would be to perform regressions without weights, assuming control variables assure that the expected value of the error term is zero, which should make the OLS estimates consistent regardless of the weights used (see Cameron & Trivedi, 2009, pp.108). Such a control-function approach yielded similar, but not identical estimates[19]. The substantive conclusions reached, however, are exactly the same regardless of the estimation approach used.

Regarding the 2010/11 response rates, which were 42 percent for women and 39 percent for men, the lowest response rates by sex and age categories were for single women aged 20-34 with children under 18, whose response rate was 23 percent. Men aged 20-34 also had low response (31 percent), and single men with children were too small a group to be analyzed independently (Mohlén, 2012, p.120). The highest response rates were for men aged 65-75 (55 percent). The two most stated reasons for non-response where because the survey was voluntary, and because the respondent "didn't have time." Of those prevented from participating, the main response was due to a physical or mental barrier, followed by language difficulties. A comparison of the weighted SWETUS samples with data from the Swedish education register is listed in Appendix A Table A1,

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[18] See Appendix A for non-response rates across national time use surveys in recent decades.

[19] Only results for the 2010/11 wave were somewhat sensitive to weighting, yet it still did not alter any results in a meaningful way.

which indicates that in some instances, men and women in the SWETUS samples are positively selected by education compared to the general population. This is considered in Papers 2 and 3, which used the 2010/11 wave of data and analyzed sub-samples of coupled individuals aged 20-55 (Paper 2) and working men and women aged 20-64 (Paper 3).

1.6.3 Methods

The empirical analyses employ statistical methods such as Tobit, OLS, logistic regression, and decomposition techniques, chosen for each specific paper due to methodological or research question related reasons, which are explained within each paper. In several papers, multiple statistical methods are used as a robustness check, especially as it concerns time use data's left-censoring and the OLS versus Tobit debate.

During the writing of this thesis, an ongoing debate surrounded whether OLS or Tobit better models time use data. The empirical challenge arises from daily time diaries' left-censored data, whereby certain individuals report zero minutes of an activity (e.g. childcare), but that doesn't necessarily mean this individual never performs childcare[20]. Thus, the shorter time diary reference period (usually 24 hours), combined with day-to-day variation in time spent in different activities, means the individuals' time diary doesn't necessarily reflect their long-run time use, which most researchers are interested in (Stewart, 2013; see also Frazis & Stewart, 2010). Activities reported as zero minutes cause many researches to assume left-censorship due to survey design, which is true in some cases, but spending zero time on an activity also reflects real behavior, as some people choose to do some things every day. Recent studies of simulations examining the bias associated with Tobit and OLS found only OLS generated unbiased estimates (Stewart, 2013). Other recent work has also suggested OLS may be more robust to measurement error (Foster & Kalenkoski, 2013; Gershuny & Egerton, 2006; Stewart, 2013). In recent years the momentum in published time use research has swung from Tobit to OLS.

In all analyses in this thesis, the sign of coefficients are generally the same regardless of Tobit or OLS model choice, as others have found (Foster & Kalenoski, 2013; Stewart 2013), but the magnitude and interpretation of

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[20] See Gershuny, 2012 for a discussion on the topic of left-censoring in time use data.

coefficients differ based on the method. This thesis does not make any empirical contributions to the OLS/Tobit debate, but proceeds within each paper by providing motivation for the model used, and performing robustness checks using the alternate model. This revealed no discernable differences in coefficients based on the method used, and results and conclusions deducted would not change in any paper based on the model applied. The degree of censored observations at zero depends on the dependent variable, whereby sleep for example has no censored observations, while providing elderly care has many. The general strategy throughout the thesis was to choose Tobit when the proportions of zeros was higher, and OLS when the proportions were lower. For example, Paper 1 used Tobit because it examined time allocation across several activities, and is a comparative paper with previous research which used the Tobit method. Paper 2 however looked at partner time allocation, and in the dependent variables of interest, there are much fewer zeros in the data (almost everyone spends at least some time alone, and most parents spend more than zero minutes with their children per day). In papers 3 and 4 OLS is used in combination with logistic regression, but Tobit was not required as there was no left censoring in the dependent variables used.

Finally, throughout the thesis weekdays and weekends are usually treated empirically, either by analyzing weekdays separately or via control strategy, as the trade-offs and opportunity costs of time intensify on weekdays for the majority. Although time use surveys lack longitudinal data, episodic data was at times extracted from the time diaries, such as to determine when individuals started their work day, or examine breaks in their night sleep.

1.6.4 Limitations

The data available to pursue the research questions of this thesis place limitations on the extent of the analysis.

First, the study is largely cross-sectional in nature, thus observations are from a static point in time and do not provide an opportunity for causal investigations. This is because precise data on time allocation in the household with a longitudinal component doesn't exist for this study period in Sweden or comparative countries. In some areas of the thesis I treat the diary episodes as longitudinal within a 24-hour window to extrapolate

information (i.e. work scheduling and sleep disruptions), but this in no way uncovers causal mechanisms.

Two potential determinants of time allocation of men and women are also not available in the time use data. In SWETUS and MTUS, country of birth is not available, limiting any investigations into impact a changing immigrant population may have on men's and women's time allocation, nor can it be evaluated whether immigrants are more or less likely to participate in the survey. The thesis also focused on examining primary time use activities, over-looking secondary activities, which may downward bias the story of gender convergence over time in the Swedish case, as women generally perform multi-tasking and do more housework and childcare than men as secondary activities (see Hook, 2006; Craig, 2006). The reason for omitting secondary activities, despite data being available, was to both simplify the analysis, and within the SWETUS data, the completion of secondary activities seemed inconsistent across waves (i.e. non-random). The gender composition of children was not available for most data used in this thesis, which may omit a determinant relevant for Paper 2, as research has shown that fathers tend to spend more time with sons (Bonke & Esping-Andersen, 2009; Yeung et al., 2011).

While single parents are dealt with empirically in the econometric analysis, the thesis took a main focus on the time allocation of individual men and women in dual-earner households. Single parents and single mothers in particular face unique constrains on their time, which in my opinion require a more focused approach to provide meaningful analysis. Single individuals were excluded from the analyses in Papers 2 and 4 which looked at coupled individuals only, and Papers 1 and 3 controlled for single household types.

This thesis examined parenthood by defining parents as either single, married or cohabiting, living with children under 18 years of age. The data available does not differentiate whether the individual is the biological, adoptive, or step-parent. Some argue this doesn't pose a problem (Gauthier et al., 2004). In 2011 Sweden, 87 percent of children aged 1 to 5 lived with both biological/adoptive parents, as did 79 percent of 6-12 year olds and 70 percent of 13-17 year olds (Statistics Sweden, 2014). Empirically, only Paper 4 could control for differences between married and non-married (cohabiting) individuals. This may not matter in Sweden, as during this period children rather than partnership legalities are considered to better define what constitutes a family (Kiernan, 2004). The empirical papers also dropped same-sex couples due to low sample sizes and because such

couples lack a variable to differentiate by gender. These limitations should be considered when interpreting the proceeding analyses.

1.7 Summary of papers

Paper 1: Re-traditionalisation of gender relations in the 1990s? The impact of parenthood on gendered time use in three Scandinavian countries[21]

Most studies have shown that having young children at home exacerbates gendered patterns in time use, strengthening a traditional division of labor whereby women perform more housework and childcare than men. Parenthood thus continues to be seen as a major barrier towards continued gender convergence in paid work and household work, observed across most countries in recent decades. Over the 1990s, this pattern changed in Sweden, where by the end of the decade parenthood impact men's and women's time use more similarly than previously (Dribe & Stanfors, 2009). The novel approach of this paper uncovered a previously unknown pattern, which raised the questions of whether such a pattern was uniquely Swedish, or whether this change also occurred in neighboring Norway and Finland over the same period. Since the 1990s were a turbulent economic decade in Sweden and Finland, with structural employment and institutional changes, further questions were raised regarding whether Swedish developments in the time allocation of men and women over the decade were in some way influenced by the economic crisis, and very little research exists on whether gender equality can progress even during uncertain economic times.

To investigate this, the paper uses harmonized cross-sectional time use survey data from MTUS for Sweden (1990/91 and 2000/01), Norway (1990 and 2000), Finland (1987 and 1999). The dates of these cross-sections aligned conveniently, and were able to bracket the economic crises in both Sweden and Finland, using Norway as a quasi-control group that was not affected by economic crisis in a similar way. The study does not pretend to establish any direct causal relationship between economic crises and time

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[21] Co-authored with Maria Stanfors. This chapter has been published in the *Journal of Contemporary European Studies* and is re-printed here with permission from publisher Taylor & Francis.

use, but more so aimed to uncover whether a Nordic pattern was emerging similarly between the countries, or whether some deviation would be observable between the countries that did and did not experience society-altering crises. This question seemed logical considering economic crises clearly affect how people spend their time (Aguiar, Hurst & Karabounis, 2011), the most obvious development being those who lose jobs must reallocate their time in ways unknown as it relates to the gender division of labor.

We find that the pattern uncovered in Sweden, that parenthood impacted men and women much more equally circa 2000 compared to a decade earlier, was not a unique Swedish phenomena, but also occurred in neighboring Norway and to a lesser extent Finland. Results are contextualized by arguing that certain policy developments unique to Finland may have helped preserve a male-breadwinner model to a greater extent than in Sweden or Norway. That change occurred in all three countries illustrated that shifts towards gender equality in time allocation can continue despite turbulent economic times which disrupted core prerequisites of the dual-earner/dual-carer model.

The analysis was restricted to weekday observations of those aged 20-64, for a total of 26,121 observations (6,878 Sweden, 11,610 Finland and 7,633 Norway). A weekend analysis was included in an earlier draft of the paper but was omitted due to space limitations, the results of which provided evidence that on weekends parenthood also impacted men and women more similarly circa 2000 than previously. The division of labor was analyzed using five dependent variables, includein paid work, routine housework, maintenance housework, childcare, and individual leisure. A Tobit model (Tobin, 1958) was used for two purposes; comparability with Dribe & Stanfors (2009), and to deal with the left censored data that exists for some dependent variables in this study (i.e. not everyone in the sample performs housework or childcare on a given day). The analyses included level differences, period effects, and interaction variables by age of youngest child and gender to extract parenthood effects. Due to the data's cross sectional nature, the differences between those with and without children were compared.

Paper 2: Time alone or together? Trends and tradeoffs among dual-earner couples, Sweden 1990-2010[22]

This paper asks whether working couples in Sweden spent more or less time together as a couple, as a family, and with their children over the period of 1990 to 2010, a period where no such research exists for any Nordic country. In recent decades the institution of marriage has come under duress, evidenced by increased divorce rates and research showing declining marital interaction, at least in the U.S. (Amato et al., 2007; Dew, 2009). Within the Second Demographic Transition literature, the rise of dual-earner couples and women's increased work orientation is generally considered to coincide with decreasing family orientation. Since Sweden is a SDT frontrunner (cf. Lesthaeghe, 1991), we are concerned that working couples may possibly forfeit time with their children, which can have lasting human capital implications, or with their spouse, which research shows seems vital to marital stability and happiness. Competing demands from employers and family members impose tradeoffs on individuals, especially for dual-earner couples with (young) children, making them prioritize when something has to give. Tradeoffs relate not only to the activities that individuals spend their time on, but to the extent that activities can be coordinated with others. We are additionally concerned whether an educational gradient may exist concerning qualitative aspects of family life, such as time spent conversing with one's partner, or time spent interacting with children, and how any gradient may have changed over time. The changing dimensions of who partnered individuals allocate their time with may have large-scale implications.

This paper contributes to the related literature on this topic in several ways. First, the bulk of related literature looks at spousal time in isolation, and we present a multi-faceted approach to investigate time tradeoffs across four key dimensions – time spent alone, exclusively with one's partner, as a family, and with children, which better enables us to explain why changes have taken place. Secondly, we connect results from 1990 to 2010 to related research that examined changed over the 1980s in Sweden, to provide a fuller historical picture of developments concerning family life. Thirdly, one important aspect of well-being is time spent with children (Robinson & Godbey, 1997), yet the majority of time use research in this area looks exclusively at activities categorized as childcare, which vastly understates

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[22] Co-authored with Maria Stanfors.

the time parents spend with children (Gershuny, 2000) and distorts the true nature of parenting.

The analyses are based on time diary data from three waves of SWETUS covering partnered individuals aged 20-54, exploiting information on with whom activities are performed, a much less often looked at dimension of time allocation. We decomposed changes between waves using Oaxaca decompositions (Oaxaca, 1973), in order to isolate change based on demographics and behavior. Using decomposition analysis to analyze between-wave changes in time use data is relatively new (see for example Babcock & Marks, 2011; Genadek, Flood & Garcia-Roman, 2015).

Our results revealed some evidence of declining spousal interaction over the period for couples without children. However, we uncovered a strong behavioral shift between 1990 and 2010 towards time spent as a family and with children on weekdays and weekends. The shift evolved differently for men and women, indicating gender convergence in private and public spheres, but changes have come at a cost of alone time for women, a reported issue of work-family conflict for many parents (Biachi et al., 2006; Nomaguchi, 2009; Phipps et al., 2001). We argue that our results are valuable inputs towards discussions surrounding the "family-friendliness" of the SDT. The analyses also reveal that focusing exclusively on spousal exclusive time, as many other studies have done, would mask important developments that improve our understanding of changes taking place within couples time allocation; that they are in fact spending more time as a family unit than previously, and more time with their children than previously, despite mothers of young children working more over this period.

Paper 3: Overworked and underslept? The changing sleep patterns of men and women in Sweden 1990-2010

This paper used SWETUS time use data from 1990/91, 200/01 and 2010/11 to investigate whether working men's and women's sleep patterns have changed in Sweden between 1990 and 2010. Since there are claims that women are overworked and sleep deprived in other national contexts (Hochschild & Machung, 2012; MacDonald et al. 2005), the increased proportion of working mothers in Sweden gives cause for concern, since sleep duration and hours of paid work are generally highly and inversely correlated (Basner et al., 2007; Biddle & Hamermesh, 1990).

To date there is no research for Sweden that has analyzed time use survey data from 1990 to 2010 for studying changing sleep patterns of men and women. Limited related research exists in the Nordic context, except for Denmark (Bonke, 2015). Most of the related literature on gender differences in sleep come from national contexts where maternal employment rates are lower than in Sweden, which may have different gendered sleep patterns in the aggregate, since working mothers have been found to tradeoff leisure and sleep to enable more time with their children (Bianchi, 2000; Sayer, 2005; Stewart, 2010). Studies from the U.S. and UK show women's night sleep is more disrupted than men's due to childcaring needs that extend into the night (Burgard, 2011; Maume et al., 2009), and this paper contributes the Sweden story to the international literature. This study also builds on previous related research by investigating sleep from both a quantitative and qualitative perspective simultaneously, both of which are important determinants on the restorative properties sleep provides. Short durations of sleep can increase fatigue, as can disruptive night sleep, which increases fatigue, depression, confusion and reduced vigor not unlike the effects of sleeping 4 hours a night (Kahn et al. 2014).

The key findings are that from 1990 to 2010, sleep duration has not declined for men or women in Sweden, according to the SWETUS data. Its uncovered that working men are more likely to be short sleepers (<6.5 hours day) than working women, but that family cycle stages have a greater impact on women's sleep than for men, who sleep similarly across all family cycle stages. The results also show that men and women with young children face unique challenges in catching up on sleep on weekends. It uncovers that night disruptions which are followed by childcare and non-childcare related activities are gendered, with women roughly twice as likely to perform caregiving in the night. Night disruptions have increased post-1990 for men and women in Sweden. The night disruptions finding is important for understanding how sleep patterns have changed, revealing that studying sleep minutes in isolation would produce misleading results concerning how sleep quality and efficiency has deteriorated, meaning an hour of sleep in 1990 does not equate to an hour in 2010, especially for those with children.

Paper 4: The division of paid labor over family cycle: a cross-European perspective

Parenthood has long been considered an obstacle towards gender equal developments in the labor market, as the presence of children has a greater negative impact on women's labor supply than men's in all national contexts, especially when children are young (Anxo, Fagan, Cebrian, & Moreno, 2007; Dribe & Stanfors, 2009; Gornick, Meyers & Ross, 1997; Misra, Budig, & Boeckmann, 2011; Stier, Lewin-Epstein, & Braun, 2001; Uunk, Kalmijn, & Muffels, 2005). This paper examined the division of paid labor of coupled men and women across European countries adhering to differing welfare regime types, comparing partnered men and women across five family life-course stages using five pooled cross-sections of data from The European Union Statistics on Income and Living Conditions (EU-SILC) for 25 European countries between 2004 and 2008 (N= 243,432 individuals).

This paper contributes to literature on the division of paid labor in several ways. First, because having children in the home can impact women's participation in employment as well as their working time, both margins are examined. The impact of parenthood on the division of labor is assessed over five family cycle stages based on the age of the youngest child in the home, providing a more nuanced analysis of differentiating regime-type patterns in how coupled individuals divide paid labor than studies which compare, for example, parents and non-parents dichotomously or focus specifically on parents of very young children. Using five such categories better operationalizes the gendered impact of parenthood, as mothers' time allocation across multiple dimensions, including paid work, can vary substantially over the life course (Anxo et al., 2007; Anxo et al., 2011; Kimmel & Connelly, 2007; Stier, Lewin-Epstein, & Braun, 2001). The paper explores these dimensions using Esping-Andersen's (1990) regime-typology, while including several Eastern European countries based on their positioning within this regime framework according to (Fenger, 2007), countries which are largely unexplored in this body of literature.

The main results are that welfare regimes exhibit unique patterns both in terms of women's employment over the family cycle, and the division of paid labor at the intensive margin. Compared to childless women, in the social democratic countries only women with children aged 0-2 are at lesser odds of being employed, while across most other regimes, mothers with

children at older ages remain less likely to be employed than childless women. At the intensive margin, the magnitude of the additional impact of parenthood on women's weekly work hours varied more so between regimes than within them over the family cycle, indicating that while the age of a youngest child is somewhat determinant of the division of work hours, what matters more is the regime you live in. This adds to our understanding of how men and women are employed quite differently over family cycle stages under certain contexts, and contributes to our understanding of how dual-earner coupled men and women divide labor uniquely, dependent on regime context.

1.8 Discussion

How individuals allocate their time in the labor market, and household, is continually changing throughout history, and a better understanding of such developments provide valuable inputs into our understanding of human behavior, society and the economic. This thesis aimed to make an empirical contribution by being the first to comprehensively study different aspects of how women's and men's time allocation have changed in Sweden between 1990 and 2010, incorporating a cross-Nordic and cross-European comparative aspect. 1990 to 2010 could be considered a period where a new equilibrium in gender roles is being ironed out, which has numerous implications which to date are not fully understood or even documented. The overarching question was to provide inputs into the debate over whether the time allocation of men and women is continuing to converge at the turn of the 21st century, or has the gender revolution stalled? If so, can parenthood been seen as a barrier, or driver or convergence?

Paper 1 contributed to this discussion by showing that circa 2000, parenthood began to impact the division of labor of men and women more equally in Norway and Finland, as it had in Sweden (Dribe & Stanfors, 2009), despite the turbulent economic times experienced over the 1990s. This provided some further evidence that a more gender equal division of labor amongst parents seems to be emerging along regime type lines (Kan, Sullivan, & Gershuny, 2011). We uncovered a pattern of gender convergence across all three countries, and although a traditional division of labor persisted over the period, parenthood could not be blamed to the same extent as before. But more research is certainly needed regarding how men's

and women's time allocation changes over periods of economic crisis, which may emerge with richer data sets that span across such periods. This paper also attempted to contextualize the more nuanced differences uncovered in Finland, compared with Sweden and Norway, in relation to policy differences in Finland which may not have incentivized and supported the dual-earner dual-carer model to the same degree. This is a somewhat speculative assumption, given the limitations of the study design, yet it is in line with evidence that over this period women with young children in Finland exited the labor market in considerable numbers in the short (Sipila & Korpinen, 1998), and to a lesser extent, long term (Rønsen 2009).

Papers 2 and 3 focused on Sweden specifically, asking questions related to work-family balance issues that require greater input in the Swedish context, given recent changes in men's and women's time allocation in the labor market. In Paper 2, we studied who coupled men and women spend their time with across multiple dimensions, and how this has changed between 1990 and 2010, a topic of importance, but one where little research exists in the Nordic context. Our point of departure was that women's increased work orientation likely has come with trade-offs, and a large body of literature finds dual-earner couples nowadays are spending less time together and as a family, but little research examines these in a multi-faceted dimension. Our results indicated that there has been a shift in with whom coupled men and women allocate their time, with spousal exclusive time in decline, yet for those with children, large increases in time spent together, as a family and with children. We uncovered considerable increases in men's time inputs with their children (exclusive of other family members) on weekdays, and an increase in total time spent with their children on weekdays and weekends. That mothers hadn't reduced time with children was surprising given their paid work changes and increased proportion of children in childcare services over the period, but it was in line with research from other contexts. This has come at a tradeoff however, at the cost of alone time, yet the data used cannot inquire as to whether working women in Sweden increasingly feel they lack time to themselves. This suggests, in line with other research, that women in Sweden are prioritizing work and family needs over other allocations of time. The increase in family time conforms with U.S. trends (Genadek et al., 2015), and is in line with increasingly selected partnerships based on consumption complementarities (Stevenson & Wolfers, 2007). Children in dual-earner households in Sweden have actually gained parental resources of time in

this period, although the qualitative aspects of which varied across the educational gradient. This contributes to international evidence of a rise of (time) intensive parenting, although more research is needed on the mechanisms driving this trend in Sweden, which could include selection effects, income effects, rising safety concerns, more flexible work schedules and competitive forces. This trend in the U.S. has been attributed to heavy child time investments in response to rising competitiveness for university admittance (Ramey & Ramey, 2009), which may not be the case in Sweden, where university is more universally accessible.

Paper 3 asked whether women's increased work orientation has come at the cost of sleep, and whether this period in general is one of increasing sleep deprivation for working individuals in Sweden. The paper finds, somewhat surprisingly, that women slept more than previously, but that their sleep is more disrupted. The same results were found for men, and gender differences indicated that men sleep less, but women's sleep is more disrupted due to childcare and non-childcare related factors. This paper contributed to international debates regarding sleep changes in recent decades, and made an empirical contribution by examining sleep from both a qualitative and quantitative perspective. The paper does however come up short in explaining why men and women sleep more over this period, but argues that sleep has become less efficient, and increasingly disrupted sleepers should likely sleep more over time, not less. Sleep is a complex phenomenon and more research is required, and I hesitate in making generalizations from these findings out of concern over the lower response rates in 2010, as it could be the case that workers who sleep better than otherwise comparable workers may be less fatigued, and thus more likely to participate in a time use survey. The SWETUS data is far from perfect for analyzing sleep duration at the population level, but it has merits, including less heaping on the dependent variable, and could be the best source available for a large sample of workers in Sweden over this period. The data also contains both a quantitative and qualitative aspect of sleep embedded in the data. In the coming years, large-scale studies using sleep actigraphs will provide more accurate data for measuring sleep duration and disruptions in large populations, which will help better understand how and why men and women sleep differently.

The fourth paper added a cross-European perspective, analyzing the division of paid labor on two margins for prime-aged coupled men and women. It clearly showed that the division of paid labor over multiple family cycle stages is patterned along regime type lines. Family cycle

differences in the division of weekly work hours varied more between regimes than within over the family cycle, indicating how coupled men and women divide labor, net of covariates, is determined by contextual factors. These results also illustrated how under certain regime conditions, the gendered impact of parenthood is concentrated to those with very young children but not at older ages, whereas under other conditions, its impact exists regardless of the age of the youngest child in the home, which has greater implications on equality between the sexes.

The thesis in its entirety took a cross-sectional approach on a snapshot between 1990 and 2010, limited any causal investigations. The papers are in many regards descriptive and explorative, and future research should dig deeper into some of the contextual evidence uncovered. For example, Paper 2 findings show a considerable increase in the overall time coupled parents spend with their children, which warrants much further investigation into the mechanisms behind this phenomenon. It would be interesting to know if this increase over time has occurred equally based on the sex of the child in the home, and what are the motivating factors behind why women are spending as much or more time with their children, despite working more. Another finding warranting further investigations is the increasingly disruptive sleep experienced by working men and women, and better understanding the source of such disruptions.

Parenthood continues to impact men and women differently, but not as much as it used to. Continued convergence is possible, but it will need to come from men and fathers adapting their behavior, and it may very well require certain regime conditions which shape gender relations to develop further. This thesis documented convergence in the time use of men and women, yet differences remain, and new differences have emerged over this period which require further attention. These are long term processes and change is gradual and structural, although this phase of gender equality in time allocation remains unfinished.

1.9 References

Adema, W., & Whiteford, P. (2007). *Babies and bosses: Reconciling work and family life: A synthesis of findings for OECD countries*. Paris: OECD.

Aguiar, M.A., & Hurst, E. (2007). Measuring trends in leisure: The allocation of time over five decades. *Quarterly Journal of Economics, 122*, 969-1006.

Aguiar, M. A. & Hurst, E., & Karabounis, L. (2011). Time use during recessions. National Bureau of Economic Research (NBER) Working paper, No. 17259.

Amato, P. R., Johnson, D. R., Booth, A., & Rogers, S. J. (2007). *Alone together: How marriage in America is changing*. Cambridge, MA: Harvard University Press.

Angelov, N., Johansson, P., Lindahl, E., & Lindström, E. A. (2011). Kvinnors och mäns sjukfrånvaro. Uppsala: Institutet för arbetsmarknads-och utbildningspolitisk utvärdering (IFAU).

Anxo, D. (2009). Working time policy in Sweden. Working time: In search of new research territories beyond flexibility debates, 55-70.

Anxo, D., Fagan, C., Cebrian, I., & Moreno, G. (2007). Patterns of labour market integration in Europe—a life course perspective on time policies. *Socio-Economic Review, 5*(2), 233-260.

Anxo, D., Mencarini, L., Pailhé, A., Solaz, A., Tanturri, M. L., & Flood, L. (2011). Gender differences in time use over the life course in France, Italy, Sweden, and the US. *Feminist Economics, 17*(3), 159-195.

Arber, S., Hislop, J., Bote, M., & Meadows, R. (2007). Gender roles and women's sleep in mid and later life: a quantitative approach. *Sociological Research Online, 12*(5), 3.

Arpino, B., Esping-Andersen, G., & Pessin, L. (2015). How do changes in gender role attitudes towards female employment influence fertility? A macro-level analysis. *European Sociological Review*, 1-13.

Ås, D. (1978). Studies of time-use: problems and prospects. *Acta Sociologica*, 21(2), 125-141.

Babcock, P., & Marks, M. (2011). The falling time cost of college: Evidence from half a century of time use data. *Review of Economics and Statistics, 93*(2), 468-478.

Basner, M., Fomberstein, K. M., Razavi, F. M., Banks, S., William, J. H., Rosa, R. R., & Dinges, D. F. (2007). American time use survey: sleep time and its relationship to waking activities. *SLEEP, 30*(9), 1085-1095.

Baxter, J. (1997). Gender equality and participation in housework: A cross-national perspective. *Journal of Comparative Family Studies*, 220-247.

Becker, G. S. (1965). A theory of the allocation of time. *The Economic Journal, 75*(299), 493-517.

Becker, G. S. (1973). A theory of marriage: Part I. *Journal of Political Economy, 81*(4), 813-846.

Becker, G. S. (1981). *A treatise on the family*. Cambridge, MA: Harvard University Press.

Bergqvist, C. & Nyberg, A. (2002), Welfare state restructuring and child care in Sweden, pp. 287–307 in S. Michel & R. Mahon (eds.), *Child care policy at the crossroads. Gender and welfare state restructuring*. New York, London: Routledge.

Bethlehem, J., Cobben, F., & Schouten, B. An International Comparison of nonresponse. *Handbook of nonresponse in household surveys*, 147-177.

Bianchi, S. (2000). Maternal employment and time with children: Dramatic change or surprising continuity? *Demography, 37*, 410-414.

Bianchi, S. M., & Milkie, M. A. (2010). Work and family research in the first decade of the 21st century. *Journal of Marriage and Family, 72*(3), 705-725.

Bianchi, S. M., Robinson, R. P., & Milkie, M. A. (2006). *Changing rhythms of American family life*. New York: Russell Sage Foundation.

Biddle, J., & Hamermesh, D. (1990). Sleep and the allocation of time. *Journal of Political Economy, 75*(229), 493-517.

Blau, F. D., Ferber, M. A., & Winkler, A. E. (1992). *The economics of men, women and work*. Prentice Hall, Englewood Cliffs, New Jersey.

Blood, R. O. & Wolfe, D. M. (1960). *Husbands and wives*. Glencoe, IL.

Blossfeld, H. P. (2009). Educational assortative marriage in comparative perspective. *Annual Review of Sociology*, 513-530.

Bonke, J. (2015). Trends in short and long sleep in Denmark from 1964 to 2009, and the associations with employment, SES (socioeconomic status) and BMI. *Sleep Medicine, 16*(3), 385-390.

Bonke, J. & Esping-Andersen, G. (2009). Family investments in children - Productivities, preferences and parental child care. *European Sociological Review, 25*, 1-14.

Brines, J. (1993). The exchange value of housework. *Rationality and Society, 5*, 302-340.

Brines, J. (1994). Economic dependency, gender, and the division of labor at home. *American Journal of Sociology, 100*, 652-688.

Breen, R., & Cooke, L. P. (2005). The persistence of the gendered division of domestic labour. *European Sociological Review, 21*(1), 43-57.

Brewster, K. L., & Rindfuss, R. R. (2000). Fertility and women's employment in industrialized nations. *Annual Review of Sociology, 26*, 271-296.

Burgard, S. A. (2011). The needs of others: Gender and sleep interruptions for caregivers. *Social Forces, 89*(4), 1189-1215.

Cameron, A. C., & Trivedi, P. K. (2009). *Microeconomics using Stata*. College Station, TX: Stata Press Publications.

Coltrane, S. (2000). Research on household labor: Modeling and measuring the social embeddedness of routine family work. *Journal of Marriage and the Family, 62*, 1208-1233.

Costa, D. L. (2000). From mill town to board room: The rise of women's paid labor. *Journal of Economic Perspectives, 14*(4), 101-122.

Coverman, S. (1985). Explaining husbands'participation in domestic labor. *The Sociological Quarterly, 26*(1), 81-97.

Cowan, R. S (1983). *More Work for Mother*. New York: Basic Books.

Craig, L. (2006). Does father care mean fathers share? A comparison of how mothers and fathers in intact families spend time with children. *Gender & Society, 20*, 259-281.

Craig, L. and Mullan, K. (2010). Parenthood, gender and work-family time in the United States, Australia, Italy, France, and Denmark. *Journal of Marriage and Family, 72*, 1344–1361.

De Henau, J., Meulders, D., & O'Dorchai, S. (2010). Maybe baby: Comparing partnered women's employment and child policies in the EU-15. *Feminist Economics, 16*(1) 43–77.

De Leeuw, E., & De Heer, W. (2002). Trends in household survey nonresponse: a longitudinal and international comparison. In Survey Nonresponse, ed. R. M. Groves, D. A. Dillman, J. L. Eltinge, and R. J. A. Little, pp. 41–54. New York: Wiley.

De Vries, J. (1994). The industrial revolution and the industrious revolution.The *Journal of Economic History, 54*(02), 249-270.

Dew, J. (2009). Has the marital time cost of parenting changed over time? *Social Forces, 88*, 519-542.

Dribe, M., & Stanfors, M. (2009). Does parenthood strengthen a traditional household division of labor? Evidence from Sweden. *Journal of Marriage and Family, 71*(1), 33-45.

Duvander, A.Z. & Johansson, M.(2012). What are the effects of reforms promoting fathers' parental leave use? *Journal of European Social Policy, 22*(3), 319-330

England, P.(2010). The gender revolution uneven and stalled. *Gender & Society, 24*(2), 149-166

Esping-Andersen, G. (1990). *The three worlds of welfare capitalism*. Cambridge, England: Polity Press.

Esping-Andersen, G. (2009). *The incomplete revolution: Adapting to women's new roles.* Cambridge: Polity

Esping-Andersen, G., Boertien, D., Bonke, J., & Gracia, P. (2013). Couple specialization in multiple equilibria. *European Sociological Review*, 1-15.

European Commission (2008). EU-SILC User Database Description. Version 2006-1 from 01-03-08. Luxembourg: European Commission.

Eurostat, E. C. (2004). Guidelines on Harmonised European Time Use Surveys.

Evertsson, M. (2006). The reproduction of gender: housework and attitudes towards gender equality in the home among Swedish boys and girls. *The British Journal of Sociology, 57*(3), 415-436.

Evertsson, M. & Nermo, M. (2007). Changing resources and the division of housework: A longitudinal study of Swedish couples. *European Sociological Review, 23*, 455-470.

Fenger, M. (2007). Welfare regimes in Central and Eastern Europe: Incorporating post-communist countries in a welfare regime typology. *Contemporary Issues and Ideas in Social Sciences, 3*(2), 1-30.

Fisher, K., & Gershuny, J., & Altintas, E., & Gauthier, A.(2012). Multinational Time Use Study: User's Guide and Documentation. Version 5. (accessed April 2016). http://www.timeuse.org/sites/ctur/files/public/ctur_report/5715/mtus-user-guide-r5.pdf

Folbre, N., & Bittman, M. (2004). *Family time: The social organization of care* (Vol. 2). Psychology Press.

Foster, G., & Kalenkoski, C. (2013). Tobit or OLS? An empirical evaluation under different diary window lengths. *Applied Economics, 45*, 2994-3010.

Frazis, H., & Stewart, J. (2010). How to think about time-use data: What inferences can we make about long-and short-run time use from time diaries? IZA Discussion paper No. 5306, November 2010.

Gauthier, A. H., Smeeding, T. M., & Furstenberg, F. F. (2004). Are parents investing less time in children? Trends in selected industrialized countries. *Population and Development Review, 30*(4), 647-672.

Genadek, K. R., Flood, S. M., & García-Román, J. (2015). Trends in spouses' shared time in the United States, 1965-2012 (Working paper No. 2015-1). Retrieved from Minnesota Population Center at the University of Minnesota website: http://www.pop.umn.edu/sites/www.pop.umn.edu/files/1.Workingpaper15_1.pdf

Gershuny, J. (2000). *Changing times: Work and leisure in postindustrial society.* Oxford: Oxford University Press.

Gershuny, J. (2012). Too many zeros: A method for estimating long-term time-use from short diaries. *Annals of Economics and Statistics, 105*(106), 247–270.

Gershuny, J., Bittman, M., & Brice, J. (2005). Exit, voice, and suffering: Do couples adapt to changing employment patterns? *Journal of Marriage and Family, 67*(3), 656-665.

Gershuny, J., & Egerton, M. (2006). Evidence on participation and participants' time from day-and week-long diaries: Implications for modelling time use. In 28th International Association of Time Use Researchers Conference, Copenhagen.

Gershuny, J., Godwin, M. & Jones, S. (1994). The domestic labour revolution: a process of lagged adaptation. In The Social and Political Economy of the Household, by M. Anderson, F. Bechhofer, and J. Gershuny. Pp. 151–197. Oxford, England: Oxford University Press

Gershuny, J. & Sullivan, O. (2003). Time use, gender, and public policy regimes. *Social Politics, 10*, 205–228.

Glass, J., & Camarigg, V. (1992). Gender, parenthood, and job-family compatibility. *American Journal of Sociology*, 131-151.

Goldin, C. (1990). *The gender gap: An economic history of American women*. New York: Cambridge University Press.

Goldin C. 2006. The quiet revolution that transformed women's employment, education, and family. *American Economic Review, 96*(2), 1–21.

Goldscheider, F., Bernhardt, E., & Lappegård, T. (2015). The gender revolution: A framework for understanding changing family and demographic behavior. *Population and Development Review, 41*(2), 207-239.

Goodin R., Rice J., Parpo A. and Eriksson L. (2008) *Discretionary time: A new measure of freedom.* Cambridge: Cambridge University Press

Gornick, J. C., Meyers, M. K., & Ross, K. E. (1997). Supporting the employment of mothers: Policy variation across fourteen welfare states. *Journal of European Social Policy, 7*(1), 45-70.

Gornick, J. C. and Meyers, M. K. (2003). *Families that work: Policies for reconciling parenthood and employment.* New York, NY: Russell Sage Foundation.

Gronau, R. (1977). Leisure, home production, and work – The theory of the allocation of time revisited. *Journal of Political Economy, 85*(6), 1099-1123.

Groves, R. M. (2006). Nonresponse rates and nonresponse bias in household surveys. *Public Opinion Quarterly, 70(5),* 646-675.

Guryan, J., Hurst, E., & Kearney, M. (2008). Parental Education and Parental Time with Children. *The Journal of Economic Perspectives, 22*(3), 23-46.

Haas, L. (1981). Domestic role sharing in Sweden. *Journal of Marriage and the Family*, 957-967.

Hallberg, D., & Klevmarken, A. (2003). Time for children: a study of parent's time allocation. *Journal of Population Economics, 16*, 205-226.

Hochschild, A., & Machung, A. (2012). *The second shift: Working families and the revolution at home.* Penguin.

Hook, J. (2006). Care in context: Men's unpaid work in 20 countries, 1965-2003. *American Sociological Review, 71*, 639-660.

Hook, J. & Wolfe, C. (2011). New fathers? Residential fathers' time with children in four countries. *Journal of Family Issues, 33*, 415-450.

Immervoll, H., & Barber, D. (2005). Can parents afford to work? Childcare costs, tax-benefit policies and work incentives. OECD Social Employment and Migration Working Papers No 31 (OECD, Paris).

Jacobs, J. A. (1998). Measuring time at work: an assessment of the accuracy of self reports. *Monthly Labor Review, 121*, 42-53.

Jacobs, J. A., & Gerson, K. (2001). Overworked individuals or overworked families? Explaining trends in work, leisure, and family time. *Work and occupations, 28*(1), 40-63.

Jacobs, J. A., & Gerson, K. (2004). *The time divide: Work, family, and gender inequality.* Harvard University Press.

Jaumotte, F. (2003). Female labour force participation: past trends and main determinants in OECD countries, Working Paper No. 3768. Economics Department, OECD, Paris.

Jacobsen, J. P. (1994). *The economics of gender*. Cambridge, MA: Blackwell Publishers.

Jonung, C. & Persson, I. (1993.) Women and market work: the misleading tale of participation rates in international comparisons. *Work, Employment and Society, 7*, 259-74.

Juster, F. T., & Stafford, F. P. (1991). The allocation of time: Empirical findings, behavioral models, and problems of measurement. *Journal of Economic literature, 29*(2), 471-522.

Kahn, M., Fridenson, S., Lerer, R., Bar-Haim, Y., & Sadeh, A. (2014). Effects of one night of induced night-wakings versus sleep restriction on sustained attention and mood: a pilot study. *Sleep Medicine, 15*(7), 825-832.

Kamerman, S. B., Neuman, M., Waldfogel, J., & Brooks-Gunn, J. (2003). Social policies, family types and child outcomes in selected OECD countries. OECD Social, Employment and Migration Working papers, No.6.

Kan, M. Y., Sullivan, O., & Gershuny, J. (2011). Gender convergence in domestic work: Discerning the effects of interactional and institutional barriers from large-scale data. *Sociology, 45*(2), 234-251.

Kimmel, J., & Connelly, R. (2007). Mothers' time choices: Caregiving, leisure, home production, and paid work. Journal of Human Resources, 42, 643-661.

Keeter, S., Kennedy, C., Dimock, M., Best, J., & Craighill, P. (2006). Gauging the impact of growing nonresponse on estimates from a national RDD telephone survey. *Public Opinion Quarterly, 70*(5), 759-779.

Kiernan, K. (2004). Unmarried cohabitation and parenthood in Britain and Europe. *Law & Policy, 26*(1), 33-55.

Klevmarken, A., & Stafford, F. (1997). Time diary measures of investment in young children. Uppsala: Nationalekonomiska institutionen, pp. 1-45. ISBN: 99-2419795-X

Lam, D. (1988). Marriage markets and assortative mating with household public goods: Theoretical results and empirical implications. *Journal of Human Resources, 23*, 462-487.

Lam, C. B., McHale, S. M., & Crouter, A. C. (2012). The division of household labor: Longitudinal changes and within-couple variation. *Journal of Marriage and Family, 74*(5), 944-952.

Lamb, M. E. (2000). The history of research on father involvement: an overview. *Marriage & Family Review, 29*(2-3), 23-42.

Lesthaeghe, R. (1991). The second demographic transition in Western countries: An interpretation. IPD Working paper 1991-2. Brussels, Belgium: Interuniversity Programme in Demography, Vrije Universiteit Brussel.

Lesthaeghe, R., & Van de Kaa, D. J. (1986). Twee demografische transities. Bevolking: groei en krimp, 9-24.

Lewis, J. (1992). Gender and the development of welfare regimes. *Journal of European Social Policy, 2*(3), 159-173.

Lundberg, S., & Pollak, R. A. (1996). Bargaining and distribution in marriage. *The Journal of Economic Perspectives*, 139-158.

Lundberg, S., & Pollak, R. A. (2007). The American family and family economics. *The Journal of Economic Perspectives, 21*(2), 3-26.

MacDonald, M., Phipps, S. & Lethbridge, L. (2005) Taking its toll: the influence of paid and unpaid work on women's well-being. *Feminist Economics, 11*, 63-94.

Magnusson, L. (2000). *An economic history of Sweden* (Vol. 16). Routledge.

Manser, M. and Brown, M. (1980). Marriage and household decision-making: A bargaining analysis. *International Economic Review, 21*, 31-44.

Mansour, H. & McKinnish, T. (2014). Couples' time together: complementarities in production versus complementarities in consumption. *Journal of Population Economics, 27*(4), 1127-1144.

Marini, M. M., & Shelton, B. A. (1993). Measuring household work: Recent experience in the United States. *Social Science Research, 22*(4), 361-382.

Maume, D. J., Sebastian, R. A., & Bardo, A. R. (2009). Gender differences in sleep disruption among retail food workers. *American Sociological Review, 74*(6), 989-1007.

Miranda, V. (2011). Cooking, caring and volunteering. Unpaid work around the world. OECD Social, Employment and Migration Working papers, No 116, Paris.

Misra, J., Budig, M. J., & Böckmann, I. (2011). Cross-national patterns in individual and household employment and work hours by gender and parenthood. *Research in the Sociology of Work, 22*(1), 169-207.

Mokyr, J. (2000). Why "more work for mother?" Knowledge and household behavior, 1870–1945. *The Journal of Economic History, 60*(1), 1-41.

Mohlén, M. (2012). Nu för tiden. En undersökning om svenska folkets tidsanvändning år 2010/11. Stockholm: Statistics Sweden.

Neilson, J., & Stanfors, M. (2014). It's about time! Gender, parenthood, and household divisions of labor under different welfare regimes. *Journal of Family Issues, 35*(8), 1066-1088.

Nomaguchi, K. M. (2009). Change in work-family conflict among employed parents between 1977 and 1997. *Journal of Marriage and Family, 71*(1), 15-32.

Nomaguchi, K. M., Milkie, M. A., & Bianchi, S. M. (2005). Time strains and psychological well-being: Do dual-earner mothers and fathers differ? *Journal of Family Issues, 26*, 756 – 792.

Nyberg, A.(2000). From Foster Mothers to Child Care Centers: A History of Working Mothers and Child Care in Sweden. *Feminist Economics, 6*(1), 5-20.

Nyberg, A. (2004). Parental leave, public childcare and the dual earner/dual carer-model in Sweden. Peer Review Programs of the European Employment Strategy, Discussion paper. Available online at www. peerreview-employment.org/pdf/sweden04/disspapswe04.pdf.

Oaxaca, R. (1973). Male-female wage differentials in urban labor markets. *International Economic Review, 14*(3), 693-709.

Oláh, L. & Bernhardt, E. (2008). Sweden: Combining childbearing and gender equality. *Demographic Research, 19* (28), 1105-1144.

Ohlsson-Wijk, Sofi (2011). Sweden's marriage revival: An analysis of the new-millennium switch from long-term decline to increasing popularity. *Population Studies*, *65*, 183-200.

O'Rand, A. M., & Krecker, M. L. (1990). Concepts of the life cycle: Their history, meanings, and uses in the social sciences. *Annual Review of Sociology*, 241-262.

Pentland, W. E., Harvey, A. S., Lawton, M. P., & McColl, M. A. (1999). *Time use research in the social sciences*. New York: Kluwer Academic/Plenum Publishers.

Perrons, D. (2007). Gender divisions and working time in the new economy: Changing patterns of work, care and public policy in Europe and North America. Edward Elgar Publishing.

Phipps, S., & Burton, P., & Osberg, L. (2001). Time as a source of inequality within marriage: Are husbands more satisfied with time for themselves than wives? Feminist Economics, 7(2), 1-21.

Ramey, V. A. (2009). Time spent in home production in the twentieth-century United States: new estimates from old data. The Journal of Economic History, 69(01), 1-47.

Ramey, G., & Ramey, V. A. (2009). The rug rat race (No. w15284). National Bureau of Economic Research.

Reinhart, C. M., & Rogoff, K. S. (2013). Banking crises: an equal opportunity menace. Journal of Banking & Finance, 37(11), 4557-4573.

Rindfuss, R. R., Choe, M. K., Tsuya, N. O., Bumpass, L. L., & Tamaki, E. (2015). Do low survey response rates bias results? Evidence from Japan. Demographic Research, 32, 797.

Risman, B. J. (2009). From doing to undoing: Gender as we know it. *Gender and Society*, 81-84.

Robinson, J. P. (1985). The validity and reliability of diaries versus alternative time use measures. In F.T. Juster & F. P. Stafford (Eds.), Time, goods, and well-being (pp. 33-62). University of Michigan Press.

Robinson, J. P., & Bostrom, A. (1994). The overestimated workweek? What time diary measures suggest. *Monthly Labor Review*, 11-23.

Robinson, J. P., & Godbey, G. (1997). *Time for life. The surprising ways Americans use their time*. University Park: Pennsylvania State University Press.

Robinson, J., Martin, S., Glorieux, I., & Minnen, J. (2011). The overestimated workweek revisited. *Monthly Labor Review, 134*(6), 43-53.

Rydenstam, K. (2003). Tid för vardagsliv. Kvinnors och mäns tidsanvändning 1990/91 och 2000/01. Stockholm: Statistics Sweden.

Rønsen, M. (2009). Long-term effects of cash for childcare on mothers' labour supply. *Labour, 23*(3), 507-533.

Sayer, L. C. (2005). Gender, time and inequality: Trends in women's and men's paid work, unpaid work and free time. *Social Forces, 84*(1), 285-303.

Schofer, E., & Meyer, J. W. (2005). The worldwide expansion of higher education in the twentieth century. *American Sociological Review, 70*(6), 898-920.

Schwartz, C. R. (2013). Trends and variation in assortative mating: Causes and consequences. *Annual Review of Sociology, 39*, 451-470.

Schön, L. (2011). *Sweden's road to modernity – an economic history*. Stockholm: SNS Förlag.

Sevilla-Sanz, A. (2014). On the importance of time diary data and introduction to a special issue on time use research. *Review of Economics of the Household,12*(1), 1-6.

Shelton, B. A. & John, D. (1996). The division of household labor. *Annual Review of Sociology, 22*, 299-322.

Sipilä, J., & Korpinen, J. (1998). Cash versus child care services in Finland. *Social Policy & Administration, 32*(3), 263-277.

Skolverket (2016). Statistics and evaluation. Data retreived 14 April 2016 from http://www.skolverket.se/statistik-och-utvardering/statistik-i-tabeller/forskola/barn-och-grupper

Sobotka, T., & Toulemon, L. (2008). Overview paper 4: Changing family and partnership behaviour: Common trends and persistent diversity across Europe. *Demographic Research, 19*(6), 85-138.

Stanfors, M. (2003). Education, Labor Force Participation and Changing Fertility Patterns. A Study of Women and Socioeconomic Change in Twentieth Century Sweden (Doctoral dissertation, Lund University).

Stanfors, M. (2014). Women in a changing economy: the misleading tale of participation rates in a historical perspective. The History of the Family, 19(4), 513-536.

Stanfors, M., & Goldscheider, F. (2015). The forest and the trees: Industrialization, demographic change, and the ongoing gender revolution in Sweden and the United States, 1870–2010. Stockholm Research Reports in Demography, 18.

Stanfors, M., Sandström, G. & Andersson, F.N.G. (unpublished manuscript). A century of divorce: macroeconomic conditions and marital dissolution in Sweden 1915-2010.

Statistics Sweden (2014). Women and men in Sweden 2014. Facts and figures http://www.scb.se/Statistik/_Publikationer/LE0201_2013B14_BR_X10BR14 01ENG.pdf

Stewart, J. (2010). The timing of maternal work and time with children. *Industrial & Labor Relations Review, 64*(1), 181-200.

Stevenson, B., & Wolfers, J. (2007). Marriage and divorce: Changes and their driving forces. *The Journal of Economic Perspectives, 21*(2), 27-52.

Stenbeck, M., & Persson, G. (2006). Working life, work environment and health. *Scandinavian Journal of Public Health, 34(*67 suppl), 229-245.

Stewart, J. (2013). Tobit or not tobit?. *Journal of Economic and Social Measurement*, *38*(3), 263-290.

Stier, H., Lewin-Epstein, N., & Braun, M. (2001). Welfare regimes, family-supportive policies, and women's employment along the life-course. *American Journal of Sociology, 106*(6), 1731-1760.

Sullivan, O., & Gershuny, J. (2001). Cross-national changes in time-use: some sociological (hi) stories re-examined (No. 2001-01). ISER Working paper Series.

Svensson, L. (2008). Technology, institutions and allocation of time in Swedish households 1920-1990 (No. 2008: 20). Working paper//IFAU-Institute for Labour Market Policy Evaluation.

Szalai, A. (1966). Trends in comparative time-budget research. *American Behavioral Scientist, 9*(9), 3-8.

Thomson, E. (1990). Two into one: Structural models of couple behavior. In C. W. Draper & A. C. Marcos (Eds.), Family variables: Conceptualization, measurement and use (pp. 129-142). Newbury Park, CA.

Tichenor, V. J. (1999). Status and income as gendered resources. The case of marital power. *Journal of Marriage and the Family, 61*, 638-650.

Tobin, J. (1958). Estimation of relationships for limited dependent variables. *Econometrica: Journal of the Econometric Society*, 24-36.

Uunk, W., Kalmijn, M., & Muffels, R. (2005). The impact of young children on women's labour supply: a reassessment of institutional effects in Europe. *Acta Sociologica, 48*(1), 41-62.

U.S. Bureau of Labor Statistics and U.S. Census Bureau (2015). American Time Use Survey User's Guide - Understanding ATUS 2003 to 2014. http://www.bls.gov/tus/atususersguide.pdf

Vanek, J. (1974). Time spent in housework. *Scientific American, 11*, 116-120.

Van de Kaa, D. J. (1987). Europe's second demographic transition. *Population Bulletin, 42*(1), 1-59.

Van de Kaa, D. J. (2002). The idea of a second demographic transition in industrialized countries.   paper presented at the Sixth Welfare Policy Seminar of the National Institute of Population and Social Security, Tokyo, Japan, 29 January 2002

Van der Lippe, T., De Ruijter, J., De Ruijter, E., & Raub, W. (2010). Persistent inequalities in time use between men and women: a detailed look at the influence of economic circumstances, policies, and culture. *European Sociological Review, 27*(2): 164–79.

Voorpostel, M., van der Lippe, T., & Gershuny, J. (2009). Trends in free time with a partner: a transformation of intimacy? *Social Indicators Research, 93*(1), 165-169.

Waring, M., & Steinem, G. (1988). *If women counted: A new feminist economics*. San Francisco: Harper & Row.

Wight, V. R., Raley, S. B., & Bianchi, S. M. (2008). Time for children, one's spouse and oneself among parents who work nonstandard hours. *Social Forces, 87*(1), 243-271.

Wright, E. O., Shire, K., Hwang, S. L., Dolan, M., & Baxter, J. (1992). The non-effects of class on the gender division of labor in the home: a comparative study of Sweden and the United States. *Gender & Society, 6*(2), 252-282.

Yavorsky, J. E., Kamp Dush, C. M., & Schoppe-Sullivan, S. J. (2015). The production of inequality: The gender division of labor across the transition to parenthood. *Journal of Marriage and Family, 77*(3), 662-679.

Yeung, W. J., Sandberg, J. F., Davis-Kean, P. E., & Hofferth, S. L. (2001). Children's time with fathers in intact families. *Journal of Marriage, 61*(1), 136-154.

Appendix

Table A1. Comparing SWETUS educational composition to the Swedish Register of Education

	Age	Primary			Middle			Higher		
		Register	Swetus	Diff.	Register	Swetus	Diff.	Register	Swetus	Diff
Women										
1990/91	25-34	16.7	17.8	1.1	56.0	54.5	-1.5	25.4	27.2	1.9
	35-44	23.2	29.7	6.5	45.8	36.9	-8.9	29.9	33.3	3.3
	45-54	36.6	47.1	10.5	39.4	28.0	-11.4	23.3	24.2	0.9
	55-64	55.9	72.9	17.0	30.3	16.4	-13.9	13.1	9.8	-3.3
2000/01	25-34	9.1	8.0	-1.1	50.9	53.7	2.8	38.4	35.6	-2.8
	35-44	12.6	12.9	0.3	51.9	52.6	0.8	34.5	33.8	-0.7
	45-54	19.5	16.5	-3.0	46.7	44.7	-2.1	33.1	38.7	5.6
	55-64	33.4	30.6	-2.8	41.4	39.6	-1.8	24.2	28.8	4.6
1990/91	25-34	9.1	4.0	-5.2	35.6	24.7	-10.9	52.3	71.4	19.0
	35-44	8.4	2.5	-5.9	43.0	37.2	-5.9	47.3	60.3	13.0
	45-54	11.6	5.0	-6.6	48.6	49.1	0.5	39.0	45.9	6.9
	55-64	19.1	13.7	-5.4	46.0	46.9	0.8	34.2	39.5	5.3
Men										
1990/91	25-34	19.7	20.3	0.6	54.7	55.4	0.8	22.9	24.2	1.3
	35-44	28.0	36.5	8.5	44.0	37.6	-6.4	26.3	26.0	-0.4
	45-54	38.5	48.0	9.5	39.0	26.6	-12.3	21.4	24.3	2.9
	55-64	52.7	61.7	9.1	31.6	18.2	-13.5	14.9	18.8	4.0
2000/01	25-34	10.6	9.0	-1.6	55.2	54.0	-1.2	32.6	33.1	0.6
	35-44	17.0	18.9	1.9	52.4	49.2	-3.2	29.3	30.9	1.5
	45-54	25.7	20.1	-5.6	44.9	45.6	0.6	28.5	33.3	4.8
	55-64	36.8	30.8	-6.0	39.9	40.4	0.5	22.4	28.3	5.9
2010/11	25-34	12.3	3.7	-8.6	44.8	39.5	-5.3	38.9	55.6	16.9
	35-44	10.4	7.4	-3.0	50.3	45.6	-4.7	37.6	46.6	9.1
	45-54	16.5	11.1	-5.3	51.2	50.4	-0.7	31.3	38.3	6.9
	55-64	25.5	22.3	-3.2	44.2	45.5	1.3	29.6	32.2	2.6

Notes: The education register figures contain the entire Swedish population by level of education and sex aged 25-64. The SWETUS figures refer to survey respondents aged 25-64; weights were applied. Within-sex and –age rows do not add exactly to 100.0 due to rounding and a small number of missing. *Sources*: Utbildningsregistretet (Swedish Register of Education). Data extracted 2016-04-25 from www.scb.se. Author's own calculations from Swedish Time Use Survey.

Table A2. Individual response rates in percent, various time use surveys

Country	1980	1990	2000	2005	2010
Denmark		65[e]	66[n]		77[p]
Finland	81[a]	74[e]	52[l]		
Norway	65[b]	64	50[m]		
Netherlands	54	49	25	37	
Canada	79[d]	77[h]	78[k]	59	55
Italy		70[f]	92[o]		
United Kingdom	51[c]	93[i]	45[m]	59	
Spain		73[h]	86[o]		58[q]
Sweden		75[g]	59[l]		41[r]

Notes: [a] 1979 [b] 1981 [c] 1983-84 [d] 1986 [e] 1987 [f] 1989 [g] 1990/91 [h] 1992 [i] 1992/93 [j] 1995 [k] 1998 [l] 1999 [m] 2000-01 [n] 2001 [o] 2002/03 [p] 2008/09 [q] 2009-10 [r] 2010-11
Source: Survey documentation for each country and wave listed at
http://www.timeuse.org/mtus/surveys.html

Re-Traditionalisation of Gender Relations in the 1990s? The Impact of Parenthood on Gendered Time Use in Three Scandinavian Countries

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ABSTRACT   *This study investigates the impact of parenthood on gendered time use in Scandinavia. Having (young) children at home generally intensifies gendered patterns in time use, and strengthens the traditional household division of labour, whereby women perform more child care and housework than men. In Sweden during the 1990s, this pattern changed and parenthood affected men's and women's time use in a more similar way by the end of that decade. The article considers whether this was a unique Swedish phenomenon, and whether developments regarding time use were connected more to economic crisis or to societal changes towards gender equality. Using six waves of time diary data from the Multinational Time Use Survey (MTUS), we perform multivariate Tobit regressions, comparing what happened in Sweden during the 1990s to developments in Norway and Finland during the same period. Our results indicate that in all three countries, parenthood around the year 2000 affected men and women in a more similar way than before. Gendered patterns of time use in housework and child care showed a less traditional, gender converging pattern. These developments are associated with underlying societal changes towards greater gender equality, despite the economic crisis experienced in these countries.*

KEY WORDS: time use, parenthood, economic crisis, gender equality, Sweden, Finland, Norway

By the beginning of the 1990s, the Nordic countries were—in international comparisons—at the forefront in respect to gender equality, underpinned by progressive family-friendly policies enabling mothers and fathers to balance work and family life. Certain changes had begun decades earlier, including converging gender roles, high levels of female labour force participation as well as the predominance of dual-earner households. These phenomena, referring predominantly to the productive sphere, became to be considered as typical for Nordic countries. Less is, however, known about trends in the reproductive sphere, for example regarding the division of household labour and how the presence of (young) children affects men's and women's activities.

A study by Dribe and Stanfors (2009) on time use in Sweden shows that while parenthood in 1990 clearly strengthened the traditional gender division of labour in the

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household, this was much less the case in 2000, when parenthood affected men and women in a more similar way. As the 1990s were turbulent times in Sweden, it may be suggested that these results are related to the economic crisis. Sweden, like Finland, suffered society-altering financial and economic crises in 1991, bringing about institutional and structural changes during the following years, especially in relation to employment. The changes during this decade raise questions concerning gender equality and the relationship between parenthood and gender-specialised patterns of time use, which leads to asking how time allocations might change before and after specific crisis periods, and whether gender equality can progress during uncertain economic times; if this is the case, one might ask whether the crisis itself could be seen to drive the changes in gender relations.

In this article we investigate how the presence of young children in the household affects the time use of mothers and fathers in Sweden, Norway and Finland. We explore how time allocations changed during the 1990s and whether gender equality advanced or was pushed back during that turbulent decade. Our study is modelled based on Dribe and Stanfors (2009), and we compare findings to what happened in Sweden between 1990/1991 and 2000/2001, with Norway and Finland for the same period, performing multivariate Tobit regressions using cross-sectional Multinational Time Use Survey (MTUS) harmonised data. The dates of these cross-sections are convenient for this analysis, bracketing the economic crisis in Finland and Sweden, while Norway serves as our control group, as it was not affected by economic crisis in a similar way. We do not pretend to establish any direct causal relationship between crisis and time use—as this would be beyond the scope of this study.

Background

Throughout Europe and the United States, women's time in paid work has increased since the 1960s, and their time spent in unpaid work gradually declined, but not enough to compensate for their increased work hours (Bianchi 2000; Gauthier et al. 2004). Men increased their time in unpaid activities, but this did not compensate for the change in hours worked by women (Sayer 2005). Some would argue that the gender revolution had stalled (Hochschild 1989). Others, however, argue that change is still underway across nations (Bianchi et al. 2006; Gershuny 2000). The trend towards a convergence of men's and women's time use was facilitated by women's increased labour force participation, along with increasing access to household technology and services that reduced routine housework. But this convergence has also developed due to evolving attitudes amongst later-born generations, suggesting there still remains potential for change, as younger men and women are likely to hold more gender equal ideals, be less gender-specialised with respect to time use, and adapt to a less traditional household division of labour as adults and parents.

The way parenthood affects men's and women's time allocation is a test of gender equality as it concerns the labour market, work–family balance and the human capital of parents and their children. Numerous studies show that parenthood intensifies gendered patterns in time use and strengthens a traditional division of labour, where women perform more housework and child care while men do more paid work (Bianchi 2000 and Sayer 2005 on the USA; Craig 2005, 2006 on Australia; Gershuny and Sullivan 2003 and Sullivan and Gershuny 2001 for international comparisons; Hallberg and Klevmarken 2003 on Sweden; Knijn and Selten 2002 on The Netherlands). The overall workload of

mothers exceeding that of fathers can lead to work–family balance issues and tension within a union aiming for an equitable household division of labour, but also generate gender differences in well-being.

That economic crises affect how people spend their time is beyond question (Aguiar et al. 2011). The most obvious development is that those who lose their jobs spend less time in paid work, but it is less clear how individuals reallocate lost work hours into other activities, if those who remain employed work the same hours or even more, and if this holds constant for all, irrespective of gender, age and stage of the life cycle. Although crises leave an imprint on many people's lives, they are not well understood from a time use perspective. Experiences from the 1990s may serve as an input into our understanding of how gender equality, economic crisis and policies interact, and this may illuminate which policies matter for restructuring gendered behaviour during more recent and future crises.

Although the Nordic societies seem quite homogenous in their character, nuances exist in family policy developments from the perspective of the combined dual-earner/dual-carer versus male-breadwinner models (Datta Gupta et al. 2008). All three countries of interest for this study aimed to achieve a dual-earner/dual-carer model, of which Sweden and Finland had progressed further towards by 1990. Norway maintained the male-breadwinner model longer than the other Nordic countries, and the dual-earner model was presented as an option and not a norm (Skrede 2002). Two cornerstones of the dual-earner/dual-carer model are affordably priced and accessible child care, plus legally mandated parental leave (available to both parents) with generous income replacement, enabling individuals to balance work and family. These have been available in the Nordic societies for decades. Of interest for this study are changes within this policy environment that may affect time use of parents. Considering paid maternity leave, the most notable adjustment made would be Norway's extension from thirty-two weeks in 1990 to fifty-two weeks in 2000, a catch-up to more comparable levels with Sweden and Finland, who did not make any significant adjustments (Rønsen and Sundström 2002). Considering access to public child care, by the early 1990s, enrolment rates of pre-school children were 52% in Sweden, and 40% in Norway and Finland. By 1999, coverage rates were 64% in Sweden and roughly 50% in Finland and Norway. Thus, the percentage of children enrolled increased during the period in all three countries, which may influence the time parents spent performing tasks related to childrearing.

According to Nyberg (2006), the preconditions for the dual-earner/dual-carer model are economic growth, balanced public finances and full employment. During the 1990s, Sweden and Finland in particular failed on all these accounts, due to significant financial and economic crises that struck both countries around 1991. Economic growth and public finances were heavily disrupted for several years, and unemployment reached historical highs, peaking for prime-aged persons (aged 25–54) at 14.1% in Finland, 8.9% in Sweden, compared to 5.0% in Norway (see Figure 1). Norway also experienced a crisis in 1988, yet its outcomes were much less severe than in Sweden and Finland (Reinhart and Rogoff 2008). By the late 1990s unemployment remained well above pre-crisis levels in Sweden and Finland, while in Norway full employment had nearly been restored. Recovery in Finland and Sweden featured labour market developments that decreased the compatibility between work and family life, including an increase in temporary work contracts, particularly among women and the young (Vikat 2004). Whereas employment
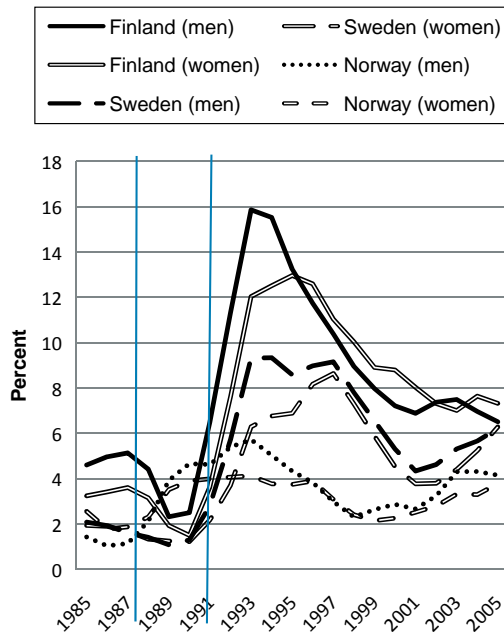
Figure 1. Unemployment rates for Sweden, Norway and Finland, 1985 to 2005 (men and women aged 25–54). *Note*: Two vertical lines represent the year assigned to the Norway Financial Crisis (1988) and Finland and Sweden Crises (1991). *Source*: Data from Labour Force Surveys in Sweden (Statistics Sweden), Norway (Statistics Norway) and Finland (Statistics Finland). Annual data are averages of monthly estimates.

rates of women in Sweden and Finland peaked around 1990, women's employment in Norway increased over the decade.

In Sweden during the 1990s, the dual-earner/dual-carer model was supported despite economic crisis by increasing access to publicly subsidised day care, and by withholding a planned extension of parental leave entitlements. Fathers' quotas support the dual-earner model. They were implemented in 1995 in Sweden,[1] and 1993 in Norway. Finland did not incorporate a fathers' quota during the period. During the 1990s, fathers' share of parental leave uptake increased in all three countries, but at different rates. In Sweden, fathers' leave share increased from 7 to 14% between 1990 and 2000, whereas in Norway, it grew from 0.6 to 7.2%. Growth in this respect was much slower in Finland with an increase from 2.4 to 4.0% (Haataja 2009; Rønsen and Sundström 2002; Stanfors 2003). Men's increased leave share over time should influence men's and women's time use inversely, at least among those with young children.

Policies available during the 1990s could have alternatively supported a male-breadwinner model, affecting the time use of men and women differently. For example, extended periods of parental leave, especially when taken by mothers, could increase the time performing child care and housework of women relative to men. Cash-for-care transfers, implemented with the stated goals of allowing parents the choice to spend more time with children (Brandth and Kvande 2006) support the male-breadwinner family

model because these transfers are almost exclusively accessed by women. In this regard, policies in Finland during our period of study deviate considerably from Norway and Sweden. Finland's home care allowance (HCA) was implemented in 1985, granting parents of children under 3 the right to either a day care placement or cash support for care of their child. The programme was rolled out gradually from 1985 to 1990, and HCA recipients doubled between 1987 and 1993, as the benefit and unemployment benefits could be simultaneously received until 1993, providing an attractive alternative to paid work during the early part of the recession (Sipilä and Korpinen 1998). The labour force participation of Finnish women with children under 3 suffered during this period, declining from 67 to 45% between 1989 and 1995 (Sipilä and Korpinen 1998). This decline may be attributed to policy, yet the fact that women in Finland are much less likely to work part-time (compared with Sweden and Norway) surely contributed. Altogether, the Finnish HCA programme could have preserved the gendered division of labour in the household. In Norway, a cash-for-care scheme became eligible to parents of 1-year-olds in 1998 and parents of children up to 2 in 1999. Policy evaluations indicate that in the short-term women reduced their employment to a limited extent, and there was no impact on fathers' employment; yet there is some evidence that the female labour supply was somewhat negatively affected in the long term (Rønsen 2009). In Sweden, there was a cash-for-care initiative of 1994, which lasted less than one year.[2]

In summary, while the Nordic welfare model remained intact during the 1990s, it could be argued that policy developments in Sweden and Norway better aimed to alter the gendered behaviour of parents than in Finland. The most noteworthy policy changes that support a more gender-equal division of labour were the expansion of child care placement and increased male uptake of parental leave, which occurred in all three countries. Norway also expanded their parental leave entitlement to catch up with Sweden and Finland. Alternatively, Finland's cash-for-care programme, taken near-exclusively by women, may have incentivised a more traditional division of labour. Thus, we move on to assess if the 1990s pushed back gender equality or whether advances were made.

Previous Research and Theoretical Considerations

From a time use perspective, it is well documented that the presence of children, especially pre-schoolers, within the household increases time spent performing child care and housework. Those who become parents often resort to a more traditional division of labour, the changes being more pronounced for women (Bianchi et al. 2006). Specialisation within the household division of labour can be explained in accordance with neoclassical economic theory, where men and women in a union specialise according to their comparative advantages in order to maximise utility for the household (Becker 1981). Since gender wage gaps exist, men are economically incentivised to specialise in paid work and women to specialise in unpaid work, including housework and child care. Although gender differences have been diminishing in recent periods, women continue to devote more hours to non-paid work and child care than do men in most contexts, ranging from the progressive Nordic countries to the more traditional countries of Continental Europe and the USA (Craig and Mullan 2010; Gauthier et al. 2004; Gershuny 2000). Some argue that this is dependent on what kind of welfare state regime the country adheres to (Sullivan and Gershuny 2001), how oriented to gender equality the country in question is, and what kind of work–family policies are available. The general trend across nations,

however, indicates that the difference between mothers' and fathers' time in child care is narrowing (Gauthier et al. 2004), more than it is in housework.

Within the context of contemporary times in Europe, it is uncertain how gendered time allocations in the household might change over a turbulent economic decade, and previous studies are limited. In Sweden, Dribe and Stanfors (2009) found that in 1990, parenthood strengthened a traditional division of labour within the household, but by 2000 this had changed so that parenthood affected both men and women more similarly. This indicates that gender equality may advance even during recessionary times, made possible if the period coincides with an institutional set-up or reforms designed to enhance gender equality, such as increasing child care placements and incentivising fathers to increase their uptake of parental leave. Since we know gender equality from this perspective advanced in Sweden during the 1990s, we are curious if the same advancements took place in Norway and Finland.

It has been shown that periods of economic crisis affect how people spend their time, and the most obvious symptom is a decrease in hours worked through rising unemployment and involuntary part-time work (Reinhart and Rogoff 2008; Walby 2009). Using data from the American Time Use Survey (ATUS), Aguiar et al. (2011) explore how households allocate their time over the business cycle, finding that more than a third of market work hours forgone are allocated to increased non-market work and child care. In particular, they found an increase in routine housework that indicates substitution. However, the lion's share of forgone work hours during recession, at least in the USA, is allocated to leisure. However, the lack of studies from other contexts makes it difficult to generalise from these findings.

Whether the reallocation of time during recessionary periods is similar for all categories of people or if it varies with gender, age and stage of the life cycle has not been much studied either. That gender matters is evident from both individual-level analysis (Aguiar et al. 2011) as well as macro-level analysis (Walby 2009). At the individual level, gender differentials in market work, non-market work and leisure continued a convergence trend in the USA from 2007 to 2010 (Aguiar et al. 2011). Less is known about how age and stage of the life cycle matter in this respect, although both aspects are of general importance for time allocation (Ghez and Becker 1975).

Hypotheses

From the discussion so far we propose three hypotheses concerning the impact of parenthood on men's and women's time use and how it changed in Sweden, Norway and Finland during the 1990s. First, we expect that parenthood affects gendered time use and strengthens a traditional division of labour around 1990, not only in Sweden but also in Norway and Finland. We know that in Sweden parents became less traditional concerning the household division of labour over the 1990s. Given the many similarities between the countries when it comes to socio-economic and demographic characteristics, cultural and geographical proximity and similar gender-neutral family-friendly policy developments, our second hypothesis is that this was not a unique Swedish phenomenon, and we anticipate this trend will also be observable in Norway and Finland, but to varying extents. Third, if the changes taking place in Sweden during the 1990s were strongly related to the crisis, then we expect similar and even more change in Finland, but not in Norway. If changes are more related to profound societal change towards greater gender equality, we

hypothesise that parenthood would affect men and women more equally by the decade's end in all three countries. This should be particularly so in Sweden and Norway, but less so in Finland, where we believe the near-exclusive female uptake of Finland's cash-for-care programme may have worked against gender equality concerning time spent in housework and child care.

Data and Methods

Our analysis uses six waves of time diary survey data from the Multinational Time Use Study (Version 2006 World 5.5—release 2). For Sweden, we use waves from 1990/1991 and 2000/2001, conducted by Statistics Sweden, in order to replicate the study by Dribe and Stanfors (2009). We also use two waves of time diary data from Finland (1987 and 1999) and Norway (1990 and 2000). These cross-sections surround the crisis years in Sweden and Finland, allowing us to examine pre- and post-crises time use. The samples are weighted and considered to be nationally representative, including information on how respondents spend their time performing forty-one different grouped activities within a 24-hour period. Time allocated to different activities was reported in 10-minute intervals up to a maximum of 1,440 minutes for one weekday and one weekend day per respondent. We utilise data from primary activities only and focus our study on weekday time use.[3] We restrict our analysis to persons aged 20–64, equating to 6,878 unique individuals for Sweden, 11,610 for Finland and 7,633 for Norway.[4] We have grouped the different time use activities into five main categories, which we expect to be related to parenthood in different ways, and two residual categories:

- *Paid work* is the aggregate of paid work outside and at home, including second jobs. Travel to and from work is excluded, as this study's primary focus is on how parental responsibilities may affect working time, and we do not wish to confound this with travel time. Including travel time into this category would disproportionately influence part-time work, and since women, and especially mothers, are more likely to work part-time, this would overstate their total working hours and bias estimates.
- *Routine housework* includes cooking/washing up, doing housework (cleaning, laundry, etc.), shopping and domestic travel (for example when going shopping). This categorisation aims to capture routine tasks, but may inadvertently capture tasks such as shopping and cooking for pleasure. Since there is no suitable method for distinguishing between routine and pleasurable housework, we include shopping and cooking under the expectation that the vast majority of weekday time spent in these areas is of the routine variety.
- *Maintenance housework* is defined as time in non-routine domestic work, such as maintaining the house or car, caring for pets, gardening and other odd jobs. Compared with routine housework, these activities occur more irregularly and may contain different gender allocations and are thus categorised separately.
- *Child care* consolidates various aspects of time spent with children as the primary activity, including both routine and high quality activities. It thus includes changing diapers, bathing, dressing children and so on, together with reading, talking and playing with children.[5] It also includes being present at child activities.

● *Individual leisure* attempts to aggregate individually orientated activities, such as time spent participating in or watching sports and/or leisure activities. Here we consider activities that are done for personal benefit, but not necessarily performed alone. The activities are not typically part of family life. The category includes hunting, fishing, going to the cinema, dancing, attending parties and restaurants, visiting friends, reading books, newspapers and magazines and doing hobbies. We have excluded activities that are less individualistic, such as watching TV, listening to the radio, going to church and doing voluntary work, which are often done with other family members and/or combined with secondary activities.

Additionally, we include one category for *sleep* (including naps) and a residual category titled *other*, which includes various forms of travel, personal services and grooming, along with non-individual leisure such as watching TV, listening to the radio, attending church and taking walks/excursions.

Table 1 presents descriptive statistics of our Sweden, Norway and Finland samples, stratified by gender and wave. The first thing to note is a general tendency of gender convergence of time use in paid work, routine housework and child care in Sweden. Whereas Swedish men and women decrease their time in paid work across the 1990s, men and women in both Norway and Finland work more with stable gender differentials. Moreover, the gender gap in housework is smaller in Sweden than in the other countries, especially in the later period. Time spent in child care decreased in Sweden and Norway for both men and women, making intuitive sense since both countries experienced significant increases in day care uptake over the period (although the gender gap actually increased in Norway).

In Finland, however, men and women increased their child care slightly, which suggests more child care activities taking place at the home. Maintenance housework decreases for men and women in all three countries over the period. Interestingly, for men and women, time spent in individual leisure declines in Norway, yet the opposite occurs in Finland and Sweden. For what little we know about time use during recessionary periods, these results match those found in the USA.

We study the differences between parents and non-parents in time use in Sweden, Norway and Finland in order to get an idea of how parenthood affects time allocation in families before and after the 1990s. We estimate multivariate regression models controlling for variables that are likely to influence time use (see Table 2). Our control variables include age and its squared term to allow for linear and non-linear age effects on different time uses. Household type controls are included to differentiate between individuals living in different household contexts, with single households as the reference category. The activity variable indicates the individual's main activity (full-time employed, part-time employed, student, retired or unemployed). Finnish respondents who were categorised as both students and part-time workers have been defined as students since our focus is on weekday time use, and we deem it likely that they are students during the week and work part-time during the weekend. We also control for spouse's employment status (full-time, part-time and not in paid work),[6] which we believe to influence the partner's time use, especially that of parents, through time availability. Household income is divided into three categories: lowest 25%, middle 50% and highest 25%.[7] We also control for the educational level of the individual.[8]

Table 1. Descriptive statistics for total weekday time use by category for Sweden (1990–1991 & 2000–2001), Norway (1990 & 2000) and Finland (1987 & 1999)

Sweden	1990–1991				2000–2001			
	Men		Women		Men		Women	
	% t = 0	Mean (t|t > 0)	% t = 0	Mean (t|t > 0)	% t = 0	Mean (t|t > 0)	% t = 0	Mean (t|t > 0)
Paid work	20.5	534	37.8	445	27.7	486	42.7	432
Routine housework	9.2	104	1.7	204	17.1	93	4.1	141
Housework maintenance	57.8	89	52.4	60	56.6	87	50.1	58
Child care	75.7	71	59.1	124	74.8	64	57.2	88
Individual leisure	17.2	106	13.7	97	15.0	157	11.9	136
Sleep	0.0	444	0.0	461	0.0	461	0.1	478
Other	0.0	334	0.0	339	0.1	364	0.0	393
N	1,752		1,745		1,467		1,914	

Norway	1990				2000			
	Men		Women		Men		Women	
	% t = 0	Mean (t|t > 0)	% t = 0	Mean (t|t > 0)	% t = 0	Mean (t|t > 0)	% t = 0	Mean (t|t > 0)
Paid work	26.0	490	44.7	403	28.7	499	46.9	414
Routine housework	23.5	85	2.8	183	10.2	120	1.4	201
Housework maintenance	43.9	107	43.8	75	66.2	101	73.7	56
Child care	77.9	83	59.3	125	74.6	66	51.9	118
Individual leisure	15.0	148	7.0	152	23.6	120	16.1	112
Sleep	0.2	462	0.1	479	0.1	459	0.0	476
Other	0.1	348	0.1	327	0.1	375	0.0	380
N	1,645		1,868		1,884		2,236	

(Continued)

Table 1. *Continued*

Finland	1987				1999			
	Men		Women		Men		Women	
	% t = 0	Mean (t|t > 0)	% t = 0	Mean (t|t > 0)	% t = 0	Mean (t|t > 0)	% t = 0	Mean (t|t > 0)
Paid work	27.4	488	38.4	424	32.3	497	45.7	434
Routine housework	13.2	94	1.7	186	17.0	103	2.6	178
Housework maintenance	56.7	103	59.6	69	42.3	88	28.1	59
Child care	84.1	58	70.7	113	81.3	68	67.0	116
Individual leisure	8.8	129	6.4	127	6.4	147	5.6	130
Sleep	0.1	476	0.1	485	0.1	476	0.1	492
Other	0.1	357	0.0	331	0.1	342	0.1	337
N	3,972		4,070		1,669		1,899	

Note: The category 'Other' is a residual including travel to and from work, meals, toilet, personal services, misc. leisure (TV, radio, church, excursions). Mean values in minutes per day and calculated based on individuals with non-zero time spent in activity.
Source: Multinational Time Use Study (MTUS) Version 2006 World 5.5 – release 2.

Table 2. Means of variables used in regressions

	Sweden 1990–1991	Sweden 2000–2001	Norway 1990	Norway 2000	Finland 1987	Finland 1999
Gender						
Men (ref. cat.)	0.502	0.435	0.468	0.457	0.494	0.468
Women	0.498	0.565	0.532	0.543	0.506	0.532
Age	40.9	41.7	38.8	41.2	39.7	41.8
Age^2	1,819	1,881	1,660	1,844	1,728	1,901
Age of youngest child in household						
None under 18 (ref. cat.)	0.584	0.544	0.549	0.470	0.592	0.591
0–4 years	0.224	0.220	0.229	0.232	0.162	0.141
5–12 years	0.111	0.154	0.114	0.194	0.159	0.169
13–17 years	0.081	0.081	0.108	0.104	0.087	0.101
Household type						
One person household (ref. cat.)	0.175	0.158	0.108	0.133	0.129	0.103
Married/cohab. couple alone	0.283	0.352	0.213	0.237	0.238	0.277
Married/cohab. couple w. others	0.454	0.383	0.525	0.559	0.567	0.488
Other	0.088	0.107	0.154	0.071	0.066	0.132
activity						
Employed*	0.849	0.812	0.803	0.805	0.781	0.737
Full-time work (ref. cat.)	NA	NA	0.637	0.587	0.723	0.547
Part-time work	NA	NA	0.165	0.218	0.060	0.190
Unemployed	0.018	0.003	0.038	0.019	0.025	0.072
Retired	0.044	0.020	0.051	0.096	0.040	0.089
Student	0.037	0.009	0.044	0.033	0.051	0.057
Other	0.052	0.155	0.064	0.048	0.101	0.045
Spouse's employment						
In paid work (ref. cat.)**	0.632	0.588	0.580	0.595	0.580	0.587
Full-time work	0.478	0.479	0.464	0.457	NA	0.425
Part-time work	0.154	0.109	0.115	0.137	NA	0.161
Not in paid work	0.103	0.124	0.142	0.113	0.149	0.180
Unknown	0.264	0.288	0.279	0.293	0.271	0.234
Household income						
Low 25% (ref. cat.)	0.278	0.221	0.199	0.199	0.172	0.204
Middle 50%	0.451	0.514	0.370	0.543	0.508	0.510
High 25%	0.254	0.265	0.190	0.256	0.320	0.269
Unknown	0.018	0.000	0.241	0.003	0.000	0.017
Educational level						
Primary (ref. cat.)	0.351	0.178	0.150	0.116	0.500	0.249
Secondary	0.417	0.494	0.595	0.547	0.239	0.428
Higher education	0.227	0.314	0.241	0.331	0.261	0.323
Education unknown	0.005	0.014	0.014	0.006	0.000	0.000
N	3,497	3,381	3,513	4,120	8,042	3,568

Notes: *'Employed' is the sum of individuals in full- and part-time work (the distinction missing, thus NA, from Swedish data), listed for comparative purposes only and not used in regressions.
**Data on spouse's employment are missing from 1987 Finnish data; we thus regress using the reference category 'Full-time work' for Norway waves and 'In Paid Work' for Finland waves.
Source: See Table 1.

Because our concern is how parenthood affects time use differently by gender and over time, we estimate models where gender is interacted with age of youngest child in the household (categorised by no children, youngest child aged 0–4, youngest child aged 5–13 and youngest child aged 13–17). The base effect of age of youngest child indicates the effect for men (reference category for sex), and the interaction provides any additional effect for women.

Many individuals spend no time at all on some activities (see Table 1), violating the normality assumption of ordinary least squares regression. Assuming that the likelihood of spending time in an activity and actual time spent on that activity are both determined by the same factors, we estimate a (left-censored) Tobit model:

$y_i^* = \boldsymbol{x}_i\boldsymbol{\beta} + \mu_i, \mu_i \sim N(o, \sigma^2)$, where y_i^* is a normally distributed latent (non-censored) variable. The observable dependent variable y_i equals y_i^* if $y_i^* > 0$ and 0 otherwise. Our reported coefficients indicate the effects of the explanatory variables ($\boldsymbol{x}_i$) on the latent variable y_i^*.

This method provides estimates of period effects on both men's and women's time use, which we estimate separately for Norway and Finland, making comparisons with results from Sweden. As a robustness test, we perform multivariate estimations using a Tobit model and OLS using the same explanatory variables, both with and without weights, finding the OLS estimates yielded highly similar results, but concluding the Tobit model with weights produced the most consistent results.

Results

Table 3 displays Tobit estimates of weekday time use period changes by gender for Norway (2000 vs 1990) and Finland (1999 vs 1987) after controlling for aforementioned variables, which we relate to results from Sweden (2000/2001 vs 1990/1991). It is worth mentioning that the coefficients for men are period effects, while for women they are net effects of period and the interaction between period and gender.

For paid work, we find a decrease for both men and women in Sweden and slight increase for men in Finland, yet we do not find any statistically significant changes in Norway. The decline in Sweden is likely related to the recession, with a greater tendency to have short-term work contracts and reduced work hours existed in the later period. The paid work increase for men in Finland suggests specialisation or that the intensity of work increased in Finland during the 1990s (cf. Brandth and Kvande 2006).

Time spent on routine housework declined considerably for men and especially for women, who reduced their time in housework more than men in both Sweden and Finland over the period. This is consistent with the general trend of the time and with findings from other countries. It does not, however, indicate a substitution of housework for paid work, since paid work also declined in Sweden. Period changes regarding Norway housework results are troubled by a reclassification of the variable, thus the increases in routine housework and declines in maintenance housework may be overstated. As a test, we collapse routine and maintenance housework to estimate total non-market work performed, finding statistically significant period changes of 10.4 for men and − 18.6 for women in Norway, suggesting women's time in overall housework duties to have declined while men's has increased. Time spent on child care decreased for men and women in Sweden, but increased for men and women in Finland, and was stable in Norway. These alternative trajectories could be driven by numerous factors, such as differences in public

Table 3. Tobit estimates of period changes in weekday time use by gender and country for Sweden (1990–1991 and 2000–2001), Norway (1990 and 2000) and Finland (1987 and 1999)

	Paid work	Routine housework	Maintenance housework	Child care	Individual leisure	Sleep	Other
Sweden 2000–2001 vs 1990–1991							
Men	− 64.1**	− 29.4**	− 1.0	− 19.2**	46.2**	17.9**	27.6**
Women	− 42.8	− 66.0**	2.7	− 26.7	36.5	21.5	58.5**
N	6,878	6,878	6,878	6,878	6,878	6,878	6,878
LR χ²	3,188	1,836	368	4,526	570	303	1,634
Norway 2000 vs 1990							
Men	− 0.2	42.6**	− 67.9**	− 2.2	− 44.9**	− 2.7	28.9**
Women	20.8	8.8**	− 91.1**	− 3.2	− 55.7 †	− 3.7	59.6**
N	7,633	7,633	7,633	7,633	7,633	7,633	7,633
LR χ²	3,936	2,515	808	5,679	745	534	1,653
Finland 1999 vs 1987							
Men	18.3†	− 11.1†	12.3**	29.7**	17.8**	− 4.1	− 27.2**
Women	− 1.3	− 23.9**	47.8**	30.5	− 2.8**	2.0	− 5.1**
N	11,610	11,610	11,610	11,610	11,610	11,610	11,610
LR χ²	8,827	4,629	1,211	8,589	960	891	4,586

Notes: Controlling for all variables listed in Table 1.
Strong effects found for Maintenance Housework in Norway are due to classification changes in this variable between surveys (care of adults and other households moved from odd jobs to housework). Combining routine and maintenance housework, we find statistically significant period effects of 10.4† for men and − 18.6** for women.
† $p < .10$; * $p < .05$; ** $p < .01$.
Source: See Table 1.

day care uptake or even fertility patterns. In line with findings on the USA, in Sweden both leisure and time devoted to other activities increased over the period for men and women.

The main concern of this study is to investigate whether gender equality advanced or stalled during the 1990s. In order to do so we assess the differences between men and women regarding the impact of parenthood on time use and how it changed during the decade. We estimate models, controlling for covariates listed in Table 2, including an interaction effect of gender and age category of youngest child in the home. The main effect of age of youngest child indicates the base effect for men (being the reference category). The interaction gives the additional effect, if any, for women. To derive the net effect of having a child aged 0 to 4 and being a woman, the base and the interaction effects need to be added. We estimate the periods separately.

To begin with overall gender differences, as expected women perform less paid work and more routine housework than men in all three countries in each wave. Women also do more child care relative to men. Although the results are inconclusive across countries, the general tendency is one towards less leisure among women over time. Overall we see gender differences diminishing slightly over time in most categories.

Our results indicate that parenthood clearly affects the time use of men and women, although unequally. To begin with Sweden (Table 4), we establish no effect of parenthood on time spent in paid work among men in 1990/1991, but women with a child aged 0–4 devote considerably less time to paid work than otherwise comparable women. In 2000/2001, however, both mothers and fathers spent less time in paid work, though the

Table 4. Interaction between parenthood and gender on weekday time use in different activities by period in Sweden (reference categories in parentheses)

	Paid work	Routine housework	Maintenance housework	Child care	Individual leisure	Sleep	Other
1990–1991							
Gender (Men)							
Women	−97.5**	75.6**	−3.6	13.5	−8.1	18.3**	7.4
Age youngest child in household (none < 18)							
0–4 years	0.4	−1.7	−2.4	221.5**	−37.0**	−4.5	−26.1*
5–12 years	0.1	−11.9	−0.8	149.7**	−31.5**	−5.3	13.7
13–17 years	−3.2	−19.8†	17.8	73.2**	−16.5	10.1	9.5
Interaction gender*age of youngest child in household							
Woman × 0–4 years	−109.2**	35.2**	−22.0†	62.3**	18.5†	−5.2	−24.4†
Woman × 5–12 years	−46.6	36.1**	7.5	34.6†	20.9†	−1.9	−32.8*
Woman × 13–17 years	−16.1	30.7**	−16.2	29.1	11.1	−7.7	−11.4
N	3,497	3,497	3,497	3,497	3,497	3,497	3,497
LR χ2	1,885**	1,174**	226**	2,556**	228**	128**	973**
2000–2001							
Gender (Men)							
Women	−80.2**	53.7**	−10.7†	37.2**	−14.5*	13.8**	26.9**
Age youngest child in household (none < 18)							
0–4 years	−79.5†	47.7**	8.4	200.6**	−63.8**	15.3	−0.6
5–12 years	−53.6	28.7†	−1.6	147.1**	−40.6*	14.6	17.1
13–17 years	−43.0	19.0	−9.6	97.6**	−3.1	7.8	−5.2
Interaction gender*age of youngest child in household							
Woman × 0–4 years	−95.6**	3.6	3.2	20.9†	9.8	1.9	−12.3**
Woman × 5–12 years	−38.4	10.3	21.0	1.2	14.8	−0.6	−29.1†
Woman × 13–17 years	−3.2	13.0	23.9	0.2	−36.8*	11.7	1.3
N	3,381	3,381	3,381	3,381	3,381	3,381	3,381
LR χ2	1,326**	563**	193**	2,092**	191**	167**	675**

Notes: Controlling for all variables listed in Table 1.
† $p < .10$; * $p < .05$; ** $p < .01$.
Source: See Table 1.

effect was still larger for women. In line with a traditional division of labour, there is no effect of fatherhood on men's time in routine housework in 1990/1991, whereas there are clear effects of parenthood for mothers with children of all ages. In 2000/2001, however, housework increases significantly for fathers of children aged 0–12, while women experience no additional effect to men in this respect, indicating that both mothers and fathers of children below age 13 devote more time to housework than otherwise comparable men and women. Parenthood effects in time spent performing child care are, of course, large for both men and women, but decline with the age of the child. In 1990/1991 there was an additional effect for women, indicating that the difference between mothers and non-mothers was significantly bigger than that between fathers and other men. It is interesting to note that these additional effects for women in Sweden almost disappear over time. In 1990/1991 parents of young children had less time for individual leisure, actually more so among fathers than mothers. The additional effect among mothers of young children experienced in the early period disappeared by 2000/2001. Overall, the pattern is that the additional effects experienced by women in 1990/1991 are eased in 2000/2001 in most categories, especially for routine housework and child care.

Considering Norway (Table 5), there are clear effects of parenthood in 1990 for women; mothers with their youngest child aged 0–4 performing considerably less paid work compared to otherwise similar women with no young children; whereas fathers' time in paid work is unaffected. In 2000, parenthood reduced time spent in paid work for men considerably, which is in line with the fact that Norwegian fathers were much more likely to take parental leave by 2000. The additional effect which mothers of children under 13 experienced was reduced by 2000 compared to ten years earlier. The presence of young children increased time in routine housework for both men and women already in 1990. In 1990, there were additional effects for women, indicating that the differences between mothers and other women were greater than differences between fathers of young children and other men. Yet in 2000, the additional effect was only to be found in the case of women with young children in the household. Also, fathers of older children (5–12 years) devoted more time to housework compared to other men. A similar yet stronger pattern exists for child care, with all parents (obviously) performing more child care than people without children, with a statistically significant bigger difference between mothers and non-mothers than between fathers and non-fathers, more so in 1990 than in 2000. The additional effect experienced by women of older children in 1990 disappeared by 2000.

In sum, although starting off differently around 1990, the results for Norway and Sweden seem to follow the same gender-equalising pattern by 2000.

In Finland (see Table 6), like Sweden and Norway, we find no effect of parenthood on time spent by men in paid work in 1987, but there is a strong negative effect for women with children aged 0–4. By 1999 this additional effect for mothers also includes mothers of 5–12-year-olds. These coefficients are larger than the comparative measures in especially Sweden, but also Norway, a possible reflection of Finnish women's lesser tendency to work part-time. Concerning housework, the presence of children increased routine housework for fathers of children aged 5–12 already in 1987, with additional effects for women with children of all ages. By 1999, however, housework increased significantly for fathers of children aged 0–4 and 13–17, and mothers of children aged 13–17 no longer experienced additional

Table 5. Interaction between parenthood and gender on weekday time use in different activities by period in Norway (reference categories in parentheses)

	Paid work	Routine housework	Maintenance housework	Child care	Individual leisure	Sleep	Other
1990							
Gender (Men)							
Women	−67.1**	84.8**	−20.4**	−8.2	12.4*	5.1	−22.8**
Age youngest child in household (none < 18)							
0–4 years	−35.7	22.3**	−19.9†	205.5**	−7.1	−21.3**	−21.3*
5–12 years	18.8	9.5	−40.3**	151.8**	−19.3	1.3	−14.2
13–17 years	26.5	−7.4	−12.7	60.8**	−5.0	−24.5**	11.7
Interaction gender*age of youngest child in household							
Woman × 0–4 years	−142.5**	31.9**	−14.2	93.1**	−2.2	16.0*	−42.1**
Woman × 5–12 years	−75.0*	36.0**	21.5	45.8*	18.2	−10.8	−15.3
Woman × 13–17 years	−41.3	42.0**	2.4	62.8**	16.3	21.0*	−39.9**
N	3,513	3,513	3,513	3,513	3,513	3,513	3,513
LR χ²	1,913**	1,593**	151**	230**	278**	254**	662**
2000							
Gender (Men)							
Women	−66.7**	63.2**	−48.6**	4.5	−3.5	12.2**	3.5
Age youngest child in household (none < 18)							
0–4 years	−60.2*	18.1†	−2.3	228.9**	−28.3**	−16.8*	−13.9
5–12 years	−66.4**	29.9**	−4.0	164.0**	−4.1	−14.3†	−1.4
13–17 years	−88.2**	9.5	13.8	77.5**	10.1	4.5	27.5
Interaction gender*age of youngest child in household							
Woman × 0–4 years	−116.0**	29.9**	−5.2	86.8**	9.2	−1.0	−42.8**
Woman × 5–12 years	−17.1	14.3	7.9	41.8**	6.8	5.0	−35.0**
Woman × 13–17 years	21.5	14.3	6.8	25.0	0.0	0.6	−34.2†
N	4,120	4,120	4,120	4,120	4,120	4,120	4,120
LR χ²	2,064**	956**	230**	3,083**	257**	325**	906**

Notes: Controlling for all variables listed in Table 1.
† p < .10; * p < .05; ** p < .01.
Source: See Table 1.

Table 6. Interaction between parenthood and gender on weekday time use in different activities by period in Finland (reference categories in parentheses)

	Paid work	Routine housework	Maintenance housework	Child care	Individual leisure	Sleep	Other
1987							
Gender (Men)							
Women	−58.3**	91.0**	−29.0**	48.2**	1.1	3.6	−27.8**
Age youngest child in household (none < 18)							
0–4 years	7.5	8.0	−8.1	235.4**	−21.8**	−16.9**	−22.6**
5–12 years	−4.3	12.8*	−16.7†	171.2**	−10.3	3.2	−10.6
13–17 years	17.9	−7.1	11.5	57.4**	1.5	−14.5*	−7.9
Interaction gender*age of youngest child in household							
Woman × 0–4 years	−151.9**	39.2**	−16.4	75.1**	−13.4†	14.7*	−42.7**
Woman × 5–12 years	−18.1	22.5**	2.4	0.5	13.0†	−5.7	−21.5*
Woman × 13–17 years	−41.6	41.6**	−5.8	2.9	−11.0	20.1*	−5.5
N	8,042	8,042	8,042	8,042	8,042	8,042	8,042
LR χ²	5,288**	3,024**	744**	5,553**	689**	617**	2,995**
1999							
Gender (Men)							
Women	−70.2**	81.0**	−0.7	39.2**	−18.4**	10.8*	−6.2
Age youngest child in household (none < 18)							
0–4 years	−22.1	19.6*	5.4	279.8**	−34.5**	0.3	−48.3**
5–12 years	−26.5	0.8	4.4	171.6**	−11.3	−1.0	4.6
13–17 years	−25.4	25.4*	−4.5	86.7**	0.3	−1.1	−6.6
Interaction gender*age of youngest child in household							
Woman × 0–4 years	−142.0**	18.7	−2.7	66.7**	−6.9	2.3	−21.9†
Woman × 5–12 years	−85.6**	51.5**	5.0	34.7*	−0.5	14.4	−22.5†
Woman × 13–17 years	−7.0	−5.4	2.9	36.5†	3.0	3.4	−0.4
N	3,568	3,568	3,568	3,568	3,568	3,568	3,568
LR χ²	3,751**	1,813**	315**	3,279**	439**	333**	1,721**

Notes: Controlling for all variables listed in Table 1.
† $p < .10$; * $p < .05$; ** $p < .01$.
Source: See Table 1.

effects. In 1987, parenthood affected child care substantially for men and women in Finland, with mothers of young children experiencing additional affects that we do not find for women with older children. By 1999, parents of 0–4 and 13–17-year olds performed more child care than they had compared with 1987, and women with children older than 4 experienced additional effects not observed in the earlier period. In 1987 parents of young children had less time for individual leisure than comparable non-parents, more so for women than men, yet the additional effects among mothers in the early period were no longer found in 1999. In general, the Finnish results exhibit a similar pattern as the other Nordic countries, where parenthood affected the time use of men and women more similarly by the late 1990s than previously. Two differentiations in the Finnish results are that in 1999, mothers of 5–12-year-olds faced an additional negative effect on paid work time, and mothers of 5–12 and 13–17-year-olds faced an additional effect on child care time, two outcomes which were not observed in 1987 in Finland nor in the latter period in Sweden. These results make intuitive sense, however, considering Finland's cash-for-care programme and its possible long-term repercussions on female labour force participation.

To learn more about whether post-crisis unemployment is driving our results, as a robustness check we drop the unemployed from our Finnish data and re-estimate regressions.[9] No coefficient of interest changes more than marginally, with the exception of small changes concerning the overall gender differentials in paid work, which can be explained because men classified as unemployed are more likely to perform paid work than unemployed women. Interestingly, for routine housework and childcare, dropping the unemployed made no changes at all to gender differentials, and for parents it only reduced slightly the housework coefficients (the employed do slightly less housework as expected). Thus, as gender and parenthood effects are not affected in any significant manner, it suggests that the unemployed are not biasing our results.

Concluding Discussion

This article contributes to the literature by examining gendered time use and the effects of parenthood and how it changed during the 1990s, after the dust of the crisis had settled. While few comparative time use studies exist surrounding crisis periods, previous research overwhelmingly supports the notion that parenthood strengthens a more traditional division of labour, whereby fathers specialise in paid work and mothers increase time in housework and child care. It is understood that in Sweden, parenthood affected men and women more similarly by the end of the 1990s than it had a decade earlier. We set out to determine whether this was a unique Swedish phenomenon, perhaps even made possible by a crisis period that enabled the lesser-employed to divide their labour more equally. Alternatively, we ask whether a Nordic pattern is emerging in this period, due more so to underlying societal changes towards gender equality that progress regardless of turbulent times.

Our findings suggest that parenthood clearly strengthened a traditional division of labour in all three countries around 1990, where we found no effect of parenthood on father's time in paid work for any country. Mothers in Sweden, Norway and Finland however performed less paid work, more housework, more child care and in general less leisure than comparable women and compared with men. By the end of the 1990s

however, parenthood affected men and women much more equally in each country than it had previously.[10] In Sweden, our results show mothers reduced their paid work to a lesser extent than a decade earlier, while fathers reduced their paid work and increased their housework contributions. In Norway, fathers with children of all ages had reduced their work hours by 2000; while those with children under 13 had increased their time spent performing housework and childcare, outcomes not observed a decade earlier. In general, the Finnish results also support the notion that parenthood affected men and women more equally by the end of the 1990s, as it concerns time spent performing housework and child care. Fathers in Finland however did not reduce their work hours in the later period, the only country to experience this.

This study uncovered some evidence suggesting that policies in place during crisis periods matter. For example, fathers adjusted their time in paid work much more so in Sweden and Norway in the later period, after both countries had introduced fathers' quotas and male leave uptake had increased. The fact that fathers in Finland had not reduced their work hours by 1999 could be due to the lower uptake of male parental leave compared with Sweden and Norway, which itself may be due to the lack of a fathers' quota. It is also possible that men in Finland, whose employment situation was dire even still in 1999, felt additional pressure to resist taking parental leave, despite its mandated availability to them. Additionally, the presence of children in the home greatly increased time spent in child care for women as we would assume in all three countries, the effects of which were mediated over time in Norway and Sweden but increased somewhat for mothers with children older than 4 in Finland. Fathers of younger and older children in Finland also experienced this increase however, so these results do not suggest a return to re-traditionalisation. The child care results for Sweden and Norway seem indicative of the increasing share of children in public day care in 2000 compared with 1990. Since cash-for-care uptake in Finland was highly gendered in nature, it may partly explain the additional parenthood effects for mothers with the youngest child aged 5–12 found in 1999, who reduced their paid work and performed additional child care, a pattern only observed in our Finnish results. The timing of this policy plays a crucial role here, as it was implemented pre-crisis in Finland, and the crisis intensity itself surely influenced its uptake. Without a counterfactual comparison, it is difficult to speculate if alternative policy measures would have generated different results, yet it seems that the HCA may have had some effect on a particular cohort of women in Finland.

Gender differentials, although declining over time, still show that a traditional division of household labour exists, yet parenthood, at least at around 2000, cannot be blamed to the same extent as before. That parents in Sweden became considerably less traditional during the 1990s, as did parents in Norway and to a lesser degree in Finland, suggests that gender-equality can advance even if the core prerequisites of the dual-earner/dual-carer model are temporarily disturbed during a period of economic turbulence, and that the crises themselves are most likely not the primary change agent. If economic crisis and lingering unemployment had enabled Swedish men and women to divide their time more equally, we would have likely found a similar pattern to our results for Sweden and Finland, with a deviating pattern for Norway. Instead gender equality advanced in a similar pattern in all three countries, albeit to varying extents, with greater changes experienced in Sweden and Norway compared with Finland. What we might learn from the Nordic experience, with Sweden being the forerunner, is not to cut back too drastically on welfare state arrangements that support families and gender equality at the same time,

such as day care availability and subsidies, in periods of crisis. Another thing to learn is to be pro-active and initiate gender equal policies, such as fathers' quotas, instead of less difficult and less expensive initiatives such as cash-for-care programmes. Our results also support the notion that gender equality develops along regime-type and generational lines, yet certain country-specific results could be due to policy nuances. Further research is, however, needed. We plan to extend this study to cover the period from 2000 to 2010, and include new countries from other welfare state regime types.

Acknowledgements

Notes

1   As the Swedish parental leave system is gender-neutral, the mother and father are supposed to take six months each. Sharing is, however, up to the parents to decide. The reform of 1995 made it compulsory for each parent to take at least one month leave or the benefit of that month will be lost. Thus, one month is exclusively for the mother and one for the father.

2   The cash-for-care allowance was initiated by the Liberal-Conservative government but abolished by the Social Democrats when they came into power in 1994. Since 2008 it has been optional for local authorities to introduce a cash-for-care allowance, but far from all have done so.

3   The MTUS data do not provide information on secondary activities.

4   Respondents were surveyed within one year of each other with the response rate varying from 50% for Norway in 2000 to 75% for Sweden 1990–1991.

5   See Craig (2006) for a thorough discussion on different types of child care activities and gendered aspects of time in child care that may differ quantitatively and qualitatively.

6   For our Finnish samples, we use paid work and not in paid work due to missing part- and full-time designations in the 1987 survey data.

7   Large percentages of unknown responses to spouse's employment and household income (Norway 1990) make interpreting any results of these two variables problematic.

8   Comparisons between Norway in Finland in our data set reveal a possible inaccuracy in the harmonisation of this variable, but we proceed nonetheless. For a discussion see http://www.unesco.org/education/information/nfsunesco/doc/isced_1997.htm.

9   We perform this for each wave of the study finding no significant differences. Results not shown but available from authors on request.

10 Although this paper focuses on weekday time use, this pattern holds true for weekend time use as well. Results not shown but available upon request.

References

Aguiar, M. A., E. Hurst, and L. Karabounis. 2011. "Time Use during Recessions." National Bureau of Economic Research (NBER) Working Paper, No. 17259.

Becker, G. S. 1981. *A Treatise on the Family*. Cambridge, MA: Harvard University Press.

Bianchi, S. M. 2000. "Maternal Employment and Time With Children: Dramatic Change or Surprising Continuity?" *Demography* 37 (4): 410–414.

Bianchi, S. M., J. P. Robinson, and M. A. Milkie. 2006. *Changing Rhythms of Family Life*. New York: Russell Sage Foundation.

Brandth, B., and E. Kvande. 2006. "Care Politics for Fathers in a Flexible Time Culture." In *Gender Divisions and Working Time in the New Economy: Changing Patterns of Work, Care and Public Policy in Europe and North America*, edited by D. Perrons, 148–161. Cheltenham: Edward Elgar.

Craig, L. 2005. "Children and the Revolution: A Time-Diary Analysis of the Impact of Motherhood on Daily Workload." *Journal of Sociology* 42 (2): 125–143.

Craig, L. 2006. "Does Father Care Mean Fathers Share? A Comparison of How Mothers and Fathers in Intact Families Spend Time With Children." *Gender & Society* 20 (2): 259–281.

Craig, L., and K. Mullan. 2010. "Parenthood, Gender and Work–Family Time in USA, Australia, Italy, France and Denmark." *Journal of Marriage and Family* 75 (5): 1344–1361.

Datta Gupta, N., N. Smith, and M. Verner. 2008. "The Impact of Nordic Countries' Family Friendly Policies on Employment, Wages, and Children." *Review of Economics of the Household* 6 (1): 65–89.

Dribe, M., and M. Stanfors. 2009. "Does Parenthood Strengthen a Traditional Household Division of Labor? Evidence from Sweden." *Journal of Marriage and Family* 71 (February): 33–45.

Gauthier, A. H., T. M. Smeeding, and F. F. Furstenberg Jr. 2004. "Are Parents Investing Less Time in Children: Trends in Selected Industrialized Countries." *Population and Development Review* 30 (4): 647–671.

Gershuny, J. 2000. *Changing Times: Work and Leisure in Postindustrial Society*. Oxford: Oxford University Press.

Gershuny, J., and O. Sullivan. 2003. "Time Use, Gender, and Public Policy Regimes." *Social Politics* 10 (2): 205–228.

Ghez, G., and G. Becker. 1975. *The Allocation of Time and Goods Over the Life Cycle*. New York: Columbia University Press.

Haataja, A. 2009. "Fathers' Use of Paternity and Parental Leave in the Nordic Countries." Kela/FPA Online Working Paper, No. 2/2009.

Hallberg, D., and A. Klevmarken. 2003. "Time for Children: A Study of Parent's Time Allocation." *Journal of Population Economics* 16 (2): 205–226.

Hochschild, A. R. 1989. *The Second Shift: Working Parents and the Revolution At Home*. New York: Penguin.

Knijn, T., and P. Selten. 2002. "Transformations of Fatherhood: The Netherlands." In *Making Men into Fathers: Men, Masculinities and the Social Politics of Fatherhood*, edited by B. H. Hobson, 168–190. Cambridge: Cambridge University Press.

Nyberg, A. 2006. "Economic Crisis and the Sustainability of the Dual Earner, Dual Carer Model." In *Gender Divisions and Working Time in the New Economy: Changing Patterns of Work, Care and Public Policy in Europe and North America*, edited by D. Perrons, 91–102. Cheltenham: Edward Elgar.

Reinhart, C. M., and K. S. Rogoff. 2008. *Banking Crises: An Equal Opportunity Menace*, National Bureau of Economic Research (NBER) Working Paper, No. 14587.

Rønsen, M. 2009. "Long-Term Effects of Cash for Childcare on Mothers' Labour Supply." *LABOUR* 23 (3): 507–533.

Rønsen, M., and M. Sundström. 2002. "Family Policy and After-Birth Employment Among New Mothers: A comparison of Finland, Norway and Sweden." *European Journal of Population* 18 (2): 121–152.

Sayer, L. 2005. "Trends in Women's and Men's Paid Work, Unpaid Work and Free Time." *Social Forces* 84 (1): 285–303.

Sipilä, J., and J. Korpinen. 1998. "Cash Versus Child Care Services in Finland." *Social Policy & Administration* 32 (3): 263–277.

Skrede, K. 2002. "Towards Gender Equality in Norway's Young Generations?" In *Nordic Demography: Trends and Differentials*, edited by J. Carling, 191–218. Oslo: Unipub/Nordic Demographic Society.

Stanfors, M. 2003. *Education, Labour Force Participation and Changing Fertility Patterns: A Study of Women and Socioeconomic Change in Twentieth Century Sweden*. Stockholm: Almqvist & Wiksell International.

Sullivan, O., and J. Gershuny. 2001. "Cross-national Changes in Time Use: Some Sociological (Hi)stories Re-examined." *British Journal of Sociology* 52 (2): 331–347.

Vikat, A. 2004. "Women's Labour Force Attachment and Childbearing in Finland." *Demographic Research* 3: 177–212.

Walby, S. 2009. "Gender and the Financial Crisis." Paper for UNESCO project on 'gender and the financial crisis', April 9.

Time alone or together? Trends and tradeoffs among dual-earner couples in Sweden 1990-2010[1]

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Abstract
With increased female work orientation the institution of marriage came under pressure. One implication is that couples, especially dual-earners, spend less time together, negatively affecting marital quality. This paper investigates time allocation among coupled individuals aged 20-55 in Sweden across four dimensions between 1990 and 2010, using three waves of the Swedish Time Use Survey (SWETUS) (N=9,544). OLS and decomposition analyses find a trend towards time together over time alone, with childless couples spending similar time together and parents increasing family time. The shift towards family time evolved differently for men and women, indicating gender convergence in private and public spheres, but at higher costs of time alone for women. Change is behavioral and general, applying equally across gender and educational groups. There are educational gradients concerning time with children and the qualitative aspects of time together, indicating that dual-earner society may be family-friendly, but not equally for all.

Key words: gender, parenthood, spousal interaction, Sweden, time use

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Introduction

In recent decades the institution of marriage has come under duress, evidenced by increased prevalence of cohabitation and single-person households, high divorce rates, and declining marital interaction (Amato, Johnson, Booth, & Rogers, 2003, 2007; Dew, 2009). During this process, marriage transformed into being more "individualistic" than before (Cherlin, 2004). These trends form components of the Second Demographic Transition (SDT), which states Western societies have entered a phase characterized by a rise of female economic autonomy, dual-earner couples, delayed union formation and childbearing, less stable marriages, below replacement fertility, value shifts towards rising aspirations for higher order needs and greater self-actualization, with implications for family behavior (Lesthaeghe, 1991, 2014; Lesthaeghe & Meekers, 1986). Whereas many of these developments imply decreasing family orientation, certain aspects, such as delayed union formation, along with reduced and delayed childbearing, can imply family stability and gains in parental resources (Dribe & Stanfors, 2010; McLanahan, 2004). The aforementioned developments coincide with a rise of intensive parenting norms, where both qualitative and quantitative research report that parents have been spending more time with their children while cutting back on partner time (Bianchi, Robinson, & Milkie, 2006; Daly, 2001; Dew, 2009; Hays, 1996).

An important issue in this context is the changing time allocations among couples. Spousal interaction seems vital to both marital quality and stability (Amato et al., 2007). Men and women have reported greater happiness and meaning, and less stress, during time shared with partner, regardless of the activity performed (Flood & Genadek, 2015). Reductions in partner time can have negative implications on marital quality and stability, especially for those with children, the majority of whom report spending too little time with their partner (Bianchi et al., 2006; Roxburgh, 2006). Moreover, mothers and fathers experienced more positive well-being during time that was spent with their children, though not in a gender-neutral way (Musick, Meier, & Flood, 2014). Family time has been repeatedly assigned the label of scarcity, putting parents who claim to never have enough of it in an endless pursuit to gain more and fueling cultural concerns of over-work and work-life strategies (Daly, 2001; Mattingly & Sayer, 2006). Lacking family time can be particularly acute amongst dual-earner couples (Bianchi et al., 2006; Jacobs & Gerson, 2004; Roxburgh, 2006). Time with children is equally important, because evidence suggests

that early parental time investments have lasting impacts on children's human capital development (Currie, 2001; Harvey, 1999). In addition, lack of time alone may be symptomatic of increased work-family conflict (Nomaguchi, 2009), leaving less time available for leisurely pursuits, recovery, investments in human capital, physical health and social relationships, or time free of dependent children. Though different, yet important in their own way, each dimension of with whom time can be shared is subject to tradeoff under the constraint of a 24-hour day.

The present study investigates the time allocations of partnered men and women across four dimensions – time spent alone, with one's partner, with children only, and as a family, while also taking into account the type of activities performed, using time diary data from three waves of the Swedish Time Use Survey. We argue that this multi-dimensional approach better illustrates the trends and tradeoffs of who men and women in partnerships spend their time with. Our motivation is to understand how and why these dimensions have changed between 1990 and 2010. We believe that the quantity of time spent together with one's partner and/or children is important for marital well-being, quality of life, work-life balance, and child development, and are curious of whether an advanced dual-earner society increasingly substitutes paid work for time spent with family members. We add to the literature by establishing how multiple dimensions of time allocations changed between 1990 and 2010 in Sweden for a nationally-representative sample of coupled (i.e., cohabiting or married) men and women, complementing research on spousal interaction from the U.S., with most studies looking at partner time in isolation among married couples only. We also investigate the total time individuals spend with their children across all activities, broadening previous literature which has tended to focus on childcare activities specifically.

Despite its obvious relevance for individuals and families, with whom partnered men and women spend their time is not well understood in the Nordic context. The Nordics, with Sweden as a frontrunner, are considered prime examples of the SDT (cf. Lesthaeghe, 1991). Sweden is the Nordic welfare model archetype, where for decades, a comprehensive social policy package has aimed to release individuals' dependence on the family and the market, while promoting gender equality and reducing income differentials. Swedish work-family policies have long since targeted both men and women, thus individuals have greater flexibility and decision-making autonomy over time allocation, irrespective of gender, family status and education, than elsewhere. Though advanced in these respects compared to

other countries, change is ongoing; women in Sweden have continued to become increasingly work-oriented and men have taken up more domestic tasks (Dribe & Stanfors, 2009) over this period, yet the time allocations of couples are both changing and unknown.

Background

Time allocation is a constrained choice. Each day has 24 hours, which not only sets limits on time spent in different activities (Becker, 1965; Gronau, 1977), but also for energy (Becker, 1985; Bird & Rieker, 2008), and "devotion" to these activities (Blair-Loy, 2003). Competing demands from employers and family members impose tradeoffs on individuals, especially for dual-earner couples with (young) children, making them prioritize when something has to give. Tradeoffs relate not only to the activities that individuals spend their time on, but to the extent that activities can be coordinated with others.

Over the past decades, marriage has changed into a more voluntary institution (Cherlin, 2004), transforming from an organization of activities with specialization among partners characterized by production complementarities (Becker, 1973), to a partnership characterized by consumption complementarities (Mansour & McKinnish, 2014; Stevenson & Wolfers, 2007). This illustrates that family institutions are dynamic and change with economic opportunities (Cherlin, 2014, Coontz, 2005), with important implications for family life and individuals. In the past, when many goods and services were provided in the household (cf. Lam, 1988), specialization was rational. Thus the model with production-based marriage is primarily a valid characterization of the male breadwinner household, which dominated in many Western countries in the immediate post-war period. The greater tendency to buy these goods and services (including childcare) in the market, together with technological, social and legal changes, reduced the value of specialization within marriage, which was accompanied by a greater tendency for assortative mating on productivity traits (e.g., education, Schwartz & Mare, 2005). In such unions, partners typically share values (including work-orientation), and enjoy the same activities and the company of each other. Against this backdrop, we may conjecture that time together is valued higher than time alone among coupled individuals and that couples will share more – not less – time together today than before.

The amount of time individuals spend together with their partner matters for marital quality (Amato et al., 2007), happiness (Flood & Genadek, 2015; Kingston & Nock, 1987) and emotional well-being (Offer, 2014). Time with one's partner is generally perceived desirable and many married mothers and fathers in the U.S. report spending too little time with their spouse (Bianchi et al., 2006). Existing evidence on whether time with one's partner is on the rise or decline is, however, mixed. Part of the limited literature on couples' joint time use focuses on the synchronization of activities, which have been increasing generally (Fisher, Egerton, Gershuny, & Robinson, 2007) and particularly with respect to work (e.g., Hamermesh, 2002). Despite increasing synchronization, there is evidence that couples spend less time on their own today than before (Amato et al., 2007), but change has not taken place uniformly among those with and without children or across the week (Dew, 2009; Flood & Genadek, 2015). Whether there is a uniform or diverging pattern across the educational gradient remains an open question.

In most cases work and parenthood are prioritized over time with one's partner or time alone (Voorpostel, van der Lippe, & Gershuny, 2009), as parents protect family time, despite their combined work hours having increased over time (Genadek, Flood, & García-Román, 2015; Sayer, 2005), Although women's paid work hours have increased in recent decades, their total time spent with children hasn't decreased much (Bianchi et al., 2006). Mothers prioritize time with children over sleep and leisure (Bianchi, 2000), so more time in paid work and unchanged time with children have created a time pressure for women, leading to less time for other activities, including time alone and with partner, leaving many feeling they lack time for themselves (Bianchi et al., 2006; Phipps, Burton, & Osberg, 2001). Differences seem to vary across the family cycle with young children constraining time for couples to engage in joint activities; an impact not found for those with older-aged (i.e., 13+) children (Kalmijn & Bernasco, 2001). Men's time with children has also increased (Sayer, Bianchi, & Robinson, 2004) in line with increasingly intensive parenting norms (Hays, 1996; Daly, 2001).

Observed gender differences along the dimensions of with whom time is spent are associated with a traditional, yet changing, division of labor with women taking on more family responsibilities than men, increasing the tradeoff between activities and, by extension, who to spend them with. Though Sweden is gender equal by international standards, we nevertheless expect gender differences across the four dimensions of time allocation

investigated, with women's involvement in paid work and childcare reducing their partner time and time alone more than among men.

According to economic theory on time allocation, higher education is associated with greater work orientation and earnings, irrespective of gender, but the opportunity cost of time declines on weekends for many because of scheduling (Becker, 1965), insinuating that the higher educated may value weekend time more if their weekday discretionary time is more scarce. The higher earnings of the well-educated enable them to buy goods and services, allowing them to work more, but they also engage in more activities, increasing the tradeoff between activities and time. Higher education not only translates into higher income but also different values. Hallberg (2003), using data for Sweden on couples' time together conditional on synchronization, did not find any income effect. In contexts where income differences are limited, education may be a stronger predictor for time use, increasing both work and childcare (i.e., activities with an investment component) among the highly educated compared to the less educated (Aguiar & Hurst, 2007; Guryan et al., 2008; Sayer, Gauthier, & Furstenberg, 2004), at the expense of partner time.

Extant research comes largely from the U.S. and would benefit from an understanding of developments in other contexts. Whereas no studies have examined couples' togetherness in Sweden or any other Nordic context using time diary data for this period, earlier work found the jointness in parents' time allocation grew between 1984 and 1993 (Hallberg & Klevmarken, 2003), raising the question of whether this trend extended beyond the early 1990s, equally for all irrespective of gender, education, and family status. Extending the limited research on partnered individuals' shared time, we investigate the extent to which time allocations of men and women changed across four dimensions – time spent alone, with one's partner, with children only, and as a family – and assess how gender, education, and family cycle impacted these time allocations across dimensions of with whom time can be shared.

Data

We used three waves of the Swedish Time Use Survey (SWETUS) conducted by Statistics Sweden (see Mohlén, 2012; Rydenstam, 2003 for discussions on data collection and quality). SWETUS is a time diary study of nationally representative cross-sectional samples from 1990/91 (N=7,787), 2000/01 (N=7,955) and 2010/11 (N=6,477). The survey

methodology remained consistent over time, with response rates ranging from 75 percent in 1990/91, to 50 percent in 2000/01 and 41 percent in 2010/11, a decline that is reflective of widespread survey-response trends in Sweden and elsewhere (cf. Curtin, Presser, & Singer, 2005). In nearly all cases, respondents completed one weekday and weekend day time diary. These diaries reported how individual respondents spent their time on more than 100 different activities in ten minute intervals, the location of these activities, and who was present during the activities performed. Survey data on time use were complemented by interview and register data on demographic and socioeconomic indicators.

Our main analyses focused on with whom time was shared, analyzing coupled individuals' time allocations across multiple dimensions (i.e., alone time, partner time, child time, and family time). We compared those with and without children using sub-samples of partnered (cohabiting or married) men and women aged 20-55 in heterosexual relationships (see Table 1). In total we used information for one weekday and one weekend day from more than 4,700 individuals equally distributed across gender. A small number of real couples were included in the 2000/01 and 2010/11 data, which we controlled for in the multivariate analyses by clustering standard errors by household to account for non-independence. The proportion of our sample in dual-earner households were 90, 86 and 90 percent in 1990/91, 2000/01 and 2010/11 respectively; both partners worked full-time (35+ hours/week) in more than half of these couples. Educational attainment of our sample increased over the period.

Table 1.
Weighted Proportions (%) of Variables Used in Regressions

	All	Men	Women	All	Men	Women	All	Men	Women
Gender									
Men	.52			.49			.51		
Women	.48			.51			.49		
Family cycle									
No children	.36	.35	.37	.38	.36	.40	.33	.31	.35
1 child, <7 years old	.08	.09	.07	.08	.08	.07	.11	.11	.11
2+ children, youngest <7	.22	.24	.21	.22	.25	.19	.22	.24	.19
1 child, 7+ years old	.15	.16	.14	.14	.13	.15	.15	.14	.15
2+ children, 7+ years old	.18	.17	.20	.19	.19	.19	.20	.19	.20
Work status									
Full-time	.77	.98	.55	.82	.96	.67	.82	.94	.70
Part-time	.23	.02	.45	.18	.04	.33	.18	.06	.30
Age group									
20-34	.31	.31	.31	.29	.28	.29	.27	.26	.28
35-44	.35	.35	.35	.34	.35	.32	.37	.37	.36
45-55	.34	.34	.33	.38	.36	.39	.36	.37	.36
Education									
Primary	.33	.35	.30	.13	.17	.10	.06	.07	.04
Secondary	.42	.41	.43	.52	.50	.53	.42	.47	.36
Higher	.26	.24	.27	.35	.33	.37	.52	.46	.59
Partner's work status									
Full-time work	.69	.48	.91	.70	.52	.87	.69	.51	.88
Part-time work	.21	.37	.03	.16	.30	.04	.17	.29	.05
Other	.10	.14	.05	.14	.19	.08	.10	.12	.07
Parental leave	.01	.01	.01	.00	.00	.01	.04	.07	.01
Region									
Urban centers	.33	.32	.33	.30	.30	.31	.37	.35	.40
Large cities	.34	.35	.33	.37	.37	.36	.36	.40	.32
Medium cities	.21	.22	.21	.20	.20	.20	.16	.17	.15
Small town/rural	.12	.11	.12	.13	.13	.13	.10	.08	.13
N	3,883	1,996	1,887	3,520	1,565	1,955	2,141	971	1,170

Note: Decimals subject to rounding.
Source: Swedish Time Use Survey (SWETUS) 1990/91, 2000/01 and 2010/11.

8

Method

Dependent variables

We created four continuous 'with whom' dependent variables; all referring to primary activities (consistently reported and of high quality, which was not the case for secondary activities) during non-paid work waking time: *alone time* refers to time without anyone else present*; partner time* is time spent exclusively with one's partner; *child time* is spent with children from the household without the partner present; *family time* is joint time with the partner and at least one child from the household (see Appendix 1 for variable coding). Each dependent variable is the daily minute total (excluding paid work, commuting alone to/from work and sleep/personal care time), constructed using the 'with whom' variable, where survey respondents self-reported whether they performed an activity alone or together with specific members of the household. We also included a dependent variable for *paid work* (including overtime, but not commuting time). Our second analyses focused on qualitative aspects of fathers' and mothers' time use specifically. Our five dependent activity variables are: *routine housework* (i.e., regularly-performed activities such as cooking, cleaning, and washing dishes); *childcare* includes reading to, playing with and interacting with one's children, which differs from our variable child time, which is the total time spent with a child, be it performing childcare or other activities; *meals/socializing* (i.e., eating meals, dessert and coffee/tea, and conversing, but not meal preparation or clean-up); *leisure (non-TV)* includes a variety of activities such as walking, hiking, performing sport, and participating in clubs; and *leisure (TV)* includes television or movie viewing, but excludes other screen time which is categorized as leisure (non-TV). Some of these activities have been positively associated with marital satisfaction, such as time conversing, eating meals and leisure (Offer, 2014), whereas others have more ambiguous associations, such as routine housework, childcare or watching TV (Kingston & Nock, 1987).

Independent variables

We used three main independent variables. *Family cycle* is a categorical variable which combined the number of children and age of youngest child in the home (i.e., no children, 1 child <7 years old, 2+

children with youngest <7, 1 child 7+ years old, or 2+ children aged 7+ years) that both factor into time allocations (Kalmijn & Bernasco, 2001). The under-7 categorization best captures the threshold between pre- and compulsory-school in Sweden. To examine change over time, we included a categorical variable for *survey year* (i.e., 1990/91, 2000/01 and 2010/11). *Education* was categorized as primary, secondary and higher based on Sweden's Sun 2000 ranking system, which is comparable to the International Standard Classification of Education 1997 (ISCED-97).

We estimated regressions controlling for several variables. A dummy for *work status* identified respondents who worked part-time (1-34 hours/week). This variable accounts for differences in work status, which is particularly relevant in Sweden where those with children under 12 are entitled to work reduced hours, yet more women than men take up on this. *Age group* was categorized as 20-34, 35-44 and 45-55. *Partner's work status* was categorized as full-time (35+ hours/week), part-time (1-34 hours/ week), other (i.e., unemployed, homemaker, student), and 'on parental leave', to control for the variation in partner's work situation. We included a *region* control to capture the degree of urbanization with major metropolitan centers (i.e., Stockholm, Göteborg, and Malmö), large cities, medium-sized cities and small towns/rural. A control for day of the week was included in the weekday regressions as was a dummy for Sundays in the weekend analyses.

Analytic strategy

We first calculated weekday (Table 2) and weekend (Table 3) weighted means of our dependent variables, stratified by wave, gender, and family status, and performed t-tests to determine statistically significant gender and between-wave differences. We then estimated gender-stratified OLS regressions on four with whom dependent variables (*alone, partner, child and family time*), to uncover the impact of family cycle and education over the period studied (Table 4). Because the proportions reporting zero minutes in these four dependent variables were small (available from authors on request) we prefer OLS over Tobit, which may be used for left-censored dependent variables. Moreover OLS estimates allow for interpretation of results in minutes. Tobit results (available from authors) did not alter the pattern of our results or any conclusions deducted. To further investigate wave differences, we employed an Oaxaca decomposition (Oaxaca, 1973; see Table 5) to partition change in our dependent variables between 1990/91

and 2010/11, based on the contribution of changes in explanatory variables (cf. Aguiar & Hurst, 2007; Amato et al. 2003; Dew, 2009). We also ran decompositions for paid work to illustrate how this had changed. Finally, to better understand how parents' time allocations have changed qualitatively, we performed OLS analyses for five dependent variables (routine housework, childcare, meals/socializing, leisure (non-TV), and leisure (TV)) (Table 6). This analysis pooled men and women and tested for gender differences across time through interactions. Sensitivity analyses were conducted (see below). Individual sampling weights corrected for survey design (stratified random sample) and oversampling throughout the analyses.

Results

With time allocation across multiple dimensions in focus, descriptive results (Tables 2 and 3) establish level differences between those living with and without children, which were smallest for alone time and greater concerning partner time, and of course child and family time. T-tests revealed statistically significant within-year gender differences for alone and child time, but not for shared time (partner and family time). There were also within-year gender differences with respect to paid work, commuting, and sleep. On weekdays, gender differences in alone and paid work time converged considerably between 1990/91 and 2010/11 for all. Among those living without children, men's paid work decreased and their partner time increased while women's alone time decreased. Considering those with children, men's paid work decreased while their time with children and as a family increased, and women's paid work and family time increased while their alone time decreased. These family time increases occurred both at the extensive and intensive margins. On weekends, there was gender divergence rather than convergence with more change among those living with children. Men with children reduced partner time and increased family time, whereas women with children reduced both alone and partner time and increased family time. These partner time declines were at the intensive margin, as proportions reporting zero changed little between 1990/91 and 2010/11 (7.5 vs. 7.9 percent).

As a whole, there are indications of increasing togetherness rather than time alone, irrespective of gender, and especially among those living with children. Looking at total time with a partner (partner + family time), there

was an increase among those with children in the household, which made them spend similar amounts of time together compared to those without children at the end of the study period, especially on weekends. Moreover, parents also spend time with their children, which is another dimension of togetherness. Statistically significant gender differences relate to child time across waves, irrespective of day of the week, though marked changes took place. Gender convergence in time with children primarily came about by fathers increasing their (weekday) time, but level differences persisted in this respect on weekdays while weekend time with children was more equal. The fact that mothers' family time increased more than fathers' helped preserve a gender gap in total time with children in 2010/11 (though substantially smaller than in 1990/91). It's worth noting that in 2010/11 women spent more total time with their children (302 and 473 minutes on weekdays and weekend days, respectively) than men (235 and 432 minutes) - substantially more than the amount of childcare performed, emphasizing the importance of analyzing both dimensions. A role reversal has taken place for alone time, irrespective of family status. Whereby in 1990/91 women had more time alone than men on weekdays but weekends were equal, in 2010/11 weekdays were equal and women had less weekend alone time.

Table 2.
Weekday Weighted Mean Minutes across Multiple Time Allocations

	1990/91		2000/01		2010/11		M Δ 1990-2010
	M	*SD*	*M*	*SD*	*M*	*SD*	
No children <18 years in home							
Alone time (M)	157*	7.65	164*	10.28	157	13.73	0
Alone time (W)	220*	9.51	194*	9.63	179	12.44	-41†
Partner time (M)	233	9.17	233	12.47	271	20.79	38†
Partner time (W)	237	10.05	258	10.93	247	16.44	11
Paid work (M)	470*	12.02	452*	15.79	427	21.52	-44†
Paid work (W)	361*	12.73	357*	12.54	391	18.05	29
Commute (M)	34*	2.09	36	2.84	40	4.09	5
Commute (W)	27*	1.72	31	1.80	39	3.26	11†
With others (M)	79	6.56	78	8.73	79	13.05	-1
With others (W)	83	6.97	86	7.97	71	9.30	-13
Sleep (M)	463*	5.29	459*	6.57	461*	9.60	-3
Sleep (W)	506*	4.58	499*	4.87	507*	7.47	1
Missing/NA (M)	3	1.16	18	4.06	7	3.23	4
Missing/NA (W)	5	1.58	16	3.21	7	2.04	1
N	682		645		332		
One or more children aged <18 years in home							
Alone time (M)	133*	4.87	135	5.75	142	8.04	9
Alone time (W)	173*	5.65	146	5.35	137	6.94	-35†
Partner time (M)	98	3.53	93	4.79	92	6.59	-6
Partner time (W)	95	4.44	88	4.63	87	4.65	-8
Child time (M)	67*	3.66	105*	6.21	101*	7.39	34†
Child time (W)	170*	7.01	192*	8.34	159*	8.99	-11
Family time (M)	115	4.70	134	6.84	134	7.85	19†
Family time (W)	115	4.55	136	6.39	143	7.81	28†
Paid work (M)	484*	8.39	409*	11.20	423*	13.06	-61†
Paid work (W)	314*	9.37	296*	10.34	355*	12.20	41†
Commute (M)	38*	1.55	32*	1.64	44	3.16	7†
Commute (W)	23*	1.27	23*	1.40	36	2.94	14†
With others (M)	43*	3.62	48	4.25	36	4.71	-6
With others (W)	61*	4.93	48	4.51	42	5.10	-19†
Sleep (M)	460*	3.41	457*	3.97	460*	5.09	0
Sleep (W)	484*	3.40	487*	3.96	475*	4.82	-9
Missing/NA (M)	3*	0.49	27	3.36	7	3.97	4
Missing/NA (W)	5*	0.79	24	2.56	5	1.40	0
N	1,261		1,127		736		

Notes: See Appendix 1 for definition of variables. The sum of time allocations within-wave, gender and family status total 1,440 minutes. * $p < .05$. within-year gender differences. † $p < .10$. within-variable and -gender differences between 1990/91 and 2010/11.
Source: See Table 1.

Table 3.
Weekend Weighted Mean Minutes across Multiple Time Allocations

	1990/91		2000/01		2010/11		$M \Delta$ 1990-2010
	M	SD	M	SD	M	SD	
No children <18 years in home							
Alone time (M)	200	10.05	179	11.12	208	18.15	8
Alone time (W)	210	9.45	179	9.19	189	12.81	-21
Partner time (M)	461	13.74	480	16.51	452	24.54	-8
Partner time (W)	484	14.43	502	15.06	445	22.06	-39
Paid work (M)	78*	9.58	77	12.56	82	16.65	3
Paid work (W)	49*	7.60	51	7.88	83	14.58	33†
Commute (M)	6	1.28	5	0.95	5	1.52	-1
Commute (W)	4	0.90	5	0.88	9	2.29	5†
With others (M)	128	10.32	119	11.66	101	17.99	-27
With others (W)	118	10.72	120	10.54	117	15.03	0
Sleep (M)	564	6.62	554	8.25	584	11.36	20
Sleep (W)	570	5.91	564	5.61	586	8.53	16
Missing/NA (M)	3	1.81	26	4.95	8	3.62	5
Missing/NA (W)	5	1.59	19	3.60	11	4.71	6
N	680		640		332		
One or more children aged <18 years in home							
Alone time (M)	183	5.86	169*	6.69	175*	8.72	-8
Alone time (W)	172	5.70	150*	5.57	142*	7.02	-30†
Partner time (M)	187	7.07	162	8.13	156	9.41	-31†
Partner time (W)	181	7.43	156	7.49	140	7.78	-41†
Child time (M)	122*	5.34	125*	6.86	129	9.04	7
Child time (W)	153*	6.82	153*	7.37	151	9.32	-1
Family time (M)	261	7.07	284	9.98	303	12.78	42†
Family time (W)	260	7.76	280	9.93	322	12.53	62†
Paid work (M)	70	7.04	67	7.91	72	10.54	2
Paid work (W)	67	6.54	64	7.54	74	10.15	8
Commute (M)	5	0.82	6	0.89	6	1.20	1
Commute (W)	4	0.57	5	0.76	6	1.29	2
With others (M)	65*	5.58	62	5.88	54	7.09	-11
With others (W)	45*	4.45	58	5.60	45	5.41	1
Sleep (M)	542	4.34	541	4.79	539	6.03	-4
Sleep (W)	553	4.34	552	4.39	549	5.43	-4
Missing/NA (M)	5	1.15	24	2.84	6	1.66	1
Missing/NA (W)	6	1.33	24	2.73	9	2.90	4
N	1,260		1,108		741		

Notes: See Appendix 1 for definition of variables. The sum of time allocations within-wave, gender, and family status total 1,440 minutes. * $p < .05$. within-year gender differences. † $p < .10$. within-variable and -gender differences between 1990/91 and 2010/11.
Source: See Table 1.

Turning to the multivariate results in Table 4, beginning with alone time, the presence of children generally reduced alone time for men and women on both weekdays and weekends, whereby young children impacted the alone time difference between those with and without children more for

women than men. Net of observables, men's alone time changed little post-1990/91, but for women, time alone was reduced by more than 20 minutes on weekdays and by almost 30 minutes on weekends in the decades following 1990/91. Men with middle and higher education experienced more alone time than their less-educated counterparts; a gradient which was not statistically significant for women.

Regarding partner time, men and women with children under 18 in the household spent considerably less time exclusively together than individuals without children. Differences relating to number of children and age of youngest child were, however, marginal. Unlike Dew (2009), we uncovered no decline in weekday partner time between waves, but on weekends, women in 2010/11 had 46 less minutes of partner time than previously, whereas men's results (not statistically significant) suggested decline. There was no educational gradient regarding weekday partner time, although higher educated women spent more time with their partner on weekends than their less-educated counterparts.

Table 4.
Ordinary Least Squares (OLS) Estimates of Alone, Partner, Child and Family Time among Partnered Men and Women, 1990/91-2010/11

A.

	Alone time				Partner time			
	Weekday		Weekend		Weekday		Weekend	
	Men	Women	Men	Women	Men	Women	Men	Women
Family cycle (ref. = no children)								
1 child, <7 years old	-41.3***	-83.4***	-13.5	-57.5***	-155.8***	-161.9***	-326.5***	-358.4***
	(11.8)	(10.7)	(14.3)	(11.7)	(11.9)	(11.6)	(17.3)	(16.1)
2+ children, youngest <7	-18.5	-72.6***	-22.9*	-46.0***	-166.7***	-175.0***	-336.0***	-349.9***
	(9.6)	(9.3)	(10.8)	(9.3)	(10.0)	(9.7)	(13.5)	(14.3)
1 child, 7+ years old	-11.7	-13.4	-32.8*	-11.4	-123.5***	-124.8***	-198.0***	-240.5***
	(9.5)	(10.3)	(12.7)	(10.3)	(11.1)	(9.9)	(17.3)	(14.9)
2+ children, 7+ years old	-24.6**	-35.1***	-17.1	-24.4*	-151.9***	-165.9***	-293.3***	-321.7***
	(9.0)	(9.3)	(11.8)	(9.6)	(10.8)	(9.1)	(14.1)	(13.3)
Survey year (ref. = 1990/91)								
2000/01	-0.5	-21.6**	-22.1***	-28.0***	-3.7	3.5	-5.0	-12.7
	(6.9)	(7.1)	(7.9)	(7.4)	(7.2)	(7.0)	(10.3)	(10.9)
2010/11	-1.2	-26.8**	-12.8	-28.7**	12.3	-1.8	-20.2	-46.1***
	(8.8)	(8.3)	(10.2)	(8.9)	(10.0)	(8.0)	(12.7)	(12.5)
Education (ref. = primary)								
Secondary	11.1	-4.3	23.0**	-10.9	-4.3	0.2	-21.7	10.5
	(7.6)	(9.8)	(9.4)	(10.6)	(9.0)	(9.1)	(12.0)	(13.7)
Higher	22.6**	-11.3	24.9**	-6.8	-4.6	3.6	14.7	30.9*
	(8.7)	(10.2)	(10.1)	(11.3)	(10.0)	(9.2)	(13.2)	(14.0)
Constant	124.6***	182.1***	163.0***	193.6***	222.5***	236.7***	468.3***	468.3***
	(13.4)	(13.7)	(14.6)	(14.6)	(13.8)	(14.2)	(19.0)	(19.2)
R²	0.031	0.098	0.047	0.061	0.236	0.257	0.352	0.372
N	2,269	2,514	2,263	2,498	2,269	2,514	2,263	2,498

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Table 4 (continued)

B.

| | Child Time | | | | Family Time | | | |
| | Weekday | | Weekend | | Weekday | | Weekend | |
	Men	Women	Men	Women	Men	Women	Men	Women
Family cycle (ref. = no children)								
1 child, <7 years old	89.4***	229.7***	102.7***	154.3***	136.1***	157.0***	335.6***	348.4***
	(9.9)	(16.5)	(12.0)	(13.1)	(11.5)	(11.0)	(18.4)	(19.0)
2+ children, youngest <7	112.6***	243.5***	157.0***	208.1***	121.9***	124.8***	284.9***	294.2***
	(6.7)	(10.1)	(8.6)	(9.8)	(6.9)	(7.7)	(10.5)	(12.1)
1 child, 7+ years old	44.1***	71.9***	62.4***	73.5***	86.5***	92.5***	210.9***	178.4***
	(6.4)	(5.7)	(7.5)	(8.0)	(7.8)	(8.0)	(13.8)	(12.3)
2+ children, 7+ years old	68.7***	138.7***	103.6***	117.6***	118.0***	102.0***	251.0***	245.7***
	(6.1)	(7.6)	(8.1)	(7.7)	(7.9)	(7.2)	(12.0)	(12.2)
Survey year (ref. = 1990/91)								
2000/01	21.3***	17.3**	-1.0	-0.8	12.8*	16.2**	15.0	17.4*
	(4.8)	(6.3)	(6.0)	(6.2)	(5.5)	(5.1)	(8.2)	(8.4)
2010/11	21.1***	-7.2	0.0	-5.9	20.5**	19.9**	28.1**	38.0***
	(5.6)	(7.3)	(7.9)	(7.5)	(6.8)	(6.2)	(10.3)	(10.2)
Education (ref. = primary)								
Secondary	9.8*	13.7*	5.9	5.4	-9.9	0.1	3.1	2.7
	(4.8)	(6.9)	(7.5)	(7.0)	(6.9)	(5.9)	(10.4)	(10.7)
Higher	14.8**	18.4*	16.3	21.4**	-17.6*	-5.8	-7.8	0.1
	(5.4)	(7.8)	(8.4)	(8.0)	(7.6)	(6.4)	(11.5)	(11.4)
Constant	-22.0**	-9.6	-7.3	-5.6	3.5	-17.8*	-11.6	1.8
	(7.6)	(9.9)	(8.0)	(8.7)	(9.5)	(8.2)	(13.5)	(13.1)
R²	0.207	0.391	0.234	0.300	0.229	0.242	0.375	0.371
N	2,269	2,514	2,263	2,498	2,269	2,514	2,263	2,498

Notes: Regressions control for work status, age group, partner's work status, region and day of the week. ref. = reference category. Standard errors in parentheses. *p < .05. **p < .01. ***p < .001.
Source: See Table 1.

Considering time spent exclusively with children, young children were more time-intensive than older children. Time with children on weekdays increased consistently over time for men, but not on weekends, nor for women. There was a positive educational gradient for child time for both men and women, though an earlier Swedish study (ending in 1993) found this only for women (Hallberg & Klevmarken, 2003).

Finally, family time (i.e., time with both partner and children) was associated with young children, rather than the number of children present in the household. Compared to the other dependent variables, there was less variation in family time across the family cycle. There was a linear increase in family togetherness after 1990/91 for all, irrespective of gender and education, throughout the week (with the exception of highly educated men on weekdays), making this the most powerful change across the dimensions studied.

With these results in mind, it should be noted that sample characteristics may vary between waves and observed changes over time, such as increasing togetherness, may be compositional rather than behavioral. To investigate whether this was the case, we pooled the 1990/91 and 2010/11 waves and performed Oaxaca decompositions on differences between the waves for our dependent variables, stratified by gender and weekday/weekend. This method first estimated wave-specific regressions for our dependent variables (using the OLS model from Table 4):

$$T_{t+1} = \alpha_{t+1} + \beta_{t+1}X_{t+1} + \varepsilon$$
$$T_t = \alpha_t + \beta_t X_t + \varepsilon$$

Whereby T represented our dependent variable means, β represented the coefficients, X is a vector of time use determinants, ε the error term, and subscripts t and $t+1$ for waves 1990/91 and 2010/11, respectively. Given the average first-stage values, the between-wave difference was next decomposed into two components via a second-stage estimation equation:

$$T_{t+1} - T_t = \alpha_{t+1} + \beta_{t+1} X_{t+1} - \alpha_t - \beta_t X_t = (\alpha_{t+1} - \alpha_t) + (\beta_{t+1} - \beta_t)$$
$$X_t + \beta_{t+1}(X_{t+1} - X_{t+1})$$

The between-wave difference in mean minutes was decomposed into the amount which we would expect in 2010/11, based on 1990/91 sample characteristics (the explained component), $\beta_{t+1}(X_{t+1} - X_{t+1})$ and the amount that is unexplained or behavioral $(\beta_{t+1} - \beta_t) X_t$.

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Table 5 shows the results from the decomposition analysis across the multiple dimensions of time allocation and paid work. Panel A refers to the full sample, whereas panels B and C, focusing on child and family time, refer to parents of children under 18. Columns numbered (1) refer to weekdays and (2) refer to weekends. Row 1 shows the average decrease or increase in minutes between 1990/91 and 2010/11 for the different dimensions of time allocation. The results confirm that between 1990/91 and 2010/11, there was a significant decrease throughout the week in women's, but not men's, alone time. There was a significant decrease in both men's and women's time with their partners on weekends. Over the 20 years of study men scaled back paid work by 55 minutes per day, whereas women as a group increased their labor supply by 35 minutes on weekdays and 17 minutes on weekends. Fathers with a least one child under 18 in the household on average increased their child time by 34 minutes per day. The most striking results relate to family time and the total time parents spend with their children; both men and women increased their family time throughout the week, by 19 and 28 minutes per day during weekdays, and by 20-30 minutes more on weekends, naturally because weekday time is more restricted by school and work schedules. Total child time, which combined time with children only and as a family, also increased in a consistent manner (the insignificant change for women on weekdays being generated through the netting out of a decline in their child time over the decades studied). For parents, total time with partner increased, though not in a statistically significant manner.

Turning to the question as to whether these results may be explained by changes in the composition of the sample (i.e., changing demographics and other individual characteristics) or by behavioral change, we assess rows 2 and 3 indicating the 'explained' and 'unexplained' components of change. There are no significant changes between 1990/91 and 2010/11 concerning alone time for men, although their 35 minute weekend partner time decline was equally explained (though not statistically significant) by changing sample characteristics and behavior. Changes relating to women's time alone and with partner were, however, explained by changes in behavior (the unexplained component being statistically significant and larger than the explained). The change in men's and women's labor supply was also behavioral in nature. For weekdays, changing sample characteristics were only marginally affecting men's and women's paid work, although for women on weekends, changing characteristics modified behavioral change by 16 minutes. Concerning child time, the only

significant change between waves was for men on weekdays and this was also largely behavioral (31.5 minutes of the 34 minutes increase, though changing characteristics contributed some). Of note, the large increases in family time for those with children were nearly entirely behavioral; on weekdays change would even have been larger had sample characteristics not changed across the decades studied and modified the total time in 2010/11. The same goes for the even larger increase in total time with children. In sum, the decomposition analyses support the notion of gender convergence in alone, child and paid work time, less spousal exclusive time on weekends, less time alone for women, and trends toward togetherness with greater time spent as a family and in total with one's partner and children.

Table 5. Oaxaca Decomposition Results comparing 1990/91 and 2010/11

A.

| | Alone time | | | | Partner time | | | | Paid work | | | |
	Men		Women		Men		Women		Men		Women	
	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)
Δ1990/91-2010/11	5.1	-4.1	-38.7***	-27.8**	3.1	-35.0*	-5.4	-47.9**	-55.0***	2.0	35.4***	17.0
Explained	6.2	9.2	-13.4**	-0.4	-7.6	-17.8	-2.3	1.6	-2.6	-2.0	1.9	-15.7***
Unexplained	-1.1	-13.3	-25.3**	-27.4**	10.7	-17.2	-3.1	-49.5***	-52.4**	4.0	33.4**	32.7***
N	1,486	1,481	1,525	1,532	1,486	1,481	1,525	1,532	1,486	1,481	1,525	1,532

B.

| | Child time | | | | Family time | | | | Total partner (partner+family) | | | |
	Men		Women		Men		Women		Men		Women	
	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)
Δ1990/91-2010/11	34.1***	7.2	-10.8	-1.3	19.0*	42.1**	28.0**	62.0***	12.9	11.3	20.1	21.3
Explained	2.6	5.0	-3.7	4.2	-7.7	0.9	-5.0	3.5	-16.9*	-9.0	-3.7	18.2*
Unexplained	31.5***	2.3	-7.1	-5.5	26.7**	41.3**	32.9**	58.5***	29.8*	20.3	23.9*	3.1
N	995	993	1,002	1,008	995	993	1,002	1,008	995	993	1,002	1,008

C.

| | Total child (child + family) time | | | |
	Men		Women	
	(1)	(2)	(1)	(2)
Δ1990/91-2010/11	53.1***	49.4**	17.2	60.7***
Explained	-5.1	5.8	-8.7	7.7
Unexplained	58.2***	43.6*	25.9	53.0**
N	995	993	1,002	1,008

Notes: Decompositions using OLS model from Table 4. Weekday results listed in columns (1) and weekend results in columns (2). *p < .05. **p < .01. ***p < .001.

Source: See Table 1.

Our final analyses assessed how parents' time use changed more qualitatively between 1990/91 and 2010/11. Descriptively, we observe gender convergence in average time spent in routine housework, childcare and leisure (non-TV). The percent of within-activity time shared with one's partner shows an interesting pattern, whereby leisure (non-TV and TV) became less shared, but housework became more shared as did childcare for women (see Appendix 4). We next estimated OLS multivariate regressions for these five primary activity variables for weekdays and weekends separately (Table 6). We included the same controls as previously, but pooled men and women and interacted gender with wave, which produced wave coefficients indicating the post-1990/91 impact for men, and the interaction coefficients provided any additional impacts for women. Results show that for those with children in the household, women performed more housework and childcare, and watched less television, than men. Men with children have increased their routine housework weekdays post-1990/91, but not to the extent of women's decreases. Men performed more childcare in 2010/11 compared with 1990/91, which mirrored a weekday childcare decline for women. On weekends men with children performed more routine housework in 2010/11 than previously, but women have reduced their housework to a greater extent than men's increases. This analysis also revealed that time spent on meals and socializing increased slightly for men and women post-1990/91. The higher educated behaved differently than their lesser educated counterparts by doing more childcare and more housework on weekends, counter to our theoretical expectations, while also watching less television. In sum, our activity variables add to our story of gender convergence over time with increased togetherness via meals and socializing, yet statistically significant gender gaps remained in housework and childcare, and also concerning television leisure for those with children.

Table 6.
OLS Estimates of Total Time Spent in Five Activities among Partnered Men and Women with Children aged <18 in Household, 1990/91-2010/11, by weekdays and weekends

Weekdays	Routine housework	Childcare	Meals/ Socializing	Leisure (non-TV)	Leisure (TV)
Family cycle (ref. = 1 child, <7 years old)					
2+ children, youngest <7	10.3*	7.2	2.0	-1.0	-1.6
	(4.6)	(5.3)	(3.8)	(8.0)	(4.9)
1 child, 7+ years old	-7.7	-65.5***	-1.8	29.1**	2.3
	(5.6)	(5.6)	(4.7)	(10.9)	(6.1)
2+ children, 7+ years old	3.6	-43.0***	-4.2	17.1	-4.2
	(5.1)	(5.6)	(4.2)	(9.4)	(5.6)
2+ children, youngest <7	10.3*	7.2	2.0	-1.0	-1.6
	(4.6)	(5.3)	(3.8)	(8.0)	(4.9)
Gender (ref. = men)					
Women	84.4***	32.0***	6.8*	10.6	-23.3***
	(5.0)	(4.7)	(3.2)	(8.4)	(4.8)
Survey year (ref.=1990/91)					
2000/11	7.6*	8.6*	12.6***	34.3***	8.0
	(3.4)	(3.8)	(3.3)	(8.4)	(4.6)
2010/11	12.0**	15.7**	7.6	3.2	10.8
	(4.2)	(4.6)	(4.0)	(9.4)	(5.8)
Interaction term (wave*gender)					
2000/01*	-32.4***	-1.6	-1.0	-12.6	5.4
women	(6.2)	(6.1)	(4.2)	(11.3)	(5.9)
2010/11*	-55.5***	-16.0*	-3.3	-3.5	12.8
women	(7.1)	(6.7)	(5.6)	(12.2)	(7.2)
Education (ref.=primary)					
Secondary	0.6	4.6	-5.0	6.3	-4.9
	(3.7)	(3.3)	(2.7)	(7.4)	(4.2)
Higher	-1.2	13.5***	4.2	18.8*	-26.9***
	(3.9)	(3.6)	(3.0)	(8.1)	(4.4)
Constant	30.8***	85.3***	64.8***	88.9***	91.1***
F	40.7	46.5	5.3	4.2	8.8
R2	0.253	0.259	0.051	0.032	0.075
N	3,124	3,124	3,124	3,124	3,124

Weekends	Routine housework	Childcare	Meals/ Socializing	Leisure (non-TV)	Leisure (TV)
Family cycle (ref. = 1 child, <7 years old)					
2+ children, youngest <7	20.6***	15.3*	1.8	-3.9	-1.1
	(5.7)	(6.5)	(4.8)	(10.8)	(6.4)
1 child, 7+ years old	-8.1	-62.7***	-7.5	36.0*	5.2
	(7.2)	(7.0)	(6.1)	(14.5)	(8.1)
2+ children, 7+ years old	6.9	-43.5***	-1.3	25.6*	-7.4
	(6.6)	(6.9)	(5.5)	(12.3)	(7.4)
2+ children, youngest <7	20.6***	15.3*	1.8	-3.9	-1.1
	(5.7)	(6.5)	(4.8)	(10.8)	(6.4)
Gender (ref. = men)					
Women	107.2***	16.5**	-6.7	-22.6	-33.3***
	(6.7)	(5.5)	(5.3)	(12.3)	(6.9)
Survey year (ref.=1990/91)					
2000/11	-0.1	-8.8	12.7**	4.5	-5.2

	(4.8)	(4.7)	(4.1)	(11.7)	(6.5)
2010/11	14.7*	12.5	15.3**	-35.7**	-6.5
	(6.0)	(6.5)	(5.8)	(12.9)	(7.4)
Interaction term (wave*gender)					
2000/01*	-33.5***	1.3	3.3	3.4	-1.2
women	(7.8)	(6.4)	(5.2)	(14.8)	(8.0)
2010/11*	-68.2***	-11.0	10.3	14.7	17.9
women	(9.1)	(8.4)	(7.6)	(16.8)	(9.3)
Education (ref.=primary)					
Secondary	7.6	5.8	2.5	18.6	-17.3**
	(4.9)	(4.0	(3.6)	(10.0)	(5.9)
Higher	14.8**	22.2***	13.5**	41.0***	-41.5***
	(5.2)	(4.5)	(4.1)	(10.6)	(6.1)
Constant	68.9***	85.0***	114.1***	197.1***	156.0***
F	37.2	36.8	26.8	5.8	10.5
R2	0.185	0.210	0.131	0.042	0.070
N	3,109	3,109	3,109	3,109	3,109

Notes: Regressions control for work status, age group, partner's work status, region and day of the week. Standard errors in parentheses. $*p < .05$. $**p < .01$. $***p < .001$.
Source: See Table 1

We performed sensitivity tests by re-estimating Tables 4, 5, and 6 using different sample configurations (excluding those aged 25 or less, those with 60+ minutes of missing with whom information, on those with and without children independently) and using a different work status control, yet found nothing significant concerning results or conclusions.

Limitations

We acknowledge that limitations apply to the present study. First, cross-sectional data provide no information on trends in individuals' time use across decades. Second, the sample consists mostly of synthetic couples, thus we cannot confirm whether both partners would have reported identically. This limitation should be of minor importance (Sayer, Gauthier & Furstenberg, 2004), and we do not uncover any statistically significant gender differences in partner or family time for any wave, suggesting minimal reporting differences. Lacking true partner data also means we can only investigate the impact of work schedule synchronization on the time allocation of a limited number of couples, leaving small numbers for investigation. Moreover, our data cannot distinguish between biological or step-children. Another shortcoming is the Swedish data lacks information on whether the individual enjoyed the activity or not. Future SWETUS versions should be complemented with more true couples and well-being

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indicators for international comparisons, given the country's forerunner status and general interest as an example in the field of family research.

Discussion

This paper contributes to the literature on changing time allocations among couples by examining with whom men and women spend their time, assessing partner time as one of multiple dimensions of time allocation. Our case study is Sweden 1990/91-2010/11, an advanced dual-earner society and SDT frontrunner. Motivated by concerns that partnerships have become increasingly individualistic (Cherlin, 2004), with reduced interaction between partners to the detriment of partnership stability (Amato et al. 2007; Dew, 2009), our time use analysis does not uncover widespread declines in spousal interaction nor decreased family orientation but, in fact, finds evidence of increased family orientation. Time together is clearly increasingly favored over time alone in present-day Sweden. Change between 1990/91 and 2010/11 was comprehensive among groups and largely behavioral, i.e., not driven by compositional changes in the population.

Over the decades studied, women became increasingly work-orientated (though female labor force participation in Sweden was already high by international standards), and men less so. Despite more time at work, women protected time with their partners and those with children actually increased the total time with their partners through increasing family togetherness. The pattern for weekday partner time differs from the U.S. between 1975 and 2000, where it declined for couples (Bianchi et al., 2006; Dew, 2009). Our results are, however, in line with U.S. family time trends (Genadek, Flood & García-Román 2015).

Despite working more, women in Sweden did not reduce time with children as found elsewhere (Bianchi et al., 2006; Sayer et al., 2004), but they forfeited time with others and traded off alone time to a larger extent than men. This is counter-intuitive in times of rising individualization and may be of concern because alone time is required for recuperation, and lacking time for oneself is a reported issue of work-family conflict for many parents (Bianchi et al., 2006; Nomaguchi, 2009; Phipps et al., 2001). We do not know from our data whether working women in Sweden feel they lack time for themselves, but evidence indicates alone time has become more scarce, especially among mothers of young children.

Lacking family time is a challenge amongst dual-earner couples (Bianchi et al., 2006; Jacobs & Gerson, 2004), but less so in 2010/11 Sweden than previously. Working men and women increased their total time with children substantially. This together with increases in total partner time on weekdays show that despite an increase in couples' total work hours, workers can protect, and even increase, time with their partner and children by prioritizing family togetherness. Because our data lack any well-being indicators, we do not know whether our couples derive greater happiness or meaning from spousal time (Flood & Genadek, 2015), or time shared with children (Musick, Meier & Flood, 2014). As weekend discretionary time is free of paid work for most, and we uncover no weekend child exclusive time changes for men or women between 1990/91 and 2010/11, it seems that parents in 2010/11 Sweden have a preference for joint time with partner and children. These results are in line with a shift towards increasingly selected partnerships characterized by consumption complementarities (Mansour & McKinnish, 2014; Stevenson & Wolfers, 2007) and the rise of intensive parenting norms (Daly, 2001; Dew, 2009 Hays, 1996). We contribute further to this topic by providing time use evidence of the compositional shift towards family togetherness for Sweden. That those with children increasingly prioritized family time throughout the week, while child time remained constant, indicates a continuation of 1980s trends of a preference for family togetherness over individual specialization with children (Hallberg & Klevmarken, 2003). Children in dual-earner households have gained parental time resources in 2010/11 compared to previously and this pattern holds across the educational distribution.

Education is not a strong determinant of time allocation across multiple dimensions of who time is spent with compared to family cycle. We find considerable variation in partner time dependent on age and number of children in the home, compared with childless adults. In a sense, for those with children, the total time shared together is in equilibrium across the family cycle; those with young children have less partner exclusive time but greater family time than those with older children, who alternatively have greater partner time but lesser family time. Education does, however, impact time allocations with children, where we found a positive educational gradient to both time spent with children and performing childcare for men and women, in line with this period's educational gradient in the sharing of parental leave (Sundström & Duvander, 2002). Education is important for the kind of activities partnered individuals engage in. The highly educated not only spend more time caring for their children, but they spend more time

on qualitatively different leisure activities (including meals and socializing on weekends) than less-educated peers, in line with economic theory predicting that the highly educated engage more in activities with an investment component (cf. Aguiar & Hurst, 2007; Guryan et al., 2008), with implications for child development through an intergenerational transmission of parental resources and social capital.

Despite the initial concerns that an advanced dual-earner society may substitute time alone and paid work for partner interaction, it seems instead that alone time has come under duress, especially among women, as a tradeoff for increased family togetherness. This is one exception from a general tendency towards gender convergence in time use. Overall, this study confirms that family institutions are dynamic and change with economic opportunities. Women's economic emancipation and the establishment of the dual-earner norm were once thought to put pressure on the family. Contrary to expectations this is not the case in Sweden today; higher education does not lead to lower fertility; couples where both partners are highly educated professionals are more likely to continue childbearing and less likely to separate (Dribe & Stanfors 2010) and there is a general trend towards togetherness rather than alone time among individuals in dual-earner couples. Selection into partnerships may have changed, though our aggregate results describe the coupled working population accurately, as others have argued (Amato et al. 2007), but it is clear that those who form partnerships spend more – not less – time together. Taken together with other results respecting family dynamics in Sweden, this study's results indicate that gender equality is conducive to family life once a nation reaches a certain level of gender equality where men's and women's economic roles are comparable. Then an increasing role-sharing implies that more shared time is valued and thus freed up, thereby reducing the scarcity of family time, as others have argued (Fisher et al., 2007). In a comprehensive welfare state like Sweden institutional support through policy and financial subsidies, not least the supply of quality daycare and after-school facilities, cover many hours of the day which otherwise would have been spent on routine activities and supervision, incentivizing people to share time rather than spend it alone.

References

Aguiar, M., & Hurst, E. (2007). Measuring trends in leisure: The allocation of time over five decades. *Quarterly Journal of Economics*, *122*(3), 969-1006.

Amato, P. R., Johnson, D. R., Booth, A., & Rogers, S. J. (2003). Continuity and change in marital quality between 1980 and 2000. *Journal of Marriage and Family*, *65*(1), 1-22.

Amato, P. R., Johnson, D. R., Booth, A., & Rogers, S. J. (2007). *Alone together: How marriage in America is changing*. Cambridge, MA: Harvard University Press.

Becker, G. S. (1965). A theory of the allocation of time. *The Economic Journal*, *75*(299), 493-517.

Becker, G. S. (1973). A theory of marriage: Part I. *Journal of Political Economy, 81*(4), 813-846.

Becker, G. S. (1985). Human capital, effort, and the sexual division of labor. *Journal of Labor Economics, 3*(1), 33-58.

Bianchi, S. M. (2000). Maternal employment and time with children: Dramatic change or surprising continuity? *Demography*, *37*(4), 401-414.

Bianchi, S. M., Robinson, R. P., & Milkie, M. A. (2006). *Changing rhythms of American family life*. New York: Russell Sage Foundation.

Bird, C. E., & Rieker, P. P. (2008). *Gender and health: The effects of constrained choices and social policies*. New York: Cambridge University Press.

Blair-Loy, M. (2003). *Competing devotions: Career and family among women executives*. Cambridge, MA: Harvard University Press.

Cherlin, A. J. (2004). The deinstitutionalization of American marriage. *Journal of Marriage and Family*, *66*(4), 903-919.

Cherlin, A. J. (2014). *Labor's love lost: The rise and fall of the working-class family in America.* New York: Russell Sage Foundation.

Coontz, S. (2005). *Marriage, a history: How love conquered marriage*. New York: Viking Press.

Currie, J. (2001). Early childhood education programs. *Journal of Economic Perspectives*, *15*(2), 213-238.

Curtin, R., Presser, S., & Singer, E. (2005). Changes in telephone survey nonresponse over the past quarter century. *Public Opinion Quarterly*, *69*(1), 87-98.

Daly, K. J. (2001). Deconstructing family time: From ideology to lived experience. *Journal of Marriage and Family*, *63*(2), 283-294.

Dew, J. (2009). Has the marital time cost of parenting changed over time? *Social Forces*, *88*(2), 519-541.

Dribe, M., & Stanfors, M. (2009). Does parenthood strengthen a traditional household division of labor? Evidence from Sweden. *Journal of Marriage and Family*, *71*(1), 33-45.

Dribe, M., & Stanfors, M. (2010). Family life in power couples: Continued childbearing and union stability among the educational elite in Sweden, 1991-2005. *Demographic Research, 23*, 847-878.

Fisher, K., Egerton, M., Gershuny, J. I., & Robinson, J. P. (2007). Gender convergence in the American heritage time use study (AHTUS). *Social Indicators Research*, *82*(1), 1-33.

Flood, S., & Genadek, K. (2015). Time for each other: Work and family constraints among couples. *Journal of Marriage and Family*. DOI: 10.1111/jomf.12255.

Genadek, K., Flood, S., & García-Román, J. (2015). Trends in spouses' shared time in the United States, 1965-2012. *Working Paper No. 2015-1*. Minneapolis, MN: Minnesota Population Center at the University of Minnesota.

Gronau, R. (1977). Leisure, home production, and work – The theory of the allocation of time revisited. *Journal of Political Economy, 85*(6), 1099-1123.

Guryan, J., Hurst, E., & Kearney, M. S. (2008). Parental education and parental time with children. *Journal of Economic Perspectives*, *22*(3), 23-46.

Hallberg, D. (2003). Synchronous leisure, jointness and household labor supply. *Labour Economics*, *10*(2), 185-203.

Hallberg, D., & Klevmarken, A. (2003). Time for children: A study of parent's time allocation. *Journal of Population Economics*, *16*(2), 205-226.

Hamermesh, D. S. (2002). Timing, togetherness, and time windfalls. *Journal of Population Economics, 15*(4), 601-623.

Harvey, E. (1999). Short-term and long-term effects of early parental employment on children of the national longitudinal survey of youth. *Developmental Psychology*, *35*(2), 445-459.

Hays, S. (1996). *The cultural contradictions of motherhood*. New Haven, CT: Yale University Press.

Jacobs, J. A., & Gerson, K. (2004). *The time divide: work, family, and gender inequality*. Cambridge, MA: Harvard University Press.

Kalmijn, M., & Bernasco, W. (2001). Joint and separated lifestyles in couple relationships. *Journal of Marriage and Family*, *63*(3), 639-654.

Kingston, P. W., & Nock, S. L. (1987). Time together among dual-earner couples. *American Sociological Review, 52*(3), 391-400.

Lam, D. (1988). Marriage markets and assortative mating with household public goods: Theoretical results and empirical implications. *Journal of Human Resources, 23*(4), 462-487.

Lesthaeghe, R. (1991). The second demographic transition in Western countries: An interpretation. *IPD Working Paper 1991-2*. Brussels, Belgium: Interuniversity Programme in Demography, Vrije Universiteit Brussel.

Lesthaeghe, R. (2014). The second demographic transition: A concise overview of its development. *Proceedings of the National Academy of Sciences*, *111*(51), 18112-18115.

Lesthaeghe, R., & Meekers, D. (1986). Value changes and the dimensions of familism in the European community. *European Journal of Population*, *2*(3/4), 225-268.

Mansour, H., & McKinnish, T. (2014). Couples' time together: Complementarities in production versus complementarities in consumption. *Journal of Population Economics*, *27*(4), 1127-1144.

Mattingly, M. J., & Sayer, L. C. (2006). Under pressure: Gender differences in the relationship between free time and feeling rushed. *Journal of Marriage and Family*, *68*(1), 205-221.

McLanahan, S. (2004). Diverging destinies: How children are faring under the second demographic transition. *Demography*, *41*(4), 607-627.

Mohlén, M. (2012). *Nu för tiden. En undersökning om svenska folkets tidsanvändning år 2010/11*. Stockholm: Statistics Sweden.

Musick, K., Meier, A., & Flood, S. (2014). How parents fare: Mothers' and fathers' subjective well-being in time with children. *Working Paper No. PWP-CCPR-2014-010*. Los Angeles, CA: California Center for Population Research.

Nomaguchi, K. M. (2009). Change in work-family conflict among employed parents between 1977 and 1997. *Journal of Marriage and Family, 71*(1), 15-32.

Oaxaca, R. (1973). Male-female wage differentials in urban labor markets. *International Economic Review*, *14*(3), 693-709.

Offer, S. (2014). Time with children and employed parents' emotional well-being. *Social Science Research*, *47*, 192-203.

Phipps, S., & Burton, P., & Osberg, L. (2001). Time as a source of inequality within marriage: Are husbands more satisfied with time for themselves than wives? *Feminist Economics*, *7*(2), 1-21.

Roxburgh, S. (2006). "I wish we had more time to spend together...": The distribution and predictors of perceived family time pressures among married men and women in the paid labor force. *Journal of Family Issues*, *27*(4), 529-553.

Rydenstam, K. (2003). *Tid för vardagsliv. Kvinnors och mäns tidsanvändning 1990/91 och 2000/01*. Stockholm: Statistics Sweden.

Sayer, L. C. (2005). Gender, time and inequality: Trends in women's and men's paid work, unpaid work and free time. *Social Forces*, *84*(1), 285-303.

Sayer, L. C., Gauthier, A. H., & Furstenberg, F. F. (2004). Educational differences in parents' time with children: Cross-national variations. *Journal of Marriage and Family, 66*(5), 1152-1169.

Sayer, L. C., Bianchi, S. M., & Robinson, J. P. (2004). Are parents investing less in children? Trends in mothers' and fathers' time with children. *American Journal of Sociology*, *110*(1), 1-43.

Schwartz, C. R., & Mare, R. D. (2005). Trends in educational assortative marriage from 1940 to 2003. *Demography, 42*(4), 621-646.

Stevenson, B., & Wolfers, J. (2007). Marriage and divorce: Changes and their driving forces. *The Journal of Economic Perspectives, 21*(2), 27-52.

Sundström, M., & Duvander, A-Z. (2002). Gender division of child care and the sharing of parental leave among new parents in Sweden. *European Sociological Review, 18*(4), 433-447.

Voorpostel, M., van der Lippe, T., & Gershuny, J. (2009). Trends in free time with a partner: A transformation of intimacy? *Social Indicators Research, 93*(1), *Sociological Review, 18*(4), 165-169.

Appendix 1

Coding of dependent variables (minutes per day)

With whom variables

Alone time: Time coded as the respondent being alone or likely alone. A small proportion of alone time episodes are phone calls, thus the respondent is alone in the physical sense.

Partner time: Time coded as activity in the presence of respondent's spouse or partner exclusive of children living in the household. Persons from outside the household may be present. Primary activities most often performed with one's partner include eating, watching TV, having coffee breaks and conversing. Night sleep is categorized separately as sleep time.

Family time: Time coded as activity in the presence of one's partner plus any child (or children) from the household. Others from outside the household may also be present. Primary activities most often performed as a family include eating, watching TV, conversing, travel, and weekend trips.

Child time: Time coded as activity in the presence of one or more children from the household with the respondent's partner not present. Others from outside the home may be present. Activities most often performed with children include routine as well as quality childcare including playing, reading, supervising, homework help, and eating meals.

Residual time use categories

Residual categories capture the remaining time allocations of a 1,440 minute day.

Paid work: Time coded as working in a primary or secondary job and any overtime. Breaks are also coded as paid work time, unless reported with the partner or children present (for example, a very small proportion of meals at work are coded as shared with partner).

Commute: Includes time coded as commuting directly to/from work and tasks carried out on said commute. Cases where individuals commute with a partner, or children, are categorized as partner or child time.

With others: Time coded as activity in the presence of others not living in the household. The data does not always indicate who other persons are, be they a friend, neighbor, acquaintance, co-worker, or extended family member.

Sleep: Coded as minutes per day spent on night sleep, excluding naps, therefore sleep is never categorized as being alone or shared. Personal care and grooming are

also included, unless they explicitly indicated being shared with a partner or children.

Missing/NA: This category includes episodes where the with who information is missing and the activity cannot be allocated to any other residual category. Less than one percent of time allocation falls under this category and there are no gender differences in this regard.

Activity variables

Routine housework: Regularly occurring activities such as cooking, food preparation, washing, dishwashing, cleaning, and clothing repair.

Childcare: Includes both routine childcare (e.g., bathing, changing, clothing, and feeding) and quality childcare (e.g., supervising and assisting children, helping with homework, playing, reading, conversing, attendance at children's leisure activities, other child welfare, and travel related to caring for own children).

Meals/Socializing: Includes having meals, coffee/tea, drinks and conversing.

Leisure (non-TV): Includes activities such as taking walks, hiking, mushroom-/berry-picking, hunting, fishing, sports, swimming, other sports and recreation/hobbies, reading, computer and telephone use, as well as visiting the cinema, theatres, concerts, library, or parties, and civil life activities such as activities with organizations and associations. This category also includes travel to and from leisure activities.

Leisure (TV): Time spent watching television or movies in the home.

Appendix 2

Table 4 (full output). Ordinary Least Squares (OLS) Estimates of Alone, Partner, Child and Family Time among Partnered Men and Women, 1990/91-2010/11.

A.	Alone time				Partner time			
	Weekday		Weekend		Weekday		Weekend	
	Men	Women	Men	Women	Men	Women	Men	Women
Family cycle (ref. = no children)								
1 child, <7 years old	-41.3***	-83.4***	-13.5	-57.5***	-155.8***	-161.9***	-326.5***	-358.4***
	(11.8)	(10.7)	(14.3)	(11.7)	(11.9)	(11.6)	(17.3)	(16.1)
2+ children, youngest <7	-18.5	-72.6***	-22.9*	-46.0***	-166.7***	-175.0***	-336.0***	-349.9***
	(9.6)	(9.3)	(10.8)	(9.3)	(10.0)	(9.7)	(13.5)	(14.3)
1 child, 7+ years old	-11.7	-13.4	-32.8*	-11.4	-123.5***	-124.8***	-198.0***	-240.5***
	(9.5)	(10.3)	(12.7)	(10.3)	(11.1)	(9.9)	(17.3)	(14.9)
2+ children, 7+ years old	-24.6**	-35.1***	-17.1	-24.4*	-151.9***	-165.9***	-293.3***	-321.7***
	(9.0)	(9.3)	(11.8)	(9.6)	(10.8)	(9.1)	(14.1)	(13.3)
Survey year (ref. = 1990/91)								
2000/01	-0.5	-21.6**	-22.1***	-28.0***	-3.7	3.5	-5.0	-12.7
	(6.9)	(7.1)	(7.9)	(7.4)	(7.2)	(7.0)	(10.3)	(10.9)
2010/11	-1.2	-26.8**	-12.8	-28.7**	12.3	-1.8	-20.2	-46.1***
	(8.8)	(8.3)	(10.2)	(8.9)	(10.0)	(8.0)	(12.7)	(12.5)
Education (ref. = primary)								
Secondary	11.1	-4.3	23.0**	-10.9	-4.3	0.2	-21.7	10.5
	(7.6)	(9.8)	(9.4)	(10.6)	(9.0)	(9.1)	(12.0)	(13.7)
Higher	22.6**	-11.3	24.9**	-6.8	-4.6	3.6	14.7	30.9*
	(8.7)	(10.2)	(10.1)	(11.3)	(10.0)	(9.2)	(13.2)	(14.0)
Work Status								
Part-time	47.0***	43.2***	1.6	-13.9*	28.8	14.8*	-34.7	-1.2
	(17.7)	(6.9)	(19.7)	(6.6)	(19.6)	(6.7)	(23.8)	(9.7)
Age group (ref = 20-34)								
35-44	12.0	17.8*	45.4***	31.1***	3.0	-11.1	-23.8	-15.2
	(8.8)	(7.9)	(10.5)	(8.2)	(9.3)	(8.3)	(12.9)	(12.1)
45-55	17.2	36.6***	72.6***	45.9***	3.9	-15.3	-22.9	0.2
	(9.5)	(9.3)	(11.8)	(9.7)	(11.3)	(10.9)	(15.6)	(15.4)
Partner's work status (ref. = full-time work)								
Part-time work	-10.3	-9.7	5.9	28.7	16.9*	37.0*	-3.2	-32.5
	(7.1)	(13.8)	(8.7)	(18.7)	(7.4)	(14.5)	(10.2)	(24.2)
Other	-14.8	-1.4	-20.8*	10.1	25.4*	39.8*	-13.4	-23.7
	(8.9)	(13.8)	(10.1)	(13.5)	(11.6)	(18.3)	(14.5)	(21.8)
Parental leave	-1.1	-43.8	-10.2	6.6	-13.4	55.2	-17.7	-44.3
	(25.2)	(23.2)	(31.9)	(30.6)	(14.6)	(35.5)	(27.5)	(45.1)
Region (ref. = urban centers)								
Large cities	13.0	9.8	-3.2	-5.1	2.8	15.6*	17.3	17.8
	(7.1)	(7.4)	(9.4)	(7.8)	(8.1)	(7.5)	(11.5)	(11.2)
Media cities	24.0*	12.1	-25.0*	6.4	-3.6	5.7	23.2	11.5
	(9.9)	(8.8)	(9.8)	(9.1)	(8.9)	(9.0)	(13.5)	(13.0)
Small town/rural	39.4**	14.8	6.6	2.7	23.3	8.7	0.0	5.2
	(12.5)	(10.3)	(13.1)	(10.3)	(13.3)	(11.0)	(15.8)	(15.4)
Constant	124.6***	182.1***	163.0***	193.6***	222.5***	236.7***	468.3***	468.3***
	(13.4)	(13.7)	(14.6)	(14.6)	(13.8)	(14.2)	(19.0)	(19.2)
F	2.7	13.1	6.1	10.0	22.0	29.0	55.2	66.8
R^2	0.031	0.098	0.047	0.061	0.236	0.257	0.352	0.372
N	2,269	2,514	2,263	2,498	2,269	2,514	2,263	2,498

B.	Child time				Family time			
	Weekday		Weekend		Weekday		Weekend	
	Men	Women	Men	Women	Men	Women	Men	Women
Family cycle (ref. = no children)								
1 child, <7 years	89.4***	229.7***	102.7***	154.3***	136.1***	157.0***	335.6***	348.4***
old	(9.9)	(16.5)	(12.0)	(13.1)	(11.5)	(11.0)	(18.4)	(19.0)
2+ children,	112.6***	243.5***	157.0***	208.1***	121.9***	124.8***	284.9***	294.2***
youngest <7	(6.7)	(10.1)	(8.6)	(9.8)	(6.9)	(7.7)	(10.5)	(12.1)
1 child, 7+ years	44.1***	71.9***	62.4***	73.5***	86.5***	92.5***	210.9***	178.4***
old	(6.4)	(5.7)	(7.5)	(8.0)	(7.8)	(8.0)	(13.8)	(12.3)
2+ children, 7+	68.7***	138.7***	103.6***	117.6***	118.0***	102.0***	251.0***	245.7***
years old	(6.1)	(7.6)	(8.1)	(7.7)	(7.9)	(7.2)	(12.0)	(12.2)
Survey year (ref. = 1990/91)								
2000/01	21.3***	17.3**	-1.0	-0.8	12.8*	16.2**	15.0	17.4*
	(4.8)	(6.3)	(6.0)	(6.2)	(5.5)	(5.1)	(8.2)	(8.4)
2010/11	21.1***	-7.2	0.0	-5.9	20.5**	19.9**	28.1**	38.0***
	(5.6)	(7.3)	(7.9)	(7.5)	(6.8)	(6.2)	(10.3)	(10.2)
Education (ref. = primary)								
Secondary	9.8*	13.7*	5.9	5.4	-9.9	0.1	3.1	2.7
	(4.8)	(6.9)	(7.5)	(7.0)	(6.9)	(5.9)	(10.4)	(10.7)
Higher	14.8**	18.4*	16.3	21.4**	-17.6*	-5.8	-7.8	0.1
	(5.4)	(7.8)	(8.4)	(8.0)	(7.6)	(6.4)	(11.5)	(11.4)
Work Status (ref=full-time)								
Part-time	27.1	26.0***	-3.4	6.1	-20.0	3.5	-13.9	5.1
	(18.2)	(6.3)	(13.8)	(6.4)	(10.4)	(5.2)	(19.9)	(8.8)
Age group (ref = 20-34)								
35-44	12.8*	-24.1**	13.7	11.1	-0.7	17.8**	0.6	20.7
	(6.5)	(8.8)	(8.0)	(8.2)	(7.3)	(6.6)	(11.3)	(11.3)
45-55	3.6	-11.0	1.7	-1.4	6.7	8.3	22.2*	26.7**
	(5.0)	(6.5)	(7.0)	(6.1)	(6.2)	(5.5)	(9.4)	(9.2)
Partner's work status (ref. = full-time work)								
Part-time work	-4.4	2.5	5.5	26.2	0.6	-17.6*	2.3	-51.7***
	(5.2)	(19.8)	(6.5)	(16.4)	(5.7)	(9.0)	(8.9)	(14.8)
Other	-17.1**	-38.7***	-5.0	-2.8	21.8**	14.4	16.0	-24.3*
	(6.1)	(6.7)	(7.9)	(7.7)	(8.1)	(8.8)	(12.1)	(11.0)
Parental leave	-41.1*	27.2	3.8	-4.4	42.4	5.6	2.9	51.2
	(18.3)	(34.2)	(24.9)	(25.9)	(30.4)	(34.6)	(41.4)	(54.6)
Region (ref. = urban centers)								
Large cities	6.5	-6.7	1.4	1.7	0.1	3.2	-14.9	-17.3
	(5.6)	(6.6)	(6.5)	(6.8)	(6.0)	(6.1)	(9.6)	(9.6)
Media cities	10.4	5.6	6.2	2.8	13.5	5.0	-7.9	-18.1
	(5.9)	(7.9)	(8.0)	(8.0)	(8.3)	(6.7)	(11.8)	(11.4)
Small town/rural	5.3	0.5	9.3	0.8	-2.0	3.4	-14.9	-26.6*
	(6.7)	(9.1)	(8.4)	(8.9)	(8.2)	(7.4)	(13.0)	(12.4)
Constant	-22.0**	-9.6	-7.3	-5.6	3.5	-17.8*	-11.6	1.8
	(7.6)	(9.9)	(8.0)	(8.7)	(9.5)	(8.2)	(13.5)	(13.1)
F	2.7	13.1	6.1	10.0	22.0	29.0	55.2	66.8
R^2	0.207	0.391	0.234	0.300	0.229	0.242	0.375	0.371
N	2,269	2,514	2,263	2,498	2,269	2,514	2,263	2,498

Notes: Regressions also control for day of the week. ref. = reference category. Standard errors in parentheses.
*$p < .05$. **$p < .01$. ***$p < .001$.
Source: See Table 1

Appendix 3

Table 6 (full output). OLS Estimates of Total Daily Time Spent in Five Activities among Partnered Men and Women with Children aged <18 in Household, 1990/91-2010/11.

	Weekdays					Weekends				
	Routine housework	Childcare	Meals/ socializing	Leisure (non-TV)	Leisure (TV)	Routine housework	Childcare	Meals/ socializing	Leisure (non-TV)	Leisure (TV)
Family cycle (ref. = 1 child, <7 years old)										
2+ children, youngest <7	10.3*	7.2	2.0	-1.0	-1.6	20.6***	15.3*	1.8	-3.9	-1.1
	(4.6)	(5.3)	(3.8)	(8.0)	(4.9)	(5.7)	(6.5)	(4.8)	(10.8)	(6.4)
1 child, 7+ years old	-7.7	-65.5***	-1.8	29.1**	2.3	-8.1	-62.7***	-7.5	36.0*	5.2
	(5.6)	(5.6)	(4.7)	(10.9)	(6.1)	(7.2)	(7.0)	(6.1)	(14.5)	(8.1)
2+ children, 7+ years old	3.6	-43.0***	-4.2	17.1	-4.2	6.9	-43.5***	-1.3	25.6*	-7.4
	(5.1)	(5.6)	(4.2)	(9.4)	(5.6)	(6.6)	(6.9)	(5.5)	(12.3)	(7.4)
Gender (ref. = men)										
Women	84.4***	32.0***	6.8*	10.6	-23.3***	107.2***	16.5***	-6.7	-22.6	-33.3***
	(5.0)	(4.7)	(3.2)	(8.4)	(4.8)	(6.7)	(5.5)	(5.3)	(12.3)	(6.9)
Survey year (ref. = 1990/91)										
2000/11	7.6*	8.6*	12.6***	34.3***	8.0	-0.1	-8.8	12.7**	4.5	-5.2
	(3.4)	(3.8)	(3.3)	(8.4)	(4.6)	(4.8)	(4.7)	(4.1)	(11.7)	(6.5)
2010/11	12.0**	15.7**	7.6	3.2	10.8	14.7*	12.5	15.3**	-35.7**	-6.5
	(4.2)	(4.6)	(4.0)	(9.4)	(5.8)	(6.0)	(6.5)	(5.8)	(12.9)	(7.4)
Interaction term (survey year*gender)										
2000/01* women	-32.4***	-1.6	-1.0	-12.6	5.4	-33.5***	1.3	3.3	3.4	-1.2
	(6.2)	(6.1)	(4.2)	(11.3)	(5.9)	(7.8)	(6.4)	(5.2)	(14.8)	(8.0)
2010/11* women	-55.5***	-16.0*	-3.3	-3.5	12.8	-68.2***	-11.0	10.3	14.7	17.9
	(7.1)	(6.7)	(5.6)	(12.2)	(7.2)	(9.1)	(8.4)	(7.6)	(16.8)	(9.3)
Education (ref. = primary)										
Secondary	0.6	4.6	-5.0	6.3	-4.9	7.6	5.8	2.5	18.6	-17.3**
	(3.7)	(3.3)	(2.7)	(7.4)	(4.2)	(4.9)	(4.0)	(3.6)	(10.0)	(5.9)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Higher	-1.2 (3.9)	13.5*** (3.6)	4.2 (3.0)	18.8* (8.1)	-26.9*** (4.4)	14.8** (5.2)	22.2*** (4.5)	13.5** (4.1)	41.0*** (10.6)	-41.5*** (6.1)
Work status (ref. = full-time)										
Part-time	30.1*** (4.3)	15.6*** (4.2)	8.1*** (2.8)	12.7* (6.5)	3.3 (3.5)	-4.6 (5.3)	1.5 (4.3)	-3.3 (3.5)	-2.6 (8.8)	-7.0 (4.5)
Age group (ref. = 20-34)										
35-44	-0.8 (4.1)	-12.8*** (4.1)	-0.2 (3.0)	-7.6 (6.9)	-2.0 (4.1)	12.1** (4.8)	-10.5** (5.2)	1.7 (3.9)	5.7 (9.5)	0.7 (5.3)
45-55	2.1 (5.2)	-23.6*** (4.6)	6.0** (4.1)	-9.0 (9.4)	-2.3 (5.3)	19.0*** (6.5)	-19.3*** (5.7)	14.4*** (5.5)	11.4 (12.8)	-2.8 (6.9)
Partner's work status (ref. = full-time work)										
Part-time work	-4.6 (3.4)	-2.2 (3.6)	6.2 (3.1)	-0.2 (7.2)	-3.8 (4.2)	-6.5 (4.6)	5.3 (4.9)	-2.9 (4.0)	15.6 (10.0)	-2.7 (5.8)
Other	-9.8** (4.1)	-8.9* (5.0)	0.6 (3.5)	-7.7 (9.6)	0.9 (5.5)	-10.0 (6.3)	5.2 (5.4)	-8.4 (5.6)	-12.2 (12.2)	6.8 (7.1)
Parental leave	-13.5 (9.4)	-3.5 (14.0)	-5.4 (7.2)	11.8 (20.9)	-10.3 (11.8)	-17.4 (11.8)	31.3 (19.1)	-2.6 (10.6)	1.7 (24.8)	-35.9** (14.1)
Region (ref. = urban centers)										
Large cities	5.2 (3.1)	-2.6 (3.3)	-3.2 (2.6)	-7.9 (6.1)	2.1 (3.4)	1.7 (4.4)	-3.4 (3.9)	-5.0 (3.7)	-3.5 (8.5)	0.4 (4.6)
Medium cities	20.7*** (4.2)	-6.0 (4.1)	2.8 (3.4)	-2.0 (7.5)	4.4 (4.0)	1.6 (5.0)	-2.2 (5.2)	-1.8 (4.5)	-15.5 (9.8)	9.8 (5.4)
Small town/rural	7.3 (4.4)	-6.5 (4.4)	0.4 (3.6)	12.6 (6.5)	1.0 (4.5)	-13.9** (5.3)	-6.6 (4.8)	-14.2*** (4.4)	-4.3 (10.9)	12.9* (6.4)
Constant	30.8*** (4.4)	85.3*** (4.4)	64.8*** (3.6)	88.9*** (6.5)	91.1*** (4.5)	68.9*** (5.3)	85.0*** (4.8)	114.1*** (4.4)	197.1*** (10.9)	156.0*** (6.4)
F	40.7	46.5	5.3	4.2	8.8	37.2	36.8	26.8	5.8	10.5
R^2	0.253	0.259	0.051	0.032	0.075	0.185	0.210	0.131	0.042	0.070
N	3,124	3,124	3,124	3,124	3,124	3,109	3,109	3,109	3,109	3,109

Appendix 4

Weekday and Weekend Weighted Mean Total Daily Time Spent in Five Activities. Partnered Men and Women with Children <18 Living in Household

	1990/91			*2000/01*			*2010/11*			
	M	*% shared*	*SD*	*M*	*% shared*	*SD*	*M*	*% shared*	*SD*	*M Δ 1990-2010*
Weekdays										
Routine Hswk (M)	43*	37.5	1.89	51*	35.2	2.77	54*	43.2	3.41	11†
Routine Hswk (W)	144*	21.7	4.09	115*	25.4	3.59	95*	31.6	4.25	-49†
Childcare (M)	43*	26.6	2.42	54*	26.9	3.16	62*	27.0	4.21	19†
Childcare (W)	84*	19.6	3.73	88*	17.7	4.18	83*	26.1	4.58	-1
Meals/social (M)	73*	73.4	1.76	85	66.1	2.75	80	64.1	3.45	7†
Meals/social (W)	80*	58.9	1.75	90	57.7	2.35	86	57.5	3.53	6
Leisure-non-TV(M)	110*	44.7	4.63	145	36.0	7.02	116	40.0	7.25	6
Leisure-non-TV(W)	130*	33.4	5.17	151	36.7	5.99	132	36.3	6.64	2
Leisure-TV(M)	88*	71.6	2.91	93*	63.0	3.51	90	68.4	4.62	2
Leisure-TV(W)	66*	74.5	2.58	76*	63.5	2.88	81	65.4	3.77	15†
Weekends										
Routine Hswk (M)	83*	44.5	2.92	87*	46.8	3.71	103*	50.6	4.90	20†
Routine Hswk (W)	192*	34.2	4.59	161*	38.0	4.34	144*	47.0	5.15	-48†
Childcare (M)	61*	35.9	3.47	55*	34.6	3.49	81	37.9	5.97	19†
Childcare (W)	75*	33.1	3.67	68*	32.1	3.63	81	44.6	5.05	6
Meals/social (M)	118	84.3	2.51	132	82.5	3.24	139	81.1	5.15	21†
Meals/social (W)	112	80.6	2.16	130	76.2	2.94	143	78.3	4.49	31†
Leisure-non-TV(M)	256*	54.2	7.73	263	49.9	8.63	230	51.8	9.99	-25†
Leisure-non-TV(W)	231*	58.1	7.13	244	54.2	7.44	223	52.9	8.45	-8
Leisure-TV(M)	145*	71.9	4.31	135*	66.0	4.83	124*	68.6	5.68	-21
Leisure-TV(W)	106*	80.8	3.55	95*	73.4	3.48	107*	74.4	4.71	1

Notes: See Appendix 1 for definition of variables.
* $p < .05$. within-year gender differences.
† $p < .10$. within-variable and -gender differences between 1990/91 and 2010/11.
Source: See Table 1.

Paper 3

Overworked and underslept? The changing sleep patterns of men and women in Sweden 1990-2010[1]

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Abstract

How working men's and women's sleep patterns have changed between 1990 and 2010 is currently debated and requires empirical inputs. Sweden serves as an interesting case study given its dual-earner normative with comparably high maternal employment. Using nationally-representative time use surveys from 1990/91, 2000/01, and 2010/11 (n=13,895), this paper investigates sleep quality and quantity from a gender perspective, asking whether sleep duration has declined, and whether the prevalence of night disruptions has increased, between 1990 and 2010 for working men and women with and without children? Multivariate results find no evidence of sleep decline over the period on weekdays or weekends. However, the odds of reporting night disruptions are higher for women, and have increased post-1990 for men and women with and without children due to childcare and non-childcare related factors. In general workers in Sweden are sleeping more, not less post-1990, but the increase in night disruptions indicates sleep quality and efficiency has deteriorated.

Key words: gender, parenthood, sleep, Sweden, time use

Introduction

Overworked and underslept is a popular modern depiction of working life at the turn of the 21st century, a portrayal which most commonly applies to working women[2]. However, whether working men's and women's sleep patterns have changed in Sweden between 1990 and 2010 is an open question. Many have argued that the prevalence of sleep deprivation has increased in recent decades, due to the 24-hour demands and productivity needs of the globalized economy, with increasingly long working and commuting hours, and non-standard work schedules as primary culprits (Basner et al. 2007; Chatzitheochari and Arber 2009; Derickson 2014; Presser 2003). Despite these claims, time use researchers have not uncovered empirical evidence of any secular decline in adult sleep duration in the U.S. (Hale 2005; Robinson and Godbey 1997), in Denmark (Bonke 2015), or in Western Europe in the late 20th century (Gershuny 2000; Robinson and Michelson 2010). Epidemiologists have not uncovered any evidence of secular sleep declines in recent decades either, but have instead found inconsistent results on average sleep duration trends within countries from the 1960s to 2000s (Bin, Marshall and Glozier 2012; Bin, Marshall and Glozier 2013). A more common finding from sleep studies is a persistent gender gap in daily sleep minutes favoring women over men across most national contexts (Basner et al. 2007; Krueger and Friedman 2009; Robinson and Godbey 1997; Robinson and Michelson 2010) and over life-cycle stages (Burgard and Ailshire 2013).

Both the gender sleep gap and lack of any sleep declines are somewhat puzzling, since women and especially working mothers have increased work hours while continuing to devote as much or even more time to their children in recent decades (Bianchi, Robinson and Milkie 2006; Neilson and Stanfors on Sweden, forthcoming). Since sleep duration and hours of paid work tend to be highly and inversely correlated (Basner et al. 2007; Biddle & Hamermesh 1990; Hale 2005, Kalil, Dunifon, Crosby and Su 2014), one might expect the trend of women's increased work orientation to have led to sleep declines. Most sleep literature however comes from national contexts where maternal employment rates are lower than in Sweden, which may have different gendered sleep patterns in the

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[2] Such depictions of the challenges with modern motherhood in the media and popular literature are frequent. For just one example, see Allison Pearson's 2002 best-selling book *I Don't Know How She Does It*.

aggregate, since working mothers have been found to tradeoff leisure and sleep to enable more time with their children (Bianchi 2000; Sayer 2005; Stewart 2010). Working longer and irregular hours has been associated with mothers' own reduced sleep as well as their children's (Hofferth and Sandberg 2001; Kalil, Dunifon, Crosby and Su 2014; Stewart 2010). There is also evidence from the U.S. and UK which has shown women's night sleep is more disrupted than men's due to child caregiving needs that extend into the night (Burgard 2011; Maume et al. 2009; Venn, Arber, Meadows and Hislop 2008). Taken together, this evidence implies that both sleep quantity and quality are sociodemograpically influenced and responsive to economic incentives, which should be considered in tandem when assessing sleep pattern changes at the societal level. The majority of sleep research neglects to consider family responsibilities and how they may impact the sleep of men and women differently, despite growing evidence to support this is the case, a shortcoming this paper aims to address.

This paper is the first to study gendered sleep pattern changes from both a quantitative and qualitative perspective for a nationally-representative sample of workers in Sweden, using data from the Swedish Time Use Surveys (SWETUS) from 1990/91, 2000/01 and 2010/11. Time use surveys remain a relatively unexplored source of sleep data (Bin, Marshall and Glozier 2012), and their episodic nature offer the unique opportunity to investigate sleep durations and night disruptions in tandem. Multivariate analytical methods are applied to answer the following three questions: (1) Has sleep duration declined between 1990 and 2010 for working men and women in Sweden?; (2) Are those with children at greater risk of short sleep (<6.5 hours/day) than those without children?; (3) Have the prevalence of night disruptions increased between 1990 and 2010 for working men and women with and without children?

This paper contributes to the literature by analyzing quantitative and qualitative aspects of sleep simultaneously from a gender perspective, arguing that the multifaceted approach better captures the true nature of sleep compared with focusing on one aspect in isolation. It extends previous research on gender differentiation in night sleep disruptions by isolating those for childcare and non-childcare related factors, while examining change across three waves of time use data spanning 1990 to 2010. The paper aims to offer some possible explanations for the puzzling gender gap in sleep minutes found in most empirical studies. Sweden serves as an interesting case study since dual-earner couples are the norm, mothers work

similar hours than non-mothers, and the gender gap in paid work hours was converging over this period.

Background

Between 1990 and 2010 in Sweden, annual hours worked per worker has risen by roughly 60 hours[3]. This increase has been driven compositionally by women, part of a continued gender convergence in work hours, as evidence has shown the hours spent in market work increased for women but decreased for men over this period (Stanfors 2014). This has coincided with a period whereby men and women have become increasingly higher educated, an international development (Schofer & Meyer, 2005), with Sweden ranking amongst the highest OECD countries concerning the proportions with tertiary education, and where the traditional gender gap in higher education favoring men has reversed to the greatest extent (OECD, 2013; Schwartz & Han, 2014). By proxy higher educational attainment reflects the more complex skill set required in the labor market, implying that occupations have become more cognitively demanding. Taken together, it can be assumed that an increased work orientation or intensification of work has changed in this study period, each of which can influence sleep in myriad ways. For example, increased work hours can limit discretionary time, which could reduce sleep quantity, but they can also increase work-family tensions and stresses which arise out of less time available to accomplish the days' tasks, which may impact sleep quality independently.

There is considerable evidence to support the notion that sleep is sociodemographically determined (Hale 2005), that it responds to economic incentives (Biddle and Hammermesh 1990), and that it is gendered (Burgard 2011; Burgard and Ailshire 2013). Individuals' sleep durations, unless purely biologically determined, should be considered within an economic model of time allocation; otherwise, a population's aggregated waking time would be independent of economic shocks (Biddle and Hamermesh 1990). Thought of in economic incentives, the growing portion of tertiary-educated citizenry increase the opportunity cost of discretionary time today compared with previously. This suggests sleep duration may have declined if treated as an increasingly flexible commodity which in a 24-hour, zero-sum day can be traded for activities of perceived greater utility, such as work, leisure, or

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[3] OECD statistical database. http://stats.oecd.org . Accessed December 2, 2014.

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spending time with one's children (Basner et al. 2007). Which activities individuals trade-off matter in relation to sleep, because activities such as childcare are more emotionally intensive than leisure (Becker 1985). Caring for children could thus have an exhaustive effect, and in Sweden mothers continue to perform more childcare and spend more time with children than fathers (Neilson & Stanfors, forthcoming). Women are also far more likely than men to work in care-related occupations such as daycare and school teachers, thus any exhaustive effect of providing care may not apply exclusively to women with children of their own. Parents, especially those with young children, have less autonomy over their sleep because their children may awaken them, a lack of autonomy that exists regardless of whether it is a working day or not. Young children who wake during the night and require parental assistance may also prefer one parent over the other, which has been found to more likely be the mother, illustrating a gender division of labor and women's primary caregiver role carries over into the night (Burgard 2011; Venn et al. 2008). Sleep differs from other non-market activities since it produces energy, as opposed to caring for children or performing your job which consume it (cf. Becker 1993, 64-73). The relationship between work intensity, sleep and opportunity costs is however not straightforward considering effort, because higher earners may forfeit sleep to work more hours, or alternatively, may engage in sleep to energize themselves, enabling them to work more efficiently or productively. Sleep is a somewhat unique form of time use because it cannot be outsourced, although to some degree it can be transferred between partners (Kalil et al. 2014). Such transfers may depend on the gendered division of household labor, whereby specialization within households may be comparatively low in Sweden, a forerunner concerning gender convergence in time use across life cycle stages (Anxo et al. 2011; Dribe and Stanfors 2009; Kan, Sullivan and Gersuny 2011). Sleep can also be postponed by forfeiting sleep today in the hope of regaining it tomorrow, a tradeoff easily enacted since there is a lag in consequences (i.e. the fatigue is felt tomorrow, not immediately). Investigations into workers' sleep in Sweden need to consider the impacts of parenthood on women and men independently, since maternal employment levels are comparably high, men take active roles as parents (Dribe and Stanfors 2009), and fertility levels in this period are high by European comparison. Some researchers have found women's sleep was affected by both work and family roles, whereas men's sleep was affected solely by their work role (Cha & Eun 2013), while others find men have shorter sleep and longer leisure, while women have the

opposite (Burgard & Ailshire 2013; see also Sayer 2005). Men's longer leisure could in itself be a contributing factor to gender sleep differences, as cross-sectional evidence suggests positive associations between self-reported exercise levels and self-reported sleep (cf. Youngstedt & Kline 2006).

However, Sweden possesses certain institutional and labor market characteristics that may protect workers' sleep while reconciling work and family obligations. In a European perspective, the prevalence of shift-work and holding multiple jobs is uncommon, while individuals have greater autonomy over their working time than in most other countries (Anxo 2009; Parent-Thirion et al. 2007). A normative Swedish workweek is 35-40 hours, Monday to Friday, yet in reality a multitude of work-time arrangements exist, including shift work, flexible hours, evening or night work, or taking a day off work to care for a sick child. Although multi-country studies from this period show weekend work to be less common in Sweden than in most European countries (Presser, Gornick and Parashar 2008), there is nevertheless a trend of increasing female share of weekend employment evident in Sweden, at least from 1992 to 2001 (Presser and Gornick 2005). Working time policy in Sweden enables individuals to manage paid work hours over the life cycle with great flexibility, and has shifted towards decentralized decision-making, suggesting that hours worked by individuals are on a case by case basis (Anxo 2009). 55 percent of SWETUS respondents from 2000/01 and 2010/11 report they can be flexible with working time, 59 percent of men and 52 percent of women (respondents were not asked this question in 1990/91). This influence over work hours can benefit parents especially, who have the statutory right to work reduced hours until their children become 12 years old, thus many part-time workers in Sweden actually hold full-time positions, but are exercising their right to work reduced hours. The parental leave system is job-protected and has included men since 1974, whose uptake share has gradually increased to 24.8 percent in 2013 (Swedish Social Insurance Agency, 2014). Between 1990 and 2010, the system has targeted men's behavior via economic incentives, while becoming increasingly flexible and culturally-embedded, which may reconcile work-family tensions and in turn protect time for sleep.

One might naturally expect that having young children is negatively correlated with sleep duration, and since a high proportion of workers in Sweden combine paid employment with active parenting, sleep may come under duress, especially for working mothers who remain the primary

caregivers. However, whether working mothers sleep less than working fathers in any context is currently debated, with some arguing that working mothers of pre-schoolers are more sleep deprived than their partners and "talked about sleep the way a hungry person talks about food (Hochschild 1989, 10)", a claim which some time use researchers suggest the data doesn't support (Milkie, Raley, and Bianchi 2009). In some cases, mothers of young children have been found to sleep more than non-mothers, "perhaps due to fatigue or time management" (Robinson and Godbey 1997, 113). Rare longitudinal sleep research has found that working parents of very young children sleep less minutes than those without children, but as their children age, these parents sleep more (Hagen, Mirer, Palta and Peppard 2013). Parenting norms, which change over time, may also influence parents' sleep via their children's sleep (Mindell et al. 2006), as there are bidirectional links between parental nocturnal involvement and infant sleep problems, whereby infants who fall asleep with significant parental involvement are more likely to have increased number and duration of night wakings (Sadeh, Tikotzky and Scher 2010).

Previous research into quantitative aspects of sleep are often concerned with the proportions not meeting daily recommended sleep durations, which range between 7 to 9 hours for adults aged 18-64, with less than 6 hours not recommended (Hirshkowitz et al. 2015)[4]. There is no consensus on what sleep duration is optimal within the 7 to 9 hour range, largely due to individual variation, but research using the Finnish social insurance cohort found the optimal amount of sleep associated with the least duration of sickness absence to be 7.76h for males and 7.63h for females (Lallukka et al. 2014). Epidemiological and medical studies usually define unhealthy short sleep durations as 6 hours or less daily, but 6.5 hours has also been used (Basner et al. 2007; Chatzitheochari and Arber 2009). Examining both average sleep duration and proportions of short sleepers has been used in related research (Bonke 2015; Hagen et al. 2013), which overcomes the shortcoming that mean levels remain similar while the proportions of short sleepers change. Short sleep durations may also be of greater concern for public health (Bin, Marshall and Glozier 2012). Time use studies find that for the general population, from 1960 to 2001 a strong

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[4] The National Sleep Foundation (U.S.) recommendations daily sleep durations at various ages, including: 5-9 hours for ≥65 years, 8-10 hours for children aged 14-17, 9-11 hours for children aged 6-13, 10-13 hours for children aged 3-5, and 11-14 hours for children aged 1-2.

8-hour sleep average normative exists over time and across countries, with women consistently sleeping more than men, at least on weekdays (Robinson and Michelson 2010; Gershuny 2000). Total time spent in paid work has a stronger negative association with sleep duration that any other activity (Basner et al., 2007; Biddle and Hamermesh 1990). Since long paid work hours have traditionally been seen as the primary culprit of sleep deprivation and men input more time in the labor market than women, gender has often been overlooked in the sleep literature. In addition to long work hours, irregular work schedules have also been associated with worsened health outcomes, including sleep (cf. Presser 2003; Spurgeon, Harrington and Cooper 1997; Wight, Raley and Bianchi 2008). In particular, shift work and very long hours have higher probability of linkages with fatigue and sleep and are looked at speculatively (Bellavia and Frone 2005; Luckhaupt, Tak and Calvert 2010; Presser 2003; Wight, Raley and Bianchi, 2008), and have been linked to harsher parenting and negative psychosocial outcomes in children (Dunifon et al. 2013; Musick, Meier and Flood, forthcoming). Because men and women work different hours and schedules, sleep research generally controls for work hour differences to some degree, but the timing of work-shifts are usually overlooked empirically (see as exceptions Presser 2003; Wight, Raley and Bianchi 2008), a shortcoming this paper addresses.

Qualitative sleep research often investigates disruptive night sleep, which can increase fatigue, depression, confusion and reduced vigor not unlike the effects of sleeping 4 hours a night (Kahn et al. 2014). One biological mechanism for these suboptimal outcomes is due to night disruptions upsetting individuals' endogenous circadian rhythms, which optimize physiological functions to match daily behavioral patterns such as eating and sleeping. Rhythms become sub-optimally aligned for those who perform shift work and may contribute to numerous adverse health effects such as fatigue, poor sleep, detrimental metabolic changes and increased risk of developing obesity and diabetes (Buxton et al. 2012), as well as reduced cognitive functioning (Kronholm et al. 2009). Self-reported fatigue is more common in women than men in Sweden and some evidence suggests its prevalence has increased over this study period (Stenbeck & Persson, 2006). Mothers experience more fatigue than women without children, but are less burdened by long-standing illness, suggestive of a "healthy mother effect" (Floderus, 2008). Poor sleep is economically and socially costly, the estimates of which are often staggeringly high (see for example Ricci et al. 2007 on U.S. estimates), and has been associated with

all-cause mortality and morbidity (Bin, Marshall and Glozier 2013), sickness absence from work (Lallukka et al. 2014; Westerlund et al. 2008), and fatal occupational accidents using register data for Sweden (Åkerstedt et al. 2002a). Women report higher levels of sleep problems than men in many contexts, and biological and physiological sex differences don't fully explain these differences, implying that sleep is embedded in social roles (Arber, Hislop, Bote and Meadows 2007; Burgard and Ailshire 2013). Social roles can include caregiving for children, where women, regardless of their employment status, have been found to experience greater night disruptions for caregiving than men, in research using U.S. time use data (Burgard 2011), one week audio-diaries for retail food workers in the U.S. (Maume et al. 2009) and retrospective surveys in the UK (Venn, Arber, Meadows and Hislop 2008). In addition to caregiving, work-related concerns can also spillover into the night and cause disruptive night sleep. There is evidence that high work demands and being female are risk indicators for disturbed sleep in Sweden (Åkerstedt et al. 2002b), and that the age-adjusted prevalence of self-reported work-related sleep disturbances have increased between 1993 and 1999 in Sweden, from 12 to 22 percent for women and 12 to 19 percent for men (Westerlund et al 2008). Insomnia-related symptoms in the working population have also reportedly increased over the same period in neighboring Finland (Kronholm et al. 2008). Night awakenings are one aspect of sleep quality which can be measured using time use surveys, made possible by the unique sequential nature of the time diaries' episode structure. Differentiating sleep disruptions due to caregiving, or other factors, are extremely difficult to disentangle, but time diaries can shed some light on this topic by examining night disruptions in connection with the immediate activity performed post-disruption.

Based on theoretical reasoning and previous research, this paper will test several hypotheses as they relate to sleep duration and gender. The first hypothesis is that women's sleep duration has declined post 1990/91, due to the strong negative correlation between paid work and sleep duration, and since working women are spending more hours in the labor market. I do not expect this to be the case for men, who have reduced work hours in recent decades, so they may in fact be sleeping more than previously, if the negative relationship with work and sleep holds. The second hypothesis relates to the impact of parenthood on short sleep duration, asking whether working mothers are more likely to be short-sleepers than non-mothers, and similarly whether working fathers are more likely to be short-sleepers than non-fathers. Due to competing demands from parents, we should expect

they sleep less than non-parents, even for men since they take active parenting roles in Sweden. But because women remain the primary caregiver to children, there may be greater sleep variation over the family cycle for women than for men. The third hypothesis tests whether night sleep disruptions have increased post-1990 for men and women. I anticipate this to be the case, as related research in Sweden and elsewhere supports this development. Finally, its anticipated night disruptions due to child caregiving and other factors will both be gendered, as women remain the primary caregivers for children, they report greater sleep problems than men, and international evidence supports women's sleep is more disrupted than men's.

Data

This paper analyzes three cross-sections of the Swedish Time Use Surveys (1990/91, 2000/01 and 2010/11), conducted by Statistics Sweden, focusing on a sub-sample of employed individuals aged 20-64. Since poor health is associated with worse sleep performance, this worker sub-sample is likely healthier (and thus not representative) of the general population, as those on a sick or disability leave have been excluded from the analysis. To reduce sample heterogeneity, students, retirees, those with a disability, and those on sick or 100 percent parental leave have been excluded. 87 observations are dropped due to missing education information, 24 because their partner status is unclear, and 7 were excluded because they reported zero sleep minutes on the diary day. Response rates were 75 percent in 1990/91, 59 percent in 2000/01, and 41 percent in 2010/11, which are corrected for using survey weights provided by Statistics Sweden. Survey dates were randomly assigned throughout the year and balanced per day of the week, however, the 1990/91 wave did not survey individuals in June through August. This presents a problem for the trend analysis if working persons in Sweden have different summer sleep patterns than they do throughout the rest of the year. Evidence from neighboring countries suggests this may be the case; in Denmark longer sleep duration has been found in winter compared to summer (Bonke, 2015), although in Norway, some evidence suggests bed and wake times do adjust seasonally while sleep duration and night disruptions do not (Friborg, Bjorvatn, Amponsah and Pallesen 2012). Tests reveal that in 2010/11, mean sleep minute differences between certain quarters were statistically significant for both men and women (see Table 1), so June, July and August observations were excluded from the 2000/01

and 2010/11 samples to correct for any potential seasonality bias, resulting in a final sample of 6,949 individuals. Time diaries are recorded from 04:00hrs to 04:00hrs, meaning respondents' total sleep minutes are a synthetic of two separate days. This construct, in a society where the Monday to Friday workweek is highly normative, means Friday sleep data are atypical if individuals wake as usual Friday morning but go to bed later because they do not work Saturday. For this reason, the primary weekday analyses use Monday to Thursday time diaries exclusively (5,575 observations), the weekend analysis uses Saturdays and Sundays (6,933 observations), and the night disruption analyses use the full range of diaries from every day of the week (13,895 observations). Each survey is nationally-representative and sampling weights are applied to correct for survey design (stratified random sample) and for over- and under-sampling of individuals by age, sex and employment status. Nearly all sampled individuals completed one weekday and one weekend day diary[5], reported in 10-minute episodes and including information on how, where and with whom respondents allocated their time across more than 100 possible activities. The surveys were undertaken on an individual basis but include a small sample of true couples in 2000/01 and 2010/11, thus standard errors are clustered at the household level.

Table 1.
Mean daily sleep minutes by quarter, 2000/01 and 2010/11

| | 2000/01 | | 2010/11 | |
	Men	Women	Men	Women
Weekdays[a]				
Quarter 1	453 (443-463)	466 (454-479)	441* (429-454)	464 (452-476)
Quarter 2	444 (431-457)	464 (454-475)	433* (420-446)	445* (433-457)
Quarter 3	456 (446-467)	474 (463-485)	463 (449-478)	471 (459-484)
Quarter 4	456 (446-467)	466 (456-477)	447 (432-461)	459 (445-473)
N	1,029	1,247	712	855
Weekends				
Quarter 1	537 (523-552)	536 (524-547)	527 (513-541)	539* (526-552)
Quarter 2	529 (515-543)	522 (511-533)	523 (505-541)	517 (502-531)
Quarter 3	526 (513-540)	534 (523-546)	539 (522-556)	517 (504-531)
Quarter 4	522 (508-535)	531 (520-543)	522 (507-538)	527 (513-542)
N	1,287	1,515	881	1,071

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[5] 220 individuals completed only one survey day (99 in 1990/91, 35 in 2000/01 and 86 in 2010/11).

SWETUS possess several advantages for studying sleep at the societal level. First, the measure of sleep duration, including night sleep and any naps, is embedded within the 24-hour time dairy and is not the surveys' primary focus, which should reduce socially-desirable response bias problematic in topic-specific studies. This embeddedness improves precision by reducing heaping on commonly-cited daily sleep intervals of 7 or 8 hours, as common responses of 7, 7.5 and 8 hours were reported by only 6.3, 6.0 and 5.9 percent of the weekday sample, which differed little from 7 hours 10 minutes (5.8 percent) or 7 hours 20 minutes (5.6 percent) proportions[6]. The time diary also encapsulates the entire day's activities, facilitating some disentangling of the interplay between the timing and scheduling of sleep and work. For example, the identification of work starting times, night disruptions and naps, and their impact on sleep duration can be assessed. Time diaries cannot identify the true cause of night disruptions, but the episodic nature can isolate disruptions and observe whether the disruption is immediately followed by child care, or any other activity for a nationally-representative sample with multiple cross-sections spanning a 20 year period.

Dependent variables

This study uses three dependent variables in its analyses. OLS estimations use total daily sleep minutes, calculated by summing all primary activity episodes of night sleep, including naps. Logistic regressions use a binary variable identifying short sleep duration as <6.5 hours per day, which is tested for robustness at thresholds of ≤6 and <6 hours. Although epidemiological and medical studies usually define unhealthy short sleep durations as 6 hours or less daily, the time diary methodology overstates sleep durations because diarists record the time they went to bed (as opposed to falling asleep), warranting the use of 6.5 hours as others have done (Basner et al. 2007; Chatzitheochari and Arber 2009). Night sleep

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[6] As a comparison, sleep duration was self-reported in hourly increments in Kreuger and Friedman (2009), resulting in 30.8 percent of the sample reporting 7 hours and 32.5 percent reporting 8 hours.

disruption is a binary variable, taking the value of one if the respondent's night sleep was disrupted by one or more 10-minute episodes and they later returned to sleep. This identification strategy under-estimates the true prevalence of night disruptions because night sleep that ended pre-maturely due to an interruption cannot be identified, and disruptive episodes of less than 10 minutes may be unreported. Alternatively identifying night disruptions as anyone with 3 or more night sleep episodes would include false-positives because many 3rd or higher parity sleep episodes record a change in who is present (a partner entering/leaving bed), and it is ambiguous whether this wakened the respondent.

Independent variables

The main variables of interest are a dichotomous variable for gender (male reference category) and a categorical variable for year (1990/91 reference category, 2000/2001, 2010/11). Explanatory covariates are included stepwise, which include family cycle stage, work status, work shift, night disruption, and napped on the diary day. Because both the age and number of children in the home are likely to affect sleep durations (Krueger and Friedman 2009) and disruptions (Burgard 2011), a family cycle categorical variable is created by combining the age of youngest child and number of children in the home, with no children (reference category), 1 child under age 7, 2 children where the youngest is under 7, 3+ children where the youngest is under 7, 1 child aged 7 or older, and 2+ children 7 or older. Since the entire sample is employed at the time of survey and the bulk of parental leave in Sweden occurs during the child's first year, the somewhat broad children under-7 categorization should not be influenced by the effects of having a newborn in the home, and individuals whose partners are on parental leave are controlled for. Work status is categorized as full-time 35+ hours per week (reference category), part-time (1-34 hours per week), and farmers/self-employed, for whom weekly hours are not available. Work shift is a categorical variable to account for work scheduling differences and to control for those who didn't work on the diary day for whatever reason (i.e. day off, sick day or caring for sick child[7]). This variable is calculated based on Presser (2003), by determining what

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[7] This adjustment is necessary because women take roughly 63 percent (and men 37 percent) of all temporary parental benefit days to care for sick children (Swedish Social Insurance Agency, 2014).

period of the day at least half of the diarists' work minutes were performed. The reference category is day work (half the hours fell between 0700-1700hours), day work with pre-7am start, evening work (half the hours fell between 1600-midnight), night work (half the hours between midnight-0800), and did not work on diary day. This variable is extrapolated from the diary episodes because respondents were not asked a consistent work-scheduling question across the waves, and categorizing workers by their shift orientation is challenging because self-reports are not explicitly defined (what one calls an evening shift, another may call a night shift) and people's shifts may vary throughout the week (Presser 2003). Two dummy variables to indicate whether the person experienced a night sleep disruption (as previously described) or if they napped (defined as primary activity code for napping) on the diary day are also included, to assess their influence on sleep duration.

Control variables

Baseline covariates in each model include: age and age squared to capture age-related sleep differences; education (ISCED levels 1-2 reference category, ISCED 3, and ISCED 4-5) which has been shown to affect sleep duration independent of hours worked (Biddle and Hamermesh, 1990; Hale 2005); partner status (no partner reference category, in paid work and other/parental leave) since those with and without working partners may have different constraints on their time; and region (urban centres reference category, large cities, medium cities, rural). SWETUS provide no information on prior health conditions such as BMI, diet, smoking or caffeine consumption, known lifestyle determinants of sleep duration (Hale 2005; Krueger & Friedman 2009). In their absence, I construct a proxy categorical variable physical activity, which measures time spent engaged in light to moderate physical activity on the individual's non-diary day[8] (0 minutes reference category, 10-40 min., 50-80 min., 90+ minutes), a similar variable construct as in Krueger and Friedman (2009).

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[8] Physical activities include walking, hiking, biking, hunting, indoor and outdoor sports, and other sport activities. Non-diary day is used because the diary day is endogenous.

First sleep duration is assessed using ordinary least squares (OLS) regression with total daily sleep minutes as the dependent variable. Regressions are estimated on pooled cross-sections for weekdays (excluding Fridays) and weekends separately, since 83 percent of sample respondents worked on the weekday and only 21 percent worked on the weekend diary day. A gender and survey year interaction term is used to determine whether sleep minutes have declined post-1990 for men and women. Independent variables are introduced stepwise in an attempt to explain the gender gap in sleep minutes and to explore differences over family cycle stages. Logistic regression is then applied to assess whether working men and women with children are at greater odds of short sleep (<6.5 hours) than working men and women without children. Lastly, sleep quality is assessed using logistic regression with a dichotomous variable for those experiencing a night disruptions, which is further dichotomized into disruptions followed by childcare and non-childcare in an attempt to better understand the mechanisms of disruptions. A comprehensive series of robustness checks are tested and their output is provided in the Supplementary Index.

Results

Descriptive statistics are presented in Table 2, with mean sleep minutes and short sleep proportions reported for the weekday (Monday to Thursday) observations. Mean weekday sleep minutes are 443 (7hr. 23min.) for men and 459 (7hr. 39min.) for women, a statistically significant raw gender gap of 16 minutes. Statistically significant within-variable gender differences exist for each survey year and across all age and educational categories. Women also sleep more than men across each family cycle stage, although gender differences are statistically significant only for those with no children, 2 children with the youngest under 7, or one older child. The family cycle variable's confidence intervals indicate greater variation in sleep minutes for men and women with children, compared to those without. The baseline proportion of weekday short sleepers (<6.5 daily hours) are 17.3 percent of the weighted sample; 19.6 percent of men and 15.3 percent of women. Survey year categories indicate little change in mean minutes between waves, while unadjusted short sleep proportions are

highest for men in 1990/91 (20.4 percent), and women in 2010/11 (16.6 percent). Night disruptions are reported by 4.1 percent of men and 8.6 percent of women on weekdays. Of note, for men and women who reported a night disruption, their short sleep proportions are higher than within-gender baseline figures, but their mean sleep minutes do not decline in tandem, indicating that disruptions have heterogeneous effects on sleep minutes. 4.5 percent of the sample napped on the diary day, a proportion roughly half of a comparable U.S. time use study (Burgard and Ailshire 2013). Hypothetically speaking, had these individuals not napped, their short sleep prevalence would have increased considerably, from 16 to 38 percent for men, and 11 to 33 percent for women.

Table 2.
Weighted Means and Proportions of Variables

	Pooled (Men/Women)			Men			Women		
	Var. Mean	Mean Sleep mins. (95% CI)	Prop. Sleep <6.5hrs.	Var. Mean	Mean Sleep mins. (95% CI)	Prop. Sleep <6.5hrs.	Var. Mean	Mean Sleep mins. (95% CI)	Prop. Sleep <6.5hrs.
Gender									
Men (ref.)	0.489	443* (440-447)	19.6%		443* (440-447)	19.6%			
Women	0.511	459* (455-463)	15.3%					459* (455-463)	15.3%
Survey year									
1990/91 (ref.)	0.440	448 (444-452)	17.7%	0.397	437* (432-442)	20.4%	0.482	457* (451-462)	15.5%
2000/01	0.276	458 (454-463)	16.8%	0.298	451* (445-457)	19.8%	0.254	466* (459-472)	13.4%
2010/11	0.284	450 (445-455)	17.6%	0.304	444* (436-451)	18.4%	0.264	457* (450-464)	16.6%
Family cycle									
No children (ref.)	0.512	457 (454-461)	16.2%	0.553	450* (445-455)	18.4%	0.472	466*(461-471)	13.7%
1 child, <7 years old	0.071	467 (457-477)	15.2%	0.064	460 (445-474)	18.1%	0.077	472 (459-486)	12.8%
2 children, youngest <7	0.095	447 (440-454)	17.6%	0.099	434* (425- 444)	21.6%	0.091	461* (450-471)	13.3%
3+ children, youngest <7	0.048	439 (428-450)	21.0%	0.049	431 (417-445)	23.3%	0.046	448 (431-464)	18.5%
1 child, 7+ years old	0.141	441 (433-448)	19.6%	0.117	426* (417-436)	21.7%	0.165	450* (441-460)	18.1%
2+ children, 7+ years old	0.134	439 (432-445)	19.5%	0.119	434 (425-444)	20.9%	0.150	442 (433-451)	18.5%
Work status									
Full-time (ref.)	0.704	448 (445-451)	18.4%	0.825	442* (438-446)	20.0%	0.588	456* (451-460)	16.2%
Part-time	0.212	465 (460-471)	13.6%	0.050	462 (441-483)	17.4%	0.366	466 (460-471)	13.1%
Other	0.085	446 (437-455)	18.6%	0.125	445 (435-455)	17.9%	0.046	447 (428-467)	20.6%

Table 2 (continued)

Work shift

Daytime work	0.624	444 (441-447)	14.9%	0.604	439* (435-443)	16.4%	0.644	448* (445-452)	13.6%
Daytime work,	0.141	401 (396-405)	35.0%	0.202	400 (394-405)	34.5%	0.082	402 (393-412)	36.2%
Evening work	0.045	472 (455-489)	18.3%	0.046	480 455-505)	16.6%	0.044	463 (441-486)	20.0%
Night work	0.019	432 (401-463)	41.7%	0.018	441 (404-478)	39.3%	0.019	424 (376-471)	43.9%
Did not work on diary day	0.172	517 (509-524)	9.2%	0.130	518 (505-531)	9.8%	0.212	516 (507-525)	8.8%

Dichotomous indicators

Night disruption	0.064	463 (451-475)	21.1%	0.041	461(437-485)	22.7%	0.086	463 (450-477)	20.4%
Napped	0.045	492 (477-507)	13.7%	0.047	477* (458-496)	15.9%	0.042	508* (485-530)	11.4%

Age group[a]

age 20-29	0.181	478 (471-485)	15.1%	0.187	466* (455-476)	17.1%	0.176	490* (481-499)	13.1%
age 30-39	0.259	449 (444-454)	15.5%	0.256	443* (436-450)	17.6%	0.262	454* (447-461)	13.6%
age 40-49	0.277	442 (438-447)	16.5%	0.266	434* (428-440)	18.0%	0.287	449* (443-456)	15.3%
age 50-64	0.283	446 (441-450)	15.4%	0.292	437* (431-443)	17.4%	0.275	454* (448-460)	13.4%

Education

Primary (ref.)	0.214	450 (445-455)	16.8%	0.227	443* (436-450)	18.8%	0.202	457* (450-464)	14.5%
Secondary	0.451	452 (448-456)	18.1%	0.467	442* (437-448)	21.0%	0.435	463* (457-468)	15.1%
Higher	0.335	451 (447-455)	16.9%	0.306	445* (439-451)	18.1%	0.363	456* (450-461)	15.8%

Partner status

No partner (ref.)	0.327	455 (450-460)	18.0%	0.286	453 (445-461)	18.8%	0.366	457 (450-463)	17.5%
Partner Working	0.576	449 (445-452)	17.1%	0.587	437* (433-441)	20.3%	0.566	460* (456-464)	14.0%
Partner other	0.097	455 (447-463)	16.7%	0.127	450 (441-460)	18.3%	0.068	464 (450-479)	14.0%

Region

Urban (ref.)	0.348	453 (448-457)	17.4%	0.333	449 (442-456)	19.8%	0.363	456 (450-462)	15.2%
Large cities	0.353	452 (448-456)	16.8%	0.366	442* (437-447)	18.9%	0.342	462* (455-468)	14.6%
Med. Size towns	0.190	448 (443-454)	17.9%	0.198	436* (429-444)	20.3%	0.182	461* (453-469)	15.4%
Small town/rural	0.108	450 (443-458)	18.6%	0.103	443* (432-454)	20.1%	0.113	457* (446-467)	17.3%

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Table 2 (continued)

Physical activity

No exercise (ref.)	0.621	451 (447–454)	17.7%	0.641	441* (437–446)	20.4%	0.602	460* (456–465)	15.0%
1–40 mins.	0.115	448 (440–455)	17.7%	0.089	441 (430–451)	19.0%	0.140	452 (442–462)	16.9%
41–80 mins.	0.158	455 (449–461)	15.8%	0.145	446* (437–455)	18.5%	0.171	462* (454–471)	13.5%
81+ mins.	0.091	455 (447–463)	17.2%	0.109	449* (438–459)	18.0%	0.074	465* (452–477)	16.1%
Missing /NA	0.015	448 (416–481)	18.7%	0.016	485* (446–523)	10.9%	0.014	407* (358–457)	27.5%

Day of week[b]

Monday (ref.)	0.248	456 (451–461)	16.9%	0.248	449* (442–456)	18.7%	0.248	463* (455–471)	15.2%
Tuesday	0.102	451 (446–456)	17.4%	0.102	439* (433–446)	20.2%	0.102	462* (455–469)	14.7%
Wednesday	0.102	452 (446–457)	16.8%	0.102	444* (436–452)	18.7%	0.102	459* (452–467)	15.0%
Thursday	0.100	447 (442–452)	18.5%	0.100	441* (434–449)	20.9%	0.100	452* (446–459)	16.2%
Friday	0.098	419 (413–424)	34.8%	0.098	412* (404–420)	37.6%	0.098	425* (417–433)	32.0%
Saturday	0.099	489 (485–493)	15.9%	0.099	486 (480–492)	17.2%	0.099	492 (486–497)	14.6%
Sunday	0.252	563 (559–567)	5.1%	0.252	564 (558–570)	6.3%	0.252	563 (558–568)	4.0%

Notes: [a] Age categories listed for illustrative purposes, whereas age and age^2 are used in regression analyses. [b] Column figures are based on Monday-Thursday observations, with the exception of *day of week*, which are day-specific. *T-tests denote within-variable statistically significant gender differences in means at p<.10.
Source: Swedish Time Use Survey (SWETUS) 1990/91, 2000/01 and 2010/11.

In order to illustrate the association between work minutes and sleep duration, and to examine the gender gap in sleep minutes, Figure 1 plots men's and women's average weekday sleep minutes over the cumulative paid work minutes distribution, using the Monday-Thursday diary days only. 20 paid work minute ventiles were calculated by pooling men and women, thus the sleep averages over each ventile compare men and women whose workdays were highly similar in length. The figure clearly shows the negative association between hours worked and sleep duration, ranging from sleep averages of 8.5 hours for those who work the least, to 6 hours for those working the most, with a 7 to 7hr 30 norm throughout much of the paid work distribution. A bivariate regression of sleep minutes on minutes of paid work reveal that the linear relationships in Figure 1 are equivalent to each additional hour of work reducing sleep by 11 minutes for men and 10 minutes for women. This figure additionally shows that even when comparing men and women who worked similar minutes on a typical weekday, women still slept more minutes than men throughout much of the distribution, thus work hour differences between men and women cannot fully explain the gender gap in sleep minutes.

Figure 1.
Average sleep minutes over the cumulative paid work minutes distribution (Monday-Thursdays)
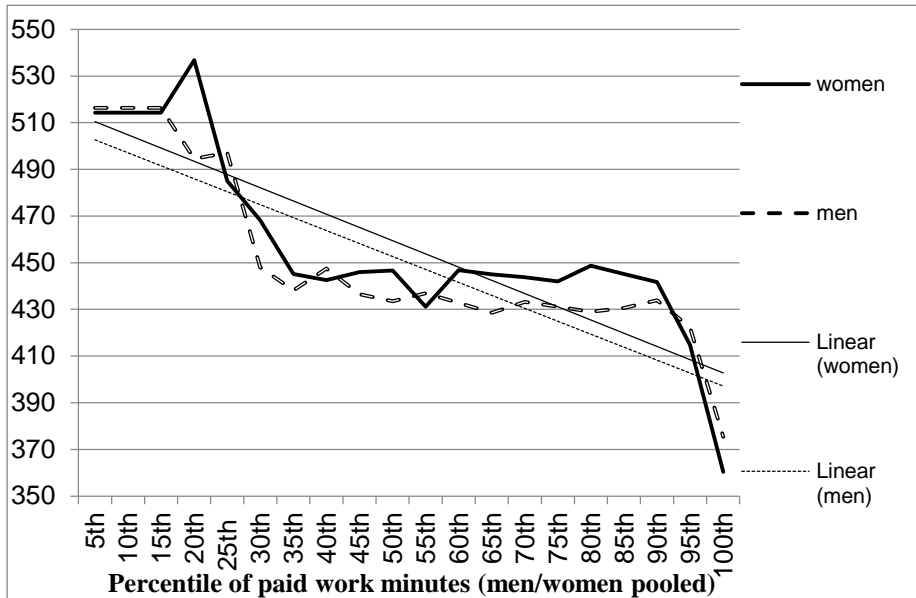
Notes: Y-axis equals weighted mean total sleep minutes over 20 ventiles of paid work minutes (men/women pooled) on the Monday-Thursday diary day. 1990/1991, 2000/01, and 2010/11 cross-sections pooled (n=6,457).

Table 3 presents OLS multivariate results from the pooled sample for Monday-Thursday observations, to assess the gender sleep gap across stepwise models and determine whether total sleep minutes declined during a typical workweek over the study period. Model (1) controls only for survey year and shows women slept 16 more minutes than men on a typical work day. The gender gap is never fully explained away, remaining across all stepwise models. Controlling for work status (Model 5) did not reduce the gender gap, but controlling for work shift differences reduced the gender gap to a marginal 7 minutes. Model 5 also revealed that part-time workers sleep more than full-time, but once work shift is controlled for (Model 6), this effect is no longer significant. Regarding changes across waves, the survey year coefficients indicate the base difference between 1990/91 for men and women, with the interaction term indicating any additional changes post-1990 for women. Net of base covariates and after including all independent variables, the year coefficients suggest working men and

women slept more in 2000/01 and 2010/11 compared with 1990/11. Differences between 2000/01 and 2010/11 are not statistically significant. The wave*female interaction term indicates no statistically significant additional effect for women post-1990, providing no indication that women are increasingly sleeping less post-1990, as hypothesized. The year coefficients should be considered in light of the often-held assumption that sleep duration has declined in this period. Results from Table 3 can also inform regarding sleep differences over the family cycle, indicating individuals across all family cycle categories slept marginally less than those without children, with the exception of one young child, where no statistical difference in sleep minutes is uncovered, a pattern also found in the U.S. (Robinson and Godbey 1997; Burgard and Ailshire 2013). Coefficients for family cycle should be considered bearing in mind a possible "healthy mother effect," where those with and without children may have different uncontrolled characteristics (Floderus et al. 2008; Hagen et al. 2013). It's also worth noting that models 6 and 7 include the work shift categorical variable, showing a significant relative importance that varying work schedules have on sleep duration. This variable's inclusion reduces the gender gap in sleep minutes considerably, due in part because 13 percent of men and 21 percent of women did not work on the diary day, and paid works negative relationship with sleep duration. One final note is that the night disruptions dichotomous variable indicates no association with total daily sleep minutes (Model 7), meaning those who are disrupted in the night compensate through sleep management (e.g. anticipating a disruption and going to bed earlier, or sleeping in post-disruption). Several sensitivity analyses are performed to test the robustness of the gender and wave coefficients from Table 2 (see Supplementary Index A1-A3). These tests conclude that the gender gap in sleep minutes remains robust across models when each wave is estimated independently (Index A1). However, separate tests revealed that when limiting the sample to those with children only (A2), in the fully-specified models (Model 5) the gender gap remains significant only for those without children. Robustness tests of the survey year results regressing men and women separately (A3) do not uncover any evidence of sleep declines post-1990/91 for women or men, on weekdays or weekends.

Table 3.
Ordinary Least Squares (OLS) Estimates of Weekday Sleep Minutes, Pooled Men/Women, 1990/91-2010/11

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Gender (ref. = men)							
Women	16.3***	19.3***	21.2***	23.0***	18.2***	6.9†	7.1†
	(2.559)	(3.720)	(3.674)	(3.652)	(3.974)	(3.692)	(3.687)
Survey year (ref. = 1990/91)							
2000/01	11.4***	13.8**	18.2***	17.6***	17.5***	13.6***	13.2**
	(3.016)	(4.110)	(3.892)	(4.183)	(4.173)	(3.817)	(3.811)
2010/11	3.3	6.5	12.6*	10.9*	10.2*	7.6†	7.7†
	(3.278)	(4.652)	(4.450)	(4.817)	(4.801)	(4.454)	(4.445)
Interaction gender × survey year							
Women × 2000/01		-4.4	-4.1	-7.2	-6.5	-2.9	-2.3
		(5.833)	(5.311)	(5.690)	(5.691)	(5.219)	(5.209)
Women × 2010/11		-6.1	-5.7	-9.0	-7.3	1.2	1.5
		(6.530)	(5.923)	(6.349)	(6.373)	(5.865)	(5.872)
Family cycle (ref. = no children)							
1 child aged <7				0.6	-0.2	-5.6	-4.9
				(5.757)	(5.770)	(5.606)	(5.619)
2 children yngst. <7				-12.5**	-14.7**	-16.3***	-16.3***
				(4.601)	(4.658)	(4.339)	(4.354)
3+ children yngst <7				-17.1**	-19.3**	-20.7***	-20.6***
				(6.263)	(6.292)	(5.882)	(5.842)
1 child >6 years old				-8.9*	-9.2*	-9.1*	-8.8*
				(4.225)	(4.226)	(3.921)	(3.912)
2+ children >6 years old				-13.2**	-14.2**	-14.8***	-14.5**
				(4.409)	(4.439)	(4.170)	(4.178)
Work status (ref. = full-time 35+hrs./week)							
Part-time <35 hrs/wk					13.8***	5.7	5.7
					(3.672)	(3.515)	(3.508)
Farmers/self-employed					4.4	10.5*	10.5*
					(4.818)	(4.454)	(4.473)
Work shift (ref. = daytime work)							
Day work, start <7am						-44.1***	-44.8***
						(2.955)	(2.944)
Evening work						22.5**	22.7**
						(8.304)	(8.348)
Night work						-15.8	-17.2
						(15.725)	(15.818)
Did not work diary day						70.6***	69.0***
						(4.098)	(4.072)
Dichotomous indicators							
Napped							29.2***
							(6.707)
Night sleep disruption							-5.6
							(5.861)
Baseline covariates[a]			Yes	Yes	Yes	Yes	Yes

Constant	438.9***	437.3***	603.3***	572.8***	567.3***	553.1***	551.7***
	(2.247)	(2.576)	(19.033)	(20.620)	(20.521)	(18.948)	(18.893)
R^2	0.011	0.011	0.011	0.043	0.046	0.179	0.184
N	5,575	5,575	5,575	5,575	5,575	5,575	5,575

Notes: [a] Covariates include age, age^2, education, region, partner status and physical activity. Standard errors in parentheses.
***$p < .001$ **$p < .01$ *$p < .05$ †$p < .10$

Weekend sleep is analyzed separately using OLS (Table 4) using the same weekday model, with the exception of including a dummy variable to control for Saturday/Sunday differences. 74 percent of the sample sleep more on their weekend diary day than their weekday (no gender difference), as evidenced by the mean sleep minutes of men and women on Saturdays and Sundays which are notably higher than weekday figures (see Table 2). While the gender gap remained statistically significant on weekends across models 2-8, the wave coefficients and the interaction term wave*female revealed that this gender gap was present in 1990/91 only. This result is consistent with the trend of an increasing share of female weekend employment in Sweden over the period (Presser & Gornick, 2005). The family cycle coefficients also differ on weekends, compared to weekdays, in an important way, whereby individuals with young children slept less than comparable workers without children, as well as those with older children. Thus, while most working individuals caught up on sleep during the weekend, parents of younger children did not to the same degree as those without children or even those with older children.

Table 4.
OLS Weighted regression, pooled men and women, total daily sleep minutes (weekends)

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Gender (ref. = men)							
Women	2.8	10.0*	9.0*	10.6**	12.9**	9.2*	9.8*
	(2.803)	(4.066)	(4.075)	(4.034)	(4.317)	(4.131)	(4.101)
Survey year (ref. = 1990/91)							
2000/01	10.5**	16.0**	18.7***	18.9***	18.8***	18.8***	18.9***
	(3.275)	(4.818)	(4.900)	(4.893)	(4.891)	(4.686)	(4.650)
2010/11	6.6†	14.3**	17.8**	18.7**	19.0**	17.9**	19.0***
	(3.653)	(5.454)	(5.565)	(5.526)	(5.531)	(5.339)	(5.321)
Interaction gender × survey year							
2000/01 × female		-10.6†	-8.9	-11.0†	-11.3†	-9.3	-9.8†
		(6.268)	(6.223)	(6.212)	(6.216)	(5.955)	(5.920)
2010/11 × female		-15.0*	-12.9†	-15.4*	-16.4*	-9.2	-9.3
		(7.257)	(7.192)	(7.140)	(7.153)	(6.802)	(6.787)
Family cycle (ref. = no children)							
1 child aged <7				-26.0***	-25.0***	-25.9***	-26.2***
				(6.392)	(6.426)	(6.138)	(6.121)
2 children yngst. <7				-23.4***	-22.0***	-22.8***	-23.0***
				(5.417)	(5.500)	(5.239)	(5.264)
3+ children yngst <7				-32.8***	-31.2***	-32.7***	-32.4***
				(6.779)	(6.841)	(6.610)	(6.588)
1 child >6 years old				-2.1	-1.6	-0.3	-0.3
				(4.528)	(4.524)	(4.392)	(4.381)
2+ children >6 years old				-2.7	-2.0	1.0	1.6
				(4.562)	(4.566)	(4.295)	(4.281)
Work status (ref. = full-time 35+hrs./week)							
Part-time <35 hrs/wk					-8.8*	-5.9	-5.6
					(3.797)	(3.629)	(3.604)
Farmers/self-employed					-11.7*	8.3	8.4
					(5.423)	(5.291)	(5.254)
Work shift (ref. = daytime work)							
Day work, start <7am						-102.4***	-103.4***
						(9.212)	(9.194)
Evening work						25.2**	24.1**
						(7.595)	(7.627)
Night work						-58.2**	-62.0***
						(16.735)	(16.955)
Did not work diary day						53.4***	52.7***
						(4.159)	(4.140)
Dichotomous indicators							
Napped							41.1***
							(6.072)
Night sleep disruption							-1.2
							(4.784)
Baseline covariates[a]	Day only	Day only	Yes	Yes	Yes	Yes	Yes

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Constant	557.2***	553.3***	663.6***	654.1***	658.1***	624.0***	621.3***
	(2.906)	(3.277)	(20.948)	(22.962)	(22.873)	(22.109)	(22.114)
R^2	0.109	0.110	0.126	0.133	0.134	0.210	0.218
N	6,933	6,933	6,933	6,933	6,933	6,933	6,933

Notes: [a] Covariates include age, age^2, education, region, partner status and physical activity. Standard errors in parentheses. ***$p < .001$ **$p < .01$ *$p < .05$ †$p < .10$

Next, total daily sleep is analyzed using short sleep duration (<6.5 hours/day) as a binary dependent variably with logistic regression, producing odds ratios as coefficients (Table 5). As previously mentioned, short sleep may be of greater health concern than sleep minute changes, and analyzing both dimensions overcomes the potential shortcoming that changes at the lower end of the distribution aren't being masked by averages. Weekday regressions were stratified by gender to uncover any differentiating pattern over family cycle stages for men and women. Wave coefficients indicated no statistical difference in the odds of short-sleeping post-1990/91 for men or women across any of the models, consistent with the OLS findings that sleep duration has not declined for men or women. Two relevant differences between men and women emerged however. First, no differential odds over family cycle stages existed for men, but for women, those in each child category, except one young child, were at increased odds of short sleep compared to childless women. This pattern is robust across short sleep thresholds of <6 and ≤6 hours, respectively, despite somewhat sensitive differences in baseline prevalence rates across these thresholds (see Supplementary Index B1-B2). Since this study examines working men and women only, this result can be interpreted as working men within each family cycle stage are at similar odds of sleeping less than 6.5 hours a night, but this is not the case for working women with children, who are more likely short sleepers than childless women. Overall, working men are more likely to be short sleepers than working women (19.6 percent baseline for men versus 15.3 of women), but greater variation exists over family cycle stages for women. Secondly, experiencing a night disruption increases the odds of short sleep for women only. This result is examined in greater detail in the subsequent analysis.

Table 5.
Weighted logistic regression, total daily sleep <6.5 (Mon-Thur), men and women

	Men (baseline = 19.6%)					Women (baseline = 15.3%)				
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 1	Model 2	Model 3	Model 4	Model 5
Survey year (ref. = 1990/91)										
2000/01	0.914 (0.723-1.156)	0.912 (0.721-1.154)	0.911 (0.720-1.152)	0.930 (0.729-1.187)	0.927 (0.727-1.184)	0.865 (0.663-1.129)	0.899 (0.690-1.172)	0.890 (0.681-1.162)	0.859 (0.652-1.131)	0.823 (0.624-1.085)
2010/11	0.845 (0.638-1.111)	0.841 (0.635-1.114)	0.843 (0.637-1.117)	0.851 (0.638-1.135)	0.846 (0.634-1.128)	1.055 (0.792-1.405)	1.101 (0.825-1.471)	1.090 (0.814-1.460)	1.031 (0.768-1.385)	1.010 (0.752-1.357)
Family cycle (ref. = no children)										
1 child aged <7		1.034 (0.634-1.686)	1.042 (0.639-1.701)	1.159 (0.710-1.892)	1.144 (0.699-1.872)		1.093 (0.637-1.877)	1.124 (0.658-1.921)	1.172 (0.659-2.082)	1.124 (0.631-2.001)
2 children yngst. <7		1.196 (0.805-1.776)	1.196 (0.805-1.777)	1.180 (0.779-1.787)	1.178 (0.778-1.782)		1.178 (0.751-1.848)	1.298 (0.819-2.057)	1.358 (0.848-2.173)	1.253 (0.776-2.025)
3+ children yngst <7		1.272 (0.761-2.127)	1.275 (0.762-2.132)	1.340 (0.800-2.244)	1.329 (0.792-2.233)		1.710* (1.007-2.904)	1.826* (1.072-3.108)	1.771* (1.009-3.110)	1.672† (0.965-2.898)
1 child >6 years old		1.065 (0.757-1.500)	1.076 (0.764-1.516)	1.110 (0.785-1.568)	1.110 (0.784-1.571)		1.333 (0.930-1.910)	1.354† (0.945-1.941)	1.419† (0.980-2.054)	1.422† (0.981-2.063)
2+ children >6 years old		1.033 (0.721-1.481)	1.046 (0.730-1.500)	1.137 (0.788-1.642)	1.137 (0.786-1.644)		1.493* (1.040-2.142)	1.553* (1.081-2.231)	1.473* (1.016-2.138)	1.474* (1.013-2.144)
Work status (ref. = full-time 35+hrs./week)										
Part-time <35 hrs/wk			0.944 (0.545-1.636)	1.031 (0.583-1.824)	1.010 (0.568-1.796)			0.781† (0.606-1.007)	0.829 (0.636-1.081)	0.839 (0.643-1.095)
Farmers/self-employed			0.834 (0.605-1.150)	0.750† (0.544-1.035)	0.748† (0.541-1.034)			1.382 (0.867-2.202)	1.344 (0.839-2.155)	1.380 (0.856-2.223)

Table 5 (continued)

Work shift (ref. = daytime work)

	Model 1	Model 2	Model 3	Model 4
Day work, start time <0700hrs	2.901*** (2.263-3.719)	2.933*** (2.288-3.759)	4.092*** (2.927-5.721)	4.203*** (3.001-5.886)
Evening work	1.123 (0.623-2.024)	1.108 (0.611-2.009)	1.665† (0.993-2.789)	1.549 (0.905-2.652)
Night work	3.565*** (1.881-6.755)	3.551*** (1.848-6.824)	6.224*** (3.443-11.250)	6.403*** (3.532-11.607)
Did not work diary day	0.553** (0.364-0.841)	0.553** (0.362-0.846)	0.666* (0.471-0.944)	0.646* (0.455-0.916)
Dichotomous indicators				
Napped		0.758 (0.443-1.298)		0.638 (0.331-1.231)
Night sleep disruption		1.467 (0.838-2.568)		1.791** (1.209-2.652)
N	2,626		2,949	

Notes: Baseline proportions of short-sleepers (<6.5 hours) are 24.4 percent for men and 18.0 percent for women. All models include baseline covariates age, age^2, education, region, partner status and physical activity. Coefficients are odds ratios with 95% confidence intervals in parentheses. ***$p < .001$ **$p < .01$ *$p < .05$ †$p < .10$

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Night disruptions are next examined using logistic regression across the same stepwise models, pooling men and women (Table 6). To better capture the true prevalence of night disruptions, this analysis included all days of the week. The binary outcome variable equaled 1 if the individual reported at least one 10-minute disruption in their night sleep on the diary day, which identified 9.8 percent of women and 6.1 percent of men. The most common post-disruption activities include caring for children, watching tv, restlessness, phone calls, and eating. Results across models 1 thru 6 indicate that women were more likely than men to report night disruptions. Wave coefficients indicate the odds of experiencing disruptions have increased post-1990 for men and women, a result which is robust when estimating weekdays only, and men and women independently[9]. Over family cycle stages, those with younger children are at significantly higher odds of experiencing a disruption compared to those without children, and those with older children.

To better understand the nature of these night disruptions, the next analysis asks whether night disruptions have increased across the waves due to child caring specifically, or other factors, or both? In an attempt to answer this, night disruptions were dichotomized by the type of activity performed immediately post-disruption (childcare or non-childcare related) for those with and without children independently (Table 7). This exercise revealed that night disruptions have increased post-1990 for those with children due to childcare specifically, but also, that non-childcare related disruptions have increased as well for those with, and without, children. These results provide some evidence that for those with children, their night sleep has become increasingly disrupted post-1990 due to both child and non-child related factors. For those without children, night disruptions have also increased post-1990. Furthermore, disruptions due to child and non-childcare related factors were both gendered in nature.

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[9] Results not shown but available from author.

Table 6.
Weighted logistic regression (men and women pooled), experienced at least 1 night disruption

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Gender (ref. = men)						
Women	1.482** (1.174-1.870)	1.589**** (1.261-2.002)	1.507** (1.190-1.910)	1.404** (1.087-1.813)	1.334* (1.033-1.723)	1.338* (1.036-1.728)
Survey year (ref. = 1990/91)						
2000/01	1.397* (1.066-1.830)	1.352* (1.032-1.771)	1.352* (1.031-1.774)	1.348* (1.028-1.767)	1.317* (1.003-1.729)	1.313† (1.000-1.724)
2010/11	1.516** (1.125-2.043)	1.437* (1.059-1.951)	1.394* (1.022-1.899)	1.382* (1.015-1.881)	1.363† (1.000-1.856)	1.363† (1.000-1.858)
Interact 2000 wave × female	1.437* (1.025-2.015)	1.326 (0.947-1.856)	1.457* (1.038-2.046)	1.476* (1.051-2.072)	1.511* (1.074-2.125)	1.508* (1.072-2.122)
Interact 2010 wave × female	1.130 (0.770-1.658)	1.036 (0.705-1.522)	1.157 (0.786-1.703)	1.179 (0.800-1.739)	1.239 (0.839-1.830)	1.241 (0.840-1.833)
Family cycle (ref. = no children)						
1 child aged <7			2.531*** (1.904-3.363)	2.507*** (1.884-3.336)	2.466*** (1.854-3.281)	2.469*** (1.856-3.285)
2 children yngst. <7			3.089*** (2.372-4.024)	3.001*** (2.293-3.927)	2.977*** (2.271-3.903)	2.975*** (2.270-3.900)
3+ children yngst <7			3.436*** (2.488-4.745)	3.341*** (2.417-4.619)	3.329*** (2.408-4.602)	3.328*** (2.407-4.602)
1 child >6 years old			1.202 (0.921-1.568)	1.200 (0.920-1.566)	1.201 (0.920-1.568)	1.202 (0.921-1.569)
2+ children >6 years old			1.225 (0.930-1.613)	1.209 (0.916-1.595)	1.224 (0.927-1.616)	1.229 (0.931-1.623)
Work status (ref. = full-time 35+hrs./week)						
Part-time <35 hrs/wk				1.154 (0.950-1.401)	1.128 (0.928-1.372)	1.129 (0.928-1.372)
Farmers/self-employed				0.865 (0.641-1.167)	0.942 (0.697-1.272)	0.942 (0.698-1.272)

Table 6 (continued)

Work shift (ref. = daytime work)					
Day work, start time <0700hrs				0.606*	0.602*
				(0.412-0.891)	(0.410-0.885)
Evening work				2.157***	2.143***
				(1.575-2.953)	(1.564-2.937)
Night work				0.999	0.980
				(0.544-1.836)	(0.533-1.802)
Did not work diary day				1.722***	1.706***
				(1.400-2.119)	(1.387-2.100)
Napped (dummy)					1.243
					(0.942-1.639)
Baseline covariates[a]	Yes	Yes	Yes	Yes	Yes
N	13,895	13,895	13,895	13,895	13,895

Notes: Baseline proportion 8.2 percent. Baseline covariates include age, age^2, education, region, partner status, physical activity on non-diary day and day of week. Coefficients are odds ratios with 95% confidence intervals in parentheses. ***$p < .001$ **$p < .01$ *$p < .05$ †$p < .10$

Table 7. Weighted logistic regression (men and women pooled), experienced at least 1 night disruption, by disruption type and parenthood status

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Disruptions due to childcare (those with children only)						
Men	ref	ref	ref	ref	ref	ref
Women	1.910***	1.846***	2.203***	2.318***	2.106***	2.129***
	(1.423-2.564)	(1.334-2.556)	(1.583-3.066)	(1.605-3.348)	(1.452-3.053)	(1.466-3.093)
1990/91						
2000/01	2.850***	2.796***	2.690***	2.660***	2.639***	2.603***
	(2.079-3.908)	(2.019-3.873)	(1.926-3.757)	(1.902-3.719)	(1.879-3.706)	(1.856-3.649)
2010/11	2.570***	2.447***	2.242***	2.220***	2.397***	2.387***
	(1.797-3.675)	(1.646-3.635)	(1.474-3.411)	(1.458-3.381)	(1.556-3.692)	(1.549-3.680)
N	7,016	7,016	7,016	7,016	7,016	7,016
Disruptions, non-childcare related (those with children only)						
Men	ref	ref	ref	ref	ref	ref
Women	1.631***	1.875***	1.963***	1.832***	1.770***	1.765***
	(1.315-2.023)	(1.476-2.380)	(1.536-2.508)	(1.399-2.399)	(1.349-2.321)	(1.345-2.315)
1990/91						
2000/01	1.534***	1.313*	1.303*	1.310*	1.289*	1.293*
	(1.217-1.934)	(1.034-1.666)	(1.023-1.660)	(1.028-1.670)	(1.010-1.645)	(1.012-1.652)
2010/11	1.740***	1.438*	1.435*	1.438*	1.457*	1.459*
	(1.340-2.259)	(1.090-1.897)	(1.083-1.901)	(1.085-1.907)	(1.095-1.939)	(1.095-1.942)
N	7,016	7,016	7,016	7,016	7,016	7,016
Disruptions, non-childcare related (those without children only)[a]						
Men	ref	ref		ref	ref	ref
Women	1.571***	1.514***		1.411**	1.396**	1.396**
	(1.261-1.955)	(1.212-1.890)		(1.112-1.792)	(1.100-1.772)	(1.100-1.770)
1990/91						
2000/01	1.710***	1.622***		1.629***	1.636***	1.643***
	(1.340-2.183)	(1.262-2.085)		(1.266-2.095)	(1.272-2.103)	(1.277-2.114)

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2010/11	1.679***	1.505**	1.516**	1.518**	1.542**
	(1.284-2.194)	(1.133-2.001)	(1.140-2.016)	(1.142-2.018)	(1.158-2.053)
N	6,879	6,879	6,879	6,879	6,879
Napped					Yes
Work shift				Yes	Yes
Work status			Yes	Yes	Yes
Family cycle		Yes	Yes	Yes	Yes
Baseline covariates[a]	Yes	Yes	Yes	Yes	Yes

Notes: All models include covariates age, age^2, education, region, partner status and physical activity. Coefficients are odds ratios with 95% confidence intervals in parentheses. [a] Family cycle categorical variable not included in model 3 for those without children.
***$p < .001$ **$p < .01$ *$p < .05$ †$p < .10$

Limitations

This study comes with limitations. First, the SWETUS data contain three cross-sections between 1990 and 2010, limiting any causal investigations. In the absence of longitudinal data on sleep durations for men and women in Sweden however, the SWETUS data are to my knowledge the only nationally-representative data set available for this period that include men and women. Sleep is a complex phenomenon, and numerous confounders and omitted variables (such as prior health conditions) exist that this paper cannot account for. Because none of the empirical models fully explain the variation in sleep minutes, results should be considered given that unobserved heterogeneity may vary between men and women and waves in this study. It should be mentioned that defining short sleep across three thresholds (≤6.5, ≤6 and <6 hours, respectively) revealed prevalence differences that were somewhat sensitive. Across these thresholds, the proportions of short sleepers for men on weekdays ranged from 19.6, 13.0 and 10.4, and for women, 15.3, 10.8 and 8.5. This sensitivity warranted the inclusion of Supplementary index B1-B2, which revealed that regardless of how short sleep is defined, men are more likely short sleepers, its prevalence has not increased over time, and women with children are at greater odds of short sleep than women without children.

The night disruption findings should be interpreted cautiously and could be spurious due to not controlling precisely enough for the age of the youngest child in the home, since research from the U.S. has shown night disruptions decrease as children age, with age zero being the most disrupted (Burgard 2011). This paper dealt with this issue by only including working parents, excluding those on parental leave, and controlling for those with a partner on parental leave, in order to reduce the influence newborns may have on this result. Long sleep durations, which have also been linked to negative health outcomes, have been omitted from the analysis, despite evidence that the proportions sleeping very long hours have increased in this period (Bonke 2015; Bin, Marshall and Glozier 2013). However, by selecting a sub-sample of workers only, the proportions sleeping long were minimized. Sleep results from Sweden may also not be generalizable, at least outside of countries with comparable levels of maternal employment, given the strong correlation between work and sleep duration. Despite these shortcomings, this paper has aimed to contribute to several discussions surrounding the relationship between sleep, work and parenthood which hopefully future research can build upon.

Discussion

This paper provides an account of the changing sleep patterns of working men and women in Sweden using time use data from 1990 to 2010, while contributing to several discussions in the related literature. A multi-faceted view of both quantitative and qualitative aspects of sleep was taken, in an attempt to illustrate a more realistic picture of how sleep interacts with work and family lives, with a focus on the gendered aspects thereof, and changes occurring after 1990.

This period has been described by many others as one where sleep has come under duress, a consequence of the increasing demands and productivity needs of the globalized economy (Chatzithochari and Arber, 2009; Derickson 2014; Presser 2003). Operating under the assumption that these are increasingly sleep-deprived times, this empirical analysis finds little support for this overarching hypothesis in a quantitative sense, uncovering no evidence that working men and women are sleeping any less daily minutes, or are more likely to be short sleepers, comparing 1990 with 2000 and 2010 in Sweden. On weekdays, when the majority are in paid employment, both men and women slept more post-1990, and this held true for the weekend analysis as well. While this finding seems somewhat difficult to reconcile, especially given women's increased work intensity, which many in Sweden combine with active parenting, it is consistent with the general findings from time use analysts in the U.S., Europe and neighboring Denmark (Bonke 2015; Gersuny 2000; Hale 2005; Robinson and Michelson 2010).

These sleep duration results should however be considered in combination with the night disruption analyses, which found that women are more likely to be disrupted than men, those with young children more likely than those without, and the odds of being disrupted increase post-1990 for both men and women. So while the average sleep minutes of men and women didn't decline after 1990, sleep in the latter period is more likely disrupted in the night, suggesting a seven or eight hour sleep in 1990 is not qualitatively equivalent to one in 2000 or 2010, given the impact disruptions can have on fatigue and cognitive functioning (Kahn et al., 2014). The increase in disruptions post-1990 has occurred generally, and when disruptions are dichotomized into those followed by childcare and non-childcare related activities, the increase post-1990 holds in both cases. These findings add empirical support to a small but growing literature from

other national contexts that night sleep disruptions are gendered (Burgard 2011, Maume et al. 2009, Venn et al. 2008), but make a contribution to this discussion by illustrating that they are gendered in two ways; women's greater night caregiving burden, and disruptions which seem unrelated to child caregiving. The change over time, especially those due to childcare specifically, warrant further research. It should be noted that the method used to identify night disruptions is somewhat fuzzy and cannot be interpreted as causal, as it likely under-estimates their true prevalence for three reasons; under-reporting of episodes less than 10-minutes, night sleeps which were terminated prematurely cannot be differentiated from desired waking times, and the time required to fall asleep post-disruption likely varies between individuals and cannot be accounted for in the survey design. This under-reporting means a latent and gendered prevalence of fatigue probably explains some portion of the gender gap in sleep minutes found in most time use studies, if for example, fatigued women respond by sleeping more. The small gender gap in sleep minutes favoring women raises the question of whether this gap is enough to compensate for women's lesser sleep quality, as others have asked (Burgard and Ailshire, 2013).

There are several possible explanations for why sleep durations have not declined in this period for women, as theorized. Increasingly busy working lives coupled with family obligations may have an exhaustive effect (Becker 1985), so while discretionary time for sleep reduces, women may have traded-off leisure time to a greater extent than men, as others have found (Burgard and Ailshire 2013). A second explanation could be that over this period self-reported fatigue has increased considerably for women in Sweden (Stenbeck and Persson 2006), thus we might expect an increasingly fatigued population should in fact sleep more, not less. It is also possible that the increasingly flexible, gender-neutral and culturally-embedded institutional setting serve to better enable juggling work and family obligations over the family cycle, which may also explain why workers with young children don't sleep substantially less than other working adults, and why no short sleep differences were found between part- and full-time workers. As previously mentioned, night disruptions cause fatigue and increased post-1990 across all groups, thus it's alternatively possible that an increasingly fatigued society should in fact sleep more in the aggregate, not less.

Regarding working parents, it was shown descriptively that there is more variation in how much working men and women with children sleep,

compared to those without children. In the OLS analysis, at the means having 2 or more young children reduces men's and women's sleep compared to those without children, but this doesn't increase the odds of short sleep for men, although it does for women, except those with 1 young child. This suggests the impact of parenthood on men and women's sleep is nuanced, reducing sleep minutes marginally for men and women at the mean. But when the focus becomes short sleep, men more likely fall into this category than women, yet no family cycle differences are uncovered for men, suggesting their short sleep is determined more so by work roles. For working women however, those in all but the youngest child category are at greater odds of short sleep relative to women without children. So while men are more likely than women to be short sleepers in general, the relative sleep deprivation between working women with and without children is greater than it is for men.

The family cycle results should be interpreted with two caveats. Firstly, differences between parents and non-parents are complicated by the possible existence of a health mother and possibly healthy father effect (Floderus et al. 2008), which would bias coefficients if those living with children sleep differently than those who do not due to unobservable characteristics. Both men and women with children in this study are positively selected compared with non-parents based on education level and income, for example. Secondly, this paper uses rather crude child categories given that children's sleep behavior varies considerably with age (Burgard 2011), which means the result that those with two or more young children sleep less than others could in fact be driven by those with a 1 year old, thus the broad categorization may over-generalize an impact concentrated at younger child ages. Regardless, the findings offer no support that working mothers sleep less than working fathers, but they do experience greater interruptions than men, and sleep less than comparable women without children.

Regarding the puzzling gender sleep gap prevalent in nearly all time use surveys, this paper has made minor strides towards explaining it. It was shown in a descriptive sense how when matching men and women based on their hours worked on the diary day, the gender gap is visibly prevalent throughout much of the paid work distribution (Figure 1), meaning differences in how many minutes men and women work on a typical workday cannot fully explain the gender gap. Descriptively, this gap was also significant across most family cycle categories. The multivariate analyses revealed that much of the gender gap can be explained away by

controlling for work shift, a variable which also controlled for those working and not working. One interpretation for the marginal gap which remained could be due to occupational sorting. If one follows the logic that caregiving has an exhaustive effect, women are much more likely to work in care-related occupations than men in Sweden. Although occupation-type variables are not included in the SWETUS data, future research should consider this dimension.

The overworked and underslept common depiction of working life at the turn of the 21st century is surely prevalent in an anecdotal sense, yet the SWETUS surveys do not indicate that the amount of time workers in Sweden sleep has declined between 1990 and 2010, in line with other findings from time use studies. One could argue that if SWETUS respondents are positively selected, they may be more capable of avoiding undersleeping, but if this is the case they may also be overworked, which would limit their time for sleep. Popular modern depictions may very well apply to certain individuals, and many may perceive that they work long hours and sleep little, but the SWETUS data does not provide general support for this. The results here however may illuminate the more acute problem that disruptions have become increasingly prevalent post-1990, suggesting how much workers sleep has changed less relative to its quality and efficiency.

References

Åkerstedt, Torbjorn, P. Fredlund, M. Gillberg, and B. Jansson. "A Prospective Study of Fatal Occupational Accidents – Relationship to Sleeping Difficulties and Occupational Factors." *Journal of Sleep Research* 11, no. 1 (2002a): 69-71.

Åkerstedt, Torbjörn, Anders Knutsson, Peter Westerholm, Töres Theorell, Lars Alfredsson, and Göran Kecklund. "Sleep Disturbances, Work Stress and Work Hours: a Cross-Sectional Study." *Journal of Psychosomatic Research* 53, no. 3 (2002b): 741-48.

Anxo, Dominique. "Working Time Policy in Sweden." Working Time: In search of New Research Territories Beyond Flexibility Debates (2009): 55-70. Retrieved from:

http://eforum.jil.go.jp/english/reports/documents/jilpt-reports/no.7.pdf#page=57

Arber, Sara, Jenny Hislop, Marcos Bote, and Robert Meadows. "Gender Roles and Women's Sleep in Mid and Later Life: a Quantitative Approach." *Sociological Research Online* 12, no. 5 (2007): 3.

Basner, Mathias, Kenneth M. Fomberstein, Farid M. Razavi, Siobhan Banks, Jeffrey H. William, Roger R. Rosa, and David F. Dinges. "American Time Use Survey: Sleep Time and its Relationship to Waking Activities." *SLEEP* 30, no. 9 (2007): 1085-95.

Becker, Gary Stanley. *A Treatise on the Family* (enlarged edition). Boston: Harvard University Press, 1993.

Bellavia, Gina M., and Michael R. Frone. 2005. "Work-Family Conflict." Pp. 113-48. Handbook of Work Stress. Julian Barling, E. Kevin Kelloway and Michael R. Frone, editors. Sage Publications.

Bianchi, Suzanne M. "Maternal Employment and Time With Children: Dramatic Change or Surprising Continuity?." *Demography* 37, no. 4 (2000): 401-414.

Biddle, Jeff E., and Daniel S. Hamermesh. "Sleep and the Allocation of Time." *The Journal of Political Economy* 98, no. 5 Part 1 (1990): 922-43.

Bianchi, Suzanne M., John P. Robinson, and Melissa A. Milkie. *The Changing Rhythms of American Family Life*. Russell Sage Foundation, 2006.

Bin, Yu Sun, Nathaniel S. Marshall, and Nick Glozier. "Secular Trends in Adult Sleep Duration: a Systematic Review." *Sleep Medicine Reviews* 16, No. 3 (2012): 223-30.

Bin, Yu Sun, Nathaniel S. Marshall, and Nick Glozier. "Sleeping at the Limits: the Changing Prevalence of Short and Long Sleep Durations in 10 Countries." *American Journal of Epidemiology* (2013): Kws308.

Bonke, Jens. "Trends in Short and Long Sleep in Denmark from 1964 to 2009, and the Associations with Employment, SES (Socioeconomic Status) and BMI." *Sleep Medicine* 16, No. 3 (2015): 385-90.

Burgard, Sarah A. "The Needs of Others: Gender and Sleep Interruptions for Caregivers." *Social Forces* 89, No. 4 (2011): 1189-215.

Burgard, Sarah A., and Jennifer A. Ailshire. "Gender and Time for Sleep Among US Adults." *American Sociological Review* 78, No. 1 (2013): 51-69.

Cha, Seung-Eun, and Ki-Soo Eun. "Gender Difference in Sleep Problems: Focused on Time Use in Daily Life of Korea." *Social Indicators Research* 119, No. 3 (2014): 1447-65.

Chatzitheochari, Stella, and Sara Arber. "Lack of Sleep, Work and the Long Hours Culture: Evidence from the UK Time Use Survey." *Work, Employment & Society* 23, No. 1 (2009): 30-48.

Derickson, Alan. *Dangerously Sleepy: Overworked Americans and the Cult of Manly Wakefulness*. University of Pennsylvania Press, 2013.

Dribe, Martin, and Maria Stanfors. "Does Parenthood Strengthen a Traditional Household Division of Labor? Evidence from Sweden." *Journal of Marriage and Family* 71, No. 1 (2009): 33-45.

Dunifon, Rachel, Ariel Kalil, Danielle A. Crosby, and Jessica Houston Su. "Mothers' Night Work and Children's Behavior Problems." *Developmental Psychology* 49, No. 10 (2013): 1874-85.

Floderus, Birgitta, Maud Hagman, Gunnar Aronsson, Staffan Marklund, and Anders Wikman. "Self-Reported Health in Mothers: the Impact of Age, and Socioeconomic Conditions." *Women & Health* 47, No. 2 (2008): 63-86.

Friborg, Oddgeir, Bjørn Bjorvatin, Benjamin Amponsah, and Stale Pallesen. "Associations Between Seasonal Variations in Day Length (Photoperiod), Sleep Timing, Sleep Quality and Mood: a Comparison Between Ghana (5°) and Norway (69°)." *Journal of Sleep Research* 21, No. 2 (2012): 176-84.

Gershuny, Jonathan. *Changing Times: Work and Leisure in Postindustrial Society*. Oxford University Press, 2000.

Hagen, Erika W., Anna G. Mirer, Mari Palta, and Paul E. Peppard. "The Sleep-Time Cost of Parenting: Sleep Duration and Sleepiness among Employed Parents in the Wisconsin Sleep Cohort Study." *American Journal of Epidemiology* (2013): Kws246.

Hale, Lauren. "Who Has Time to Sleep?" *Journal of Public Health* 27, No. 2 (2005): 205-11.

Hirshkowitz, Max, Kaitlyn Whiton, Steven M. Albert, Cathy Alessi, Oliviero Bruni, Lydia Doncarlos, Nancy Hazen et al. "National Sleep Foundation's Sleep Time Duration Recommendations: Methodology and Results Summary." *Sleep Health* 1, No. 1 (2015): 40-43.

Hochschild, Arlie, and Anne Machung. *The Second Shift: Working Families and the Revolution at Home*. Penguin, 2012.

Hofferth, Sandra L., and John F. Sandberg. "How American Children Spend their Time." *Journal of Marriage and Family* 63, No. 2 (2001): 295-308.

Kahn, Michal, Shimrit Fridenson, Reut Lerer, Yair Bar-Haim, and Avi Sadeh. "Effects of One Night of Induced Night-Wakings Versus Sleep Restriction on Sustained Attention and Mood: a Pilot Study." *Sleep Medicine* 15, No. 7 (2014): 825-32.

Kalil, Ariel, Rachel Dunifon, Danielle Crosby, and Jessica Houston Su. "Work Hours, Schedules, and Insufficient Sleep Among Mothers and Their Young Children." *Journal of Marriage and Family* 76, No. 5 (2014): 891-904.

Kan, Man Yee, Oriel Sullivan, and Jonathan Gershuny. "Gender Convergence in Domestic Work: Discerning the Effects of Interactional and Institutional Barriers from Large-Scale Data." *Sociology* 45, No. 2 (2011): 234-51.

Kronholm, Erkki, Timo Partonen, Tiina Laatikainen, Markku Peltonen, Mikko Härmä, Christer Hublin, Jaako Kaprio et al. "Trends in Self-Reported Sleep Duration and Insomnia-Related Symptoms in Finland from 1972 to 2005: a Comparative Review and Re-Analysis of Finnish Population Samples." *Journal of Sleep Research* 17, No. 1 (2008): 54-62.

Kronholm, Erkki, Mikael Sallinen, Timo Suutama, Raimo Sulkava, Pertti Era, and Timo Partonen. "Self-Reported Sleep Duration and Cognitive Functioning in the General Population." *Journal of Sleep Research* 18, No. 4 (2009): 436-446.

Krueger, Patrick M., and Elliot M. Friedman. "Sleep Duration in the United States: a Cross-Sectional Population-Based Study." *American Journal of Epidemiology* 169, No. 9 (2009): 1052-63.

Lallukka, Tea, Risto Kaikkonen, tommi Härkänen, Erkki Kronholm, Timo Partonen, Ossi Rahkonen, and Seppo Koskinen. "Sleep and Sickness Absence: a Nationally Representative Register-Based Follow-Up Study." *SLEEP* 37, No. 9 (2014): 1413-25.

Luckhaupt, Sara E., Sangwoo Tak, and Geoffrey M. Calvert. "The Prevalence of Short Sleep Duration by Industry and Occupation in the National Health Interview Survey." *SLEEP* 33, No. 2 (2010): 149-59.

Maume, David J., Rachel A. Sebastian, and Anthony R. Bardo. "Gender Differences in Sleep Disruption Among Retail Food Workers." *American Sociological Review* 74, No. 6 (2009): 989-1007.

Mindell, J. A., B. Kuhn, D. S. Lewin, L. J. Meltzer, A. Sadeh, and American Academy of Sleep Medicine. "Behavioral Treatment of Bedtime Problems and Night Wakings in Infants and Young Children." *SLEEP* 29, No. 10 (2006): 1263-76.

Milkie, Melissa A., Sara B. Raley, and Suzanne M. Bianchi. "Taking on the Second Shift: Time Allocations and Time Pressures of US Parents with Preschoolers." *Social Forces* 88, No. 2 (2009): 487-517.

Musick, Kelly, Ann Meier, and Sarah Flood. "How Parents Fare: Mothers' and Fathers' Subjective Well-Being in Time with Children." Forthcoming in *American Sociological Review*.

Neilson, J. & Stanfors, M.(2015). Time Alone or Time together? Time Allocation Among Working Couples in Sweden 1990-2010. Unpublished Paper. Centre for Economic Demography at Lund University.

Parent-Thirion, Agnès. Fourth European Working Conditions Survey. European Foundation for the Improvement of Living and Working Conditions, 2007.

Presser, Harriet B. *Working in a 24/7 Economy: Challenges for American Families*. Russell Sage Foundation, 2003.

Pearson, Allison. *I don't know how she does it*. Random House, 2010

Presser, Harriet B., and Janet C. Gornick. "Female Share of Weekend Employment: a Study of 16 Countries." *Monthly Laboour Review* 128 (2005): 41-53.

Presser, Harriet B., Janet C. Gornick, and Sangeeta Parashar. "Gender and Nonstandard Work Hours in 12 European Countries." *Monthly Labor Review* 131 (2008): 83-103.

Ricci, Judith A., Elsbeth Chee, Amy L. Lorandeau, and Jan Berger. "Fatigue in the US Workforce: Prevalence and Implications for Lost Productive Work Time." *Journal of Occupational and Environmental Medicine* 49, No. 1 (2007): 1-10.

Robinson, John P., and Geoffrey Godbey. *Time for Life: the Surprising Ways Americans Use their Time*. Penn State Press, 1997.

Robinson, John P., and William Michelson. "Sleep as a Victim of the "Time Crunch"– a Multinational Analysis." *Electronic International Journal of Time Use Research* 7, No. 1 (2010): 61-72.

Sadeh, Avi, Liat Tikotzky, and Anat Scher. "Parenting and Infant Sleep." *Sleep Medicine Reviews* 14, No. 2 (2010): 89-96.

Sayer, Liana C. "Gender, Time and inequality: Trends in Women's and Men's Paid Work, Unpaid Work and Free Time." *Social Forces* 84, No. 1 (2005): 285-303.

Schofer, Evan, and John W. Meyer. "The Worldwide Expansion of Higher Education in the Twentieth Century." *American Sociological Review* 70, No. 6 (2005): 898-920.

Spurgeon, Anne, J. Malcolm Harrington, and Cary L. Cooper. "Health and Safety Problems Associated with Long Working Hours: a Review of the Current Position." *Occupational and Environmental Medicine* 54, No. 6 (1997): 367-75.

Stenbeck, Magnus, and Gudrun Persson. Working Life, Work Environment and Health. *Scandinavian Journal of Public Health* 34, No. 67(2006), 229-45.

Stewart, Jay. "The Timing of Maternal Work and Time with Children." *Industrial & Labor Relations Review* 64, No. 1 (2010): 181-200.

Venn, Susan, Sara Arber, Robert Meadows, and Jenny Hislop. "The Fourth Shift: Exploring the Gendered Nature of Sleep Disruption Among Couples with Children." *The British Journal of Sociology* 59, No. 1 (2008): 79-97.

Westerlund, Hugo, Kristina Alexanderson, Torbjörn Åkerstedt, Linda Magnusson Hanson, Töres Theorell, and Mika Kivimäki. "Work-Related Sleep Disturbances and Sickness Absence in the Swedish Working Population, 1993–1999." *SLEEP* 31, No. 8 (2008): 1169-77.

Wight, Vanessa R., Sara B. Raley, and Suzanne M. Bianchi. "Time for Children, One's Spouse and Oneself Among Parents Who Work Nonstandard Hours." *Social Forces* 87, No. 1 (2008): 243-71.

Youngstedt, Shawn D., and Christopher E. Kline. "Epidemiology of Exercise and Sleep." *Sleep and Biological Rhythms* 4, No. 3 (2006): 215-21.

Appendix.

Part A. Table 2 robustness checks.

A.1 OLS results, Check gender gap across models by wave

1990/91	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Male (ref.)						
Female	19.3***	21.9***	22.9***	16.0***	5.5	5.6
	(3.720)	(3.646)	(3.621)	(4.174)	(3.866)	(3.858)
R2	0.011	0.031	0.034	0.040	0.170	0.172
N	2,614	2,614	2,614	2,614	2,614	2,614
2000/01						
Male (ref.)						
Female	15.5***	17.7***	17.7***	15.1***	6.0	7.3*
	(3.923)	(3.863)	(3.864)	(4.386)	(4.133)	(4.119)
R2	0.007	0.044	0.046	0.047	0.192	0.202
N	2,276	2,276	2,276	2,276	2,276	2,276
2010/11						
Male (ref.)						
Female	14.0***	14.4***	14.3***	12.5**	9.9**	9.8**
	(4.745)	(4.756)	(4.753)	(4.978)	(4.549)	(4.595)
R2	0.007	0.048	0.051	0.052	0.189	0.195
N	1,567	1,567	1,567	1,567	1,567	1,567
Napped diary day						X
Work shift					X	X
Work status				X	X	X
Child categories			X	X	X	X
Base covariates [a]		X	X	X	X	X

Note: [a]Covariates include age, age^2, education, region, partner status and weekend exercise. Standard errors in parentheses. ***$p < .001$ **$p < .01$ *$p < .05$ †$p < .10$

A.2 OLS results, Check wave results across models for those with children only

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Male (ref.)						
Female	20.8***	20.1***	20.8***	16.7***	4.6	5.0
	(5.286)	(5.350)	(5.367)	(5.866)	(5.509)	(5.519)
1990/91	ref	ref	ref	ref	ref	ref
2000/01	13.2**	15.2***	15.5***	15.4***	7.2	6.5
	(5.392)	(5.531)	(5.511)	(5.513)	(5.146)	(5.144)
2010/11	7.5	9.5 (6.516)	9.2	9.0	4.8	4.7
	(6.242)		(6.499)	(6.491)	(6.015)	(5.994)
Interactions						
2000/01× female	-1.6	-1.3	-1.9	-1.4	1.6	2.3
	(7.519)	(7.338)	(7.319)	(7.349)	(6.907)	(6.882)
2010/11 × female	-7.6	-6.1	-7.0	-6.3	0.0	0.2
	(8.684)	(8.510)	(8.484)	(8.504)	(7.848)	(7.857)
R-squared	0.013	0.031	0.035	0.038	0.158	0.161
Observations	3,215	3,215	3,215	3,215	3,215	3,215
Controls						
Napped diary day						X
Work shift					X	X
Work status				X	X	X
Child categories			X	X	X	X
Base covariates [a]		X	X	X	X	X

Note: [a]Covariates include age, age^2, education, region, partner status and weekend exercise. Standard errors in parentheses. ***$p < .001$ **$p < .01$ *$p < .05$ †$p < .10$

A3. OLS results, check wave results across models by gender, weekdays and weekends

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Women weekdays						
1990/91 (ref.)						
2000/01	9.3*	10.5*	9.4*	10.0*	10.0*	10.6**
	(4.271)	(4.328)	(4.262)	(4.281)	(3.934)	(3.951)
2010/11	0.3	4.1	2.7	3.4	8.4†	9.1*
	(4.594)	(4.809)	(4.759)	(4.786)	(4.426)	(4.434)
R2						
N	2,949	2,949	2,949	2,949	2,949	2,949
Women weekends						
1990/91 (ref.)						
2000/01	5.6	9.0*	10.0*	9.3*	11.2**	10.9*
	(4.207)	(4.474)	(4.465)	(4.479)	(4.237)	(4.219)
2010/11	-0.5	4.1	4.8	3.9	10.6*	11.6*
	(4.825)	(5.267)	(5.227)	(5.229)	(4.875)	(4.876)
R2						
N	3,646	3,646	3,646	3,646	3,646	3,646
Men weekdays						
1990/91 (ref.)						
2000/01	13.8*	17.2***	17.1***	17.1***	13.2*	12.7*
	(4.111)	(4.272)	(4.262)	(4.250)	(3.867)	(3.862)
2010/11	6.5	9.9†	9.9†	9.3†	7.0	7.1
	(4.652)	(5.074)	(5.082)	(5.050)	(4.676)	(4.648)
R2						
N	2,626	2,626	2,626	2,626	2,626	2,626
Men weekends						
1990/91 (ref.)						
2000/01	16.1**	19.0***	19.5***	19.4***	19.9***	19.9***
	(4.823)	(5.010)	(5.000)	(4.994)	(4.793)	(4.755)
2010/11	14.5**	18.8**	19.7**	19.8***	19.1**	20.3***
	(5.452)	(5.746)	(5.685)	(5.686)	(5.504)	(5.479)
R2						
N	3,287	3,287	3,287	3,287	3,287	3,287
Napped diary day						X
Work shift					X	X
Work status				X	X	X
Child categories			X	X	X	X
Base covariates [a]		X	X	X	X	X

Note: [a]Covariates include age, age^2, education, region, partner status and weekend exercise. Standard errors in parentheses. ***$p < .001$ **$p < .01$ *$p < .05$ †$p < .10$

Part B. Table 4 robustness checks.

B1. Weighted logistic regression, total daily sleep ≤6 hours (Mon-Thurs), men and women

	Men (baseline = 13.0%)					Women (baseline = 10.8%)				
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 1	Model 2	Model 3	Model 4	Model 5
Survey year (ref. = 1990/91)										
2000/01	0.803	0.807	0.808	0.845	0.840	0.924	0.945	0.936	0.932	0.908
	(0.622-1.037)	(0.625-1.042)	(0.626-1.043)	(0.648-1.102)	(0.644-1.095)	(0.699-1.221)	(0.715-1.250)	(0.706-1.242)	(0.699-1.244)	(0.681-1.211)
2010/11	0.812	0.814	0.815	0.843	0.837	1.004	1.028	1.020	0.964	0.949
	(0.598-1.102)	(0.600-1.106)	(0.601-1.107)	(0.617-1.152)	(0.612-1.144)	(0.736-1.369)	(0.751-1.408)	(0.742-1.402)	(0.697-1.333)	(0.687-1.312)
Family cycle (ref. = no children)										
1 child aged <7		0.898	0.897	0.977	0.965		1.090	1.103	1.118	1.076
		(0.508-1.587)	(0.509-1.579)	(0.554-1.724)	(0.546-1.704)		(0.617-1.928)	(0.627-1.940)	(0.619-2.022)	(0.594-1.950)
2 children yngst. <7		1.104	1.104	1.110	1.098		1.487*	1.592*	1.645**	1.558*
		(0.723-1.685)	(0.723-1.685)	(0.714-1.728)	(0.705-1.710)		(0.938-2.359)	(0.994-2.551)	(1.017-2.663)	(0.956-2.539)
3+ children yngst <7		1.248	1.248	1.364	1.332		1.315	1.358	1.299	1.249
		(0.703-2.215)	(0.704-2.213)	(0.757-2.456)	(0.741-2.393)		(0.727-2.377)	(0.747-2.468)	(0.712-2.371)	(0.681-2.291)
1 child >6 years old		1.200	1.196	1.228	1.224		1.184	1.194	1.238	1.238
		(0.814-1.768)	(0.811-1.763)	(0.833-1.812)	(0.830-1.804)		(0.798-1.757)	(0.806-1.769)	(0.824-1.862)	(0.824-1.862)
2+ children >6 years old		0.930	0.928	0.996	0.988		1.365	1.405*	1.293	1.286
		(0.615-1.407)	(0.614-1.404)	(0.651-1.524)	(0.645-1.513)		(0.922-2.022)	(0.950-2.078)	(0.858-1.948)	(0.852-1.941)

B2. Weighted logistic regression, total daily sleep <6 hours (Mon-Thurs), men and women

	Men (baseline = 10.4%)					Women (baseline = 8.5%)				
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 1	Model 2	Model 3	Model 4	Model 5
Survey year (ref. = 1990/91)										
2000/01	0.805 (0.607-1.068)	0.808 (0.609-1.072)	0.808 (0.609-1.072)	0.838 (0.627-1.120)	0.834 (0.623-1.115)	0.997 (0.734-1.353)	1.039 (0.765-1.413)	1.037 (0.761-1.412)	1.036 (0.755-1.420)	1.013 (0.739-1.388)
2010/11	0.859 (0.616-1.196)	0.862 (0.618-1.202)	0.862 (0.619-1.200)	0.886 (0.632-1.241)	0.879 (0.627-1.232)	0.954 (0.675-1.349)	0.998 (0.703-1.418)	1.000 (0.703-1.424)	0.952 (0.662-1.371)	0.941 (0.654-1.354)
Family cycle (ref. = no children)										
1 child aged <7	0.851 (0.452-1.600)	0.850 (0.454-1.592)	0.924 (0.493-1.729)	0.912 (0.486-1.713)		1.204 (0.634-2.284)	1.193 (0.636-2.241)	1.195 (0.624-2.290)	1.154 (0.600-2.222)	0.851 (0.452-1.600)
2 children yngst. <7	0.944 (0.588-1.517)	0.944 (0.588-1.517)	0.957 (0.587-1.560)	0.948 (0.581-1.548)		1.884** (1.137-3.124)	1.946** (1.162-3.258)	2.000** (1.180-3.388)	1.918** (1.127-3.265)	0.944 (0.588-1.517)
3+ children yngst <7	1.167 (0.615-2.216)	1.167 (0.615-2.214)	1.261 (0.656-2.422)	1.235 (0.647-2.359)		1.515 (0.767-2.994)	1.496 (0.752-2.979)	1.430 (0.722-2.829)	1.381 (0.694-2.747)	1.167 (0.615-2.216)
1 child >6 years old	1.035 (0.676-1.585)	1.034 (0.675-1.584)	1.058 (0.691-1.620)	1.055 (0.689-1.615)		1.394 (0.889-2.185)	1.392 (0.891-2.175)	1.449 (0.914-2.298)	1.447 (0.913-2.293)	1.035 (0.676-1.585)
2+ children >6 years old	0.896 (0.563-1.424)	0.895 (0.563-1.423)	0.954 (0.595-1.529)	0.946 (0.590-1.519)		1.787*** (1.156-2.764)	1.815*** (1.176-2.801)	1.666** (1.060-2.619)	1.658** (1.053-2.609)	0.896 (0.563-1.424)

The division of paid labor over the family cycle: a cross-European perspective

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Abstract

This paper examines the division of paid labor between coupled men and women for 25 European countries adhering to different welfare regimes, using micro-level data from the 2004-2008 European Union Statistics on Income and Living Conditions (EU-SILC). It explored the division of paid labor at the extensive (employment) and intensive (work hours) margins, comparing childless men and women to those with children across five family cycle stages, asking to what extent parenthood impacts the division of paid labor across regime types. Results indicate that at the extensive margin of employment, differences over the family cycle varied little across regimes for coupled men, while coupled women exhibited distinct regime-type patterns. For dual-worker coupled men and women, the gendered impact of parenthood on weekly work hours was present in most cases across all family cycle stages, differences which were greater in regimes where mothers' part-time work is most common.

Key words: division of paid labor, employment, gender, parenthood, work hours

Introduction

Despite an international trend of women's and especially mothers' rising labor force participation since the 1960s, parenthood remains a considerable obstacle towards further gender equal developments in the labor market, as the presence of children in the home has a greater impact on women's labor supply than men's in all national contexts. Gender gaps in employment rates and hours worked vary substantially across countries, and within countries are most prevalent when children are young (Anxo, Fagan, Cebrian, & Moreno, 2007; Dribe & Stanfors, 2009; Gornick & Meyers, 1997; Misra, Budig, & Boeckmann, 2011; Stier, Lewin-Epstein, & Braun, 2001; Uunk, Kalmijn, & Muffels, 2005). While the disproportionate impact that parenthood has on women's labor supply is well-established, less research has combined examining both employment and work hour margins in a cross-European perspective. This paper examines the division of paid labor of coupled men and women across 25 European countries adhering to differing welfare regime types, comparing partnered men and women across five family cycle stages using data from The European Union Statistics on Income and Living Conditions (EU-SILC) between 2004 and 2008 (N= 242,695 individuals).

The greater impact parenthood has on women's labor supply has long since persisted, but there are reasons to believe that the extent of this differential impact on the division of paid labor should be becoming more equal across and within European countries, and differences over the life cycle could be narrowing. In recent decades the dual-earner household has overtaken the traditional male-breadwinner household in both Europe and North America which is especially the case in the Nordic countries where male-breadwinner households are rare (Adema & Whiteford, 2007). Recent surveys indicate the dual-earner trend should continue, as roughly 90 percent of younger-aged (15-39) Europeans agree that both men and women should contribute to household income (Jaumotte, 2004; Testa, 2007). There has also been a political emphasis towards better enabling the dual-earner trend to continue, as several European governments have recently introduced policies designed to promote a dual-earner household model (Lewis, Knijn, Martin, & Ostner, 2008). A related trend concerns women's increased education levels, as the gender gap at higher levels of educational attainment, which has traditionally favored men, has declined and reversed

in most European countries (see OECD, 2013). This development predicts a more egalitarian division of paid labor within households, as higher educated women have higher employment rates and do not reduce work hours when they have children to the same extent as lesser educated women (Erhel & Guergoat-Lariviere, 2013). Despite the proportions of dual-earner households trending upwards, and women's relative educational position to men has increased, across European countries between 2004 and 2008, women's employment rates continued to lag men's by roughly 15 percent (Eurostat, 2013[1]). Much of this gap is because women with children face penalties compared to childless women and men as they are far more likely to scale back or retreat altogether from the labor market when children are present (Budig & England, 2001; Budig, Misra, & Boeckmann 2012; Klesment & Van Bavel, 2015).

Female employment rates tend to pattern along regime type lines (Esping-Andersen, 1990, 1999), yet within regimes rates of part-time work and hours worked are more variant (Gornick, 1999; Rubery, Smith, & Fagan, 1998). Part-time work can influence the division of paid labor on both margins, as its availability can increase women's employment rates, while part-time hours can increase divisions between genders, since part-time work remains primarily a female activity. Men's labor supply and hours worked are often taken as given, yet in recent years this holds less true, as men's part-time rates have been increasing across European countries (Eurostat, 2016[2]; Rubery et al., 1998). Family policy models can foster employment, enable greater control over work hours and improve gender equity (Bettio & Plattenga, 2004; Thévenon, 2011). Family policies are embedded in wider social, culture and historical contexts (Korpi, Ferrarini, & Englund, 2013), and although policy differences are nuanced across countries in the degree with which they support a dual-earner model of employment, there are commonalities according to the welfare regime a country adheres to.

This paper contributes to related literature on the division of paid labor in several ways. First, because having children in the home can impact women's participation in employment as well as their working time, both

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[1] In the EU (28) countries rates for 20-64 year olds were for women 59.3 in 2004 and 62.8 in 2008, and for men 75.4 and 77.8, respectively. Code: tesem010, accessed 18 Feb 2016, http://ec.europa.eu/eurostat/data/database

[2] Across the European Union 27 countries, between 2000 and 2008, the number of men aged 25-59 working part-time increased 27.3 percent, compared to 21 percent for women (own calculations, Eurostat, http://ee.europa.eu/eurostat/ variable code lfsa_epgaed.

margins are examined, as fewer studies have focused on the intensive (work hours) margin of employment (Hegewish & Gornick, 2011). This is combined with analyzing the impact of parenthood on the division of paid labor over five family cycle stages based on the age of the youngest child in the home, providing a more nuanced analysis of differentiating regime-type patterns in how couples divide paid labor than studies which compare, for example, parents and non-parents dichotomously or focus specifically on parents of young children. Using five such categories better operationalizes the gendered impact of parenthood, as mothers' time allocation across multiple dimensions, including paid work, can vary substantially over the life course (Anxo et al., 2007; Anxo et al. 2011; Kimmel & Connelly, 2007; Stier et al., 2001). Increasing proportions of dual-earner couples also warrant further examinations of their division of paid labor, and this paper benefits from having data on most women's partners, enabling a truer comparison for coupled men and women than studies which focus on women's labor market outcomes specifically (see as exceptions Anxo et al., 2007; Eeckhaut, Stanfors, & Van de Putte, 2014; Misra et al., 2011). These dimensions are explored using Esping-Andersen's (1990) regime-typology, while including several Eastern European countries based on their positioning within this regime framework according to (Fenger, 2007), countries which have been less studied in this body of literature.

Background

This paper considers women's labor supply and the division of paid labor within the standard labor supply model, whereby individuals decision to work or not work, and the intensity with which they work (i.e. how many hours), are based on consumption of market goods and services, measured as the market wage, and preferences for work compared to leisure, and non-labour income (Jacobsen, 1994)[3]. In this model, individuals aim to maximize utility, subject to subject to a budget and time constraint (i.e. market versus home). The budget constraint indicates individuals' consumption cannot exceed the overall value of one's time, meaning the opportunity cost of non-market time is equal to the market wage rate, thus higher earnings, irrespective of gender, increase the opportunity costs of

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[3] This paragraph draws heavily from the account in Jacobsen, 1994, pp. 154-163.

non-market time. Women and men will generally supply more hours of labor the higher the wage rate above a reservation wage, below which they will opt out of employment.

Based on the theory of specialization (Becker, 1973) and comparative advantages (Becker, 1981), decisions over intra-household time allocation relates to earnings potential differences between men and women, whereby men's typically higher wage predicts they will specialize in market work and women non-market work, implying a negative child effect on women's labor supply. Such gains are generally most obvious when children are young. Given certain preferences, work-reconciliation or family taxation policies can impact the budget constraint and reduce specialization by, for example, reducing childcare costs, and the time constraint by providing childcare access, two examples which predict increased mothers labor supply. Becker's theories were formulated when the male-breadwinner household was normative, and implied sex differences in human capital investments at odds with recent educational trends, and the fact that most women and mothers now work in the labor market. Bargaining theory was later formulated in reaction to specialization theory, which suggests that the allocation of intra-household resources (i.e. time) is considered in terms of partners' bargaining power (Manser & Brown, 1980), dependent on what each partner can trade and the living standard that can be achieved outside the partnership (Lundberg & Pollak, 1996), and can be expected to relate to spouses' relative earnings potential. Both specialization and bargaining theories imply a gendered division of labor, but women's increased wages and education raise their opportunity cost of non-market time (including caring for children) and increase bargaining power within couples, which should equate to a more equal division of paid labor over time. This is in line with empirical evidence which supports that higher educated women tend to have higher employment rates (Evertsson et al., 2009), are more likely to work full-time (Erhel & Guergoat-Lariviere, 2013), and do not reduce work hours when they have children to nearly the same extent as lesser educated women do (De Henau et al., 2010; Del Boca et al., 2009; Uunk et al., 2005).

The welfare regime context alters the forces of specialization and opportunity cost framework, as the availability and design of work-reconciliation policies tend to vary across regimes to a greater extent than within them. Policy differences across Europe have been found to explain a large percentage of female labor force participation variation across countries (Del Boca et al., 2009), and reconciliation policies can inhibit or

provide parents with greater economic opportunities (Misra, Budig, & Moller, 2007). For example, taxation methods (individual, joint, and progressivity), along with social welfare systems, may incentivize family households to decrease market work or increase nonmarket work (De Henau et al., 2010; Jacobsen, 1994). The cost of childcare, relative to income, can be considered a tax on women's income, although whether its costs or lack of availability that best drives women's labor market attachment is heavily debated (Cf. Hegewish & Gornick, 2011, p.p.128-9). Empirical evidence that childcare policies are the main determinant of mothers' employment and hours worked in cross-national perspective is growing in the literature (Del Boca et al., 2009; De Henau et al., 2010; Erhel & Guergoat-Lariviere, 2013; Keck & Saraceno, 2013; Uunk et al., 2005). Accessibility, affordability and number of opening hours in childcare are determinant and vary considerably across countries, and a lack of childcare options has been linked to women seeking part-time employment (Del Boca et al., 2009; Gornick & Meyers, 2003).

Working mothers have for decades used part-time work as a strategy for reconciling work and family obligations, and part-time rates trend along regime type lines, although some inter-country variation exists (Gornick, 1999; Rubery et al., 1998; see also Table 1). While the proportion of part-time employment which is voluntary or involuntary is subject to debate, part-time work comes with costs via lower wages, reduced access to social benefits, and less opportunities for career advancement (Bardasi & Gornick, 2008). Part-time work that is considered marginal employment or short hour full-time jobs also varies across countries and regime types (Fagan, Hegewisch, & Pillinger, 2006; Rubery et al., 1998; Stier et al., 2001). Cross-country studies have posited the economic affluence argument whereby women with children in higher income countries may be able to financially afford less time in paid labor (Uunk et al., 2005; Van der Lippe, De Ruijter, De Ruijter & Raub, 2010). Men's employment is often taken as given and has been studied much less, but cross-national research has shown that men's labor supply in couple households does vary across countries according to pre-school aged children, in some cases (France, Italy and Sweden) fathers have higher labor supply and work hours compared to childless men in couple households, but in other cases (Germany, Netherlands, Spain, UK) no differences are found (Anxo et al., 2007). Men's part-time work has been found to be more common in Sweden, than in Germany, The UK or Italy (Bardasi & Gornick, 2008).

Esping-Andersen's welfare regime typology consists of three typical welfare states; the Social Democratic, Corporatist, and Liberal (1990, 1999). Some countries typify their regime more clearly, such as Corporatist Germany and Social Democratic Sweden, but should be considered as ideal- rather than real-world types (Fenger, 2007). The aims, scope, and provisions tend to vary across regimes to a greater extent than within them, differencing in their support of dual-earner couples, family support policies, gender equality in the labor market, and the degree with which they encourage or discourage female labor force participation. The typology has been criticized by scholars who have argued the framework better applies to class than gender as it fails to incorporate domestic care and unpaid work activities, which are largely performed by women (Lewis, 1992: Orloff, 1996; Sainsbury, 1999). However, others who have created a weighted policy indicator index to define countries by earner-carer, traditional family and market-orientated, have arrived at a similar typology (Korpi et al., 2013). Despite these potential shortcomings, the regime typology does provide a suitable framework for analyzing the division of paid labor as these regimes tend to coincide with employment patterns. This paper will categorize 25 European countries into six regime clusters, based on Esping-Andersen's welfare regime typology with the addition of subtypes based on Fenger (2007)[4] who incorporated eastern European countries into the framework, proceeding under full acknowledgement that family policies are more diverse and nuanced than a clustered analysis based on welfare state regime can account for (Thévenon, 2011).

The *Social Democratic* welfare regime is characterized by egalitarianism and universalism, and where defamilization and decommodification have been achieved to fairly high degree. Social Democratic countries included in this study are Denmark, Finland[5], Iceland, Norway and Sweden. In this regime women can achieve labor market equality with men via two channels – participating in the labor market similarly, with the state assuming responsibility for children, and via economic resources which the state provides to offset the costs of child care (Stier et al., 2001). These countries invest heavily in policies targeted

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[4] This six regime cluster has been used by others studying the full range of EU-SILC countries (see for example Whelan & Maître, 2010).

[5] Finland's status has been questioned by several scholars.

towards working parents, especially through the provision of parental leave and childcare services for children under age three (Bettio & Plattenga, 2004, Esping-Andersen, 1990; Thévenon, 2011). State-subsidized childcare creates de-familiziation by transferring services from the household to the public sector, which may also induce a selection of less-committed workers into employment who may choose female-dominated occupations (Datta Gupta, Smith & Verner, 2008: Stier et al., 2001). This regime promotes female labor participation and work-family compatibility in a general sense, and work-hour reductions are anticipated over the life course of women, with the expectation they will return to full time employ as children age (Gornick &Meyers, 2003; Stier et al., 2001). The welfare state expansion of social services in the Nordics also provides a multiplier effect, both enabling women to work while creating a labor market to work within (Esping-Andersen, 1990). These countries were early adopters of gender-neutral policies, which can increase female employment (Gornick & Meyers, 2003) but also men's unpaid domestic work (Hook, 2006). Time use evidence over the 1990s has shown that parenthood began to impact men and women more equally than previously (Dribe & Stanfors, 2009; Neilson & Stanfors, 2014), and men are also much more likely to uptake parental leave and work reduced hours when children are young (Duvander & Andersson 2006; Hegewish & Gornick, 2011; Van der Lippe et al., 2010), thus the division of paid work hours may be influenced not only to women's adjustments when children are present, but by men's. Finland has partly diverging earner-carer support policies aimed at parents of very young children compared to the other Nordics (Korpi et al., 2013; Thévenon, 2011), thus a smaller share of children under 3 are enrolled in formal childcare services (Table 1). I include Finland nonetheless, because over the remaining family cycle stages I anticipate the regime pattern to hold.

Corporatist countries are generally found in continental and Southern Europe, where welfare provisions are designed in line with male-breadwinning and a more traditional division of labor for couples with children. This study will differentiate Corporatist countries from western Europe (Austria, Belgium, France, Germany, and the Netherlands) and Southern Europe (Greece, Italy, Portugal, and Spain), as warranted by differences between these two groups (Esping-Andersen, 1999; Fenger, 2007). In Corporatist countries joint taxation is somewhat more commonplace, which may influence women's employment, as high marginal tax rates may disincentive the second earner, constraining their labor supply (Anxo et al., 2007; Jaumotte, 2003). Reducing gender inequity

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in the labor market is not prioritized, as a traditional family structure is expected (Stier et al., 2001). Policies are gendered yet in many instances generous, although this generosity does not extend to the south European states, where the family is central and policies are much less developed and in some instances non-existent (Neilson & Stanfors, 2014). In the Corporatist continental countries, policies available to families presume that one parent, usually the mother, reduces or ceases economic activity while children are young (De Henau et al., 2010). France and Belgium differ somewhat in measures for family support (Esping-Andersen, 1999; Misra et al., 2007). Women's share of part-time employment is higher than other regime types (Table 1); with the Netherlands known as a one-and-a-half earner model (Van der Lippe et al., 2010). The Netherlands and Germany are also well-known for their aversion towards bringing young children to formal childcare (Klesment & Van Bavel, 2015). In the Southern countries, a strong Mediterranean family model prevails, with close intergenerational ties, solidarity and cohesiveness (Ferrera, 1996). This leads in part to a weakness or near-absence of family support policies and institutions, which is evidenced by lower female employment rates comparative in Europe, and where women have a very prominent role in non-market production (Anxo et al., 2007; see also Anxo et al., 2011). Low levels of part-time work in Italy, and other Southern countries has been explained from the supply side (overall lower female LFP) and demand side (unions negative towards part-time employ) (Cf. Bardasi & Gornick, 2008). Portugal differs slightly as women have for decades had higher activity rates than in other Southern European countries (Cf. Mutari & Figart, 2001). During this study period, these Southern countries also have higher unemployment rate gender gaps to women's disadvantage (Table 1, see also Albanesi & Sahin, 2013; Azmat, Güell, & Manning, 2006), explaining some portion of this regime's employment differences between men and women.

Liberal regimes are often found in English-speaking countries, where welfare provision arrives via the labour market and distribution is often restricted to those qualifying for means-tested supports. Male breadwinning is normative and the state does not intervene in pursuit of advancing gender equality in the labor market, as a reliance on marketized care plus women's unpaid care exists (Misra et al., 2007). Policy-makers generally stay clear of individuals' family lives except when families fail, thus state support levels are low and childbirth leads many mothers to exit the labor market (De Henau et al., 2010; Esping-Andersen, 1990). Maternal part-time work is commonplace, and the hours worked by part-timers are short comparatively

(Anxo et al., 2007), with a large proportion of part-time work of poor quality (Fagan et al., 2006). A long-hours work culture exists, especially for men, with women typically exiting the labor market to compensate for their partners' long hours (Fagan et al., 2006; Mutari & Figart, 2001). This study includes Ireland and the UK as Liberal regime countries.

Post-socialist countries were not described in Esping-Andersen's typology, although this study includes nine such countries which I categorize into *Post-socialist Corporatist* (Bulgaria, Czech Republic, Hungary, Poland, Slovakia and Slovenia[6]) and *Post-socialist Liberal*, the Baltic countries of Estonia, Latvia and Lithuania, according to Fenger (2007), as well as Whelan and Maître (2010), who fit these countries within the typology. The latter Baltic countries are a separate cluster, as it's generally understood they share commonalities (Fenger, 2007). These are included in an exploratory sense as they have received very little attention in the related literature on this topic, with minor exceptions (Erhel & Guergoat-Lariviere, 2013). Theoretical expectations are less clear to define here, largely because these countries have been less studied, and are transitioning across different points of the economic development trajectory than much of the rest of Europe. Here women's share of part time employment is very low comparatively, as are total fertility rates, GDP per capita rankings, and percentage of young children in formal childcare (Table 1). Their lower GDP per capita could imply a more equal division of paid labor out of financial necessity, as evidence from time use surveys shows women with children spend less time in paid labor in higher income countries (Van der Lippe et al., 2010) and relatedly women have been shown to work more hours in economically-stressed households (Winslow-Bowe, 2006). However, some scholars have observed a return to familialism and care by mothers in post-socialist EU member states Czech Republic, Poland and Slovakia (Szelewa & Polakowski, 2008: Erhel & Guergoat-Lariviere, 2013), suggestive that women may retreat from the labor market, at least when young children are present.

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[6] Despite data being available, I excluded Romania from the study, as it has a much less-developed welfare state which doesn't fit within the post-soviet structure (Fenger, 2007).

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Table 1. Country, survey years, and country contextual factors

Regime type	Country	Survey year(s)	Gender gap unemployment[a]	TFR[b]	GDP/ capita[c]	% women employed in services[d]	% children in formal childcare (age 0-2)[e]	% children in formal childcare (ages 3- school)[e]	Part-time employment share (women)[f]	Part-time employment share (men)[f]
Social Democratic	Denmark	2004,07-08	-0.9	1.83	44595	86	72	96	27	6
	Finland	2004,06-08	-0.7	1.82	40147	85	26	77	13	4
	Iceland	2004-08	0.2	2.08	40332	87	39	96	30	4
	Norway	2004-05	0.4	1.89	64303	90	34	82	38	9
	Sweden	2004, 07-08	-0.1	1.83	42340	90	48	91	36	7
	Regime avg.		-0.2	1.89	46343	88	44	88	29	6
Corporatist	Austria	2004-08	-0.8	1.41	42196	82	6	71	43	5
	Belgium	2004-08	-1.8	1.79	40230	88	42	99	40	5
	France	2004-07	-1.5	1.97	36924	86	33	95	29	4
	Germany	2005-08	0.1	1.36	39374	82	18	88	46	7
	Netherlands	2005-08	-0.7	1.73	45278	86	44	90	72	13
	Regime avg.		-0.9	1.65	40800	85	29	89	46	7
Liberal	Ireland	2004-07	1.1	1.95	47798	87	22	86	29	4
	U.K.	2005-08	0.8	1.82	37282	90	34	87	39	4
	Regime avg.		1.0	1.89	42540	86	29	88	46	7
Southern European	Greece	2004-08	-8.1	1.37	31396	78	10	64	9	2
	Italy	2004-08	-3.4	1.38	37491	80	26	91	28	4
	Portugal	2004-08	-2.3	1.38	27185	72	31	65	10	3
	Spain	2004-08	-5.0	1.37	33955	85	38	92	20	3
	Regime avg.		-4.7	1.38	32507	80	27	80	23	4
Post-Socialist	Bulgaria	2008	0	1.41	13620	65	10	62	2	1
	Czech Rep.	2005-08	-2.8	1.36	26921	70	2	69	7	1
Corporatist	Hungary	2005	-0.4	1.32	22625	76	8	77	5	2

Poland	2005-08	-1.8	1.29	18183	68	3	31	9	4
Slovakia	2005-08	-2.3	1.28	21422	72	3	69	3	1
Slovenia	2005-08	-1.4	1.35	28239	68	28	82	6	3
Regime avg.		-1.5	1.33	21835	71	9	66	6	2
Post- Estonia	2004,06-08	1.4	1.60	23808	74	16	84	8	3
Socialist Latvia	2005, 08	0.5	1.45	18940	75	16	63	7	4
Liberal Lithuania	2005, 07	0	1.34	20113	70	11	59	9	5
Regime avg.		0.6	1.46	20954	72	16	71	7	3
Europe-25[g]	2004-08	-1.2	1.64	35225	83	26	82	24	4

Notes: [a] Gender gap unemployment equals percentage point gap between the unemployment rate (% of labor force) of men and women (5-year average 2004-2008). [b] TFR calculated as 5-year average 2004-2008. [c] GDP/capita PPP figures in 2011 international $ (5-year average 2004-2008). [d] Employment in the services sector consists of wholesale and retail trade and restaurants and hotels; transport, storage, and communications; financing, insurance, real estate, and business services; and community, social, and personal services, in accordance with divisions 6-9 (ISIC 2) or categories G-Q (ISIC 3) or categories G-U (ISIC 4) (5-year average 2004-2008). [e] Percentage of children enrolled in formal childcare (4-year average 2005-2008) [f] Part-time employment as a percentage of total employment within-gender (5-year average 2004-2008). [g] Average of 25 European countries listed in table.

Source: [a,b,c,d] World Bank Open Data. http://data.worldbank.org/ Accessed 31 May 2016. [e,f] Eurostat, http://ec.europa.eu/eurostat/ accessed: 11 June 2016

Research questions

This paper tackles four inter-related research questions, each of which addresses the division of paid labor on two margins of employment and weekly hours worked. The questions are listed below, with some further theoretical expectations discussed.

The first question is descriptive in nature, asking how the division of paid labor patterns over five family cycle stages across 25 European countries according to six regime-type clusters? This will be illustrated by employment rates for all coupled men and women, the extensive margin, and the gender gap in weekly hours worked for men and women in dual-worker couples will represent the intensive margin. The main expectation is that regimes will exhibit unique patterns, in accordance with the previous theoretical and regime context discussions. I expect that the gender gap on both margins will be narrower in the Social Democratic regimes over family cycle stages, since these states are "strongly biased in favor of maximizing labor supply", whereas Corporatist states nourish reductions, while Liberal states do less to encourage exit or participation (Esping-Andersen, 1990, p.159). The higher propensity of part-time work in the Corporatist and Liberal regimes should be noticeable in the gender gap in weekly work hours across most of the family cycle. Southern Europe should have larger gender gaps in a general sense at the extensive margin, but possibly less variation over the family cycle compared to other regimes. The post-socialist regimes, where women's work is highly normative yet the welfare regimes are under-developed comparatively, should have egalitarian divisions for childless couples, but when young children are present substantial gaps may emerge.

The second question asks how the odds of being employed vary over the family cycle within regime types for women and men, respectively. For women, I ask whether certain regimes better reduce the employment gap between women without and with children. The expectation is that across all regimes, women with children 0-2 will be at lower odds of being employed than childless women, but that as children age this penalty will be reduced more so in the Social Democratic countries compared to the Corporatist and Liberal ones. In the post-socialist regimes, I anticipate labor market exits for women with young children, but not as children are school aged. For men, the expectation is that men with children are generally more likely employed than those without across all regime types, yet I question whether

this effect will be observable in the Social Democratic states, where men with children aged 0-2 are more likely to be on full-time parental leave.

The third question examines the impact that parenthood, or more specifically, that having a youngest child of a certain age has on the division of weekly work hours between coupled men and women. Because this analysis includes only those termed dual-workers (coupled men and women where both partners were working at the time of survey), the model should capture regime-type patterns largely determined by gendered part-time work patterns. For men, I anticipate across the family cycle in all regimes, they may generally work more weekly hours than non-fathers, but not in all cases, since related research how shown somewhat conflicting work hour differences between fathers and non-fathers across countries (Anxo et al., 2007). For women, I anticipate across all regimes that women with children aged 0-2 will work less hours than childless women, but as increases in the child's age generate more options for non-parental care such as daycare, kindergarten and school, these penalties will dissipate amongst dual-worker couples. Because these couples, in each regime, are already selected into employment, I anticipate less distinct welfare regime patterns than in the extensive analysis.

Data and methods

This paper uses five pooled cross-sections of the European Survey of Living Conditions (EU-SILC) 2004-2008, which collects cross-country comparable micro-data on income, poverty and social exclusion, including data on all individuals in the sampled households (European Commission, 2008). 25 countries were selected which fit into the previously described regime type framework (see Table 2 for countries included)[7]. The empirical focus is on prime working-aged coupled men and women, who can be identified using the spouse/partner ID variable (PB180)[8]. I defined parents as those who live with children using the father and mother id variables (RB220 & RB230),

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[7] Two countries, Slovakia and the UK, are included with some hesitation. The representativeness of the Slovakia sample has been questioned on the grounds that the employment rates of mothers in the EU-SILC sample differ substantially from a comparable labor force survey (Keck & Saraceno, 2013). In the UK sample 8 percent of coupled individuals had missing education information, a much higher figure than any other country.

[8] This variable was completed for each country and wave with one exception, 2006 Norway, which was dropped from the analysis.

meaning any children outside the household are unknown, and no differentiation can be made between biological, adopted or step-children. A four-year rotational design usually consists of four groups in year 1, with one panel being dropped, and replaced the following year of data collection, which implies larger sample sizes in the first wave of data, as subsequent appearances were excluded in the pooling so that individuals appeared only once. Although EU-SILC features longitudinal information, the 4-year rotational panel captures transitions to parenthood for relatively few individuals. The pooled cross-sections better suit this paper's research questions, with the advantage of containing a large sub-sample enabling examinations over several family cycle stages with reliable sample sizes[9].

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[9] Each country and data wave were included in the study only if the number of values in each family cycle variable cell was 30 or greater.

Table 2.
Country, survey years, and sample composition based on age of youngest child in the home.

Regime type	Country	Survey year(s)	Coupled women age 25-49 years (N)	Coupled women with partner work status (N)	No children	Yngst. child 0-2	Yngst. child 3-school age	Yngst. child school age-8	Yngst. child 9-18
Social Democratic	Denmark	2004,07-08	4,911	4,847	22.0	18.3	13.8	12.4	33.5
	Finland	2004,06-08	5,834	5,777	25.0	16.6	17.3	7.3	33.8
	Iceland	2004-08	2,438	2,389	13.7	23.2	15.5	14.5	33.2
	Norway	2004-05	2,690	2,633	21.1	18.5	14.5	12.2	33.7
	Sweden	2004, 07-08	4,533	4,477	23.0	20.2	15.3	6.4	35.1
Corporatist	Austria	2004-08	4,251	4,249	27.4	16.9	13.6	11.2	30.9
	Belgium	2004-08	3,958	3,825	26.3	19.5	13.6	11.4	29.3
	France	2004-07	4,289	4,257	21.1	21.0	15.8	11.8	30.3
	Germany	2005-08	6,711	6,649	26.8	13.5	14.2	11.8	33.7
	Netherlands	2005-08	6,970	6,901	24.5	22.7	10.2	16.0	26.7
Liberal	Ireland	2004-07	2,602	2,572	18.0	21.5	17.2	14.2	29.2
	U.K.	2005-08	5,044	4,279	28.3	19.4	9.3	15.4	27.6
Southern European	Greece	2004-08	4,749	4,730	27.8	15.9	9.8	15.3	31.3
	Italy	2004-08	14,677	14,627	26.0	16.9	14.4	11.9	30.8
	Portugal	2004-08	3,226	3,143	23.0	13.3	14.2	13.1	36.4
	Spain	2004-08	10,206	9,425	24.7	18.1	14.4	12.0	30.9
Post-Socialist Corporatist	Bulgaria	2008	1,423	1,400	28.8	14.3	14.2	7.2	35.6
	Czech Rep.	2005-08	3,722	3,722	26.0	18.0	12.6	11.1	32.4
	Hungary	2005	2,168	2,168	26.2	16.0	10.0	15.8	32.1
	Poland	2005-08	10,581	9,974	20.9	14.2	14.2	12.5	38.2
	Slovakia	2005-08	3,837	3,831	24.0	13.3	10.7	9.3	42.7
	Slovenia	2005-08	7,757	7,724	29.4	12.8	10.3	9.5	38.0
Post-Socialist Liberal	Estonia	2004,06-08	3,015	2,876	19.9	13.6	15.4	6.4	44.7
	Latvia	2005, 08	1,345	1,316	24.9	14.9	8.2	15.6	36.4
	Lithuania	2005, 07	1,996	1,971	23.9	11.2	12.4	7.4	45.1
	Europe-25[c]	2005-08	122,933	119,762	24.5	17.0	13.4	11.7	33.4

Notes: [a] Full sample includes individuals of all ages. [b] Average of 25-European countries listed in table.
Source: Author's calculations using EU-SILC 2004-2008

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The sample

The sample was chosen by first selecting women aged 25-49 who reside with a heterosexual partner (married and non-married) and provided information on self-reported current economic status (EU-SILC variable PL030, N=122,918). The 25-49 age span was chosen to limit the influence of unidentified true mothers who appear childless in the data but whose children are no longer in the same household, while at the same time not excluding too many women with older aged children, as this group is of empirical interest. Individuals with missing information on work status, work hours, or education were excluded. The male sample included all partners of the female sample for whom economic status and education was available (N=119,762), which captured 97.4 percent of the female sample's partners[10] . These women and men samples are used in the extensive paid work analyses. When examining the intensive work margin of weekly work hours for dual-worker couples, I select only the aforementioned coupled women and men whereby both partners reported being employed, which equated to 76,177 men and 76,343 women[11]. Standard errors were adjusted at the household level due to the clustering of individuals within households.

Dependent variables

The paper uses two dependent variables. *Employed* is a binary variable indicating if the man or woman self-reported to be employed full- or part-time, defined as working for pay at least 1 hour last week, using EU-SILC variable PL030 (self-defined current economic status). Those unemployed, students, in retirement, permanently disabled, fulfilling domestic/care responsibilities (i.e. homemakers) and in compulsory military service were considering not working. Individuals on maternity leave are considered employed, but full-time parental leave was indicated as not employed (even though individuals may technically have a job).

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[10] Related research tends to either select coupled men and women of the same age range (Misra et al., 2011) or allow for more parsimonious ages of partners (e.g. Anxo et al., 2007). I chose the latter, as in this case it omits only 2.6 percent of the women's partners, versus 16 percent if same age ranges were used. For robustness, the extensive work analysis is performed on male partners aged 25-59 only, which had zero effect on the coefficients of interest.
[11] The slight gender imbalance is due to some individuals having stated they are employed, but are excluded due to missing information on work hours.

The second dependent variable is *weekly work hours*, EU-SILC variable PL060 (number of hours usually worked per week in main job). This corresponded to the hours in the main job, including extra hours (paid or unpaid), but excluded commuting time and meal breaks. Individuals with irregular weekly hours (e.g. self-employed and family workers) provided average hours actually worked over the past four weeks.

The employed binary variable does not differentiate between full- and part-time because the definition and intensity of women's part-time work varies considerably across countries and family cycle stages (Bardasi & Gornick, 2008; Gutierrez-Domenech, 2005; Rubery et al., 1998). The weekly work hours variable, however, will in essence pick up variation in part-time employment across regimes and family cycle stages. The empirical interest is how coupled individuals divide the number of hours they usually work each week, not differences in self-reported part-time work which is a somewhat different (albeit important) measure of the division of paid labor.

Independent variables

The main independent variable is family cycle, constructed to capture the division of paid labor over five life-course stages, based on the age of the youngest child in the home. Categories include no children (reference category), youngest child aged 0-2, youngest child aged 3 to year before compulsory schooling, youngest child compulsory school age to 8, and youngest child aged 9-18. Although many comparative studies create similar categories based on nominal age ranges, compulsory school age differs across European countries (range 4-7; see Appendix A), thus this construct creates family cycle categories which are more comparable across countries if you consider possible constraints on women's labor supply, such as a 4-year old child attending public school in one country, but requiring formal or informal childcare in another. Since this paper will compare those with and without children in the home, the average age of women in the no children control group was 40.0, compared to 32.8 for those with youngest child 0-2, and 41.9 for those with child 9-18, who are the category closest in average age to childless women. The older age of childless women indicates that some portion of the sample likely have children who have left the home.

Control variables include presence of older siblings, a categorical variable to indicate whether no older children were present in the household (ref.), 1, or 2 or more[12]. Education pertains to the highest level attained (EU-SILC variable PE040), using the ISCED-1997 classification framework. Education was categorized as lower (ISCED levels 1-2) middle (ISCED 3), and higher (ISCED 4-5). Because cohabiting and married couples may differ in their division of paid work (Bianchi, Lesnard, Nazio, & Raley, 2014), a categorical marital status variable was included to differentiate between those who are legally married (reference category), non-married, and those with missing/NA[13]. This variable should also capture any differential tax treatment of married and non-married persons between countries (De Henau et al., 2010). Age group is a categorical variable in 5-year increments, with 25-29 as the reference category. In the logistic regression analyses of men and women a partner's education variable is included, which is not used in the OLS pooled analysis as it would induce model over-specification. Although high levels of wealth or investment income make employment less financially attractive and may negatively affect labor supply, especially for women, no such control is included as the data didn't possess any such variable which didn't pose a risk to the exogeneity assumption[14]. The partner's education control should capture some portion of this effect.

Method of analysis

This paper examines the division of labor at the extensive (employment) and intensive (weekly work hours) margins over five family cycle stages and across regime types. The first descriptive analysis calculates coupled men's and women's employment rates, and for dual-worker couples the gender gap in weekly work hours, calculating unadjusted mean values for

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[12] 89.6 percent of the female sample have two or fewer children.

[13] This variable is complete for all countries and years except Ireland 2008, but since the 2007 Ireland data shows 96 percent of couples are legally married, I code all couples in 2008 Ireland as married.

[14] EU-SILC provides detailed income variables within-countries, but because some countries have gross figures, some net, and others change between waves, creating a comparable variable that isolated investment income was not possible. For robustness, a household disposable income within-country quartile variable was included in logistic regressions. Results did not change outcomes in a meaningful manner; results available from author.

each country and averaging to obtain regime values. The second step used logistic regression to estimate the odds that a coupled woman aged 25-49 is employed at the time of survey (Table 3), and then the male partners were analyzed separately (Table 4). The third analysis used OLS regressions to investigate the impact of parenthood on weekly hours of paid work across six regime types, pooling men and women in the same models and using a gender*family cycle interaction term in order to produce a base effect for men, and an additional effect for women. This method has been applied elsewhere to examine the impact of parenthood from a gender perspective (Dribe & Stanfors, 2009; Neilson & Stanfors, 2014). This strategy has the benefit of explicitly connecting women's employment with their partners, which implies a relaxation of an OLS assumption of independence of error terms, thus robust standard errors are clustered at the household level. Step three was performed only for individuals in dual-worker couples where both partners reported working at least 1 hour on the survey week. As a robustness check and test of the regime typology framework, the third analysis is repeated for each country independently, with results presented in Appendix B.

Results

Figure 1 (a-f) presents patterns according to welfare regime-type of the employment rates of coupled women aged 25-49 and their male partners over five family cycle stages, along with the gender gap in weekly work hours for dual-worker couples. All figures are unadjusted, calculated given equal weighting to each country. The work hour gaps are shown as positive values reflecting men's higher hours in all circumstances, with weekly hours capped at 60 to reduce the influence of outliers[15] on average values. The figure illustrates that each regime type possesses a somewhat unique pattern, while some regimes share resemblance, such as Corporatist and Liberal, and the two post-socialist regimes.

    To elaborate first regarding employment rates, the Social Democratic pattern illustrates small employment gaps between men and women without children. This gap widens when children are 0-2, but to a lesser extent than other regimes. Once children are older than 2, the employment gap between men and women narrows as children age. The Corporatist regime shows a similar gap to the Social Democratic when no children are present, but a wider gap emerges when the youngest child is 0-2, a gap which closes as family cycle categories increase but remains substantial, even in the oldest child category. The Liberal regime pattern most resembles the Corporatist, although the narrowing of the gap when children are 3 to school age does not occur as it did in the Corporatist. The Southern regime has the largest employment gap for those without children, whereby 86 percent of childless men are employed compared to 65 percent of women, a gap larger than the difference between men and women with school aged children in most other regimes. Some portion of this is explained by the 4.7 percentage point gender gap in unemployment rates (unfavorable towards women), a gap which is marginal in each other regime (see Table 1). Across family cycle stages in Southern countries, women's employment rates varied less compared to all other regimes. The post-socialist regimes most resemble one another, with an employment gap pattern over the family cycle similar to the Social Democratic regime, except when the youngest child is 0-2, where the Post-socialist Corporatist regime has a larger gap emerge, and

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[15] The proportion of men and women working extremely high weekly work hours has risen across many countries in recent decades (Burger, 2015). 5.6 percent of men and 1.6. of women who worked in this study reported more than 60 weekly hours, and performing the analyses without capping did not alter results meaningfully.

where the Post-socialist Liberal regime gap widens considerably. In fact, Post-socialist Liberal coupled men and women with a child aged 0-2 is the only family cycle stage where a greater share of couples (56.3 percent) resort to a traditional division of paid labor, where the man works and the women does not across any regime type, indicative of low rates of formal childcare and labor market exits for new mothers.

Figure 1 also illustrates the gender gap in weekly work hours over the family cycle across regime types for dual-worker couples. The proportion of dual-worker couples within regimes are 75 percent in Social Democratic regime, 64 percent Corporatist, 62 percent Liberal, 52 percent Southern, 65 percent Post-socialist Corporatist and 67 percent Post-socialist Liberal. Of this selected sample of dual-workers, in all family cycle stages men work more weekly hours than women, with the gender gaps smallest within each regime when no children are present. For those with children, the differences within each regime over the family cycle tend to vary less than inter-regime differences within family cycle stages. For example, in the Social Democratic regime, only in the older child group does the work hour gap narrow, but differences at all family cycle stages are smaller in the Social Democratic compared to the Corporatist or Liberal. Men's work hours, at the average, are similar across these regimes, yet there is more inter-regime variation in the share of men who report working less than 36 weekly hours (e.g. 5.2 percent in Social Democratic, versus 13.3 percent of Corporatist men, 8.6 Liberal and 9.0 Southern) (see Appendix A). This suggests Corporatist and Liberal regimes may have greater shares of men working long hours, and shorter hours, compared to the Social Democratic regime. Women's work hours average 36.4 in the Social Democratic, versus 30.0 and 31.9 in Corporatist and Liberal, respectively, averages which have a similar inter-regime pattern as the proportion working less than 36 hours. The family cycle work hour gaps of dual workers in the Southern regime, somewhat surprisingly, most resemble the Social Democratic pattern, with the narrowest gap when no children are present, and a 7-9 hour gap over the stages when children are present. In the post-socialist regimes, the gender gap in weekly hours is smaller than in other regime types over all family cycle categories. The tendency is for the work-hour gap to reduce as children age in both these regimes.

Figure 1.
Employment rates (left axis) and weekly work hours gender cap (right axis) of coupled men and women across five family cycle stages, by regime type

a. Social Democratic 2004-2008
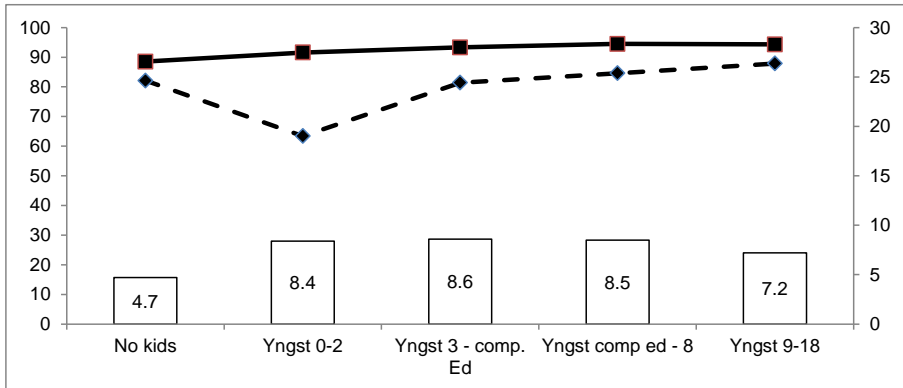
Notes: Solid lines represent men's employment rates, dotted lines women's employment rates, and column bars weekly work hours gender gap. Within regimes each country was given equal weighting. Sample weights included.
Source: EU-SILC, author's calculations

b. Corporatist 2004-2008

Notes: Solid lines represent men's employment rates, dotted lines women's employment rates, and column bars weekly work hours gender gap. Within regimes each country was given equal weighting. Sample weights included.
Source: EU-SILC, author's calculations

Figure 1 (continued).
Employment rates (left axis) and weekly work hours gender cap (right axis) of coupled men and women across five family cycle stages, by regime type
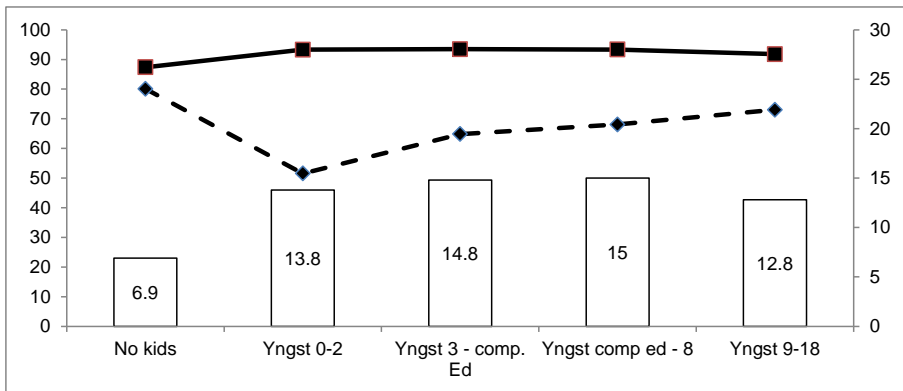
c. Liberal 2004-2008

Notes: Solid lines represent men's employment rates, dotted lines women's employment rates, and column bars weekly work hours gender gap. Within regimes each country was given equal weighting. Sample weights included.
Source: EU-SILC, author's calculations
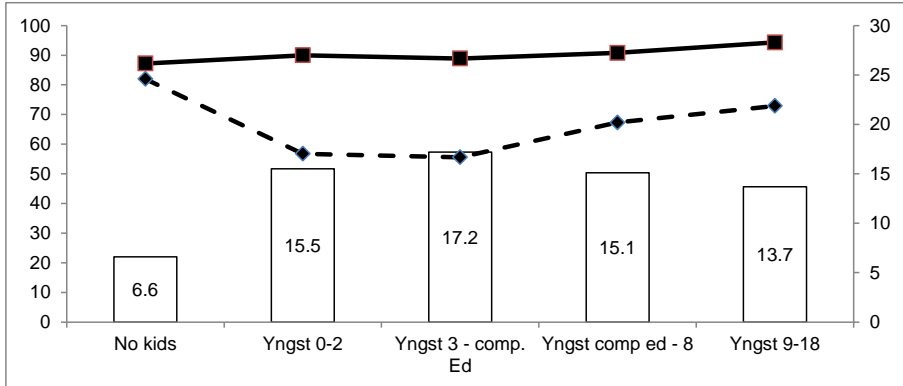
d. Southern 2004-2008

Notes: Solid lines represent men's employment rates, dotted lines women's employment rates, and column bars weekly work hours gender gap. Within regimes each country was given equal weighting. Sample weights included.
Source: EU-SILC, author's calculations

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Figure 1 (continued).
Employment rates (left axis) and weekly work hours gender cap (right axis) of coupled men and women across five family cycle stages, by regime type
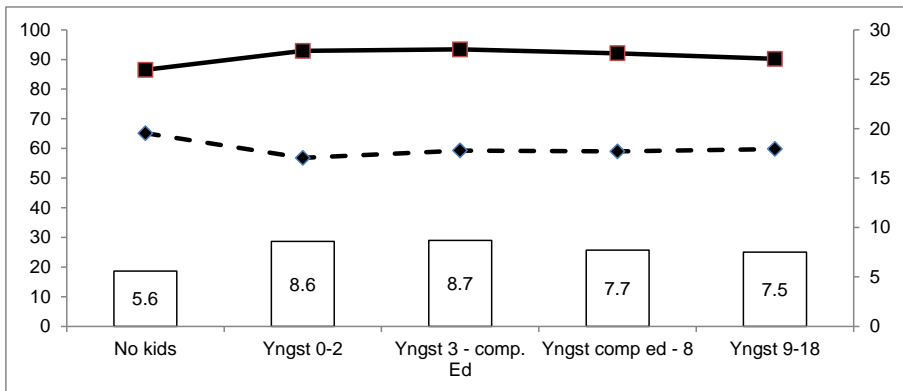
e. Post-socialist Corporatist 2005-2008

No kids	Yngst 0-2	Yngst 3 - comp. Ed	Yngst comp ed - 8	Yngst 9-18
2.8	5.6	4.9	4.4	3.3

Notes: Solid lines represent men's employment rates, dotted lines women's employment rates, and column bars weekly work hours gender gap. Within regimes each country was given equal weighting. Sample weights included.
Source: EU-SILC, author's calculations

f. Post-socialist Liberal 2004-2008

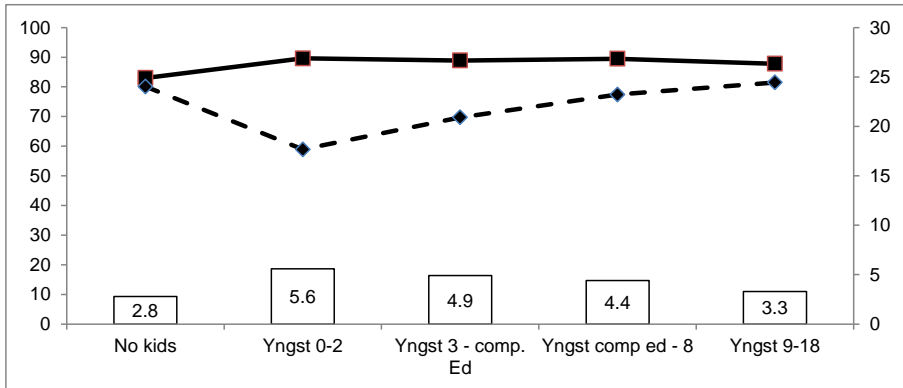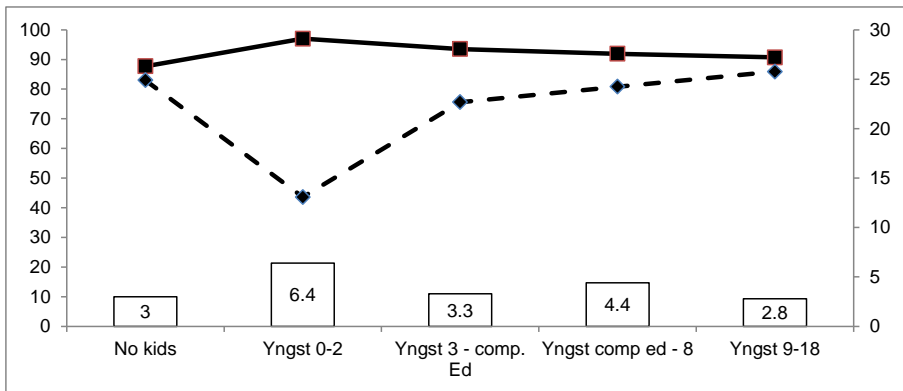|				
No kids	Yngst 0-2	Yngst 3 - comp. Ed	Yngst comp ed - 8	Yngst 9-18
3	6.4	3.3	4.4	2.8

Notes: Solid lines represent men's employment rates, dotted lines women's employment rates, and column bars weekly work hours gender gap. Within regimes each country was given equal weighting. Sample weights included.
Source: EU-SILC, author's calculations

Next, logistic regression is used to estimate the odds of being employed for coupled women (see Table 3) within regime type across family cycle stages. Control variables included age categories, education level, partner's education, presence of older siblings, and marital status, with country and year dummies also included[16]. Not surprisingly, coupled women with young children aged 0-2 are less likely working than childless women across all regimes. This differential between childless coupled women and those with 0-2 year old is least pronounced in the Southern regime (OR=0.612) and most in Post-socialist Liberal (OR=0.147), indicating the lower general employment levels of women in Southern Europe and lack of childcare option in the Post-socialist Liberal countries. In the Post-socialist Liberal regime on 40.2 percent of women in the youngest child 0-2 child category are employed, compared with 83.7 percent for childless women. Women with children's odds are also reduced across all regimes when the youngest child is 3 to compulsory school age, except in the Social Democratic countries, where any differences are not statistically significant. Reduced odds for women with youngest child aged compulsory school to 8 are present across all regimes, with the exception of the Social Democratic and Post-socialist Liberal where no differences are uncovered compared to childless women, net of covariates. When the youngest child is aged 9-18, in the Corporatist, Liberal, and Southern regimes, women are still less likely to be employed that otherwise comparable women without children, which is not the case in the Social Democratic or post-socialist regimes. Social Democratic women in this family cycle stage are more likely employed than childless women (OR=1.171), the only regime this pattern is uncovered. Across all regime types, women with middle education were at higher odds of being employed than primary educated, and women with higher education were at higher odds of being employed compared to primary and middle educated women, a quite confirmatory finding.

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[16] Tables list only main results; full table output available from author.

Table 3.
Coupled women's odds of being employed over the family cycle, by regime type

	Social Democratic	Corporatist	Liberal	Southern	Post-socialist Corporatist	Post-socialist Liberal
No Children (ref)						
Yngst. 0-2	0.341***	0.292***	0.293***	0.612***	0.320***	0.147***
	(0.30-0.39)	(0.26-0.33)	(0.24-0.36)	(0.56-0.67)	(0.29-0.36)	(0.11-0.19)
Yngst. 3-school age	0.874	0.526***	0.326***	0.720***	0.633***	0.713*
	(0.76-1.01)	(0.47-0.59)	(0.26-0.41)	(0.66-0.79)	(0.56-0.71)	(0.55-0.93)
Yngst. school age-8	0.984	0.605***	0.592***	0.782***	0.830**	0.969
	(0.83-1.16)	(0.54-0.68)	(0.48-0.74)	(0.71-0.86)	(0.74-0.93)	(0.72-1.30)
Yngst. 9-18	1.171*	0.792***	0.797*	0.848***	0.985	1.147
	(1.03-1.33)	(0.72-0.87)	(0.66-0.96)	(0.79-0.91)	(0.91-1.07)	(0.94-1.40)
Education (lower ref.)						
Middle	1.765***	2.283***	2.550***	1.971***	2.432***	1.781***
	(1.58-1.97)	(2.11-2.47)	(2.17-2.99)	(1.86-2.09)	(2.24-2.65)	(1.41-2.25)
Higher	2.472***	4.059***	3.871***	3.842***	6.833***	3.753***
	(2.19-2.79)	(3.71-4.44)	(3.28-4.57)	(3.58-4.12)	(6.07-7.69)	(2.93-4.81)
LR Chi	1733.8	3422.4	1094.8	3607.0	3752.4	1002.4
N	20,392	26,179	7,645	32,858	29,488	6,356

Notes: ***p < .001 **p < .01 *p < .05. Logistic regressions on female sample only. Control variables include age categories, education level, partner's education level, presence of older siblings, and marital status. Country and year dummies included.
Source: Author's calculations using EU-SILC 2004-2008

The odds of being employed for coupled men within regime type across family cycle stages are next estimated using the same logistic regression model as previously (see Table 4). Unlike women, in no circumstance are men with children less likely to be employed than childless men. However, men with youngest child aged 0-2 are only at higher odds of being employed compared to childless men in the Post-socialist Liberal regime. Since men with children aged 9-18 are at greater odds of being employed in each regime, as well as increased odds at other family cycle stages in the Social Democratic and Southern regimes, I expect that the lack of findings for those the aged 0-2 is because some portion of men are on full-time parental leave. To explore this somewhat crudely, I re-estimate this regression but code men who indicated being outside of paid work for the purpose of performing domestic duties, and who recorded a

positive value for family/children related allowance (variable HY050G)[17] as working. This revealed an increased odds for men with children aged 0-2 in both the Social Democratic and Corporatist regimes. Because the data does not indicate explicitly that this was an employed person on full-time parental leave, I consider this finding more interesting than robust. It can be said that a regime-specific pattern over family cycle stages is less patterned for coupled men than it is for women. Across all regime types, men with middle education were at higher odds of being employed than primary educated, and men with higher education were at higher odds of being employed compared to primary educated women, as well as middle educated men in Corporatist and the post-socialist regimes.

Table 4.
Coupled men's odds of being employed over the family cycle, by regime type

	Social Democratic	Corporatist	Liberal	Southern	Post-socialist Corporatist	Post-socialist Liberal
No Children (ref)						
Yngst. 0-2	0.973	1.141	1.218	1.138	1.054	1.467*
	(0.81-1.17)	(0.95-1.37)	(0.89-1.66)	(0.98-1.32)	(0.91-1.32)	(1.04-2.06)
Yngst. 3-school age	1.135	1.194	1.012	1.229***	1.071	1.189
	(0.92-1.40)	(0.98-1.45)	(0.72-1.42)	(1.05-1.43)	(0.92-1.25)	(0.86-1.64)
Yngst. school age-8	1.416**	1.195	1.305	1.185***	1.108	1.201
	(1.10-1.83)	(0.98-1.46)	(0.94-1.82)	(1.02-1.38)	(0.95-1.29)	(0.85-1.70)
Yngst. 9-18	1.535***	1.256**	1.438**	1.206***	1.117*	1.415**
	(1.30-1.81)	(1.10-1.44)	(1.11-1.86)	(1.09-1.34)	(1.01-1.23)	(1.15-1.74)
Education (lower ref.)						
Middle	1.488***	1.962***	1.839***	1.717***	1.881***	1.890***
	(1.29-1.71)	(1.73-2.22)	(1.46-2.31)	(1.55-1.90)	(1.70-2.08)	(1.49-2.40)
Higher	1.790***	3.188***	2.074***	2.050***	4.890***	3.252***
	(1.52-2.12)	(2.74-3.71)	(1.64-2.62)	(1.80-2.34)	(4.07-5.87)	(2.45-4.31)
LR Chi	715.5	2148.5	415.9	1718.2	2820.5	411.7
N	20,123	25,881	6,851	31,925	28,819	6,163

Notes: ***p < .001 **p < .01 *p < .05. Logistic regressions on female sample only. Control variables include age categories, education level, partner's education level, presence of older siblings, and marital status. Country and year dummies included.
Source: Author's calculations using EU-SILC 2004-2008

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[17] HY050G is recorded at the couple level, thus this doesn't truly identify if the man was on parental leave. This affected 0.5 percent of the men sample, but 14.9 percent of the women sample.

Next, the analysis shifts to OLS regressions with results presented by regime type (Table 5). The dependent variable is weekly work hours, and the division of paid labor over the family cycle is assessed using an interaction term with gender and family cycle categories. The gender coefficient represents the gender gap for childless men and women, while the family cycle coefficients are base effects for men with children comparative to men without children, and the interaction term represents any additional effect for women with children. More explicitly, the interaction term essentially shows to what extent the effect of having a youngest child of a certain age affects women's paid work hours differently than men. The results are presented from pooled within-regime regressions for coupled men and women in dual-worker households only. The interest here was to determine if fathers work more hours than non-fathers across all regimes, and to assess the motherhood gaps in work hours over the family cycle

As expected, in no regime across any family cycle stage do men with children work less than comparable men without children. When the youngest child is 0-2 however, men with children work only marginally more than men without, and differences are not statistically significant in Corporatist, Southern, or Post-socialist Liberal regimes. As the youngest child ages, the general pattern across regimes is that fathers work more than non-fathers, but not in all cases. The Post-socialist Corporatist regime also has little differences for fathers and non-fathers, except when children are school aged to 8 years old.

 For coupled women in dual-worker couples, the interaction terms' negative coefficients indicate differences between mothers of children and non-mothers were greater than said differences between fathers and non-fathers. The gaps however, measured in coefficient magnitude, vary more between regimes within family cycle categories than within regime over the four family cycle categories where children are present. The differences between women with and without children are comparable in magnitude between the Social Democratic and Southern regimes (although extensive margin differences were more pronounced). Evidence that these gaps decline over other family cycle stages is scarce however, and any such declines are very marginal, with the exception of when children are 9-18, where the motherhood penalty declines within each regime except the Post-socialist Liberal, where fathers and mothers worked more weekly hours than comparable non-parents.

Taken together, the division of paid labor for dual-worker couples reveals that in most cases, parenthood impacts the weekly work hours of women more so than men across each regime. This gendered impact does not decline as children age universally, although it does at the oldest child category, and earlier in certain regimes (Liberal, Southern, and post-socialist Corporatist). Although the proportion of dual-worker couples varies over regimes and family cycle stages, for those that do work, the impact of parenthood on the division of labor develops uniquely within each regime, although some regimes better resemble each other more so than others.

Table 5.
OLS estimates, the interaction between family cycle and gender on weekly work hours, by regime type

	Social Democratic	Corporatist	Liberal	Southern	Post-socialist Corporatist	Post-socialist Liberal
Gender (ref. = men)						
Female	-4.061***	-7.225***	-6.084***	-5.882***	-2.647***	-3.062***
	(0.173)	(0.174)	(0.330)	(0.173)	(0.134)	(0.335)
No Children (ref)						
Yngst. 0-2	0.465*	-0.211	0.498	0.260	0.661**	0.447
	(0.228)	(0.224)	(0.432)	(0.216)	(0.207)	(0.517)
Yngst. 3-school age	0.801**	0.695**	1.977***	0.537*	0.813***	0.528
	(0.235)	(0.248)	(0.548)	(0.235)	(0.207)	(0.408)
Yngst. school age-8	1.194***	1.031***	0.765	0.218	1.118***	1.308**
	(0.260)	(0.244)	(0.457)	(0.245)	(0.211)	(0.465)
Yngst. 9-18	1.155***	1.174***	1.497***	0.393*	0.381**	0.110
	(0.192)	(0.178)	(0.394)	(0.184)	(0.142)	(0.292)
Interaction gender × family cycle						
Female × Yngst. 0-2	-3.292***	-5.926***	-9.779***	-3.488***	-2.003***	-2.506**
	(0.295)	(0.304)	(0.621)	(0.293)	(0.257)	(0.749)
Female × Yngst. 3-school age	-3.313***	-7.848***	-10.998***	-3.693***	-1.943***	-0.126
	(0.286)	(0.350)	(0.796)	(0.315)	(0.255)	(0.545)
Female × Yngst. School age - 8	-3.986***	-8.601***	-9.563***	-2.530***	-1.765***	-1.236*
	(0.336)	(0.343)	(0.655)	(0.319)	(0.255)	(0.630)
Female × Yngst. 9-18	-2.418***	-6.227***	-7.419***	-2.149***	-0.552**	0.319
	(0.222)	(0.250)	(0.524)	(0.241)	(0.164)	(0.391)
F	225.4	642.5	153.9	273.1	116.0	21.3
R^2	0.185	0.360	0.324	0.174	0.076	0.065
N	30,576	33,258	9,014	33,470	37,732	8,470

Notes: ***$p < .001$ **$p < .01$ *$p < .05$. See Appendix A for details on sample composition. Control variables include age categories, education level, presence of older sibling, and marital status. Year and country dummies included.
Source: Author's calculations using EU-SILC 2004-2008

Robustness

The OLS analyses from Table 5 are re-estimated for each country independently, to test whether the family cycle pattern of dual-worker men and women for each country adheres to their regime typology. In general, results support the regime typology, but a few exceptions are worth mentioning.

In the Social Democratic countries, Iceland deviates somewhat in that a larger baseline gender gap exists as do slightly larger parenthood penalties for women, and the impact of parenthood on work hours is not observed for women of school aged children in Finland. The Corporatist country results indicate two groupings of countries; Austria, Germany and the Netherlands where mothers of children at all ages work considerably fewer hours than otherwise comparable non-mothers, which is much less the case in Belgium and France, where this gap is roughly half as large. The former results are in line with related longitudinal research (Uunk et al. 2005), and that France and Belgium differ somewhat in measures for family support (Esping-Andersen, 1999; Misra et al., 2007). In the Southern countries, the gendered impact of parenthood differs for Portugal, whereby across all family cycle stages dual-worker coupled women with children work no different than comparable women without children. This is expected, as women in Portugal have for decades had higher activity rates than other Southern European countries (Cf. Mutari & Figart, 2001). In the Post-socialist Corporatist countries, the gendered impact of parenthood across countries seems highly consistent for men and women, with the possible exception of Bulgaria, where mothers of children 3 and older worked no more or less than comparable women. Post-socialist Liberal countries present a very consistent pattern across all three countries, although Latvia has slightly larger gender gaps comparatively.

Limitations

This study is limited by its cross-sectional nature, meaning transitions over family cycle stages within individuals have not been examined, and individuals, especially women, surely transition in employment status and hours worked over the life course. Cross-sectional data also cannot correct for reverse relationships between labor market status and individual characteristics, as in some countries the decision to have a child may depend

on labor market status (Erhel & Guargoat-Lariiere, 2013; Uunk et al., 2005). Cross-sectional evidence may also overstate women's gains relative to husbands in terms of work hours, as others have shown with regards to income (Winslow-Bowe, 2006). On the other hand however, self-reported weekly work hours in questionnaires have been found to be exaggerated, especially higher in the distribution (Robinson & Godbey, 1997), and this may overstate men's hours relative to women. Relatedly, actual hours worked may vary from usual hours worked, as women, especially those with children, may be more likely to stay home to care for sick children than their partner.

Selection issues into being in a couple, and having children, are complex in a multi-country study. I have tried to address this is a minor way by examining employment at two margins, looking at coupled men and women and those who are dual-working exclusively. Furthermore, pooling of 2004-2008 means that 1.7 percent of the couple sample was surveyed in the fourth quarter of 2008 after the global financial crisis had struck (September 2008), which clearly had a short run impact on employment and work hours across many countries, negatively impacting men somewhat more so than women (OECD, 2010). This 1.7 percent largely came from Italy, and tests which excluded the 2008 Italy sample had no discernible impact on any results.

Discussion

This paper investigated the division of paid labor across five family cycle stages for 25 European countries adhering to different welfare regimes. Parenthood has always impacted women's labor supply in all national contexts, but this paper contributes to this literature by examining the division of labor on two margins of employment and work hours, and adding the cross-country perspective which included post-socialist countries less studied in the related literature.

This paper showed initially that while coupled men's employment rates vary little across regime types or family cycle stages, there exists great variation in coupled women's. Childless coupled women are employed at a rate of 79 to 83 percent in all regimes but the Southern (64 percent). Within regimes however, women with children were at decreased odds of being employed compared with childless women in each family cycle stage in the Corporatist, Liberal and Southern regimes, which was also the case in the

Post-socialist regimes, except for those with older children. It is only in the Social Democratic regime that women with children aged 3-8 were at no differential odds of being employed compared to childless women, and mothers with youngest child aged 9-18 were at higher odds in the Social Democratic regime, a pattern which resembles that found for fathers of children 9-18 in each regime type. The vast majority of children aged 3-compulsory school are in formal childcare in the Social Democratic, Corporatist and Liberal regimes, while the lower employment odds for mothers of children occur at stages when women's youngest children are 3-compulsory school aged, school aged to 8, and older. When you consider that in no regime were women with child aged 9-18 at lower odds of being employed than childless women, the reduced odds of working when children are younger seems temporary, even when looking at the cross-sectional perspective. The extensive margin of employment over the family cycle varied little across regimes for coupled men, but for couple women each regime clearly exhibited a unique pattern, leading to different gender gaps in employment rates for coupled men and women that were relatively greater than differences in hours worked. At the extensive margin, the division of paid labor between men and women over the family cycle is clearly patterned according to the regime type in question, but its women's employment that exhibits the unique regime type pattern, not men's.

This study also examined the division of work hours for coupled men and women defined as dual-workers, to contribute to the understanding of how dual-worker couples, a growing group, divide paid labor over the family cycle in a cross-European perspective. The proportion of dual-worker couples varied considerably across regime types, from 52 percent in Southern to 75 percent in Social Democratic, thus certain regimes better enable the dual-worker couple than others. This selected group also divided paid work hours over the family cycle distinctly in each regime, not only when no children were present, but especially over the family cycle, indicating that dual-worker couples face unique decision making that pattern somewhat according to the regime in question, and certain regimes can exacerbate baseline gender gaps more so than others. For dual-workers, the gender impact of parenthood was present in most cases across all family cycle stages, in some cases reducing moderately as the youngest child increased, especially in the category youngest child 9-18 category. The magnitude of the additional impact of parenthood on women varied more so between regimes than within them over the family cycle, indicating that while the age of a youngest child is mildly determinant of the division of

work hours, what matters more is the regime setting. In magnitude, the impact of parenthood on mothers work hours was greater in the Corporatist and Liberal countries, where women's part-time work hours are known to be greater. It cannot be assessed from this data what portion of the family cycle gaps in these regimes are desired, but women in the Corporatist and Liberal countries working part-time reported the primary reason is housework or looking after children or other persons, with far fewer expressing that they do not want to work more hours[18]. Some portion of the impact of parenthood in these regimes is thus likely involuntary due to normative gender roles, requiring women to care more for children. In fact, within all regimes caring for children is the most stated reason for working part-time for women, but in the Southern and post-socialist countries, women also report that they want to work more but cannot find a job with greater hours, suggesting difference forces are contributing to the division of labor over the family cycle across regimes in this period.

The analyses also revealed that especially for women, those with higher education are more likely to be employed, and work more hours, and this pattern held true across all regime types. This is not a surprising finding, but it does suggest that education trends in recent decades, including the reversal of the gender gap, is contributing to a more equal gender division of paid labor and should continue to do so, at least amongst couples in Europe, although progress in the division of paid labor is clearly lagging educational developments, as others have argued. While much of the related literature considers men's labor supply as given, future studies should consider that men's part-time work is on the rise, especially in certain countries, and requires due consideration when examining the division of paid labor.

This cross-European perspective adds to our understanding of how men and women divide paid labor over the life course under certain regime contexts, and illustrates how parenthood continues to impact women's employment to a much greater extent than men's.

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[18] In Corporatist countries, 24 percent of the female sample responded to this question; the primary reason for working part-time was housework, looking after children or others (62%), followed by do not want to work more hours (15%). In the Liberal case, 26 percent of women responded, with 66% reporting housework/care of children, and 18% not wanting to work more (see Appendix C).

References

Adema, W., & Whiteford, P. (2007). *Babies and bosses: Reconciling work and family life: A synthesis of findings for OECD countries*. Paris: OECD.

Albanesi, S., & Sahin, A. (2013): The gender unemployment gap, CEPR Discussion Papers 9448, C.E.P.R. Discussion Papers.

Anxo, D., Fagan, C., Cebrian, I., & Moreno, G. (2007). Patterns of labour market integration in Europe—a life course perspective on time policies. *Socio-Economic Review, 5*(2), 233-260.

Anxo, D., Mencarini, L., Pailhé, A., Solaz, A., Tanturri, M. L., & Flood, L. (2011). Gender differences in time use over the life course in France, Italy, Sweden, and the US. *Feminist Economics, 17*(3), 159-195.

Azmat, G., Güell, M., & Manning, A. (2006). Gender gaps in unemployment rates in OECD countries. *Journal of Labor Economics, 24*(1), 1-37.

Bardasi, E., & Gornick, J. C. (2008). Working for less? Women's part-time wage penalties across countries. *Feminist Economics, 14*(1), 37-72.

Becker, G. S. (1973). A theory of marriage: Part I. *Journal of Political Economy, 81,* 813–846.

Becker, G. S. (1981). *A treatise on the family*. Cambridge, MA: Harvard University Press.

Bettio, F., & Plantenga, J. (2004). Comparing care regimes in Europe. *Feminist economics, 10*(1), 85-113.

Bianchi, S., Lesnard, L., Nazio, T., & Raley, S. (2014). Gender and time allocation of cohabiting and married women and men in France, Italy, and the United States. *Demographic Research, 31*, 183-216.

Budig, M., & England, P. (2001). The wage penalty for motherhood. *American Sociological Review, 66*, 204–225.

Budig, M. J., Misra, J., & Boeckmann, I. (2012). The motherhood penalty in cross-national perspective: The importance of work–family policies and cultural attitudes. *Social Politics: International Studies in Gender, State & Society, 19*(2), 163-193.

Burger, A. S. (2015). Extreme working hours in Western Europe and North America: a new aspect of polarization. LEQS Paper, (92).

Gupta, N. D., Smith, N., & Verner, M. (2008). The impact of Nordic countries' family friendly policies on employment, wages, and children. *Review of Economics of the Household, 6*(1), 65-89.

De Henau, J., Meulders, D., & O'Dorchai, S. (2010). Maybe baby: Comparing partnered women's employment and child policies in the EU-15. Feminist Economics, 16(1) 43–77.

Del Boca, D., Pasqua, S., & Pronzato, C. (2009). Motherhood and market work decisions in institutional context: a European perspective. *Oxford Economic Papers, 61*(suppl. 1), i147-i171.

Dribe, M., & Stanfors, M. (2009). Does parenthood strengthen a traditional household division of labor? Evidence from Sweden. *Journal of Marriage and Family, 71*, 33-45.

Duvander, A. Z., & Andersson, G. (2006). Gender equality and fertility in Sweden: a study on the impact of the father's uptake of parental leave on continued childbearing. *Marriage & Family Review, 39*(1-2), 121-142.

Eeckhaut, M. C., Stanfors, M. A., & Van de Putte, B. (2014). Educational heterogamy and the division of paid labor in the family: a comparison of present-day Belgium and Sweden. *European Sociological Review, 30*(1), 64-75.

Erhel, C., & Guergoat-Larivière, M. (2013). Labor market regimes, family policies, and women's behavior in the EU. *Feminist Economics, 19*(4), 76-109.

Esping-Andersen, G. (1990). *The three worlds of welfare capitalism.* Cambridge, England: Polity Press.

Esping-Andersen, G. (1999). *Social foundations of postindustrial economies.* Oxford, England: Oxford University Press.

European Commission (2008). EU-SILC User Database Description. Version 2006-1 from 01-03-08. Luxembourg: European Commission.

European Parliament (2002). Presidency Conclusions. Barcelona European Council 15 and 16 March 2002. Barcelona http://www.ab.gov.tr/files/ardb/evt/1_avrupa_birligi/1_4_zirveler_1985_sonrasi/2002_3_barselona_zirvesi_baskanlik_sonuc_bildirgesi_en.pdf

Evertsson, M., England, P., Mooi-Reci, I., Hermsen, J., De Bruijn, J., & Cotter, D. (2009). Is gender inequality greater at lower or higher educational levels? Common patterns in the Netherlands, Sweden, and the United States. *Social Politics: International Studies in Gender, State & Society, 16*(2), 210-241.

Fagan, C., Hegewisch, A., & Pillinger, J. (2006). Out of time: Why Britain needs a new approach to working-time flexibility: Research Paper for the TUC. TUC. https://www.tuc.org.uk/sites/default/files/extras/outoftime.pdf

Fenger, M. (2007). Welfare regimes in Central and Eastern Europe: Incorporating post-communist countries in a welfare regime typology. *Contemporary Issues and Ideas in Social Sciences, 3*(2), 1-30.

Ferrera, M. (1996). The 'Southern model' of welfare in social Europe. *Journal of European Social Policy, 6*, 17-37.

Gornick, J. C. (1999). Gender equality in the labour market, in Diane Sainsbury, ed. Gender and Welfare State Regimes, pp. 117 – 46. Oxford: Oxford University Press

Gornick, J. C., & Meyers, M. (2003). *Families that work: Policies for reconciling parenthood and employment.* New York, NY: Russell Sage Foundation.

Gornick, J. C., Meyers, M. K., & Ross, K. E. (1997). Supporting the employment of mothers: Policy variation across fourteen welfare states. *Journal of European Social Policy, 7*(1), 45-70.

Gornick, J. C., Meyers, M. K., & Ross, K. E. (1998). Public policies and the employment of mothers: a cross-national study. *Social Science Quarterly*, 35-54.

Gutierrez-Domenech, M. (2005). Employment after motherhood: a European comparison. *Labour Economics, 12*(1), 99-123.

Hegewisch, A., & Gornick, J. C. (2011). The impact of work-family policies on women's employment: a review of research from OECD countries. *Community, Work & Family, 14*(2), 119-138.

Hook, J. L. (2006). Care in context: Men's unpaid work in 20 countries, 1965–2003. *American Sociological Review, 71*(4), 639-660.

Jacobsen, J. P. (1994). *The economics of gender*. Cambridge, MA: Blackwell Publishers.

Jaumotte, F. (2003). Female labour force participation: past trends and main determinants in OECD countries, Working Paper No. 376, Economics Department, OECD, Paris.

Keck, W., & Saraceno, C. (2013). The impact of different social-policy frameworks on social inequalities among women in the European Union: the labor-market participation of mothers. *Social Politics, 20*(3), 297-328.

Kimmel, J., & Connelly, R. (2007). Mothers' time choices: Caregiving, leisure, home production, and paid work. *Journal of Human Resources, 42*, 643-661.

Klesment, M., & Van Bavel, J. (2015). The reversal of the gender gap in education and female breadwinners in Europe. FamiliesAndSocieties Working Paper Series 26.

Korpi, W., Ferrarini, T., & Englund, S. (2013). Women's opportunities under different family policy constellations: Gender, class, and inequality tradeoffs in western countries re-examined. *Social Politics, 20*(1), 1-40.

Lewis, J. (1992). Gender and the development of welfare regimes. *Journal of European Social Policy, 3*, 159-173.

Lewis, J., Knijn, T., Martin, C., & Ostner, I. (2008). Patterns of development in work/family reconciliation policies for parents in France, Germany, the Netherlands, and the UK in the 2000s. *Social Politics: International Studies in Gender, State & Society, 15*(3), 261-286.

Lundberg, S., & Pollak, R. A. (1996). Bargaining and distribution in marriage. *The Journal of Economic Perspectives, 10*(4), 139-158.

Manser, M., & Brown, M. (1980). Marriage and household decision-making: a bargaining analysis. *International Economic Review, 21*(1), 31-44.

Misra, J., Budig, M., & Böckmann, I. (2011). Cross-national patterns in individual and household employment and work hours by gender and parenthood. *Research in the Sociology of Work, 22*(1), 169-207.

Misra, J., Budig, M. J., & Moller, S. (2007). Reconciliation policies and the effects of motherhood on employment, earnings and poverty. *Journal of Comparative Policy Analysis, 9*(2), 135-155.

Mutari, E., & Figart, D. M. (2001). Europe at a crossroads: Harmonization, Liberalization, and the gender of work time. *Social Politics, 8*(1), 36-64.

Neilson, J., & Stanfors, M. (2014). It's about time! Gender, parenthood, and household divisions of labor under different welfare regimes. *Journal of Family Issues, 35*(8) 1066–1088.

Organisation for Economic Co-operation and Development (OECD) (2010).*OECD employment outlook 2010: Moving beyond the jobs crisis*. OECD, Paris, France.

Organisation for Economic Co-operation and Development (OECD) (2013). Education at a glance 2013; OECD indicators. OECD Publishing. Paris, France.

Orloff, A. (1996). Gender in the welfare state. *Annual Review of Sociology, 22*, 51-78.

Robinson, J. P., & Godbey, G. (1997). *Time for life. The surprising ways Americans use their time.* University Park: Pennsylvania State University Press

Rubery, J., Smith, M., & Fagan, C. (1998). National working-time regimes and equal opportunities. *Feminist Economics, 4*(1), 71-101.

Sainsbury, D. (1999). *Gender and welfare state regimes*. Oxford, England: Oxford University Press.

Smith Koslowski, A. (2011). Working fathers in Europe: Earning and caring. *European Sociological Review, 27*, 230-245.

Sigle-Rushton, W., & Waldfogel, J. (2007). Motherhood and women's earnings in Anglo-American, Continental European, and Nordic countries. *Feminist Economics, 13*(2), 55-91.

Stier, H., Lewin-Epstein, N., & Braun, M. (2001). Welfare regimes, family-supportive policies, and women's employment along the life-course. *American Journal of Sociology, 106*(6), 1731-1760.

Szelewa, D., & Polakowski, M. P. (2008). Who cares? Changing patterns of childcare in Central and Eastern Europe. *Journal of European Social Policy, 18*(2), 115-131.

Testa, M. R. (2007) Childbearing preferences and family issues in Europe: Evidence from the Eurobarometer 2006 survey. *Vienna Yearbook of Population Research*, 357-379.

Thévenon, O. (2011). Family policies in OECD countries: a comparative analysis. *Population and Development Review, 37*(1), 57-87.

Uunk, W., Kalmijn, M., & Muffels, R. (2005). The impact of young children on women's labour supply: a reassessment of institutional effects in Europe. Acta Sociologica, 48(1), 41-62.

Van der Lippe, T., De Ruijter, J., De Ruijter, E., & Raub, W. (2010). Persistent inequalities in time use between men and women: a detailed look at the influence of economic circumstances, policies, and culture. *European Sociological Review, 27*(2), 164–79.

Whelan, C. T., & Maître, B. (2010). Welfare regime and social class variation in poverty and economic vulnerability in Europe: an analysis of EU-SILC. *Journal of European Social Policy, 20*(4), 316-332.

Winslow-Bowe, S. (2006). The persistence of wives' income advantage. *Journal of Marriage and Family*, *68*(4), 824-842.

Appendix A

Variable description: EU-SILC 2004-2008

Dependent variables

Employed - EU-SILC variable PL030 (Self-defined current economic status) indicates whether the respondent perceived their main activity at present to be working full- or part-time. Work is considered to be for pay and totaling at least 1 hour per week. This who are unemployed, students, in retirement, permanently disabled, fulfilling domestic/care responsibilities (i.e. homemakers) and in compulsory military service are considering not working. People on maternity leave are considered as working. People in full-time parental leave are treated as not working.

Weekly work hours – EU-SILC variable PL060 (Number of hours usually worked per week in main job) indicates the number of hours worked in the main job, including extra hours (paid or unpaid), but excludes commuting time and meal breaks. Individuals with irregular weekly hours (e.g. self-employed and family workers) were asked to provide average hours actually worked over past four weeks.

Independent variables:

Family Cycle stage – Mothers and fathers are indexed to their children in this data. This variable uses age (variable RX010) of the youngest child in the home to create five family cycle stages (No children ref. cat., youngest child aged 0-2, youngest child aged 3 – compulsory school age, youngest child aged compulsory school age to 8, and youngest child aged 9-18). Compulsory schooling ages across counties are: 4 Northern Ireland; 5 England, Scotland, and Wales; 6 Austria, Belgium, Czech Republic, France, Germany, Greece, Hungary, Iceland, Republic of Ireland, Italy, Netherlands, Norway, Portugal, Slovakia, Slovenia, and Spain; 7 Bulgaria, Estonia, Finland, Latvia, Lithuania, Poland, and Sweden. For Denmark, the age of compulsory school was 7 in 2007 and 6 in 2008.

Education - Variable PE040 uses the ISCED-1997 classification framework, which typically uses seven categories numbered 0-6. EU-SILC 2004-2008 data contains only six categories because ISCED levels 5 and 6 were pooled. Education is categorized as primary (ISCED levels 1-2), middle

(ISCED level 3) or higher (ISCED levels 4-5). Educational attainment of a person is the highest level of an educational programme the person has successfully completed.

<div align="center">Control variables:</div>

- *Sex* - Variable RB090
- *Age categories* - Variable RX010, 5-year categories 25-29, 30-34, 35-39, 40-44, 45-49
- *Older sibling present*- Categorical variable, value of 0 if none, 1 if one older sibling present, and 2 if two or more older siblings are present.
- *Cohabiting/married* - Categorical variable with a value of 1 for legally married, 2 for non- married, 3 for missing/NA
- *Household weight* - Variable DB090 (no missing values)

Supplementary table

Proportion of men and women across regime types who work <36 hrs if t<0

	SD	Corp	Liberal	South	PS – Corp	PS Lib
Men	5.2	13.3	8.6	9.0	3.1	4.2
Women	32.3	63.9	55.6	38.7	9.7	14.3
N	40,529	52,060	14,497	64,783	58,307	12,519

Source: Author's calculations using EU-SILC 2004-2008

Descriptive statistics, variables used in regressions, by regime type

	SD	Corp	Liberal	South	PS – Corp	PS Lib
Men	50.0	49.9	49.9	50.0	50.0	50.0
Women	50.0	50.1	50.1	50.0	50.0	50.0
Family cycle						
No children (ref.)	18.8	25.1	27.5	24.4	20.5	19.5
Youngest child 0-2	16.8	17.2	18.4	18.5	11.0	7.7
Youngest child 3-comp. educ	18.1	14.1	10.3	15.4	13.1	13.8
Youngest child comp. educ-8	11.7	13.7	15.9	13.6	13.0	9.7
Youngest child 9-18	34.6	30.0	27.9	28.1	42.5	49.3
Education						
Primary (ref.)	11.7	12.3	12.2	36.2	8.0	5.5
Secondary	46.5	43.5	42.2	33.4	68.1	46.3
Higher	41.8	44.2	45.7	30.5	24.0	48.2
Age categories						
<25	0.8	0.8	1.0	0.7	0.6	1.0
25-29	10.5	8.7	9.2	6.6	10.5	9.0
30-34	16.2	15.9	17.0	16.0	16.7	14.6
35-39	20.0	22.0	21.3	22.0	18.6	20.0
40-44	22.9	24.0	23.5	24.0	21.8	24.8
45-49	22.6	21.8	21.9	22.5	24.0	24.5
50+	7.1	6.8	6.0	8.3	8.0	6.1
Siblings present						
None (ref.)	44.6	54.3	54.2	62.4	59.3	61.5
1	38.6	35.3	33.6	32.0	32.5	30.0
2 or more	16.9	10.4	12.2	5.5	8.3	8.5
Marital status						
Married (ref.)	69.7	79.3	81.2	90.6	89.5	84.3
Not married	30.2	20.3	18.8	9.3	10.3	15.7
Missing	0.1	0.5	0.0	0.1	0.2	0.0
Dependent variables						
Employed (%)						
Men	93.3	93.8	91.4	92.2	89.4	89.4
Women	80.6	69.3	70.5	57.5	74.1	77.8
Weekly work hours if t>0						
Men	43.6	42.7	44.8	44.6	45.3	44.2
Women	36.4	30.0	31.9	35.9	40.7	40.4
Weekly work hours						
Men	40.4	39.8	40.5	40.9	40.6	39.0
Women	29.4	21.0	22.3	20.8	29.7	31.1
N	40,529	52,060	14,497	64,783	58,307	12,519

Note: Figures listed above are for the full sample coupled women aged 25-49 and their partners
Source: Author's calculations using EU-SILC 2004-2008

Appendix B.

OLS Multivariate results on the impact of parenthood on weekly work hours, by country within regime type

Social Democratic	Denmark	Finland	Iceland	Norway	Sweden
Gender (men ref.)					
Female	-3.625***	-3.210***	-7.231***	-5.305***	-3.635***
	(0.339)	(0.371)	(0.909)	(0.590)	(0.348)
No Children (ref.)					
Yngst. 0-2	0.483	-0.446	1.211	0.809	-0.128
	(0.459)	(0.564)	(0.884)	(0.693)	(0.427)
Yngst. 3-school age	0.309	-0.302	2.674**	1.007	0.650
	(0.470)	(0.518)	(0.874)	(0.681)	(0.454)
Yngst. school age-8	0.883	-0.364	1.989*	0.318	1.798**
	(0.505)	(0.612)	(0.818)	(0.799)	(0.653)
Yngst. 9-18	1.320**	0.120	1.430	1.677**	0.518
	(0.396)	(0.425)	(0.754)	(0.617)	(0.397)
Interact gender × family cycle					
Female × Yngst. 0-2	-2.525***	-2.062**	-6.506***	-4.361***	-2.660***
	(0.571)	(0.743)	(1.177)	(0.875)	(0.585)
Female × Yngst. 3-school age	-2.016***	-1.028	-5.596***	-5.090***	-3.995***
	(0.556)	(0.560)	(1.198)	(0.898)	(0.562)
Female × Yngst. School age - 8	-2.916***	-0.615	-5.723***	-4.776***	-4.682***
	(0.598)	(0.732)	(1.240)	(0.995)	(0.860)
Female × Yngst. 9-18	-2.427***	-0.350	-3.708***	-4.090***	-1.883***
	(0.446)	(0.463)	(1.057)	(0.728)	(0.448)
Constant	39.756***	39.800***	43.611***	35.225***	39.658***
	(1.470)	(1.445)	(2.487)	(2.054)	(1.744)
F	44.4	21.4	54.9	54.1	53.2
R2	0.135	0.075	0.277	0.220	0.188
N	7,839	8,238	3,684	4,031	6,784

Notes: ***p < .001 **p < .01 *p < .05. See Appendix A for details on sample composition. Control variables include age categories, education level, presence of older siblings, and marital status. Year dummies included.
Source: Author's calculations using EU-SILC 2004-2008

Corporatist	Austria	Belgium	Germany	France	Netherlands
Gender (men ref.)					
Female	-7.156***	-6.919***	-7.354***	-4.966***	-7.324***
	(0.555)	(0.502)	(0.386)	(0.466)	(0.329)
No Children (ref.)					
Yngst. 0-2	0.999	0.946	0.071	0.215	-0.075
	(0.801)	(0.607)	(0.675)	(0.571)	(0.357)
Yngst. 3-school age	0.831	1.595*	1.095	1.589*	0.988*
	(0.701)	(0.746)	(0.592)	(0.688)	(0.487)
Yngst. school age-8	1.192	1.876**	0.681	1.178	1.941***
	(0.641)	(0.719)	(0.600)	(0.716)	(0.475)
Yngst. 9-18	0.603	2.026***	1.406***	0.935	2.966***
	(0.462)	(0.534)	(0.380)	(0.531)	(0.396)
Interact gender × fam cycle					
Female × Yngst. 0-2	-8.929***	-3.858***	-13.032***	-3.220***	-7.118***
	(1.342)	(0.802)	(1.050)	(0.706)	(0.476)
Female × Yngst. 3-school age	-9.930***	-5.626***	-12.431***	-4.029***	-9.163***
	(1.061)	(0.920)	(0.806)	(0.767)	(0.667)
Female × Yngst. School age - 8	-9.263***	-4.795***	-12.103***	-3.814***	-10.693***
	(0.920)	(1.007)	(0.940)	(0.853)	(0.593)
Female × Yngst. 9-18	-4.282***	-5.046***	-9.169***	-3.077***	-8.498***
	(0.709)	(0.704)	(0.568)	(0.635)	(0.497)
Constant	42.631***	41.976***	34.737***	39.605***	33.887***
	(1.949)	(2.336)	(3.616)	(1.698)	(1.781)
F	74.6	60.7	165.1	46.1	272.8
R2	0.286	0.237	0.426	0.158	0.445
N	5,018	5,381	7,750	5,754	9,355

Notes: ***$p < .001$ **$p < .01$ *$p < .05$. See Appendix A for details on sample composition. Control variables include age categories, education level, presence of older siblings, and marital status. Year dummies included.
Source: Author's calculations using EU-SILC 2004-2008

Liberal	Ireland	UK
Gender (men ref.)		
Female	-8.586***	-5.377***
	(0.867)	(0.372)
No Children (ref.)		
Yngst. 0-2	0.151	0.671
	(0.915)	(0.523)
Yngst. 3-school age	2.018	1.396*
	(1.167)	(0.687)
Yngst. school age-8	0.597	1.236*
	(1.109)	(0.566)
Yngst. 9-18	1.207	1.714***
	(0.896)	(0.466)
Interact gender × fam cycle		
Female × Yngst. 0-2	-2.876*	-12.226***
	(1.244)	(0.793)
Female × Yngst. 3-school age	-8.036***	-11.370***
	(1.629)	(1.085)
Female × Yngst. School age - 8	-7.376***	-10.319***
	(1.747)	(0.816)
Female × Yngst. 9-18	-5.645***	-7.893***
	(1.144)	(0.659)
Constant	40.594***	41.252***
	(2.778)	(1.341)
F	40.5	101.2
R2	0.313	0.323
N	2,848	6,117

Notes: ***p < .001 **p < .01 *p < .05. See Appendix A for details on sample composition. Control variables include age categories, education level, presence of older siblings, and marital status. Year dummies included.
Source: Author's calculations using EU-SILC 2004-2008

Southern	Greece	Italy	Portugal	Spain
Gender (men ref.)				
Female	-5.929***	-6.688***	-3.970***	-4.938***
	(0.542)	(0.277)	(0.572)	(0.354)
No Children (ref.)				
Yngst. 0-2	0.429	0.437	0.384	0.102
	(0.755)	(0.364)	(0.743)	(0.432)
Yngst. 3-school age	-0.351	0.773*	0.674	1.035*
	(0.987)	(0.388)	(0.715)	(0.501)
Yngst. school age-8	-0.093	0.695	0.589	0.134
	(0.775)	(0.428)	(0.747)	(0.504)
Yngst. 9-18	1.111	0.469	0.907	0.523
	(0.596)	(0.324)	(0.563)	(0.407)
Interact gender × fam cycle				
Female × Yngst. 0-2	-1.864	-4.271***	-1.566	-4.484***
	(1.063)	(0.486)	(0.874)	(0.634)
Female × Yngst. 3-school age	-2.509*	-4.459***	-0.649	-4.909***
	(1.202)	(0.504)	(0.862)	(0.679)
Female × Yngst. School age - 8	-1.560	-4.212***	-0.067	-3.669***
	(0.943)	(0.541)	(0.916)	(0.713)
Female × Yngst. 9-18	-1.901**	-2.780***	-0.355	-3.468***
	(0.716)	(0.411)	(0.723)	(0.534)
Constant	51.162***	38.264***	42.877***	42.173***
	(2.397)	(2.197)	(1.530)	(1.875)
F	30.2	126.3	111.3	58.7
R2	0.139	0.223	0.074	0.165
N	5,196	14,795	4,016	9,463

Notes: ***$p < .001$ **$p < .01$ *$p < .05$. See Appendix A for details on sample composition. Control variables include age categories, education level, presence of older siblings, and marital status. Year dummies included.
Source: Author's calculations using EU-SILC 2004-2008

Post-socialist Corporatist	Bulgaria	Czech Rep.	Hungary	Poland	Slovakia	Slovenia
Gender (men ref.)						
Female	-1.624*	-4.071***	-3.620***	-3.861***	-1.013***	-3.708***
	(0.715)	(0.412)	(0.683)	(0.360)	(0.228)	(0.331)
No Children (ref.)						
Yngst. 0-2	2.990*	-0.094	-0.598	0.702	0.682*	-0.018
	(1.243)	(1.063)	(1.305)	(0.508)	(0.321)	(0.546)
Yngst. 3-school age	0.181	0.204	0.834	1.194*	0.291	0.545
	(1.048)	(0.682)	(1.151)	(0.464)	(0.338)	(0.543)
Yngst. school age-8	0.580	1.201	0.709	1.286*	0.641	1.204*
	(1.231)	(0.644)	(0.860)	(0.519)	(0.345)	(0.568)
Yngst. 9-18	0.208	0.483	0.669	1.097**	0.261	0.114
	(0.845)	(0.487)	(0.673)	(0.359)	(0.223)	(0.343)
Interact gender × fam cycle						
Female × Yngst. 0-2	-2.351	-3.128*	-2.996	-3.558***	-2.067***	-0.435
	(1.273)	(1.471)	(2.245)	(0.633)	(0.398)	(0.612)
Female × Yngst. 3-school age	-0.661	-3.402***	-1.573	-2.949***	-0.772	-0.932
	(1.208)	(0.966)	(1.480)	(0.578)	(0.435)	(0.679)
Female × Yngst. School age - 8	-0.792	-3.102***	-1.124	-2.191**	-0.902*	-0.889
	(1.289)	(0.789)	(1.111)	(0.646)	(0.393)	(0.632)
Female × Yngst. 9-18	0.599	-0.573	-0.244	-1.308**	-0.524	0.044
	(0.869)	(0.522)	(0.793)	(0.445)	(0.278)	(0.390)
Constant	41.133***	41.185***	41.973***	46.532***	43.556***	41.643***
	(5.050)	(1.578)	(1.882)	(1.765)	(1.705)	(2.117)
F	2.2	23.9	7.8	59.6	11.3	23.0
R2	0.031	0.129	0.094	0.119	0.031	0.084
N	1,883	4,870	2,587	11,285	5,728	11,379

Notes: ***$p < .001$ **$p < .01$ *$p < .05$. See Appendix A for details on sample composition. Control variables include age categories, education level, presence of older siblings, and marital status. Year dummies included.
Source: Author's calculations using EU-SILC 2004-2008

Post-socialist Liberal	Estonia	Latvia	Lithuania
Gender (men ref.)			
Female	-2.184***	-4.859***	-2.169*
	(0.540)	(0.827)	(0.850)
No Children (ref.)			
Yngst. 0-2	1.559	0.079	1.949
	(1.033)	(1.330)	(1.147)
Yngst. 3-school age	1.687*	0.211	1.344
	(0.662)	(1.186)	(0.921)
Yngst. school age-8	2.341**	2.486*	1.283
	(0.767)	(1.177)	(1.073)
Yngst. 9-18	0.980	0.170	0.927
	(0.517)	(0.824)	(0.661)
Interact gender × fam cycle			
Female × Yngst. 0-2	-4.424**	-2.591	-4.294**
	(1.433)	(2.022)	(1.543)
Female × Yngst. 3-school age	-1.890*	1.047	-1.196
	(0.838)	(1.534)	(1.163)
Female × Yngst. School age - 8	-2.069*	-0.911	-1.109
	(0.964)	(1.360)	(1.390)
Female × Yngst. 9-18	-0.332	1.761	-0.684
	(0.639)	(1.038)	(0.941)
Constant	37.546***	44.775***	38.120***
	(1.476)	(2.082)	(2.760)
F	7.0	6.8	6.0
R2	0.055	0.090	0.054
N	3,965	1,657	2,848

Notes: ***$p < .001$ **$p < .01$ *$p < .05$. See Appendix A for details on sample composition. Control variables include age categories, education level, presence of older siblings, and marital status. Year dummies included.
Source: Author's calculations using EU-SILC 2004-2008

Appendix C.

Self-reported reason for working less than 30 hours

	Men	Women						
							PS -	PS -
	Pooled	Pooled	SD[b]	Corp[b]	Lib[b]	South[b]	Corp[b]	Lib[b]
Undergoing education or training	56 (2.7%)	225 (1.5%)	5%	1%	1%	1%	1%	3%
Personal illness or disability	288 (13.8%)	522 (3.4%)	10%	2%	2%	2%	9%	7%
Want to work more hours but cannot find a job(s) or work(s) of more hours	538 (25.8%)	2,273 (14.6%)	18%	10%	4%	23%	21%	28%
Do not want to work more hours	195 (9.3%)	2,023 (13.0%)	21%	15%	18%	10%	5%	12%
Number of hours in all job(s) are considered as a full-time job	532 (25.5%)	2,006 (12.9%)	4%	5%	5%	25%	29%	15%
Housework, looking after children or other persons	169 (8.1%)	7,438 (47.9%)	33%	62%	66%	32%	24%	28%
Other reasons	311 (14.9%)	1,040 (6.7%)	8%	6%	5%	6%	11%	6%
N	2,089	15,527	1,036	6,398	1,976	4,395	1,349	373
% of within-column sample responding to variable[a]	1.7	12.3	5	24	26	13	5	5

Notes: Variable PL120, which EU-SILC states does not fully capture the definition of underemployment, but respondents were asked to tick only one response (out of seven possible) stating the main reason they work less than 30 hours. For those who ticked more than one response, priority was allocated in the top-bottom order above.
[a] Figures are the proportion within-column who responded to this question (e.g. 12.3 percent of coupled women in the sample responded to this question).
[b] Figures within each regime are for women only
Source: Author's calculations using EU-SILC 2004-2008

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Jeffrey Neilson

Parenthood, time allocation and the gender division of labour in Sweden 1990-2010

This dissertation examines the changing time allocation of men and women at the turn of the 21st century in Sweden, an interesting case given its strong position concerning female labor force participation, maternal employment, and gender equality. The aim is to examine to what extent gender and parenthood affect various types of time allocation, both in the labor market and household, and provide new insights into changes occuring over time between 1990 and 2010. Throughout the 20th century, women became increasing engaged in the labor market, yet parenthood has continued to impact how women spend their time to a much greater extent than men. The persistent, gendered impact of parenthood has begun to change however, which has implications not yet fully understood or documented. Results place Swedish developments in an international perspective, while contributing to our understaning of the changing behaviour of men and women in the labor market and household.

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