Arbeitspapiere des Osteuropa-Instituts
Arbeitsbereich Politik

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The Reduction of Working Hours as an Innovation for Global Labor Governance

A Quantitative Analysis on Working Hours and Gender Equality

87/2023

Freie Universität Berlin

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The reduction of weekly working hours can lead to more gender equality on household level. In mixed-sex, two-adult households, the working hours of each household member have a significant effect on gender equality relevant variables. This was elaborated with a cross-sectional analysis of 2019 German Socio-Economic Panel data using OLS regressions with instrumental variables. Working hours have a strong negative effect on one's own household- and care time. Men or women having a reduced full-time work contract (32-36 hours per week stipulated in the work contract) creates more symmetry of paid- and unpaid work per sex. A partner's work time has a significantly negative effect on an individual's work time but a woman's work time is more influenced by her male partner's working hours than the other way around. The thesis finds evidence that if a man has a reduced full-time work contract, this encourages women to work more paid hours per week; for men it is the other way around. The effect of a partner's working time on an individual's labor force participation is in all cases very small but significantly negative. The partner working under a reduced full-time work contract creates opposite results for men and women: It increases women's likelihood to participate in the labor market whereas it decreases men's probability to participate in the labor market.

Keywords:
work time reduction, working hours, gender, global labor governance regime.

OSTEUROPA INSTITUT

Arbeitspapier 87/2023

Abteilung Politik am Osteuropa-Institut der Freien Universität Berlin

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Jana Pfenning (2023) The Reduction of Working Hours as an Innovation for Global Labor Governance. A Quantitative Analysis on Working Hours and Gender Equality. Arbeitspapiere des Osteuropa-Instituts (Abteilung Politik) 87/2023 Freie Universität Berlin 2023.

Impressum

Arbeitspapiere des Osteuropa-Instituts, Freie Universität Berlin
Abteilung Politik

Garystraße 55
14195 Berlin

Internet:
https://www.oei.fu-berlin.de/politik/Arbeitspapiere/index.html

Redaktion: Alexander Libman
alexander.libman@fu-berlin.de
Lektorat/Layout: Alexander Libman

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The reduction of weekly working hours can lead to more gender equality on household level. In mixed-sex, two-adult households, the working hours of each household member have a significant effect on gender equality relevant variables. This was elaborated with a cross-sectional analysis of 2019 German Socio Economic Panel data using OLS regressions with instrumental variables. Working hours have a strong negative effect on one's own household- and care time. Men or women having a reduced full-time work contract (32-36 hours per week stipulated in the work contract) creates more symmetry of paid- and unpaid work per sex. A partner's work time has a significantly negative effect on an individual's work time but a woman's work time is more influenced by her male partner's working hours than the other way around. The thesis finds evidence that if a man has a reduced full-time work contract, this encourages women to work more paid hours per week; for men it is the other way around. The effect of a partner's working time on an individual's labor force participation is in all cases very small but significantly negative. The partner working under a reduced full-time work contract creates opposite results for men and women: It increases women's likelihood to participate in the labor market whereas it decreases men's probability to participate in the labor market.

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List of Abbreviations

CLS	Core Labor Standards
CSR	Corporate Social Responsibility
DIW	German Institute for Economic Research
GDP	Gross Domestic Product
GSOEP	German Socio Economic Panel
GUF	Global Union Federations
IFA	International Framework Agreements
ILO	International Labor Organization
IV	Instrumental Variable
MDG	Millennium Development Goals
MNC	Multinational Company
MSI	Multi-Stakeholder Initiative
NGO	Non-Governmental Organization
OLS	Ordinary Least Squares
SDG	Sustainable Development Goals
SOEP	Socio Economic Panel Data

1 Introduction

During the Corona crisis the concept of a work time reduction, i.e. a four-day work week, became increasingly popular around the globe as societies started to rethink their working habits. The long-standing discrepancy between desired and actual working hours (Otterbach, 2010; Reynolds, 2003, 2004; Sopp & Wagner, 2017) became a frequently debated issue. Therefore countries like Spain, the United States, Canada, the United Kingdom, Ireland, Australia, New Zealand or Iceland announced the introduction of trial programs on reducing work hours (4 Day Work Week Initiative, 2022; Guardian, 2022). The popularity of this policy measure notwithstanding, there is relatively little academic research on it. In the public discourse, reducing work hours is mostly associated with more overall wellbeing, better work conditions, lower unemployment and a sustainable economic development (Kallis, Kalush, O'Flynn, Rossiter, & Ashford, 2013). Supporters of a reduced work week moreover claim that it would lead to more equal gender relations within households (Gomes, 2021, pp. 42, 242; Jacobs & Gerson, 2005; Sayer, 2005; Schultz, 2009; Schultz & Hoffman, 2006). Having a symmetric time usage between men and women in a household could be a step forward towards more gender equality, which again has an impact on parity in the labor market. To level out paid- and unpaid work between the sexes, a reduced work week is being suggested as a broader measure to reduce and redistribute working time for everyone.

This assumption is based on concise theories (Schultz, 2009; Schultz & Hoffman, 2006) but there is almost no empirical social science- or economic research on this topic. Until today, there has been no quantitative micro analysis which has household data at its core. Therefore, this thesis presents the first quantitative micro analysis in this field.

The central research question of this thesis is: “How does the reduction of full-time working hours affect gender equality within households?” The thesis analyzes how work time affects gender equality relevant variables in a household. It elaborates the effect of work time in general and having a reduced full-time work week (32-36 hours stipulated in the work contract) on three gender equality relevant variables, namely (1) the time spent on care work and other household chores, (2) the working time of the adults in a household and (3) the labor force participation of the adults in a household. The thesis does so with a quantitative cross-sectional approach using German Socio

Economic Panel (GSOEP) data of 2019. It uses standard ordinary least squares (OLS) and probit regressions including multiple control variables with a special emphasize on income. The thesis validates these results with reduced form regressions and the use of contractual working time as an instrumental variable (IV). Additionally, having a reduced full-time work contract between 32 and 36 hours per week was used as a second IV. This permitted the drawing of conclusions about the impact of having such a reduced full-time work contract on gender equality relevant variables. For the interpretation it needs to be emphasized that for women the so-called "reduced" full-time work contract is in fact on average not a reduction but an increase of work time.

The thesis finds (1) that working hours have a strong negative effect on one's own housework hours. Furthermore, women's household- and care time is independent from their male partner's paid working hours, whereas a man's housework hours are significantly negative impacted by his female partner's real working time. If men or women had a reduced full-time work contract, it would create more symmetry of paid- and unpaid work per sex in a household. (2) There is evidence to support that a partner's work time has a significantly negative effect on an individual's work time. The effects of working time are asymmetric regarding gender. A woman's working time is more influenced by her male partner's working time than a man's working time is influenced by his female partner's working time. Furthermore, there is an indication that if a man has a reduced full-time work contract, this encourages women to work more hours per week – for men it is the other way around. (3) The effect of a partner's working time on an individual's labor force participation is in all cases very small but highly significant. Ten additional work hours of the partner reduce the likelihood to be in the labor marked by around 3 percentage point. The partner working under a reduced full-time work contract creates opposite results for men and women: It increases women's likelihood to participate in the labor market whereas it decreases men's probability to participate in the labor market.

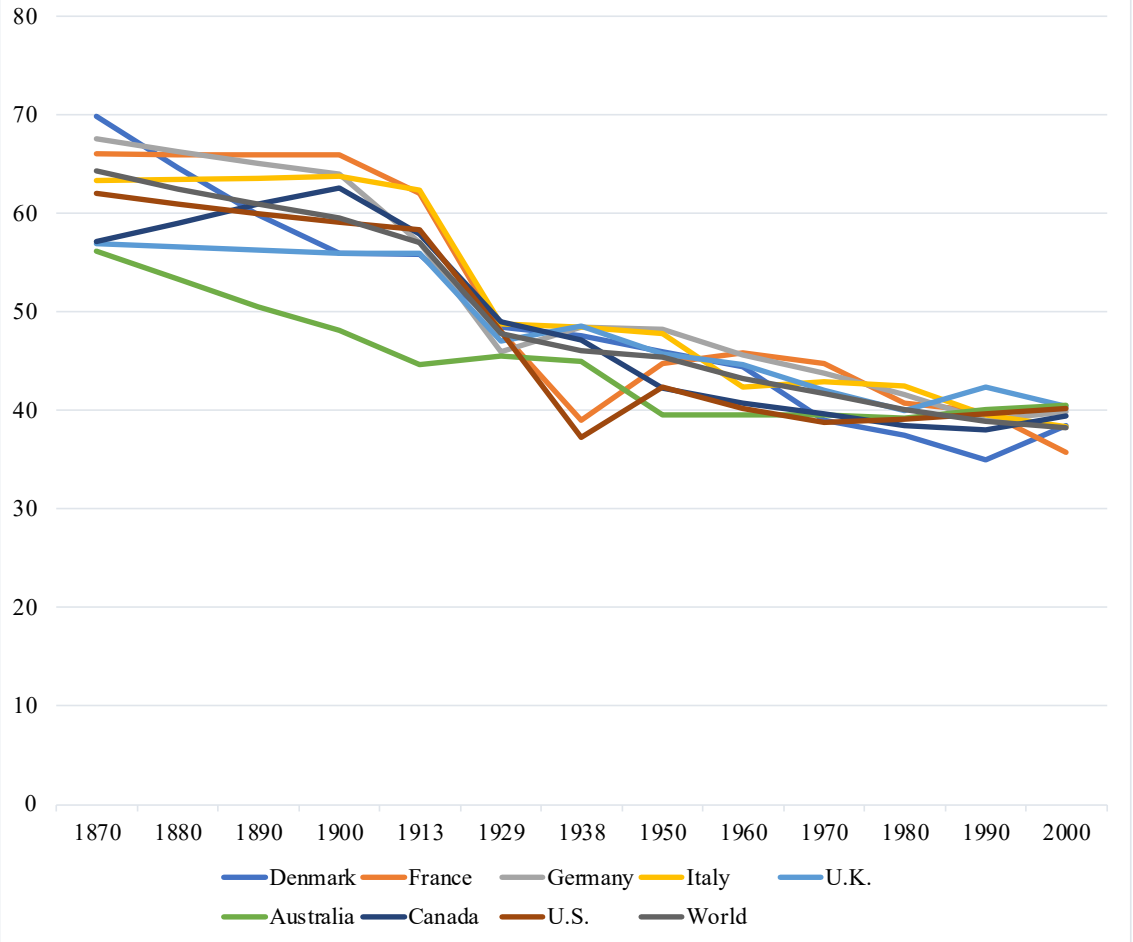
First, the paper gives a brief overview on the historical development of working time, then further explains the different concepts of a work time reduction and how they could be implemented on an international level in the Global Labor Governance Regime. It proceeds with a general literature review on the impacts of a reduced work week on macro- and micro levels and then presents stylized facts on working time by sex. It follows a comprehensive description of the methodology and data before the results are being discussed.

2 A Historic Account on Working Time

In the past 200 years, technological improvements created high increases in output in the industry economies. This led to a constant growth in consumption and therefore wellbeing for broad parts of the populations. In 1930, in the middle of the Great Depression, one of the most influential economists, John Maynard Keynes, published the Essay *Economic Possibilities for our Grandchildren* (1930). He predicted that within one hundred years we would work only 15 hours per week: "[Working] three hours a day is quite enough to satisfy the old Adam in most of us!" (p. 325). He predicted massive technology improvements and growing productivity, which would create a choice of either consuming more or working less. He assumed that societies would do both: Consume more and work less. And at least during his lifetime, Keynes (1883 - 1946) was right: Until the mid 1940s the technology-induced increase of productivity was accompanied with a strong reduction of weekly working hours. For example, in the US the standard work time fell from 67 hours of work per week in the 1870s to around 42 hours in the mid 1940s. Afterwards, this decline stagnated and the working hours decreased only slightly (Leontief, 1982). In the last 40 years our general work hours remained similar, and the increasing efficiency due to digitalization (Gal, Nicoletti, Renault, Sorbe, & Timiliotis, 2019) has not been associated with an overall decline in work hours.

Huberman and Minns (2007, p. 542) created a compilation of working time developments in industrialized countries from 1870 to 2000. Their data is being presented in Figure 1, which is a simplified presentation of statistics based on the table Appendix 1. Overall, Figure 1 shows a parallel trend for industrialized economies; still, there are distinguishable differences. Special historical, economical, and societal reasons lead to diverse working hours around the globe: Since the 1960s working hour reductions have mostly (and more strongly) occurred in Western European countries, whereas high income countries on the other side of the Atlantic did not experience strong working hour reductions (ibid.). Alesina and colleagues (2005) find that European countries experienced more frequent and more pronounced working hour reductions, because of stronger labor unions, left leaning social democratic governments, welfare state models, and higher taxation, all of which lead to smaller income inequalities. European labor market regulations on reducing hours of work and policies on longer vacation times were the main driver for the shorter working hours in Europe.

Figure 1: Working time betweeen 1870 and 2000, in weekly working hours



Today, in the beginning of the 21st century, most industrialized countries incorporated a standard working time of 5 days a week – with a diverging amount of work hours. Every country has its own history of work time and there are different origins for changes in work times. Generally, the work time reduction was implemented for two reasons: First, improving worker's health and wellbeing by increasing free time. Second, redistribution of available work (Estevão & Sá, 2008, p. 421). A couple of outstanding examples from industrialized countries will follow in the next paragraphs. They show the differences among countries in the work time reduction process.

For example, in Germany (s. Lehndorff, 2004), the general 8-hour work day for 6 days a week was established in 1918, with full wage compensation. In the economic upsurge of the 50s, 60s and 70s the five- (instead of six-) day work week was negotiated through the famous campaign "Samstags gehört Vati mir!" (IG Metall 2016). And during the recession of the 1980s IG Metall managed to negotiate a 35-hour work week for large parts of the industry sector in West Germany (IG Metall 2020) - precisely the sectors metal and electrical, iron and steel, textile and clothing, information technology, wood

and plastics as well as temporary and contract work (IG Metall, 2022). It did not include a wage compensation, as the work time reduction rather followed the aim to secure jobs, which is highly contested in Economics research (s. Section 5.1). This reduction could not be transferred to East Germany after the German reunification, therefore industry workers in Germany still stick to a standard 40 hours per week work contract.

France (s. Berniell & Bietenbeck, 2017, p. 5; Estevão & Sá, 2008, p. 422f.) officially reduced their working time from 39 to 35 hours per week in the years 2000 (for firms bigger than 20 employees: Aubrey Law I) and in 2002 (for all smaller firms: Aubrey Law II). This exogenous shock created an interesting research case regarding work time reductions. According to the French unions' motto, "35 hours pays 39", employees were expected to pay only a small portion of the expense of the working-time reduction while maintaining a monthly salary of around the same amount. The strongest motivation for these work time reductions was a redistribution of available work: *job sharing*, which will be further explained in Section 5.1 with all its limitations.

South Korea and Japan (Kawaguchi, Lee, & Hamermesh, 2013, p. 3f) historically had (and arguably still have) long working hours. In recent decades there was legislation passed to reduce work time, which again created a remarkable research case. Japan gradually decreased its statutory work time through legislation between 1988 and 1997 from 48 hours per week (8 hours per day, 6 days a week) to 40 hours per week (8 hours per day, 5 days a week). South Korea pursued a similar trend around the same time. In 1991 they reduced the standard work time to 44 hours per week. Finally, between 2000 and 2008 the standard working time was gradually decreased to 40 hours per week.

In the US, the development towards a 5-day work week was rather a bottom-up process catalyzed through Henry Ford (Kallis et al., 2013, p. 1548), who reduced the weekly working hours for his employees to a 5-day work week in 1926. He reduced the weekly working hours to fuel demand for his product a strategy that put him ahead of his time. Originally, this would be a purely Keynesian thought, although Keynes didn't publish his pioneering book *The General Theory of Employment, Interest and Money* (1936) until ten years later. In any case, Keynes was known for awarding *demand* a key role in economic theory.

Today, moved by the Corona crisis, the concept of a four-day work week is becoming increasingly popular around the globe as societies start to rethink their working habits. Reducing work hours is mostly associated with more overall wellbeing, lower unem-

ployment, more gender equality, and a sustainable economic development (s. Kallis et al. 2013). These are the reasons why countries like the UK, New Zealand, or Canada recently introduced trial programs on reducing work hours for a small portion of their workers (4 Day Work Week Initiative, 2022). It can be expected that the impacts of these trials will be analyzed thoroughly in the upcoming years.

3 The Concept of the Reduction of Weekly Working Hours

Since work times vary strongly among the globe (s. Figure 2; Chapter 6) "reducing working hours" has various meanings. Furthermore, there are many ways of implementation and many different forms in which a work time reduction can be established. Before discussing work time reduction, it is useful to answer the following questions, which will put the general concept into better perspective.

By how many hours per week will the work time be reduced? – Practically, different models are possible – a reduction to 36, 35 or 32 working hours instead of a 40-hours-per- week full time work contract could be realizable. But the interpretation of a *reduction* can vary strongly, especially in an international context. In Japan or South Korea for example (s. Chapter 2), implementing a 40-hour work week was even recognized as a work time reduction (Kawaguchi et al., 2013). This thesis uses an open approach, which considers a work week to be reduced if hours worked decrease to anywhere from 32 to 36 hours in a week. All these work times are defined as a reduced full-time work contract.

How will the work hours be distributed after the reduction? – When implementing a reduced work week there can be multiple ways to realize it: For example, working 7 hours a day in five days a week, which would result in a 35-hour work week; working 8 hours per day from Monday to Thursday and only work 3 hours on a Friday, which would result in a 35-hour work week; working 8 hours per day in four days a week and taking Friday off, which would result in a 32-hour work week. Alternatively, it is not necessarily Friday that has reduced working hours; it could also be a Monday or any other day of the week.

Will the work- and free time be fixed or alternating? - It could be reasonable to alternate work- and leisure time and to give workers the opportunity to rotate their free time. This could potentially keep up normal/long operating hours of companies. This would benefit capital owners, as companies operating on a Friday and being able to consult clients on a Friday would have a market advantage compared to companies which do not operate on Fridays. For companies trading across borders special difficulties regarding operating times could occur in case a country cuts a working day. Not coordinating the time

off, but randomizing it, could moreover have further benefits, like reducing traffic in rush hours and inhibiting the overcrowding of recreational facilities on the weekends. For the wellbeing of workers, a fixed coordination of working- and free time would be more reasonable: Research shows that an important aspect of leisure is the coordination of free time. Jenkins and Osberg (2004) found that spouses coordinate their work schedules over time and the engagement in valuable leisure activities depends on the availability of peers outside their own household. Also, Alesina and colleagues emphasize the importance of coordination or work- and leisure time (Alesina et al., 2005, p. 6). The sociologists Young and Lim even go so far as to consider leisure time a "network good" (2014), since it is dependent on other people having time off. A simple example: A person's leisure time is not as valuable if their partner, friends, and family do not have time off. Comparing the emotional well-being of employed and unemployed the authors found that the well-being of the unemployed increases over the weekend similarly to the well-being of workers. This indicates that the increase of well-being over the weekend is not based on not working, but rather collective good stemming from commonly shared free time. Summing up these research results, a coordination of additional time off seems useful for the wellbeing of citizens.

Will there be a wage compensation? – Whether there will be a wage compensation for the reduction of working hours is a central question. Historically, a work time reduction happened partly with wage compensation (e.g. the reduction in the US induced by Henry Ford; the five-day work week in Germany; the 35 hours work week in France; s. Chapter 2) or without wage compensation, which often happened during recessions (e.g. the 35 hours IG Metall work contracts of the 1980s; s. Chapter 2). Recent trials on the 4-day-working week follow different models as well, which is mostly dependent on the companies participating (4 Day Work Week Initiative, 2022). On the one hand, not having a wage compensation could increase financial pressures on households, which might affect the approval of the work week reduction among the workers. On the other hand, including a wage compensation might create business-related difficulties for companies: If the work time reduction led to a decrease in goods and services produced, this might challenge companies' balance of payments and profitability.

The questions above need to be kept in mind when implementing a work time reduction. Due to the lack of comparability as well as the lack of cases and data, there is no best practice which fits all. These are rather managerial or political decisions, depending on the institution/organization introducing the work time reduction.

This chapter has shown that there are different modes to implement reduced working hours. This can also be a challenge for academic research on that topic, as current research uses different modes of a work time reduction as a foundation for their results (more: s. Chapter 5). This strongly limits the comparability. Also, for this thesis, it is important to define a reduced work week. In the following, the reduction of the weekly working hours will be defined in a very broad way: It includes all work time models between 32 and 36 hours per week. This broad definition was chosen because these are common work time models tested or applied in practice (s. chapter 8). Since the data sample does not include an exogenous experiment on a work time reduction, the coordination of additional leisure time is not visible in the data and cannot be included in the analysis. Moreover, the wage component of having a reduced full-time work contract is not identifiable in the dataset. As financial pressures are such an important aspect of the work time reduction, they will be controlled for within the following analysis (s. Chapter 7).

For this thesis, it is not of central importance which specific form of reduction would be applied. It rather matters that a reduction is implemented at all. Based on this general concept of work reduction, the thesis examines how working less affects gender equality relevant variables in a household.

4 An International Way to Reduce Work Time

The previous chapter presented that there are many different political, economic or business modes to implement a 36-, 35- or even a 32-hour work week. Historically (s. Chapter 2), there were different motivations and institutional ways to reduce working time. This chapter shows business, economic or political ways to implement a work time reduction on an international scale. Although most industrialized countries around the globe have a 40-hour work week, this policy is not carved in stone. Paul Samuelson said to the four-day work week (Samuelson, 1970 in Bird 2009, p. 1068):

"Progress comes from technical invention, and we shall be ever grateful to the discoverer of fire, the inventor of the electric dynamo, and the perfector of hollandaise sauce. But there are also momentous social inventions […] Without language we should still live in the cave, and all honor to that unknown genius who discovered that disputes of precedence could be settled by the toss of a coin. [….] The 4-day week is precisely such a social invention. Just as double entry bookkeeping may have done as much for the standard of modern life as the development of smelting, so will new ideas that enable mankind to find the good life be needed in our present age of anxiety."

The reduction of weekly working hours is a social invention. Even if there have already been proposals and trials all around the world, a broad and long lasting reduction has not come to effect yet. The global agreement on around 40 hours per week is not a given. "This is a choice, not a law of economics" (Gomes, 2021, p. 66). A society – and different actors within it, like politicians, employers, or employees – can change their mind and challenge the status quo. And currently, there is a discrepancy between workers' actual and desired working hours (Otterbach, 2010; Reynolds, 2003, 2004; Sopp & Wagner, 2017). This as well as the impacts of the Corona crisis could be a starting point for innovative changes.

4.1 Reasons for an International Implementation

Due to globalization of production and capital, an international application of the work time reduction would be the most efficient approach. The international community today (mostly) agrees on a 5-day work week with two days off on Saturday and Sunday. Even in countries where culturally and religiously Sunday is not the main holiday, these work week schemes are often adopted to enhance competitiveness in the globalized economy, e.g. the United Arab Emirates introduced this work week in 2022 (AFP, 2021).

This coordination and cooperation on an international level is useful for globalized capital flows. Therefore, an international application of work time reduction would decrease various pressures. It would prevent labor condition dumping on an international level (Clark, 2001), which means that countries with low labor standards seem attractive for employers, who then outsource to them. A top-down legislative process on an international scale would have further benefits of coordination. Gomes points out that small economies would face difficulties to have a coordinated Friday off. Since they are dependent on trading partners, firms in countries with Friday off would be less competitive than firms in 40-hour working week countries. Therefore, Gomes suggests that if a top-down legislative process on a reduction of working hours is inaugurated, it would start with large economies which are not as dependent on trade, and then smaller economies will adapt (Gomes, 2021, pp. 46-47). This theory stands against the new legislation implemented in Belgium – a small and trade-dependent country - in 2022. As one of the first countries worldwide to do so, Belgium allows that employees can work four instead of five days a week. But the total weekly working hours remain at 40 hours per week independent from the work time model chosen by the employee (Wenckebach & Herack, 2022).

Reducing working hours on a global scale would also have beneficial effects on the environment. In a global movement, there would be a smaller risk for rebound effects (Alcott, 2008), which will be further explained in Section 5.2.

4.2 Implementation in the Global Labor Governance Regime

Globalized capitalism reduces the power of domestic policies, and new forms of regulation have emerged to address accompanying regulatory gaps on an international level. These new regulatory frameworks developed in many areas, also regarding labor standards (Marginson, 2016).

The way transnational firms are incorporating labor standards has changed over the last 30 years: The discussions on labor standards transitioned from centralized approaches to decentralized settings, from government control of ILO conventions to codes of conduct, and from governments to multinational corporations. (Hassel, 2008, p. 244). These new emerging forms of regulation became so substantial that Anke Hassel introduced the concept of the “Global Labor Governance Regime” (2008) and other authors developed the idea further (s. Feuerstein & Herrigel, 2017; Meardi & Marginson, 2014).

Overall, the regulation process can be defined as non-binding soft law in multidimensional forms of cooperation between actors.

The norms and traditional legislative model of labor standards created by the ILO and the European Union serve as the foundation for the new global labor standards regime, but it differs regarding the actors involved (Hassel, 2008, p. 233). The traditional regime of labor regulation was based on hard law with hard sanctions; compliance by governments; the regulated access of private actors, such as employer's confederations and trade unions. It was decidedly *authority-oriented*. The emerging Global Labor Governance Regime is characterized by soft law, which provides incentives and information; compliance by business; unrestricted access of private actors, like business, NGOs, and trade unions. This new labor regulation regime is *market-oriented* (ibid.). Hassel emphasizes that international organizations and governmental actors are not the only ones that have an interest in solid labor standards. Large, well-known firms in particular risk reputational losses when not complying to labor standards. Furthermore, adhering to labor standards improves supplier relations and reduces the risk of future liability conflicts if workers would seek legal compensation or if governments would strictly regulate precarious industries. These pressures led to an increase in Corporate Social Responsibility (CSR) campaigns and management measures in multinational firms during the 90s. Consequently, high-standard firms with a good reputation have an interest in all competitors complying to the standard, to level out the playing field when competing on the market (Conroy, 2001; Hassel, 2008, p. 239f.). Originally, this would be counterintuitive, as firms have usually been known as the opposing stakeholder for labor standards. All these developments resulted in a "corporate behavior that is partly developed by business, partly institutionalized by international agencies and networks of NGOs, and public policy. The result is a normative orientation toward corporate responsibility of all actors, public and private, that frame the policymaking agenda toward a decentralized private regulatory regime" (Hassel, 2008, p. 244).

The Global Labor Governance Regime consists of four central pillars, all of which have potentials but also limitations in influencing labor regulation (Feuerstein & Herrigel, 2017), such as the reduction of weekly working hours.

The first pillar in the Global Labor Governance Regime is the ILO, with its 189 conventions, which can be ratified by the member states on a voluntary basis. There are no compliance mechanisms, but the ILO calls out governments which do not adhere to the

ratified standards. Hassel points out that the ILO shifted its strategy in its 1998 declaration and the formulation of the Core Labor Standards (CLS): According to the new declaration, "these fundamental rights were to be respected, promoted, and realized by all members of the ILO, even if they had not ratified the conventions in question." (Hassel, 2008, p. 237) Thus, the quality of the rights imposed was lower than with traditional conventions, but the ILO increased its field of influence and also expanded it to non-state actors, which subsequently often referred to the CLS. Moreover, the CLS were incorporated in the Millennium Development Goals (MDG) and the Sustainable Developments Goals (SDG). The OECD and the WTO also emphasize labor standards on the global level but play a subordinate role. Overall, internationally negotiated targets are important reference points for all actors, but their implementation remains voluntary and there is no tool to rightfully enforce labor standards (Feuerstein & Herrigel, 2017, p. 8). Already the first ILO convention of 1919 included limitations of work time, and work time has always been a central issue in global labor legislation (ILO, 2022). Yet, their newest proposals do not include further work time reductions below 40 hours per week. In their newest publication on work time *Ensuring decent working time for the future* (ILO, 2018) they include a brief chapter on the "Reduction of hours of work" (ibid. 32-34), which they see as a reduction to 40 hours per week. A further reduction to a 4-day-workweek, for example, is not being discussed. Therefore, it appears unlikely that International Organizations such as the ILO will take a lead in a further work time reduction.

The second important pillar is formed by International Framework Agreements (IFA), where trade unions try to transfer their labor standards to offshore holdings and other parts of the supply chain. Thus, the power of these agreements depends on the relations between global union federations (GUF) and multinational companies (MNCs) (Dehnen & Pries, 2014; Feuerstein & Herrigel, 2017, p. 8). Historically, work time reductions were driven by unions (Hicks, 1963) and also today they play an important role. For example, in Germany companies with employee work councils on average work 0.6 hours per week less compared to companies without such councils (Lehndorff, 2004). Still, at the moment there are no further reductions on an international level in sight, which would be initiated by unions.

A third important force in the Global Labor Governance Regime are Multi-stakeholder Initiatives (MSI). They are globally acting initiatives, which combine expertise from public and private sectors. They do not follow a certain institutionalization and can take different forms with diverse tasks and practices (Feuerstein & Herrigel, 2017, p. 10).

Regarding the reduction of weekly working hours, the MSI *4 Day Work Week Initiative* (4 Day Work Week Initiative, 2022) took a leading role in catalyzing the process. They are an internationally working platform combining the expertise and interests of business, politics and research. They initiate 4-day work week trial programs, where companies can sign up and voluntarily implement a 4-day work week for 6 months. For these companies they offer training, mentoring, networking, and research, as some trials will be evaluated in collaboration with the University of Oxford. So far, there have been trials launched in the United States, Canada, the United Kingdom, Ireland, Australia and New Zealand (ibid.). Globally, this is an efficient catalyst in implementing the 4-day work week.

The fourth central pillar in the Global Labor Governance Regime is formed by Codes of Conduct, induced independently and voluntarily by companies themselves. As these are voluntary self-commitments, these Codes of Conduct vary in their quality and compliance. Sometimes, third-party standards or certifications can be applied (Feuerstein & Herrigel, 2017). Older literature states (Hicks, 1963, pp. 106-109) that firms will be slow in implementing reduced hours. Firstly, reducing hours for the whole establishment must come from the employer. In opposition to this, increasing wages goes faster, because it can be driven by an individual looking for another job. Secondly, it is a risky investment. The transition and restructuring of the firm has an investment cost, and the payoffs of possibly increasing productivity are unclear. Thirdly, it is also an investment in the workers. There is an additional cost of training (new) workers to this new way of organizing production. However, there are currently already a handful of companies which introduced a reduced work time voluntarily - partly in cooperation with the 4 Day Work Week Initiative (Reuters, 2022). Thus, there is potential for movement from the employer's side, especially as employers are heavily competing for well-trained personnel.

5 Literature Review: Impact of a Reduced Work Week

The reduction of weekly working hours has become a popular debate – not so much academically, but mainly in the public. The following chapters summarize the academic literature on a work time reduction. On the one hand, this thesis briefly reviews the macro effects (Section 5.1 and 5.2) and on the other hand it focuses on the micro effects (Section 5.3 and 5.4), among them the impacts on gender equality.

5.1 An Overall Economic and Societal Change

The reduction of weekly working hours will change our economies in many ways. This chapter presents why the economy will change on a macro level. Most arguments of this chapter are based on Gomes' (2021) *Friday is the new Saturday: How a Four-Day Working Week will Save the Economy*. In his book, the author elaborates how the reduction of weekly working hours can lead to an overall social and economic change, deriving these assumptions from the theories of the world's most famous economists. This chapter takes up seven of those arguments, discusses them and adds more perspectives to them.

First, reducing weekly working hours will increase demand and thereby has the potential to boost the economy. This assumption is based on the Keynesian theory manifested in his groundbreaking book *The General Theory of Employment Interest and Money* (J. M. Keynes, 1936) that gives demand a central role in the development of the economy. Heavily abbreviated, Keynes recommends government investment in times of recessions to enhance demand and thereby to balance out the economy. Even earlier, Henry Ford reduced the working hours in his factories from a 6-day to a 5-day work week, in order to increase demand for his cars (Ford, 1926). Converting this theory to a household level shows that the demand of households is fueled not only by more income, but also by more time. Therefore, a reduction in weekly working hours can increase the demand for products. Keynes acknowledged this phenomenon, as he wrote in a letter to a friend: Fueling the economy "by means of investment [was] only one particular application of an intellectual theorem. You can produce the same result just as well by consuming more and working less" (Skidelsky, 2003 in: Gomes 2021, p. 78).

Second, reduced work time can impact productivity and the way of production. This is an argument supported by Schumpeter, who like Keynes saw economic growth as a way to increase consumption and reduce working time (Gomes, 2021, p. 82). His central contribution to economic theory is that he introduced the importance of entrepreneurship, (business) leadership and innovation as a driver of productivity and therefore economic growth (Schumpeter, 1955). Central for this is the concept of marginal productivity, which describes how much is produced in one additional hour or day of work. But how does work time influence productivity? On the one hand, more working hours could increase productivity, if workers have a standard set-up cost and standard unproductive time during the days and longer work hours improve the utilization of capital (Feldstein, 1967; Leslie, 1984). On the other hand, an additional hour of work could decrease productivity, as more work could cause fatigue of the workers (Pencavel, 2015). If these two effects balance each other out, the connection between working time and goods produced would be linearly positive. Empirical analyses in recent years point in the opposite direction: Most economists today find evidence for diminishing marginal returns of working time (Brachet, David, & Drechsler, 2012; Collewet & Sauermann, 2017; Dolton, Howorth, & Abouaziza, 2016; Pencavel, 2015).

Third, reducing the working hours can create jobs through work sharing. This is a very common argument stating that the same output can be produced by more workers who work shorter hours. Work sharing originally is a business model that has been used by firms during recessions, for example at Volkswagen during the 1980s (Huberman, 1997). Recently, it was applied on a large scale during the Corona crisis where many countries used such models, e.g., the German Kurzarbeitergeld. But on a long-term macro level, this concept is incompatible with the argument that productivity would increase (Gomes, 2021, p. 122), which is explained in the paragraph above. Furthermore, most economists criticize this concept as an example of the lump of labor fallacy, which views the economy and work as fixed and not adjustable to changing circumstances (Kagan, 2020; Kapteyn, Kalwij, & Zaidi, 2004). Instead of increasing employment, it appears more likely that companies either keep up their goods and services produced through higher productivity or scale down their production. This is supported by empirical evidence from the French 35-hour work week reform (Estevão & Sá, 2008).

Fourth, another argument based on Schumpeter's (1955) theory is that having more leisure time increases potential for innovation. Most innovative culture and entrepreneurial ideas in human history were created because of leisure time. Bertrand Russel describes

how most groundbreaking innovations and cultural heritages come from hierarchical and imperialistic societies with a small leisure- and a large working class. Here the leisure class created novelties (Russell, 1935). Culture, innovation, and entrepreneurship is time intensive and having more leisure time could unleash creativity in this regard.

Fifth, shorter working hours can reduce technological unemployment. Marx (1849: Chapter 9) predicted unemployment caused by technological innovations, also known as structural unemployment (Kenton, 2020). World-famous quantitative economist Wassily W. Leontief (1982) explained the increase of US unemployment between World War II and the 1980s with the lack of work time reduction while technology improved. He emphasized the importance of a reduction of weekly working hours as a tool to reduce technological unemployment and to prevent a social disruption: "There remains the alternative of direct action to promote a progressive shortening of the work week combined with income policies designed to maintain and to increase" (Leontief, 1982, p. 192).

Sixth – as the Leontief quote above states - a work time reduction can raise wages in the long run, improve the lives of the working class, and decrease inequality. Especially when the second and fourth circumstances – the increase of productivity and a boost for innovation – come true, it will reflect on employees' paychecks (at least if the work time reduction is supported by good policies). There are two strong reasons that indicate this: Firstly, from a labor supply and demand perspective, the smaller supply of labor will increase the wages. Secondly, workers would have a better bargaining position. Employees would have more leverage as suppliers of labor in a leaner economy with reduced working hours, as labor was more necessary. They would be able to command a higher wage and have more real economic security (Gomes, 2021, p. 154). This is proven by the French case, where Estevão and Sá (2008) could find a strong positive effect of work time reduction on wages. Not only could wages be increased, but also inequality can be reduced (s. Piketty, 2013). Bowles and Park (2005) find that income inequality relates to long work hours. Working hours manifest power inequalities between workers and capital owners (Oh, Park, & Bowles, 2012).

Seventh, people will have the freedom to choose how to spend their time. This is a liberal argument that would even be supported from a purely capitalistic perspective, like Schumpeter's. Currently, studies show a discrepancy between desired working hours and actual working hours (Otterbach, 2010; Reynolds, 2003, 2004; Sopp & Wagner,

2017). This indicates that people want to work less, if they could, but the reality is different. Most societies have chosen to work around 40 hours per week and there is mostly no bargaining option in this regard: “The individual worker must accept the regulation working day and cannot vary the quantity of labor he is willing to offer.” (Schumpeter, 1955, p. 923). A worker “accepts a fixed working day which he is powerless to alter" (ibid., p. 1015). Due to the lacking possibility of bargaining, the work time is not in equilibrium and if the standard work time was reduced, people could choose how to spend their free time.

5.2 A Path towards Sustainable Growth

Sustainable growth is the key for well-being in the next generations. Schor (1992, 1995) and Hayden (1999) were the pioneers in identifying a relationship between work time and environmental damage. They show that working hours impact economic development, consumption and therefore also sustainability. They consider a labor time reduction to be a very important aspect of (de-)growth, and a way of making sustainable degrowth socially friendly. This important step towards a sustainable economy has good potential to be acknowledged within the populations: a win-win situation.

Working hours can influence the environment in three different ways (Knight, Rosa, & Schor, 2013, p. 694; Schor, 1992): First, working hours have a scale effect on the economy (Hayden, 1999; Knight et al., 2013; Schor, 1991). That means working hours impact the size of the economy. In general (ignoring the effect of reduced working hours on productivity) the more hours per week are worked, the more output is being generated, and vice versa (Knight et al., 2013, p. 694). On the consumer side, this can lead to a “work and spend” cycle, as Schor (1992, 1995) formulated it. Market economies usually experience productivity growth, which means that in order to maintain the same level of GDP, less labor is required. Having fixed or potentially even rising working hours generates more income, which in turn increases consumption. Therefore, reducing working hours are a key factor in channeling consumption. If the “work and spend” habits prevail, increasing productivity leads to further production and consumption, which is environmentally degrading. Furthermore, reducing working hours could preserve the environment, as generating less output uses fewer resources (Knight et al., 2013, p. 694). If economic output is decreasing, a reduction of working hours could secure employment. Knight and colleagues formulated an interesting thought in this regard: “Worktime reductions may be especially important to contain environmental pressures when eco-

efficiency, or natural resource productivity, is rising, because they dampen the possibility of rebound effects by transforming gains in productivity into more leisure instead of more output" (2013, p. 694). This argument is supportive of a top-down legislative process for a reduction of working hours, since only a legislative act could prevent these rebound effects on a large scale. An empirical analysis by Hayden and Shandra (2009) finds evidence for the scale effect. With a cross-sectional comparison of OECS countries they empirically find that hours of work are positively correlated with the ecological footprint. In other words, the more hours of work per person, the worse it is for the environment. Also, Spangenberg, Omann, and Hinterberger (2002) analyze how sustainable growth can be achieved in Germany. They see reduced working time as a key element to ease environmental pressures, while achieving economic competitiveness and low unemployment. Another interesting paper in this field is by Rosnick and Weisbrot (2007), who compare EU member states and the US, whose workers work more hours and use more energy per year. The authors conclude that if the labor force in the EU would work as much as workers in the US, they would require 15 percent more energy.

Second, working hours have a compositional effect on resource consumption. This means that working time creates time scarcity, which in turn increases the demand for time-saving goods and services that are more environmentally degrading (Knight et al., 2013, p. 694; Nässén, Larsson, & Holmberg, 2009). Besides budget, time is an important structural constraint that influences consumption patterns. Becker (1965) formulated the theory that households not only have preferences between commodities within a budget constraint, but also between commodities and leisure time. This important economic theory was complemented by Cogoy (1995, 1999) adding that time allocations also have effects on the environment. Having less time but more money promotes the use of activities and products that save time but are more expensive. Typically, those goods are more environmentally degrading and time-consuming activities and products are more resource-saving (Jalas, 2005). Lindner formulates it on point: If time is scarce, "a more basic and radical method of raising yield on time used in consumption, is to increase the amount of consumer goods to be enjoyed per time unit" (Linder, 1970 in: Devetter and Rousseau, 2011, p. 342). For example, a household with less time but more money will choose a faster transportation or more environmentally degrading ways of food production (Jalas, 2002, p. 120). There are some empirical approaches that can show the interconnection of time and environmental impact of consumption: Devet-

ter and Rousseau (2011) analyzed French households and found that more income and less time led to a more environmentally degrading consumption behavior. Nässén and colleagues (2009) conducted a micro-data analysis on energy use in households depending on working hours in Sweden. They found that a 10 percent decrease in work time leads to an average 8 percent reduction of energy use. They found a stronger effect for low income households and a smaller effect for high income households. They find that the reason for the reduced energy consumption is mainly due to the reduced income that is accompanied by fewer working hours and to a smaller extent due to the reduction in working time.

Third, there could also be rebound effects, in that working hour reduction leads to an increase in environmental pressure. This could potentially happen in two ways. Firstly, according to Alcott (2008), there could be a reverse effect: If one part of the world (global north) consumes less, demand decreases and as a result prices decline, too. Afterwards, the demand in other parts of the world (global south) are being stimulated and consumption increases. This could happen if the work time reduction reduces the demand in the global north. On the other hand, this phenomenon could also have a beneficial effect in reducing global inequalities. Secondly, it could happen that the decrease in working hours leads to an increase in labor productiveness and wages. Therefore, it could also lead to an increase in consumption production and output. Potentially, increased wages and free time could be used to go shopping or to do holidays by airplane (Knight et al., 2013, p. 694). Whereas most empirical studies in this field focused on the global north, Shao and Rodríguez-Labajos (2016) studied the impact of working time on environmental pressure in 55 countries worldwide. Their findings are important, since they show that in countries in the global north, there is a significantly positive effect of working hours on carbon emissions. Meanwhile, in countries of the global south the correlation is insignificant. Importantly, they also found rebound effects for the high-income countries. The correlation between working time and carbon emission was positive between 1980 and 2000 and turned to negative between 2001 and 2010. They explain this pattern with an increasing consumption that accompanies increasing leisure time. This supports rebound effects on consumption on a transnational level. In contradiction to Alcott's theory, Fitzgerald, Jorgenson, and Clark (2015) analyzed the effect of working hours on energy consumption in high- and low-income countries in the time period between 1990 and 2008. They find a negative correlation, and that the impact of an additional working hour on energy consumption is increasing over time and is signif-

icant for the global north and the global south. A central empirical approach in this field is by Knight and colleagues (Knight et al., 2013). They empirically test how the reduction of the work week reduces environmental pressures on three indicators - CO2 emissions, ecological and carbon footprint - using panel regressions in 27 high income countries between 1970 and 2007. Firstly, the authors can show a strong negative effect of reducing hours on the scale of the economy. Secondly, they find moderate proof for the compositional effect of working hours, the resource intensity of consumption. Thirdly, they show that working time reduction has no reverse effect on environmental pressures, i.e., that the environmental impacts worsen through fewer hours worked. If these reverse impacts occur, they are outweighed by the resource saving effects.

5.3 Impacts on Labor Conditions

The reduction of working hours can be achieved in multiple ways which no doubt will impact the way we work. In academia, researchers have explored multiple ways in which reduced working hours can impact our working conditions – both favorably and unfavorably.

There are two main reasons for an improvement in labor conditions. First, working fewer hours can increase job satisfaction. Lepinteur (2018) finds evidence that the main reasons for increasing job satisfaction arise from workers' satisfaction with working time and working conditions. He analyzed Portugal and France and found that especially in France, labor reduction played an important role in ensuring more satisfaction of the workers. Importantly, the author could prove that the increased satisfaction was sustained for a long time period, e.g. five years in Portugal. Hamermesh, Kawaguchi, and Lee (2017) analyzed the reduction of working hours in South Korea and Japan. For South Korea, they found an increase in labor satisfaction, which was especially significant for men on multiple levels. For Japan they found different results depending on gender: For women work time reduction increased labor satisfaction, for men there was no effect.

Second, a reduction in working hours can stop the "rat race" of work conditions, a term defined by G. Akerlof (1976). He shows that "workers who are willing to work at a fast speed [or, equivalently for our research question, working more hours] are judged to have superior abilities" (p. 603). They put in more effort, to differentiate themselves from a lower worker type and to be acknowledged as a high productivity worker. This is

suboptimal for employee and employer because the increased cost due to more speed or more working hours exceeds the additional production. More recently, L. A. Bell and Freeman (2001) explored the reasons for different work hours in the US and Germany. They found that generally workers choose a longer work time, as working more increases future wages and promotion prospects. Due to income distribution and taxation, in the US working one additional hour more generates more additional net income (s. Bowles & Park, 2005). Therefore, US American workers tend to work more hours. Especially if reduced working hours were promoted in a top-down way, initiated by the government with strict regulations and penalties (such as high taxation) for more work and overtime hours, the "rat race" can be stopped. To prevent labor condition dumping, an international approach would be recommended.

On the other hand, a reduction of working hours can also lead to a deterioration of working conditions in three possible ways. First, the reduction of working hours could increase the intensity of work. If the tasks and the work structure remain the same, it will not be possible to do the same tasks in a shorter time unless it is connected with more pressure and stress for the employees. Kelliher and Anderson (2010) found that employees in the UK working remotely and with reduced working hours experience work intensification. After the French work time reform, Askenazy (2004) could not find improving worker satisfaction and explains it with increasing intensity of work. Moreover, analyzing South Korea, Rudolf (2014) could also find no significant positive effect of the reduction on subjective job satisfaction. Only the satisfaction with working time increased significantly. The author explains the lack of improved job satisfaction with the increasing work intensity. Second, job security has a strong influence on job satisfaction (Clark, 2001). New legislation on working hours reduction could decrease job security, for example with substitution from labor to capital (König & Pohlmeier, 1988) or outsourcing into other countries with longer working time. In research, the hypothesis is a blind spot. There are no empirical analyses on this question in combination with reduced working hours. Third, an employment can create more than purely financial benefits. Work can be seen as a status symbol, a purpose, a sense of community and a source of recognition (Farzin & Akao, 2004). A shorter work week could reduce these positive non-financial benefits of employment. There are no studies that could assert the causality of this hypothesis.

5.4 Opportunities for the Household, Living Standards and Gender Equality

The reduction of weekly working hours can impact many aspects of people's lives. It can impact people's satisfaction or happiness, health, use of free time and gender equality. This chapter summarizes theories and research on these factors on an individual and household level.

Empirical research in this field is difficult to compare, as the reduction of working time is defined in many different ways: Sometimes it is considered as working part-time, sometimes it is defined as doing overtime, sometimes it is defined as having more holidays (s. Chapter 3). Still, what the various definitions have in common is their focus on a change in working time and the resulting impacts.

5.4.1 Happiness and Leisure Time

A central question regarding work time reduction is this: How will it influence workers' happiness or life-time satisfaction? Surprisingly, there is very little research on workers' wellbeing (s. Lepinteur, 2018, p. 1). Overall, there are tendencies towards a negative impact of working hours on happiness. But the results vary strongly depending on country, gender, and an individual's life situation, i.e. cohabitation or marital status.

Work time and leisure time have an impact on well-being. Vickery (1977) defined the term "time poverty", a new concept of poverty including time constraints which are based on the assumption that households vary in their number of care or "adult hours" (ibid. p. 28) and the number of adults in the household. Varieties in these adult time demands can lead to phenomena where individuals do not have enough time to pursue educational or leisure time or other activities which would increase their overall well-being.

Furthermore, when analyzing the connection between working hours and happiness, it is important to consider income, which itself correlates with happiness. Working hours and income are – not surprisingly - positively correlated but the impact is moderate. Easterlin (1974) found only a weak influence of income and happiness. These results were affirmed in empirical studies in past decades (Clark, 2018). For example, the psychologists Kasser and Brown (2003) found that US Americans who worked more had a higher income, but it was unrelated to their life satisfaction. Their findings suggest that

working less hours increases happiness, whereas working more and earning more money does not.

Later, Kasser and Sheldon found more empirical evidence for the positive impact of reduced working time on life satisfaction. They suggest "time affluence [i.e. working fewer hours] as a path toward personal happiness and ethical business practice" (2009). Another study based in the US and Western Europe points in this direction: Alesina et al. (2005, pp. 52-55) find that working less, i.e. having more holidays, has a positive effect on happiness. In their analysis, they first use a standard regression, which does not correct for omitted variables or reverse causality. Nevertheless, in a second regression where they use collectively agreed vacation days as an instrument and in a third regression using country panel data with year dummies, they find similar results. Golden and Wiens-Tuers (2006) analyze extra hours of work in the US and find that they have adverse impacts on happiness and mental health, which offset the financial and health benefits of the additional income. Valente and Berry (2016) analyze the influence of working hours on life-time satisfaction in the US and Latin America. Interestingly, they find different outcomes in different regions of the world as well as for men and women. Neither in the US nor in Latin America could the authors find an influence of increasing working hours on the happiness of women. For men, they find different results: Married Latin American men are less happy than married US American men when working one additional hour. They emphasize the importance of culture in this regard. In Europe there is further empirical evidence for France, Portugal, and Germany. In France and Portugal, legislation at the end of 1990 to reduce working hours improved job and leisure time satisfaction of the workers. Lepinteur (2018) finds evidence for more leisure satisfaction of the workers, which remained for a long time period after the work time reduction. The empirical results for Germany are inconsistent. Using GSOEP Data, Pouwels and colleagues (2008) show how income and working hours affect happiness. They find that working hours have a significantly negative effect on happiness, but only for men. They explain this result with the effect of income on happiness and state that existing research mostly underestimates the importance of income. Following their results, introducing a working time reduction *with* wage compensation, the effect of working time on happiness would be greater. Also, using GSOEP Data but conducting a panel analysis with fixed effects, Knabe and Rätzel (2010) find an inversely u-shaped impact of working hours on happiness, but its effect is rather small. With its relatively high working hours, South Korea is an interesting ground for such an analy-

sis. Analyzing the Korean five-day work reform in the 2000s and its impact on happiness, Rudolf (2014) does not find a significant positive effect of the reduction on subjective well-being, neither on job nor leisure time satisfaction. Only satisfaction with working time increased significantly. The author explains the lack of improvement in job satisfaction with the increasing work intensity. Moreover, the work time reform caused an increased spending on leisure activities and also led to better leisure satisfaction (Yang, 2009). Not only the spending on leisure time increased but also the time spent with housework or recreational activities, such as sleeping or exercising. These effects were highly gender-specific: Women often allocated their time towards housework, while men increased their time for leisure and recreational activities (Rudolf & Cho, 2011).

5.4.2 Health

Working time has an impact on health. Analyzing the effect of working time on health is difficult, since the two parameters are strongly interconnected and there is reverse causality. Healthy workers are more likely to have employment and to have longer working hours, so bad health unambiguously has a negative effect on labor force participation and working time (Lindeboom & Kerkhofs, 2009).

Overall, there is evidence that long work hours have a negative impact on health. This is especially strong if workers cannot influence the amount of time they spend working. Therefore, the gap between actual and desired work hours is of utmost importance when it comes to the influence of work on health, which can be true for many working models like part- or full-time (Bassanini & Caroli, 2015; D. Bell, Otterbach, & Sousa-Poza, 2012; Dockery, 2006). In this context it is important to define “long working hours”; again, definitions for this concept vary considerably. In most studies, working 40 hours per week is not considered to be “long working hours”. In most cases, overtime hours (41 or more, depending on the country / work contract) are counted as long working hours. There is only a limited number of studies that indicate the effect of reduced working hours on health. One of them is by Robone, Jones, and Rice (2011), who analyze the UK and show with panel regressions that having a part-time job compared to a full-time job has a positive influence on health. The most interesting study in this regard comes from Berniell and Bietenbeck (2017). They analyze the French work time reduction in the 2000s and find a positive effect of working hours on smoking and a negative effect of working hours on self-reported health, i.e. a 6 percentage points lower rate of

smoking and a 0.2-unit (on a scale from 1-10) increase in self-reported health after the work time reduction.

5.4.3 Gender Equality

In a heterosexual two-adult household, women are less likely to be employed; if employed, they work fewer hours than men in paid employment. Compared to their male partners, women spend more time on unpaid care work within the household.

The reasons for this male breadwinner norm have been explained in multiple ways (for more details on the debate, see: Creighton, 1996): Marxists describe female subordination often as a byproduct of rising capitalism. On the one hand, there are assumptions that female subordination was in the interest of the capitalist class, as the capitalist class benefited from the disunity gender division created (Barrett, 1980). On the other hand, Marxists assume that the male breadwinner family was also in the working class's interest since it benefited the working class's material gains to have a single wage for an entire family and to form a family organization (Humphries, 1977). Other scholars put the interests of men in the center of the analysis: men have made women leave the labor market or forced them into precarious employment in order to receive advantages themselves on the labor market and within the household (Hartmann, 1979, 1981). Moreover, the position of men and women in a household is strongly influenced by identity, the superimposition of norms as well as the values people attach to gender (or other) roles (G. A. Akerlof & Kranton, 2010; Esping-Andersen, 2009; Lippmann, Georgieff, & Senik, 2020; Rose, 1986).

In the last 40 years, men have on average increased their household- and care time (Coltrane, 1996, p. 52). The classical single-earner household, where typically the man is the sole breadwinner, became outdated. Instead, the share of dual earner and single-parent households increased (Jacobs & Gerson, 2005; Kessler-Harris, 2001; Sayer, 2005). This is due to a growing female labor force participation (Shelton & John, 1996) and a decline of wages for men, thus a loss of the classical family wage, which challenges the adequacy of having a single breadwinner in a household (Levy, 1995). Also, delayed pregnancies and a reduction of the fertility rate challenged the traditional male breadwinner norm over past decades (S. Bianchi, 1995). Moreover, gender roles and expectations for men and women changed within societies (Coltrane, 1996, p. 177 ff). Even if there are tendencies towards more equality, true symmetry has not been reached yet. In spite of the feminist struggle, the male breadwinner norm remains prevalent

(Bertrand, Kamenica, & Pan, 2015) and there are gender gaps in wage and labor force participation (Blau & Kahn, 2017). This affects work- and life-quality patterns within households, showing that women in dual-earner incomes are under more pressure (Moen & Yu, 2000). Inevitably, descriptive statistics regarding gender inequalities (s. Chapter 6) support these ideas, and even go beyond the scope in which social sciences or economic models can rationalize these phenomena.

Having a symmetric time usage within a household could be a step forward towards more gender equality. Relevant time indicators in this regard would be time spent on unpaid care work, household chores, leisure and paid work. In theory, an overall reduction of weekly working hours – for both men and women - can contribute to more gender equality and symmetry within the household (Gomes, 2021; Jacobs & Gerson, 2005; Sayer, 2005; Schultz, 2009; Schultz & Hoffman, 2006).

The mechanism between paid- and unpaid-work-time within a household meets the expectations following several publications: Men with fewer weekly working hours spend more time with care work and household chores. Also, in households where both partners have a more similar household- and care work time, the paid work time is more equally distributed (Coltrane, 1996; Deutsch, Lussier, & Servis, 1993; Horne, Johnson, Galambos, & Krahn, 2018; Mahony, 1995 cited in Schultz and Hoffman, 2006). Against common stereotypes, this phenomenon is independent from class, as working-class men do the same amount of household- and care time as better educated middle- or upper class men (Wright, Shire, Hwang, Dolan, & Baxter, 1992).

Jacobs and Gerson (2005) analyze the *Time Divide* within households with a special focus on gender equality (s. ibid. p. 6-9). Through capitalist and globalized capitalism, work patterns in the West have moved away from a standard 40-hour work week. On the one hand, employees experience underwork when working less than 30 hours per week – often under insecure and precarious work conditions. On the other hand, employees face overwork when working over 50 hours per week (Jacobs & Gerson, 2005; Schor, 1991). This has gendered consequences, as the overwork employment types are high-paying, white-collar jobs, which are mostly pursued by white men; whereas the underwork occupations are mostly done by women. The researchers conclude that reducing the overall working time can close the time divide. Using descriptive statistics based on international data, the authors were able to show that in almost all countries, having a moderate amount of weekly working hours in a two-adult-household leads to

greater equality in working time between men and women (Jacobs & Gerson, 2005, p. 138). The authors emphasize in this international comparison that working less hours per week is not necessarily associated with a more equal distribution of work time. Changes in work time need to be accompanied by policies empowering women.

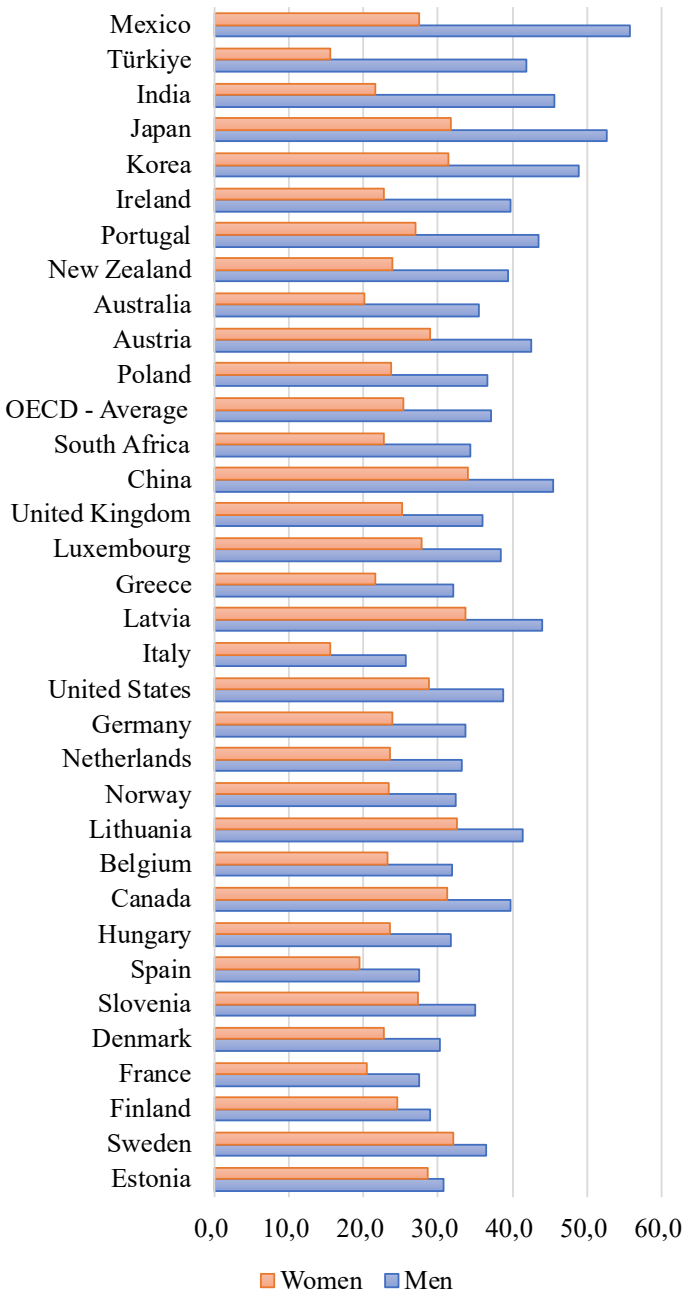
Yale Law and Social Sciences Professor Vicky Schultz and colleague Alison Hoffman open the debate about a general work time reduction in their article *The Need for a Reduced Workweek in the United States* (2006). The authors claim that feminist demands to redistribute or compensate women's care responsibilities do not go far enough. Instead, they call for broader measures to reduce and redistribute working time for everyone. This concept benefits all workers, but especially women. Without addressing "the larger structural problems underlying the 'time crunch', work–life balance remains an individual problem, requiring difficult trade-offs between meaningful participation in market work and sufficient time for family, community, and leisure" (Schultz & Hoffman, 2006, p. 135). Especially for the increasing number of dual-earners and single parents (Jacobs & Gerson, 2005; Kessler-Harris, 2001), the traditional 40-hour work week is burdensome and stressful. An overall reduction in working time would reduce stress on all employees and would be a solid foundation for greater equality within households (Schultz & Hoffman, 2006, p. 139). They propose a 35-hour work week as a compromise to move the overworked and underworked to a reasonable middle, where both partners (or single parents) still have enough time left for household chores and life pursuits (Schultz, 2009; Schultz & Hoffman, 2006). Schultz (2009) later on emphasized the importance of an overall reduction of weekly working hours to 35 hours per week, instead of just enabling more flexibility. She criticizes that so far, most academic studies and policy discussion focus on a flexibilization of work time schemes and home office possibilities to improve gender equality. The general reduction of work was not in the center of debate and there is only a small collection of academic publications on this topic. Schultz (2009) criticized that modern feminists focus on work time flexibility instead of a general work time reduction, as "flexibility" has its pitfalls. It is designed to give people the "freedom to craft their own schedules and places of work. Yet, the social meaning and the value of those choices is always constrained by what other people are doing. In the real world, 'choice' often reduces to opting for something different from the mainstream pattern, rather than altering that pattern for everyone" (Schultz, 2009, p. 1215). Coming from historical traditions (s. above), women mostly choose flexible options to reduce hours and therefore flexibility already has a gendered mean-

ing (Jacobs & Gerson, 2005; Minnotte, Cook, & Minnotte, 2010). In other words, women tend to deviate from the standard, more regularized work norm that men usually adhere to. This can lead to further discrimination and marginalization of women at the workplace. Although Vicki Schultz fueled the debate about gender and working time around the times of the financial crisis, the idea was not subsequently pursued in academia.

6 Stylized Facts on Weekly Working Hours and Gender Differences

All around the globe, a male breadwinner system is prevalent. In an average society it is assumed that in a family, i.e. a heterosexual two-adult household, there is a full-time (mostly male) breadwinner and a supportive, part-time (mostly female) caregiver (Kessler-Harris, 2001). This assumption can be supported by descriptive statistics from all around the globe. Everywhere you look, women pursue more household- and care work compared to their male partners and women work fewer paid hours per week than their male counterparts.

Figure 2: Hours spent with paid work per week, by gender



The OECD publishes gender data every year, which also includes time variables (OECD.Stat, 2022b) and labor force participation (OECD.Stat, 2022a) by gender. This data set makes it possible to present an international comparison of OECD member countries, plus China, India and South Africa. OECD Member country Costa Rica only joined the OECD in 2021, therefore its data is not presented in the figures below.

Figure 2 shows the average working time of men and women per week for each country in 2019. The diagram is sorted from the biggest difference in working time per gender (top) to smallest difference in working time per gender (bottom) in absolute values. Internationally, there is drastic variation: Estonia has with 2.2 hours the least difference in working time, whereas Mexico has the biggest difference: 28.2 hours per week. The OECD average of working time is 37.1 hours per week for men and 25.4 hours per week for women, so there is an average difference of 11.7 hours per week for paid labor. In Germany, men work on average 33.8 hours per week and women work 24.0 hours per week. This varies slightly from the averages in the sample used in this thesis (Figure 5a), since the sample is based on household- and individual SOEP (Socio Economic Panel) data and only accounts for co-living couples between 18 and 64, where at least one of them is working full time (s. Section 8.1).

Figure 3: Hours spent with household - and care time per week, by sex

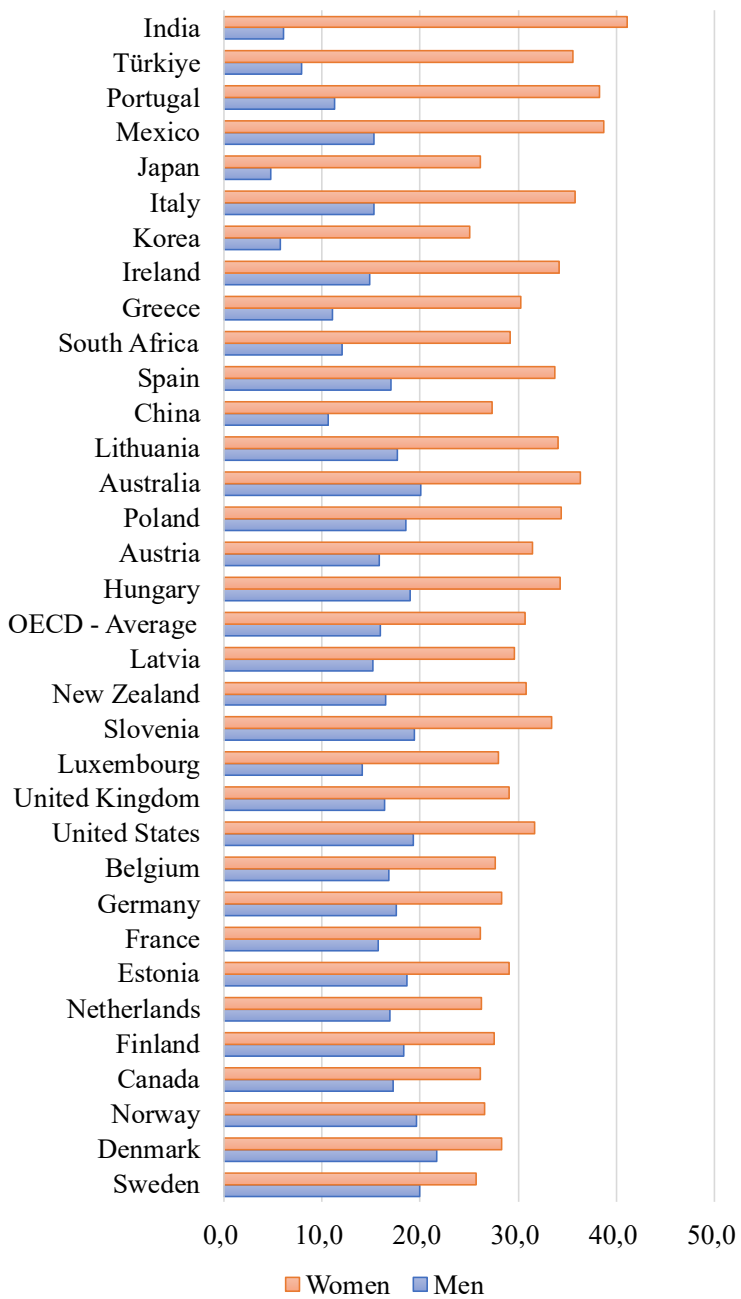
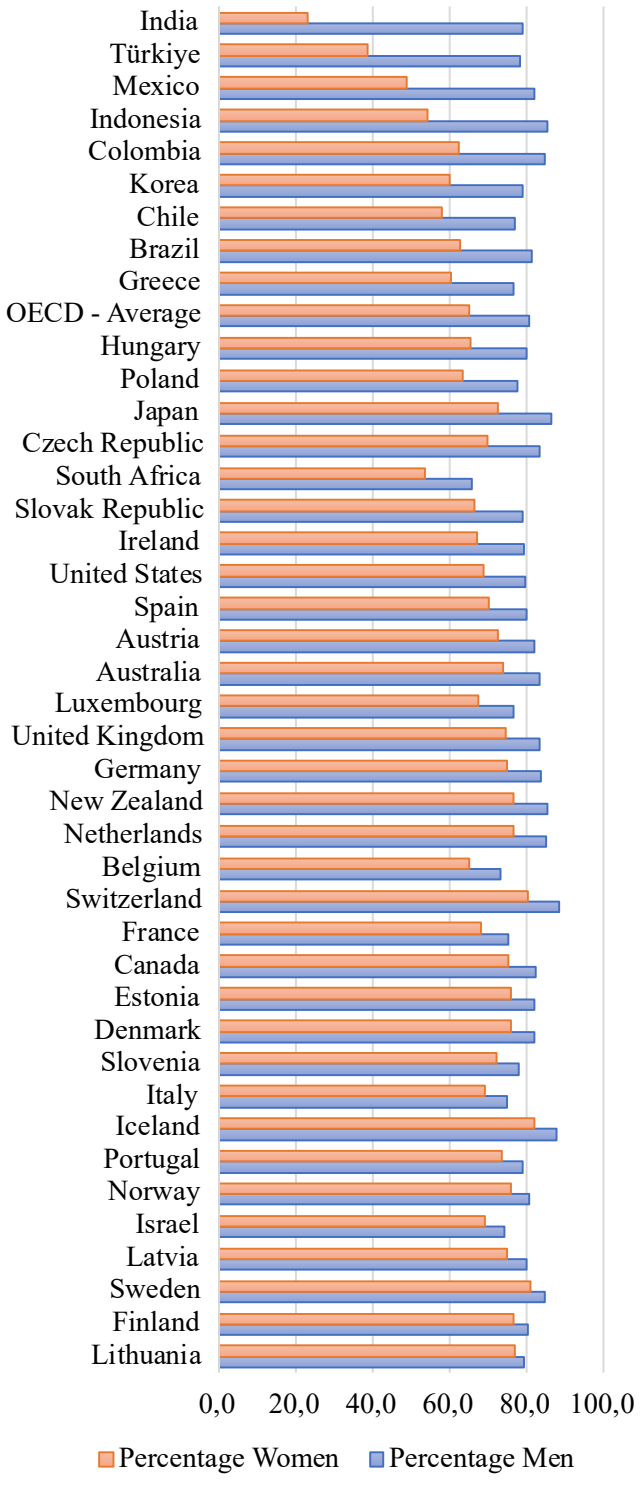


Figure 3 shows the status quo in 2019 regarding unpaid household and care time per week by gender. The diagram is ordered from the country with the largest difference in unpaid care work (top) to the country with the smallest difference in unpaid care work (bottom). The OECD aver-

age of unpaid household- and care work is 19.9 hours per week per man and 30.7 hours per week per woman. This results in an average difference of 14.8 hours per week, with women doing more household chores and care work than men. In Germany, a man on average pursues 17.5 hours of unpaid work per week, whereas a woman's unpaid hours average 28.3. Every week, there is on average a 10.8 hour difference. It is a clear pattern that in all countries women have distinctly more housework hours than men. Again, the stylized facts based on OECD data vary from the descriptive statistic of the sample used in this analysis, as the sample figure does not depict the overall German average (Figure 5b). In the sample, men on average spend 26.21 hours with unpaid work, whereas their female counterparts spend 49.42 hours per week with such work.

Figure 4: Labor force participation rate, by sex



Regarding labor force participation, there are explicit differences between men and women worldwide. In every OECD country, women are less likely to have paid employment, as shown in Figure 4. Like the numbers of work hours in Figure 3, the rates of labor force participation in Figure 4 are also sorted by the difference between men and women – from the biggest difference (top) to the smallest differ-

ence (bottom). In the OECD, women on average have a labor force participation of 65.0 percent, while men have a labor force participation rate of 80.7. This makes a difference of on average 15.7 percentage points. In Germany, the female labor force participation is 74.9 percent, whereas the male labor force participation is 83.5 percent, thus a difference of 8.6 percent. This again diverges from the descriptive statistics in the sample used for the following analysis (Figure 5c). The men in the dataset are employed with a probability of 95.6 percent and women are employed with a probability of 81.4 percent. Again, this is due to the specification of the sample, which will be further explained in Section 8.1.

Figure 5a: Descriptive statistic of the sample: Weekly working hours, by sex

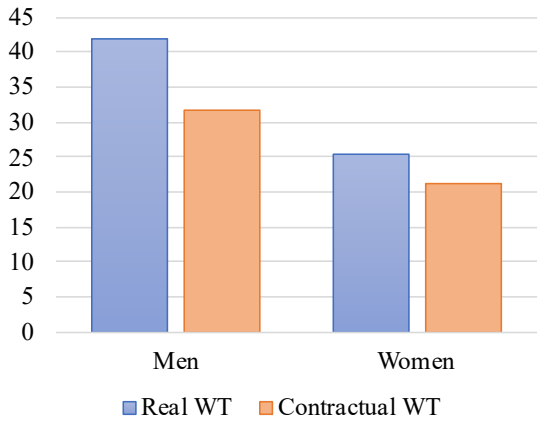


Figure 5b: Descriptive statistic of the sample: Weekly household - and care hours, by sex

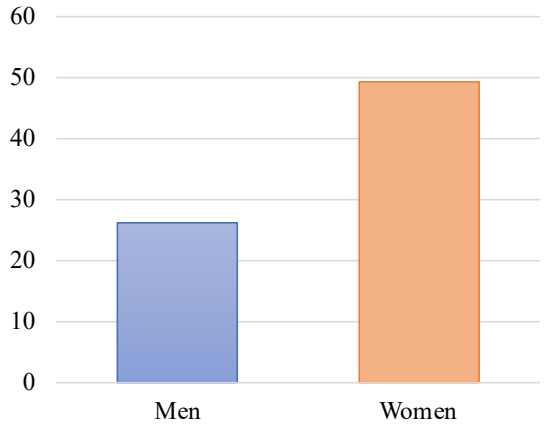
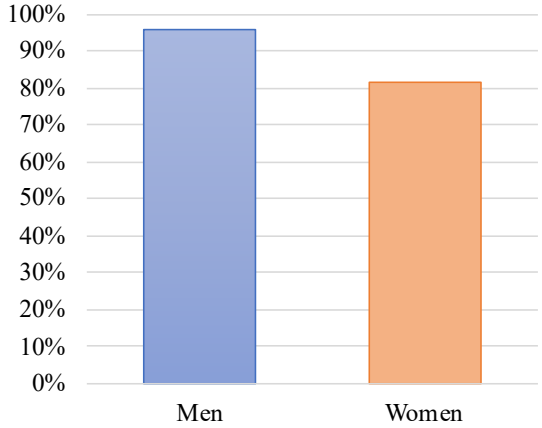


Figure 5c: Descriptive statistic of the sample: Labor force participation rate, by sex



7 Methodology

7.1 Research Question and Hypotheses

The central research question of this thesis is: "How does the reduction of full-time working hours affect gender equality within households?" This research question is mainly based on Vicki Schultz' and Alison Hoffmans' *The need for a reduced work-week in the United States* (Schultz & Hoffman, 2006) which states than an overall reduction of working hours can lead to more equal gender relations within households, which again has an impact on gender equality in the labor market. This thesis analyses the impact of working time on gender equality relevant time variables in a household, namely (1) the time spent on care work and other household chores, (2) the working time of the adults in a household and (3) the labor force participation of the adults in a household.

Based on theories and existing research, this thesis formulates six specific hypotheses that are anticipated would be supported by the data, providing evidence in favor of the claim that reduced work time leads to more gender equity. When it comes to existing empirical research, the focus has mostly been on the determinants of household labor. There is an abundance of literature and theories that explain the division of household chores and care work between partners. These theories can be divided into three main frameworks: gender perspective, relative resource, and time availability (Shelton & John, 1996).

The *gender perspectives* approach emphasizes gender roles within a household, especially among heterosexual married couples. Household labor is traditionally seen as a woman's job and the male breadwinner norm is still prevalent in sociocultural roles (Coltrane, 2000). The *relative resource* theory claims that an individual's resources, such as education, occupation or income, represent a form of power within a household, which has a strong influence on bargaining regarding unpaid care work (Brines, 1994). Central for this thesis is the *time availability* theory, which states that individuals in a household make their household labor choices based on their partner's time constraints. Individuals working longer hours in their paid employment (and therefore having less free time) will spend less time on non-paid household duties. This also influences their

partner's choices (Coverman, 1985; Presser, 1994). There are empirical findings that if the wife enters the labor force, her household- and care time decreases, whereas the husband's household- and care time moderately increases (Horne et al., 2018; Shelton & John, 1996; Wright et al., 1992). Moreover, empirical evidence suggests that the greater a wife's working hours and contribution to household income, the more likely it is that the partners share household- and care time more equally (Deutsch et al., 1993; Shelton & John, 1996). Empirically, the influence of a man's work time on a woman's work time has not been analyzed as much. Still, according to *the time availability* perspective, a reduction of a man's work time can lead to a more symmetric division of household- and care time. Hypothesis 1 below is based on the *time availability* perspective and its findings. For an exhaustive finding for H1, it is important to check for the effect of both an individual's own work time as well as that of his or her partner on the individual's household- and care time. Furthermore, controlling for income can give insights about the relevance of income for household- and care duties within a household.

H1: *"The more time per week an individual works, the less household- and care time they will pursue."*

Schultz and Hoffman (2006) suggest that an overall reduction of weekly working hours to 35 hours per week would balance out inequalities between men and women regarding household- and care time. They maintain that having a work contract with reduced working hours would lead to a woman tending to *reduce* her household- and care time, whereas a man would *increase* his household- and care time. Since there is no corresponding data of a general work time reduction available, Hypothesis 2 addresses all individuals in a household who have a reduced full-time work contract. Thus, it is important to analyze the direction men and women change their household and care time if they / their partner has a full-time work contract with reduced working hours.

H2: *"If one individual in a household has a reduced full-time work contract (32-36 hours per week), this will lead to more symmetry in the household- and care time between partners."*

Whereas the influence of time availability, i.e. working time, on the division of household labor has been analyzed thoroughly, the influence of working time on a partner's working time remains a blind spot. Theoretically, the *time availability perspective* can not only be applied for household labor, but also for paid labor: The time constraints given by paid labor, which influence a partner's time spent on household labor, should

also have an impact on the partner's time spent with paid employment. Schultz and Hoffman (2006) and Schultz (2009) argue in this direction, without explicitly calling it "time availability perspective"; instead they refer to Jacobs and Gerson (2005), who find a highly gendered work time divide. This effect has implications on a macro level, but also on a household level. In an international comparison, Jacobs and Gerson (2005, p. 138) find that if a country has more moderate working hours, this mostly leads to greater symmetry in work time between men and women in a household. This finding can also be expressed the other way around: If the citizens of a country work *more* hours, there is greater *asymmetry* between men and women in a household. Hypothesis 3 transforms this assumption to household level and combines this finding with the *time availability perspective*. H3 needs to be tested for men and women separately. Moreover, income (Horne et al., 2018) is a relevant variable that needs to be controlled for, in order to find income-related pressures on work time.

H3*: "The more hours per week an individual in a household works, the fewer hours their partner works."*

Many scholars subscribe to this idea (Gomes, 2021; Jacobs & Gerson, 2005; Sayer, 2005; Schultz, 2009), most prominently Schultz and Hoffman (2006). They state that an overall reduction in working time would reduce stress on all employees and would be a solid foundation for greater equality within households (p. 139); they propose a 35-hour work week as a compromise, to move the overworked and underworked to a reasonable middle, where both partners (or single parents) still have enough time left for household chores and life pursuits (Schultz, 2009; Schultz & Hoffman, 2006). This leads to Hypothesis 4, which also must be tested for men and women separately and should include relevance of income in this regard.

H4: *"Having a reduced full-time work contract (32-36 hours per week) will lead to more equality in working time between men and women in a household."*

This thesis goes one step further than existing theories and research and adds a new parameter. If the work times of two partners in a household are interconnected, one can assume that the working time of zero hours per week, i.e. leaving the labor market, plays a particular role. Therefore, this thesis also analyses the influence of work time on a partner's labor force participation. If Hypothesis 3 "The more hours per week an individual in a household works, the fewer hours their partner works" can be supported, the working time of an individual is likely to also influence their partner's labor force par-

ticipation as well. This leads us to propose Hypothesis 5 below. Again here, it is of importance to control for income and to test effects for each gender.

H5: *"The more time per week an individual works, the more likely is their partner to not participate in the labor market."*

If Hypothesis 4 "Having a reduced full-time work contract (32-36 hours per week) will lead to more equality in working time between men and women in a household" can be supported, this could indicate that having a work contract with reduced working hours would increase the chances of one's partner to remain in the labor market. This is due to the fact that having more similar work time would also mean that it is more likely for both partners to pursue paid labor. If one individual in the household has a full-time work contract with reduced working hours and accordingly works fewer hours, there is less pressure on their partner to give up their employment. For this reason, this thesis also tests Hypothesis 6.

H6: *"If an individual has a reduced full-time work contract (32-36 hours per week), working additional hours will decrease their partner's likelihood to participate in the labor market."*

7.2 Independent, Dependent and Control Variables

To test these hypotheses, this thesis uses a different form of regression analyses (s. Section 7.3). The central independent variable of interest is the *real working time of the partner*, in other words how many hours per week the partner works, including overtime and lower hours. This real working time is relevant for both partners, man and woman. Furthermore, the *contractual working time*, which is the number of hours per week stipulated in the work contract, also plays an important role. This thesis uses contractual working time for two different IV regressions (s. Sections 7.3.2 and 7.3.3). The dependent variables are (1) *the household and care work of both partners*, (2) *the real working time of both partners* and (3) *the labor force participation of both partners*. These are the key time variables that will allow us to gauge gender equality within a household.

Besides the main explanatory variable *real working time*, there are several additional control variables included in the regressions. The following paragraphs explain their suitability. The control variables household income and labor income are not included in all regressions, to particularly highlight the effect of income pressures and analyze their effects.

Household Income: *Household income* is a moderator. It influences the way in which the *real working time* impacts the dependent variables *time for household and care* (possibility for outsourcing)*, working time of the partner*, and *labor force participation of the partner*, because of different financial pressures. Especially regarding working time and labor force participation there is strong multicollinearity and reverse causality with income. Therefore, the estimators need to be interpreted with special attention.

Labor Income Partner: *Labor income of the partner* is also a moderator. Depending on the partner's income there might be financial pressures which impact the influence on dependent variables *time for household and care* (possibility for outsourcing)*, working time of the partner*, and *labor force participation of the partner.* The *partner's labor income* is strongly dependent on the partner's working time, so again there is reverse causality.

Marital Status: If the couple in the sample is married, this is a confounder. It influences the independent variable *partner's working time* as well as all three dependent variables. The German tax scheme for married couples, called "Ehegattensplitting", encourages spouses to have a large income difference, as it recompensates them financially (Bach, Geyer, Haan, & Wrohlich, 2011). This income difference can be induced through differences in work time.

Years of Education (Man and Woman): Educational status is a confounder. Education often determines the type of occupation someone will pursue, e.g. whether they have white-collar jobs or not. This influences the working and care time of an individual, and also those of their partner (Jacobs & Gerson, 2005).

Children Age 0-13 // Children Age 14-17: Having *children* is a confounder. It influences the independent variable, namely the partner's working time. Moreover it influences the dependent variables, such as an individual's working time, their probability to participate in the labor market (Bloom, Canning, Fink, & Finlay, 2009), as well as the time spent with care work and household chores (S. M. Bianchi, Milkie, Sayer, & Robinson, 2000, p. 211).

Health Status (Man) // Health Status (Woman): The *health status* of an individual and their partner is a confounder. Being healthy or unhealthy influences not just one's own working time, but also the working and care time of the partner, as bad health might increase pressures (Lindeboom & Kerkhofs, 2009).

Some of these variables have multicollinearity. For example, an individual's health influences their working time and vice versa (Berniell & Bietenbeck, 2017). Other examples would be that marital status and having children are intercorrelated or that years of education are also connected to income. As all these variables are not fully independent from each other and there is multicollinearity, this needs to play a role in the interpretation of the estimators. Finally, this strongly limits the possibility to draw conclusions about causality.

As it is difficult to draw conclusions about causality under these conditions, this thesis uses multiple methods, i.e. reduced form regressions and the use of the IV contractual working time. If the estimators of all regressions produce similar values, this supports their validity.

7.3 Research Design

The chosen research design is mostly based on the books by Angrist and Pischke (2009) as well as Wooldridge (2010). The quantitative analyses were conducted with Stata 17.0.

To find the impact of a *partner's real working time* (WT_p) on an *individual's real working time* (WT_i), their *household and care time* (HCT_i), and *labor force participation* (LFP_i), three different regression analyses are conducted. The variables are endogenous, so the explanatory variable (the *partner's working time*) is correlated with the control variables in X_i (e.g. having children, s. Section 7.2) and there is reverse causality between WT_p and WT_i, HCT_i, and LFP_i. Therefore, it is assumed that $Cov(X_i, e_i) = 0$ and $Cov(WT_p, e_i) \neq 0$. Thus, with an OLS regression analysis on its own it is difficult to find the causal effect of one additional hour of work on the partner's gender equality relevant time variables (s. Section 7.3.1). Therefore, this thesis adds an IV regression (s. Section 7.3.2) and a second IV regression, which draws conclusions about a work time reduction to 32-36 hours per week (s. Section 7.3.3).

7.3.1 Ordinary Least Squares (OLS) and Probit Regressions

Since an OLS regression generally creates the most precise estimators, with the smallest standard errors, it remains the foundation for this analysis. The OLS estimator is suitable for the dependent variables HCT_i and WT_i, because these variables are continuous. For the dependent variable LFP_i a probit regression is the best fit, since the variable is

binary: its value is either yes (individual is employed) or no (individual is not employed). With a binary dependent variable, the estimators of a probit model are more accurate, since it aims to estimate the change in probability that an individual has employment when their partner increases their real working time by one hour. Based on the results of the probit model, the marginal effects that each of the independent variables has on the dependent variable can be calculated. This probit regression is conducted with a Maximum Likelihood Estimation (MLE).

Based on the three different dependent variables, there are different regressions with varying control variables conducted. Therefore, this results in eight different regression models.

Ordinary Least Squares (OLS) regressions:

1. $HCT_i = \alpha_0 + \alpha_1 WT_p + \alpha_2 X_i + \alpha_3 income_{hh} + \alpha_4 income_p + e_i$,
   $HCT_i = \alpha_0 + \alpha_1 WT_p + \alpha_2 X_i + \alpha_3 income_{hh} + e_i$,
   $HCT_i = \alpha_0 + \alpha_1 WT_p + \alpha_2 X_i + e_i$,
2. $WT_i = \alpha_0 + \alpha_1 WT_p + \alpha_2 X_i + \alpha_3 income_{hh} + \alpha_4 income_p + e_i$
   $WT_i = \alpha_0 + \alpha_1 WT_p + \alpha_2 X_i + \alpha_3 income_{hh} + e_i$
   $WT_i = \alpha_0 + \alpha_1 WT_p + \alpha_2 X_i + e_i$

Probit regressions:

3. $LFP_i = \alpha_0 + \alpha_1 WT_p + \alpha_2 X_i + \alpha_3 income_{hh} + e_i$
   $LFP_i = \alpha_0 + \alpha_1 WT_p + \alpha_2 X_i + e_i$

where HCT_i is the *household and care time of an individual*, WT_i is the *working time of an individual*, LFP_i is the *labor force participation of an individual*, WT_p is the *working time of the individual's partner,* X_i are the control variables (s. Section 4.2), $income_{hh}$ is *household income*, $income_p$ is the *partner's income* and e_i is the error term. The subscript i indicates that these results are given for an individual in a household; p indicates that the data is given for their partner; hh uses information from the total household, so the combination of male and female labor income.

So far, there are eight regressions conducted, three for each continuous dependent variable (WT_i, HCT_i), and and two for the binary dependent variable (LFP_i): The differences are caused by the income controls included, which can indicate an income effect that a partner's working time has on gender equality relevant variables. Thus, each of

these regressions has two/three executions. Furthermore, each of these regressions has two additional variations: First, where the woman is “the individual” and the man is “the partner”; second, the other way around: the man is “the individual” and the woman is “the partner”. Therefore, a total of twelve OLS regressions and four probit regressions are being conducted.

7.3.2 Instrumental Variable Regression: Contractual Working Time (IV 1)

As mentioned above there are many interdependent variables and other influencing factors on working hours, employment, and household- and care time. There are many endogenous variables involved and there is multicollinearity (s. Section 7.2). Due to multicollinearity, it is difficult to draw conclusions on causality with standard OLS or probit regressions. An ideal way to find if there is not only a *correlation* between working time and the gender equality relevant variables but also a *causality* would be to create an experiment, where individuals in a household get a randomly assigned number of weekly working hours, e.g. some people get assigned to a 4-day work week and others to a 5-day work week. If households where at least one of the partners was working fewer hours had a more symmetric *labor time*, *household labor time* and *labor force participation* between men and women, then the causality that working time affects these gender equality relevant factors could be asserted. However, this experiment is unrealistic and would not be realizable. There is no such data available.

Another way to find causality would be an observational study, where randomly assigned individuals experience an increase or decrease of working time due to an unexpected exogenous shock and a similar group of individuals have their work time unchanged because they do not happen to experience that shock. A comparison of households which experienced this shock and households which did not experience this shock would be similar to the comparison in the staged experiment mentioned before. In the case of working hours, an exogenous shock is difficult to find. The Covid-19 pandemic could have been such a shock, as suddenly people changed their working schemes. Still, this is not a good case, as many other factors of life were influenced by the pandemic, e.g. income, childcare facilities or leisure activities.

This thesis introduces *contractual working time* as an IV in this field, which could potentially indicate causality. In Germany this IV could be suitable, as there are many different contractual full-time work models in Germany, because different branches, companies and sectors have their own work contracts with differing weekly working times.

The basic standard work contract in Germany stipulates 40 hours of work per week, but there are deviations, which mostly depend on collective agreements of the branch. These are mostly depending on the bargaining of the union involved. The biggest deviation in number of workers affected are IG Metall collective agreements in West Germany (s. Chapter 2). In West Germany – not in East Germany – workers work 35 hours per week in branches that are part of IG Metall (IG Metall, 2020), namely in the sectors metal and electrical, iron and steel, textile and clothing, information technology, wood and plastics as well as temporary and contract work (IG Metall, 2022). If an employee randomly joins an IG Metall job and therefore coincidentally works under a 35-hour work contract instead of a 40-hour work contract, this would be an appropriate situation for use of an instrumental variable. Whether this seems possible or realistic will be elaborated in the following paragraphs, as an instrumental variable needs to fulfill three conditions:

First, the instrument *contractual working time* needs to have a strong, causal effect on the explanatory variable of interest, *actual working time*. This is presented in the First Stage regression table (s. Table 1), which shows that the number of hours stipulated in a work contract has a strong and highly significant impact on real working time. The First Stage regression model is specified as follows:

$$WT_i = \alpha_0 + \alpha_1 CWT_i + \alpha_2 X_i + u_i$$

where WT_i is the *real working time of an individual*, CWT_i is the *contractual working time of an individual*, X_i are the *control variables* and u_i is *the error term*. The subscript i indicates that the results are given for one individual. The regression uses OLS estimators because real working time is a continuous variable.

If contractual working time increases by 1 hour per week, real working time increases by 0.181 hours for men and 0.731 hours for women. This is statistically significant with a p-value of 0.00. An additional F-Test resulting in a F-value of 80.79 for men and 1930.70 for women also indicates that the instrument fulfills the first condition.

Second, the instrument *contractual working time* must fulfill the independence assumption, so it is uncorrelated to all the other variables that might influence the outcome. This presents a strong limitation, as the contractual working time is usually not randomly assigned. Still, there are cases where it might be as good as randomly assigned: For example, if a regular employee, e.g. a business graduate that could potentially work in many different branches, chooses to work in a company which has standard IG Metall

work contracts; furthermore, if they choose this occupation for a relatively random reason, like proximity to their place of residence, which would be independent from the other influencing variables. This could potentially be the case, and would make sense for this IV, but the probability that a job choice is so random is very low. Usually, one can assume that a job choice is being made more deliberately. Therefore, the prospect of having a 35-hour (or another form of reduced full-time) work week contract attracts people with certain characteristics. For example, if someone has children or any other time-consuming responsibilities, they might be more attracted to a reduced full-time work contract. Moreover, people might choose to reduce working hours because of such reasons. Also, coming back to the IG Metall example, people working under IG Metall contracts fulfill certain characteristics, such as similar interests, age, gender or educational status (IG Metall, 2019). For all these reasons the independence assumption cannot be confirmed.

Third, the instrument must fulfill the exclusion restriction, which states that the *partner's contractual working time* only affects the outcomes *household labor*, *working time* and *labor force participation* through no other channel than the explanatory variable of interest *partner's real working time*. Similarly to the explanations above regarding the independence assumption, the exclusion restriction cannot be fully confirmed. It can be shown that *contractual working time* strongly influences *real working time*, but other channels such as *children* or *education* cannot be fully excluded. Therefore, the exclusion restriction must be rejected.

Even if the independence assumption and the exclusion restriction cannot be confirmed, it is useful to conduct IV regressions in addition to the standard OLS and Probit regression. When using IVs there are only these effects analyzed, which have been caused by the instrument. The estimators show results for the compliers, namely just the individuals/partners who have been influenced by the instrument *contractual working time*. Conducting IV regressions *in addition* to standard OLS and Probit regressions and finding similar estimators can reinforce the validity of the OLS and Probit estimators. For these reasons, the thesis uses *ivreg* for the dependent variable *household labor* and *working time* and *ivprobit* for the dependent variable *labor force participation*. The Wald test that is being conducted simultaneously with the *ivprobit* regression confirms the finding of endogeneity.

7.3.3 Instrumental Variable Regression: Having a Reduced Full-Time Working Contract (IV 2)

Besides the IV *contractual working time*, another IV is being used: *Having a reduced full-time work contract*, meaning a work contract with 32-36 hours per week (s. Chapter 3). To use this IV, a dummy variable was constructed, indicating whether someone has such a working scheme or not (s. Section 8.2). This dummy was then used as an IV.

Similarly, to IV1 (s. Section 7.3.2), the second IV *having a reduced full-time work contract* does not fulfill all IV conditions. The first condition can be accepted, as the instrument *having a reduced full-time work contract* has a strong effect on the explanatory variable of interest, *actual working time* (s. Table 2). This is shown with the First Stage regression, which is conducted as follows:

$$WT_i = \alpha_0 + \alpha_1 RWT_i + \alpha_2 X_i + c_i$$

where WT_i is the *real working time of an individual*, RWT_i is *having a reduced full time working contract between 32 and 36 hours per week*, X_i are the *control variables* and c_i is *the error term*. The subscript i indicates that the results are given for one individual. The regression uses OLS estimators because real working time is a continuous variable.

Real working *decreases* by 4.304 for men if someone has a reduced work contract and *increases* by 8.046 for women. This is statistically significant with a p-value of 0.00. An additional F-Test resulting in a F-value of 128.00 for men and 223.86 for women shows that the instrument fulfils the first condition. But again, the independence assumption and the exclusion restriction must be rejected, due to the same reasons as the ones mentioned in Section 7.3.2.

Still, for this analysis the IV having a reduced working contract is very interesting, especially because it can enlighten us about Hypotheses 2, 4 and 6, which aim for an answer regarding a reduced full-time work contract. Using the IV *having a reduced work contract* creates estimators that only show effects which have been induced by the instrument. Thus, it only shows results for the compliers, in this case the people who have work contracts between 32 and 36 hours per week. This gives a special view on those people and how their reduced full time work contracts affect gender equality relevant variables.

8 Data

German Socio Economic Panel Data (GSOEP or SOEP) is a suitable data source to find the impact of weekly working hours on gender relevant aspects. It is a survey series run by the German Institute for Economic Research (DIW), which provides a representative longitudinal data set of private households in Germany. The surveys started in 1984 in West Germany, expanded to include East Germany in 1990, and contain a broad variety of individual and household information. Almost 15,000 households and 30,000 individuals from all age groups participate in the survey (Goebel et al., 2018).

8.1 Sample

This thesis aims to analyze the effect of different work time models which usually do not change frequently during an individual's life. If they do change over a lifetime, this is usually connected to specific reasons, e.g. child care, health or retirement plans. Since the focus of this analysis is on different work time models which can occur due to contractual settings of a company, and not on work time change over a lifetime, a cross-sectional analysis is more suitable than a panel analysis. Therefore, this analysis uses a 2019 cross- section of the SOEP survey. The year 2019 is the most suitable, as it is the most recent data set which has not been influenced by the Covid-19 crisis. This is of utmost importance, as Covid-19 had strong effects on almost all aspects of society including work time models and gender relations within households (Alon, Doepke, Olmstead-Rumsey, & Tertilt, 2020; Collins, Landivar, Ruppanner, & Scarborough, 2021; Czymara, Langenkamp, & Cano, 2021). These Covid-19 related influences would adulterate the results and cause strong deviations.

The relevant variables for this analysis are included not in the household dataset but in the individuals' datasets. The relevant information for 2019 is included in the files "bjp" and "bjpequiv" (paneldata.org, 2022), which were merged based on person and household ID. After this process the dataset contained 29,835 individuals in long format. This dataset was reshaped to a household-dataset in wide format. For this analysis the sample was further reduced: It only contains households with two adults born between 1955 and 2001. These are the birth cohorts of working age in the year 2019. These two adults have a different gender, are partnered with each other, co-living, and at least one of the

two adults is working full-time, which is defined as working more than 32 hours per week. These adjustments are necessary to ensure more comparability. For this analysis a sample size of 4,740 households remains.

8.2 Main Explanatory and Dependent Variables

Actual Work Time: The central explanatory variable of this dataset is the actual working time. All individuals are asked in the questionnaire: "And how many hours do you generally work per week, including any overtime?" (Kantar Public, 2020, p. 14) The individuals responded with an integer between 0 (= no paid work) and 100.

Contractual Work Time: Very important in this context is also the contractual working time. The survey contains the question: "How many hours per week are stipulated in your contract (excluding overtime)?" and respondents gave an integer between 0 and 84.

Reduced Full Time Work Contract: Based on the variable Contractual Work Time, the variable *Reduced Full Time Work Contract* was generated. This thesis wants to find the effects of a reduced full time work contract, which is here defined as a work contract between 32 and 36 hours per week (s. Chapter 3). Therefore, every individual with a *Contractual Work Contract* between 32 and 36 hours per week was assigned with a dummy that equals 1; otherwise it equals 0.

Labor Force Participation: This dummy variable was generated based on the variable *Actual Work Time*. If the actual work time was 0, so no paid work, the dummy equals 0. If the actual work time was bigger than 0, the dummy equals 1.

Care Time and Household Chores: In the SOEP survey, different types of household chores and care activities are captured in different questions: Errands (shopping, trips to public offices, etc.), housework (washing, cooking, cleaning), childcare, care and support for persons in need of care, as well as repairs on and around the house, like car repairs or garden work. For all of these activities, the survey asks how much time people spend on them during work days as well as Saturdays and Sundays (Kantar Public, 2020, p. 3). To reduce complexity all these variables were combined to the variable *Care Time and Household Chores* and the total time per week spent on these activities was added up.

It is important to have this information for both partners – man and woman - in a household. Through the variable Household ID, it was possible to connect both partners' data for these variables. These variables are sometimes used as a dependent or an independent variable, depending on the gender the regression is done for.

8.3 Control Variables

Besides the main dependent and explanatory variables, the dataset contains a variety of important control variables (s. Section 7.2): The household and each individual's income, which is given in Euros; the individuals' years of education, which is given as an integer numbers of years; how many children under the age of 14 live in the household; how many household members between the age of 14 and 17 live in the household; the discrete variable health status of the individuals, where 1 is the worst health status and 5 is the best health status; and the dummy variable married (1 if married, 0 if not married) was generated from the variable for if the individual is co-living with their spouse.

9 Results and Discussion

9.1 First Stage Regression Results of IV 1 and IV 2

An important condition for an IV is that it has a strong and significant influence on the independent variable of interest. Therefore, the first stage of an IV regression analyzes whether this strong impact is shown or not.

Table 1: First stage OLS regression results with real working time as depedent variable - IV contractual working time (N = 4465)

	Real Working Time of a Man	Real Working Time of a Woman
Contractual Working Time of a Man = Column 1 / Woman = Column 2	0.181*** (0.0200)	0.731*** (0.0166)
HH Labor Income	0.0000653*** (0.0000109)	0.000145*** (0.0000122)
Labor Income (Partner)	-0.000108*** (0.0000146)	-0.000151*** (0.0000130)
Married	1.057** (0.516)	-1.303*** (0.366)
Year of Edu. (M)	0.219*** (0.0676)	0.0263 (0.0462)
Years of Edu.(W)	-0.139** (0.0630)	0.124** (0.0491)
Children 0-13	0.571*** (0.184)	-0.960*** (0.154)
Children 14-17	0.282 (0.279)	-0.262 (0.236)
Health Status (M)	1.142*** (0.243)	-0.0865 (0.172)
Health Status (W)	0.0779 (0.200)	0.274* (0.162)
Constants	26.73*** -1.668	5.618*** (0.974)

Standard errors in parentheses
* p<0.1, ** p<0.05, *** p<0.01

Table 1 presents the OLS regression estimates for IV1, the contractual working time. It shows that one additional hour of work stipulated in the work contract increases the working time of a man by 0.181 hours and the working time of a woman by 0.731 hours of work per week. Both results are highly significant with a p-value of 0.000. The additional F-Tests have the values 81.59 (for men) and 1933.60 (for women). This indicates that the effect of contractual working time would be strong enough to use it as an instrument. The value of the estimator differs strongly between men and women. Contractual working time does not impact a man's real working time as much as it does for a woman. This indicates that on average

women follow their contractual working time more closely than men, which can also be seen in Figure 5a. Since contractual working time has a strong and significant influence on real working time, it fulfills the first condition for an IV. It needs to be emphasized that the independence assumption and the exclusion restriction (s. Section 7.2.3) cannot be accepted.

Table 2 shows the first stage regression results for IV2, if someone has a reduced full-time work contract. The regression results show that having this type of work contract between 32 and 36 hours per week influences real working time strongly. As mentioned in Section 7.3.3, for men, it *decreases* their real working time by around 4.3 hours per week while all other control variables are kept constant. This is highly significant with a p-value of 0.000. On the other hand, it *increases* the real working time of women by around 8 hours per week, which is also highly significant. This is due to the differences in average standard working times by gender in Germany, which can also be seen in Figure 5a. Additional F-Tests indicate that the instrument could be suitable with values of 127.23 (for men) and 226.38 (for women). All the other control variables show the expected estimators. It is important to emphasize that having a re-

Table 2: First stage OLS regression results with real working time as dependent variable - IV reduced full time work contract (N = 4465)

	Real Working Time of a Man	Real Working Time of a Woman
Having a reduced full-time work contract as a Man (Column 1) / Woman (Column 2)	-4.304*** (0.382)	8.046*** (0.538)
HH Labor Income	0.0000599*** (0.00000989)	0.000271*** (0.0000289)
Labor Income (Partner)	-0.000119*** (0.0000142)	-0.000304*** (0.0000289)
Married	1.113** (0.546)	-4.855*** (0.592)
Year of Edu. (M)	0.189*** (0.0683)	0.0557 (0.0714)
Years of Edu.(W)	-0.111* (0.0637)	0.286*** (0.0759)
Children 0-13	0.668*** (0.186)	-2.810*** (0.252)
Children 14-17	0.352 (0.279)	-0.860*** (0.318)
Health Status (M)	1.281*** (0.259)	-0.300 (0.288)
Health Status (W)	0.0162 (0.204)	0.754*** (0.250)
Constants	33.14*** -1.497	19.88*** -1472

Standard errors in parentheses
* p<0.1, ** p<0.05, *** p<0.01

duced full-time work contract has opposite effects for men and women. For women having a "reduced" work time contract leads to an average increase in women's working hours. This needs to play a central role in the interpretation of the results between men and women.

9.2 Dependent Variable Household- and Care Time

It is of great importance for this thesis to show how a change in work time affects one's own and/or the partner's household- and care time. The results are presented in Table 3.

The results for a woman's household- and care time (Table 3: left side) are clear and homogenous for all methods: One additional hour of work per week reduces her household- and care time by around 0.6 hours per week, if all other control variables are kept constant. As the estimators all vary closely around -0.6, there is no income effect visible. Also, when looking at the IV2 reduced working time (columns 7-9) the estimators stay the same, which indicates that if a man has a reduced full-time work contract, this does not impact the way a woman's work time influences her household- and care time. All these estimators are highly significant, whereas there are no significant impacts of a man's work time on a woman's housework hours.

The estimators for a man's household- and care time strongly deviate from the women's estimators (Table 3: right side). One additional hour of work per week (of a man) reduces a man's household and care time by 0.3 hours per week. When controlling for income, the estimator is a bit closer to zero, so there is a moderate income effect. If a woman has a reduced full-time work contract, the effect is again a bit closer to zero and lies at -0.216 when controlling for all income factors. This means that if a woman has a reduced full-time work contract, the effect of a man's working hours on his housework hours is smaller. This differs from the women's results, which showed no impact of reduced work on the relationship between her working hours and her housework hours. Another important difference is that the estimators for a man's work time are closer to zero, but still highly significant. This means that a man's working time affects his household- and care time less than a woman's working time affects her housework hours. These results can also be confirmed by the reduced form regression results (s. Appendix 2), which is another indicator for the validity of the estimators. Comparing the estimators between men and women, another difference stands out.

Table 3: Household- and care time: OLS, IV 1 (Contractual working time partner), IV 2 (Reduced full-time work contract partner) (N = 4462)

	Dependent Variable: Household- and care time - Woman									Dependent Variable: Household- and care time - Man								
	OLS Reg	OLS Reg	OLS Reg	IV 1	IV 1	IV 1	IV 2	IV 2	IV 2	OLS Reg	OLS Reg	OLS Reg	IV 1	IV 1	IV 1	IV 2	IV 2	IV 2
Real Working Time (Man)	0.0453	0.0437	0.0195	0.262	0.258	0.368*	0.400	0.393	0.355	-0.268***	-0.276***	-0.303***	-0.265***	-0.270***	-0.297***	-0.216***	-0.187***	-0.229***
	(0.0334)	(0.0330)	(0.0321)	(0.164)	(0.161)	(0.189)	(0.366)	(0.361)	(0.345)	(0.0311)	(0.0304)	(0.0301)	(0.0312)	(0.0308)	(0.0304)	(0.0340)	(0.0381)	(0.0352)
Real Working Time (Woman)	-0.644***	-0.639***	-0.655***	-0.623***	-0.608***	-0.612***	-0.610***	-0.588***	-0.613***	0.0745***	0.0973***	0.0798***	0.105***	0.120***	0.110***	0.571***	0.472***	0.452***
	(0.0391)	(0.0346)	(0.0345)	(0.0419)	(0.0413)	(0.0413)	(0.0538)	(0.0642)	(0.0560)	(0.0203)	(0.0179)	(0.0176)	(0.0274)	(0.0235)	(0.0231)	(0.139)	(0.102)	(0.100)
HH Labor Income	-0.0000178	-0.0000237***		-0.0000135	-0.0000327***		-0.0000109	-0.0000383**		-0.0000327***	-0.0000266***		-0.0000318***	-0.0000276***		-0.0000179***	-0.0000428***	
	(0.0000157)	(0.00000687)		(0.0000165)	(0.00000975)		(0.0000177)	(0.0000171)		(0.00000706)	(0.00000502)		(0.00000688)	(0.00000516)		(0.00000654)	(0.00000802)	
Labor Income (Partner)	-0.00000752			-0.0000241			-0.0000346			0.0000333**			0.0000228			-0.000137**		
	(0.0000190)			(0.0000238)			(0.0000346)			(0.0000140)			(0.0000149)			(0.0000562)		
Married	0.375	0.387	-0.00324	0.169	0.207	-0.558	0.0398	0.0952	-0.537	0.504	0.486	0.0483	0.623	0.606	0.193	2.439**	2.485***	1.821**
	-1.155	-1154	-1142	-1158	-1156	-1165	-1192	-1183	-1235	(0.711)	(0.712)	(0.706)	(0.715)	(0.717)	(0.710)	(0.959)	(0.945)	(0.901)
Year of Edu. (M)	-0.139	-0.141	-0.234	-0.177	-0.184	-0.366**	-0.200	-0.211	-0.361*	0.0193	0.0181	-0.0857	0.0197	0.0189	-0.0899	0.0262	0.0309	-0.137
	(0.152)	(0.152)	(0.149)	(0.159)	(0.160)	(0.174)	(0.167)	(0.169)	(0.198)	(0.0905)	(0.0903)	(0.0872)	(0.0905)	(0.0904)	(0.0871)	(0.0961)	(0.0946)	(0.0918)
Years of Edu.(W)	-0.0751	-0.0717	-0.128	-0.0465	-0.0356	-0.103	-0.0284	-0.0130	-0.104	0.115	0.137	0.0737	0.110	0.126	0.0543	0.0341	-0.0560	-0.163
	(0.157)	(0.157)	(0.157)	(0.162)	(0.163)	(0.162)	(0.166)	(0.169)	(0.161)	(0.0869)	(0.0870)	(0.0868)	(0.0870)	(0.0874)	(0.0875)	(0.0965)	(0.103)	(0.109)
Children 0-13	22.13***	22.12***	22.20***	22.07***	22.03***	22.11***	22.04***	21.98***	22.11***	9.812***	9.814***	9.907***	9.908***	9.906***	10.04***	11.37***	11.34***	11.53***
	(0.654)	(0.652)	(0.654)	(0.662)	(0.665)	(0.663)	(0.652)	(0.654)	(0.651)	(0.358)	(0.358)	(0.358)	(0.365)	(0.365)	(0.367)	(0.567)	(0.554)	(0.568)
Children 14-17	1.486	1.476	1.397	1.416	1.381	1.185	1.371	1.322	1.193	-0.397	-0.446	-0.535	-0.379	-0.414	-0.494	-0.106	0.0903	-0.0407
	(0.987)	(0.987)	(0.987)	(0.999)	-1003	-1.014	(0.996)	-1000	-1.007	(0.472)	(0.470)	(0.473)	(0.472)	(0.471)	(0.473)	(0.509)	(0.517)	(0.515)
Health Status (M)	0.211	0.205	0.113	-0.0572	-0.0767	-0.423	-0.226	-0.253	-0.403	-0.345	-0.360	-0.464	-0.338	-0.349	-0.453	-0.225	-0.165	-0.328
	(0.551)	(0.550)	(0.549)	(0.570)	(0.571)	(0.597)	(0.729)	(0.743)	(0.781)	(0.322)	(0.323)	(0.323)	(0.322)	(0.323)	(0.323)	(0.362)	(0.349)	(0.344)
Health Status (W)	-0.0203	-0.0167	-0.140	-0.0406	-0.0291	-0.241	-0.0534	-0.0368	-0.237	-0.395	-0.378	-0.517	-0.417	-0.404	-0.560*	-0.754**	-0.817**	-1.053***
	(0.563)	(0.563)	(0.561)	(0.565)	(0.566)	(0.567)	(0.573)	(0.572)	(0.583)	(0.318)	(0.319)	(0.318)	(0.316)	(0.316)	(0.316)	(0.353)	(0.355)	(0.364)
Constants	49.91***	49.93***	52.28***	42.20***	42.22***	40.75***	37.34***	37.41***	41.18***	30.43***	30.23***	32.87***	29.63***	29.52***	32.02***	17.41***	18.40***	22.41***
	-3.483	-3.481	-3.380	-6.781	-6.761	-7.208	(13.26)	(13.20)	(11.73)	-2.199	-2.204	-2.136	-2.314	-2.313	-2.231	-4.379	-3.986	-3.605

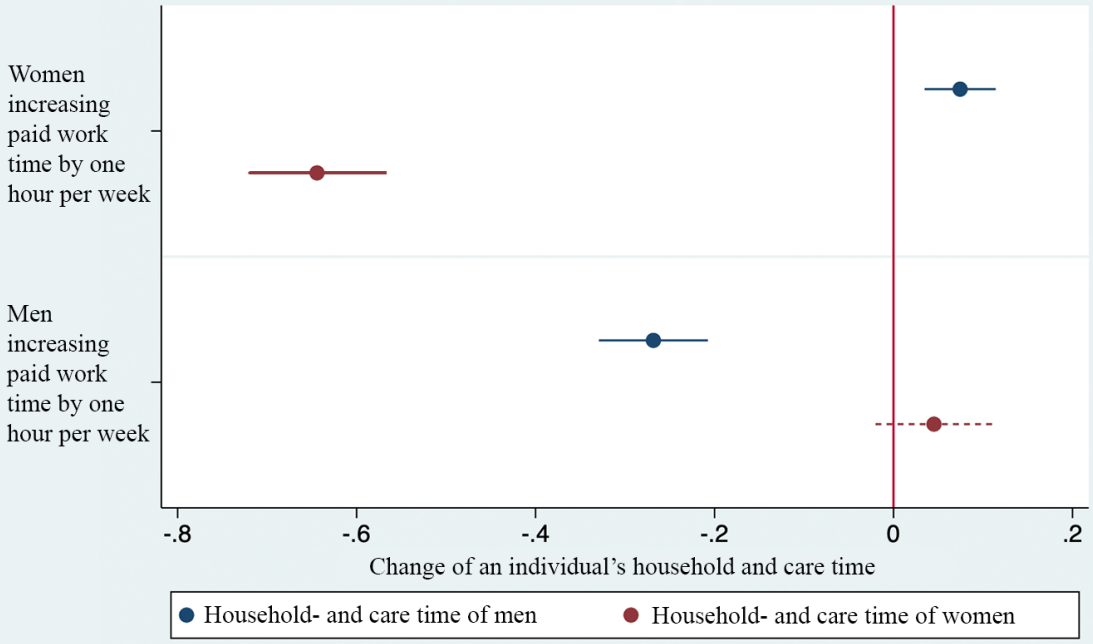
Standard errors in parentheses
* p<0.1, ** p<0.05, *** p<0.01

Whereas a woman's household- and care time is not influenced by the working hours of her partner, a man's housework hours are significantly impacted by his partner's real working time. If a woman works one hour per week more, the man's housework hours are increased by around 0.1 hours pers week. The OLS and the IV1 regression indicate this effect, which is mostly independent from income. Under IV2 (woman having a reduced full-time-work contract) the effect of one additional hour of a woman's work is even larger. If a woman has a reduced full-time work contract, her working one additional hour increases a man's household- and care time by 0.452 hours when not controlling for income, or even 0.571 hours per week when controlling for her income and that of the household. All these results are highly significant. The estimators under IV2 might be so high because of the large work time increase women on average face when having a reduced full-time work contract (s. Table 2). Overall, the results presented in Table 3 strongly indicate the asymmetry between genders in a household when it comes to the effect of work time on household- and care time.

Returning to the original hypotheses, we have evidence supporting H1 *"The more time per week an individual works, the less household- and care time they will pursue."* The effect for women is larger as women decrease their household- and care time by 0.644 hours per week (OLS estimator controlling for all income factors) for one additional hour of paid work. On the contrary, men decrease their household- and care time only by 0.268 hours per week (OLS estimator controlling for all income factors) for one additional hour of labor. The housework- and care time of women is independent from income, whereas the housework hours of men are slightly influenced by income: The effect of a man's labor hours on his housework hours is smaller (closer to zero), if household- and his partner's labor income are kept constant.

This finding is presented in Figure 6, which plots the OLS regression results including all income control variables. Figure 6 as well as Figures 7-10 show regression coefficients (points) and the confidence intervals (lines). Insignificant ($p < 0.05$) estimators are depicted through dashed lines. Figure 6 presents the estimators of the own as well as the partner's work time on household labor time. The figure clearly presents the asymmetry between men and women, showing that a woman increasing her work time has a dramatic effect: Her own household labor reduces a lot, while her partners household labor increases a bit. Meanwhile a man's paid work hours have only a moderate effect on his own household labor and no significant effect on a woman's housework hours.

Figure 6: OLS regression coefficients: Change of an individual's household and care time



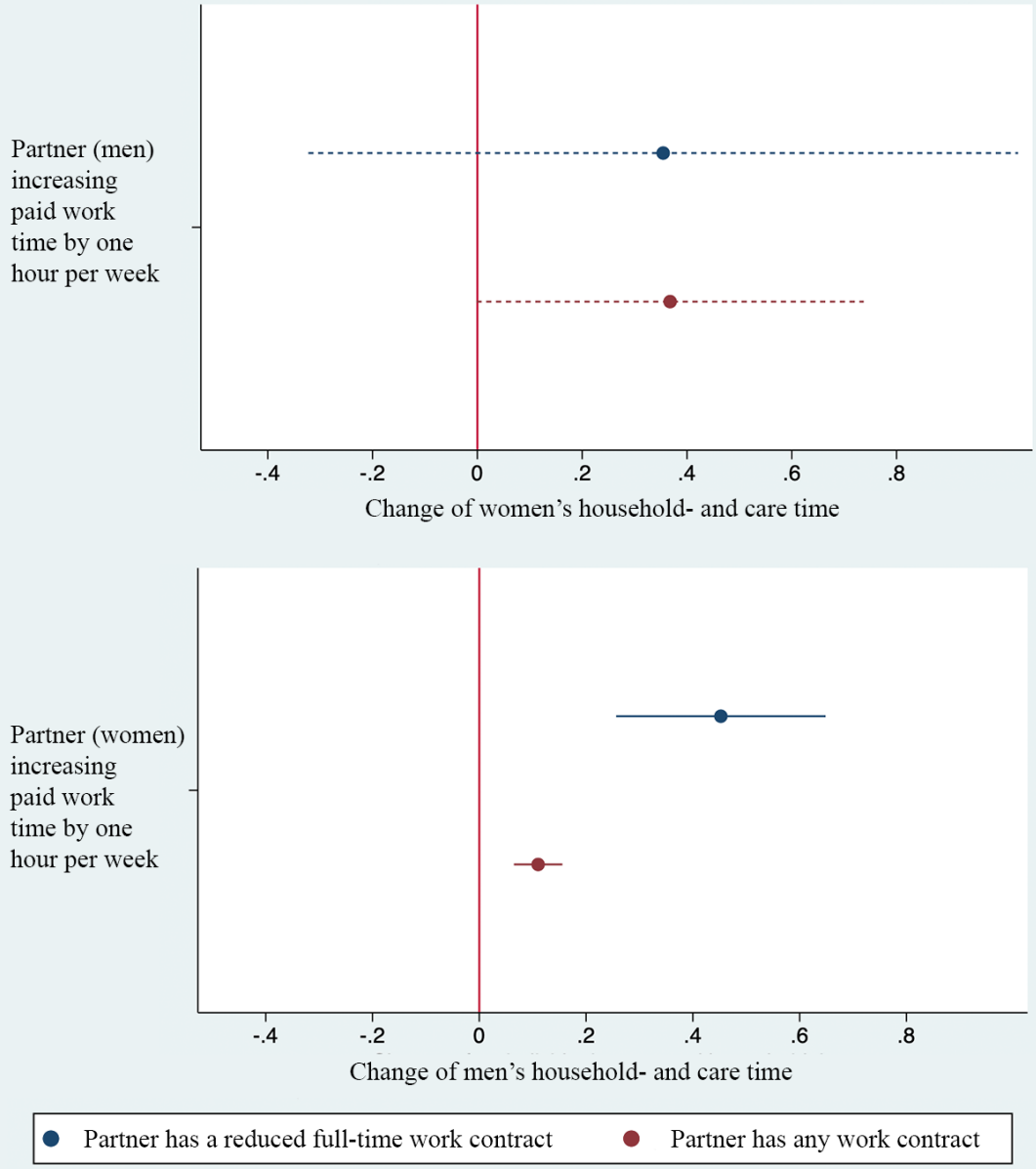
H2 states "*If one individual in a household has a reduced full-time work contract (32 reduced -36 hours per week), this will lead to more symmetry in the household- and care time between partners*." To reach a conclusion about this hypothesis, multiple layers must be analyzed. In the case of housework hours, more symmetry would mean that women reduce their housework hours and men increase their time spent with household chores and care. The regressions conducted in Table 3 give an indication about the impacts of either a man having a reduced full-time work contract (Table 3: left side columns 7-9) or a woman having a reduced full-time work contract (Table 3: right side columns 7-9).

If a woman in a household has a reduced full-time work contract and works one additional hour, a man's household- and care time increases by 0.571 hours per one additional hour of her work when controlling for all income factors or 0.452 hours when not controlling for income. The work time increase of a woman (as she has a reduced full-time work contract) makes a man increase his household time stronger than just with a moderate increase of her work time shown under the OLS and the IV1 results. At the same time, a woman would decrease her household- and care time, as a woman would *on average* work 8 more hours.

When a man has a reduced full-time contract, it has no significant impact on a woman's household- and care time, similarly to the OLS and the IV1 regressions. At the same time, the household labor of woman decreases by 0.6 hours per week for one additional

hour of her working. This is a similar effect compared to the standard OLS and IV1 results. As the IV2 results on the left side of Table 3 do not differ from the OLS and IV1 results, a man having a reduced full time work contract does not affect the impact of his work time on his female partner's care and household time.

Figure 7: Regression coefficients: The effect of the partner having a reduced full-time work contract and working one additional hour on household- and care time



These results are being presented in Figure 7. There, the IV1 and IV2 regression results, not controlling for income, are being used. These estimators have been chosen for the comparison because they have the least difference and show the most conservative prediction. Still, the differences are very visible. Women working an additional hour increase men's household- and care time much more if the woman has a reduced full-time

work contract. Men working an additional hour does not significantly increase women's housework hours, regardless of whether or not the man has a reduced full-time work contract.

Overall, these results give support to H2: if one of the partners has a reduced full-time work contract this would lead to more symmetry regarding unpaid labor in the household. On the one side, if a man had a reduced full-time contract, this would not impact the household labor time of a woman, but it would increase his own household- and care time. This would create more symmetry. On the other side, if a woman had a reduced full-time work contract, it would strongly increase a man's care time per one additional hour of her working. At the same time, she would decrease her housework hours, as she would work more outside the home. Again, it would lead to more symmetry. But if we assume that women really take up a reduced full-time work contract of 32 to 36 hours per week, it would in total on average increase the sum of a woman's paid- and unpaid work time, as one hour increase of paid work only leads to a reduction of around 0.6 hours of unpaid work.

This interpretation contains three important caveats: First, the estimators are not systematic. They show only the effect of the change of one single variable. Besides that, the change of other intervening variables, e.g. the change of housework hours of one of the partners, could have an impact on the outcomes. This methodology limits the results to the effects of one variable, which makes the total effects difficult to model. Second, women having a reduced full-time work contract are women in the SOEP dataset who work substantially more – around 8 hours - than average women in the dataset. As this work time scheme is not exogenous and rather chosen by the women, the estimators are biased. If there was a 32-36 hours per week full-time working scheme, women still should be encouraged to take up this scheme instead of remaining in part-time work. Third, household- and care work has its limits and ceilings. Depending on the characteristics of the household certain limits will be reached. This restricts the linearity of the dependent variable and the precision of standard OLS estimates at the limits.

Table 4: Real working time: OLS, IV 1 (Contractual working time partner), IV 2 (Reduced full-time work contract partner) (N = 4462)

	Dependent Variable: Real working time - Woman									Dependent Variable: Real working time - Man								
	OLS Reg	OLS Reg	OLS Reg	IV 1	IV 1	IV 1	IV 2	IV 2	IV 2	OLS Reg	OLS Reg	OLS Reg	IV 1	IV 1	IV 1	IV 2	IV 2	IV 2
Real Working Time (Partner)	-0.126***	-0.235***	-0.197***	-0.439***	-0.584***	-0.776***	0.554***	0.627***	0.643***	-0.0837***	-0.147***	-0.125***	-0.113***	-0.166***	-0.158***	-0.290**	-0.302***	-0.294***
	(0.0181)	(0.0173)	(0.0169)	(0.0771)	(0.0860)	(0.111)	(0.190)	(0.231)	(0.221)	(0.0157)	(0.0125)	(0.0123)	(0.0223)	(0.0165)	(0.0165)	(0.115)	(0.0830)	(0.0852)
HH Labor Income	0.000273***	0.0000433***		0.000258***	0.0000561***		0.000304***	0.0000115		0.0000572***	0.0000419***		0.0000561***	0.0000426***		0.0000498***	0.0000472***	
	(0.0000297)	(0.00000681)		(0.0000305)	(0.00000790)		(0.0000312)	(0.0000106)		(0.00000954)	(0.00000617)		(0.00000946)	(0.00000622)		(0.00000912)	(0.00000730)	
Labor Income (Partner)	-0.000300***			-0.000267***			-0.000373***			-0.0000880***			-0.0000775***			-0.0000146		
	(0.0000295)			(0.0000309)			(0.0000382)			(0.0000164)			(0.0000181)			(0.0000448)		
Married	-4.800***	-5.334***	-4.758***	-4.356***	-4.750***	-3.458***	-5.769***	-6.781***	-6.641***	0.772	0.836	1.594***	0.654	0.724	1.420***	-0.0556	-0.0508	0.714
	(0.589)	(0.615)	(0.626)	(0.622)	(0.668)	(0.743)	(0.762)	(0.861)	(0.919)	(0.537)	(0.538)	(0.541)	(0.535)	(0.538)	(0.542)	(0.710)	(0.721)	(0.704)
Year of Edu. (M)	0.0619	-0.0341	0.138*	0.115	0.0395	0.353***	-0.0530	-0.216**	-0.173	0.192***	0.199***	0.378***	0.191***	0.197***	0.381***	0.185***	0.186***	0.390***
	(0.0706)	(0.0738)	(0.0725)	(0.0725)	(0.0812)	(0.0902)	(0.0960)	(0.103)	(0.121)	(0.0670)	(0.0649)	(0.0615)	(0.0667)	(0.0649)	(0.0615)	(0.0665)	(0.0664)	(0.0628)
Years of Edu.(W)	0.284***	0.515***	0.636***	0.234***	0.427***	0.547***	0.394***	0.733***	0.766***	-0.106*	-0.168***	-0.0716	-0.100	-0.157**	-0.0493	-0.0695	-0.0793	0.0412
	(0.0764)	(0.0758)	(0.0784)	(0.0782)	(0.0815)	(0.0905)	(0.0948)	(0.110)	(0.0984)	(0.0639)	(0.0647)	(0.0651)	(0.0640)	(0.0652)	(0.0659)	(0.0680)	(0.0795)	(0.0866)
Children 0-13	-2.811***	-4.084***	-4.358***	-2.642***	-3.724***	-3.880***	-3.178***	-4.975***	-5.053***	0.394**	0.397**	0.262	0.299	0.312	0.111	-0.269	-0.273	-0.502
	(0.260)	(0.243)	(0.239)	(0.267)	(0.266)	(0.278)	(0.304)	(0.371)	(0.337)	(0.196)	(0.195)	(0.195)	(0.207)	(0.206)	(0.205)	(0.424)	(0.415)	(0.440)
Children 14-17	-0.733**	-1.432***	-1.325***	-0.608*	-1.196***	-0.866**	-1.007***	-2.015***	-1.991***	0.303	0.442	0.608**	0.284	0.411	0.558**	0.174	0.196	0.357
	(0.322)	(0.366)	(0.363)	(0.337)	(0.389)	(0.412)	(0.376)	(0.450)	(0.456)	(0.279)	(0.277)	(0.281)	(0.278)	(0.277)	(0.281)	(0.297)	(0.316)	(0.318)
Health Status (M)	-0.197	-0.522*	-0.364	0.198	-0.0204	0.578	-1.060**	-1.762***	-1.730***	1.246***	1.312***	1.540***	1.235***	1.295***	1.517***	1.169***	1.179***	1.425***
	(0.286)	(0.269)	(0.270)	(0.315)	(0.316)	(0.356)	(0.428)	(0.493)	(0.513)	(0.256)	(0.264)	(0.263)	(0.255)	(0.263)	(0.262)	(0.265)	(0.275)	(0.270)
Health Status (W)	0.807***	1.174***	1.440***	0.812***	1.132***	1.505***	0.796***	1.276***	1.346***	0.101	0.0576	0.289	0.122	0.0811	0.336*	0.250	0.244	0.528**
	(0.250)	(0.276)	(0.279)	(0.255)	(0.285)	(0.300)	(0.294)	(0.331)	(0.332)	(0.205)	(0.204)	(0.201)	(0.205)	(0.205)	(0.202)	(0.218)	(0.226)	(0.232)
Constants	24.78***	31.57***	28.07***	35.24***	42.83***	45.66***	1.979	3.667	2.555	34.64***	35.86***	33.12***	35.31***	36.33***	33.86***	39.34***	39.57***	36.85***
	-1.619	-1.633	-1.633	-2.901	-3.128	-3.793	-6.577	-7.694	-6.946	-1.381	-1.413	-1.390	-1.398	-1.423	-1.398	-3.028	-2.503	-2.390

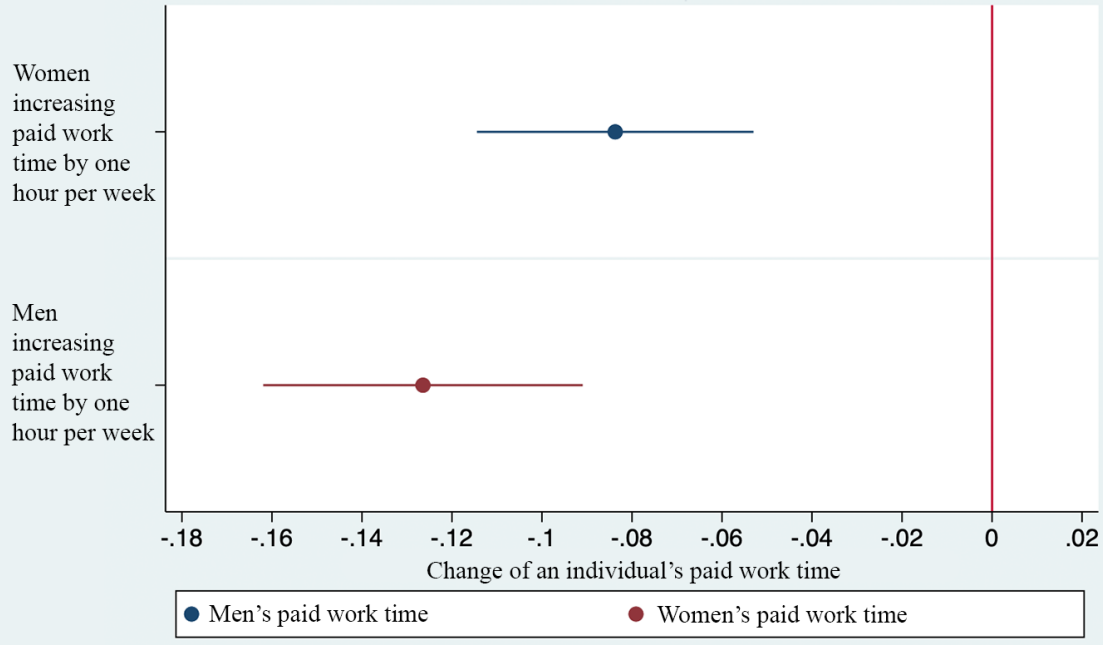
Standard errors in parentheses
* p<0.1, ** p<0.05, *** p<0.01

9.3 Dependent Variable Work Time

Table 4 shows how the change in a partner's work time affects real working time of an individual (Table 4: women are on the left side; men are on the right side).

If a man increases his work time by one hour per week, a woman will work 0.126 hours per week less, when the household- and his income are kept constant. Without controlling for income, a woman will decrease her working time even more, by 0.197 hours per week. These results are underlined by the IV1 results, which show even stronger effects. Still, the OLS results are more precise, as they have smaller standard errors. All the estimators mentioned above are highly significant. Moreover, the reduced form regression shows very similar results (s. Appendix 3), which further supports the validity of the estimators.

Figure 8: OLS regression coefficients: Change of an individual's paid work time



The regression results show that the effects of working time are asymmetric regarding gender. This is visualized in Figure 8 which compares the OLS estimators including all income control variables. It shows that men and women working an additional hour decreases their partner's work time. But a woman's working time is more influenced by her male partner's working time than a man's working time is influenced by his female partner's working time. One additional hour of work by a woman in a household decreases her partner's working time by 0.0837 hours, when household income and her

income are constant. Not controlling for income, one additional working hour decreases her partner's working time by 0.125 hours. For women and for men there are income pressures that influence the work time choice of the individuals in a household. Again, these estimators are all highly significant and supported by the results of IV1, which tend in the same direction. The OLS estimates are the most accurate due to their small standard errors and they are being used for Figure 8, which clearly presents the gendered difference.

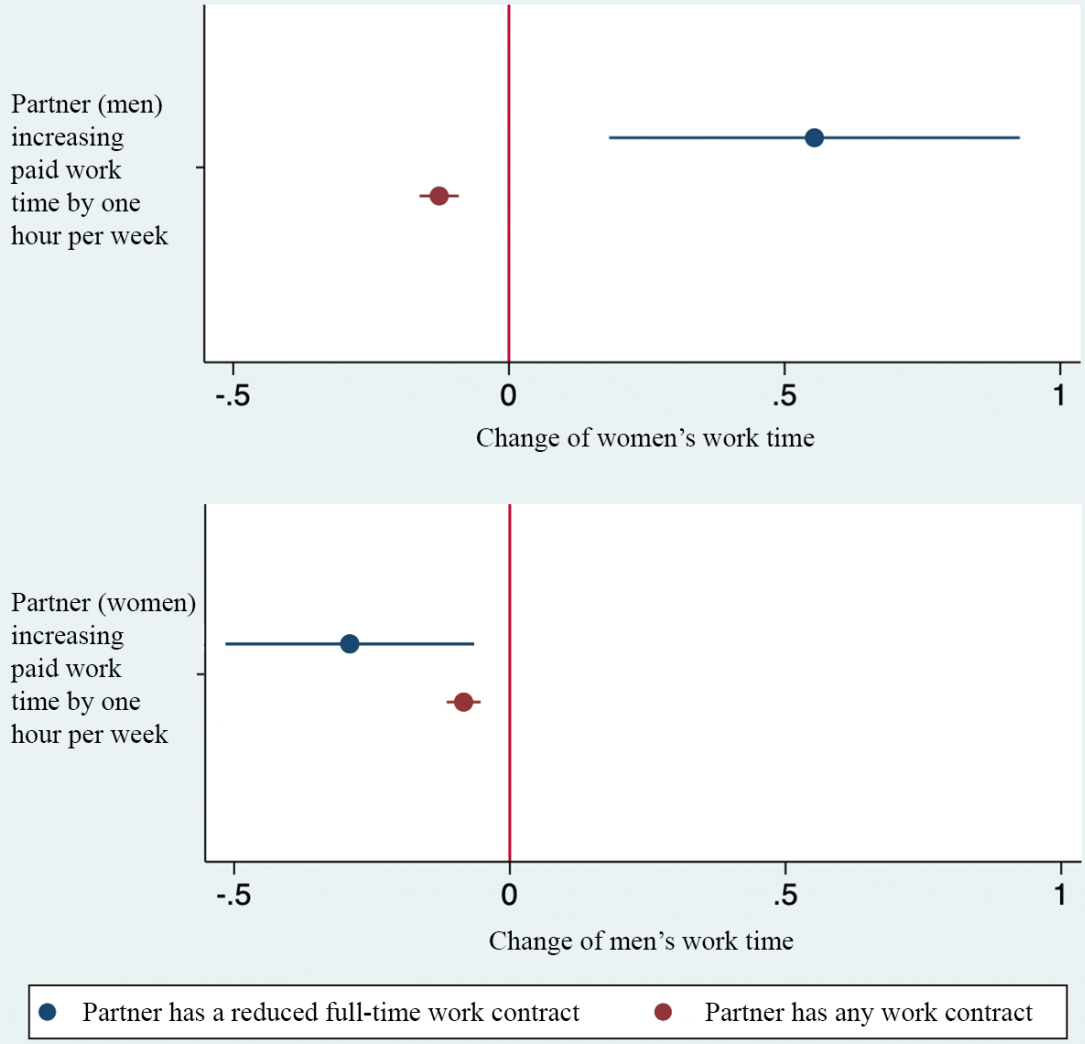
Looking at the OLS and the IV1 estimators, we have evidence to support H3 "*The more hours per week an individual in a household works, the fewer hours their partner works*." The asymmetry between effect of a man's and a woman's work time on that of their partner needs to be emphasized. Moreover, there is an income effect on working time for both partners. This indicates that monetary pressures result in people being more affected by their partner's working time.

Drawing conclusions on the impact of reduced full-time work contracts, the IV2 results play a special role. If a man has a work contract between 32 and 36 hours per week and works one additional hour, his female partner's work time will increase by 0.554 hours per week when controlling for all income factors and by 0.643 hours per week not controlling for income. Comparing this to the OLS and IV1 results, two important differences stand out: Firstly, when a man has a reduced full-time work contract, a woman's work time increases significantly, not decreases, when her partner works one additional hour. This indicates that if a man has a reduced full-time work contract, this encourages women to work more hours per week. Secondly, the relative difference between controlling for income and not controlling for income remains similar. This points in the direction that if a man has a reduced full-time work contract, the income pressures remain similar. Reducing work time by only 4 to 8 hours per week does not have consequences on a household income in terms of influencing a woman's work time choice differently. If a woman has a reduced full-time work contract, this has opposite effects. A woman having a reduced full-time work contract causes her partner to work around 0.29 hours less per one additional hour she works. This effect is larger than the OLS and IV1 results, as having a reduced full-time work contract means a strong increase in work time for women in the sample. Based on the fact that estimators are almost identical (-0.290 or -0.294), we can say that this estimator is largely independent of income. This indicates that if a woman has a reduced full time work contract and works an additional

hour, there are no income pressures on the working time of men. If a man has a reduced full-time work contract, the income pressures persist on the working time of women.

The estimators of the IV2 regressions in Table 4 lend support to H4 "*Having a reduced full-time work contract (32-36 hours per week) will lead to more equality in working time between men and women in a household.*" On the one side, a man having a reduced full-time work contract encourages women to work more, which would lead to more symmetry of work time in the household. On the other side, women having a reduced full-time work contract makes men decrease their real working time, which would again cause more symmetry in the work time between a couple. So, if the partner in a relationship has a contractual work time between 32 and 36 hours per week, this makes women increase their real working time and men decrease their real working time. These results can be seen clearly in Figure 9 and this would cause more symmetry in a household.

Figure 9: Regression coefficients: The effect of the partner having a reduced full-time work contract and working one additional hour on work time



Still, it needs to be emphasized that having a reduced full time work contract means a strong increase of work time for women – when comparing it to the current status quo. Therefore, women should be further encouraged to take up a full-time work contract, to make this visible.

The results of Table 4 have two important caveats: The regressions are not systemic and only show the effect of one person's change of work time on that of the other person. Systemic effects within a household and other consequences of a work time reduction cannot be demonstrated. Second, for women the so-called "reduced" full-time work contract is in fact not a reduction. Based on the sample and the dataset, having a reduced full-time work contract is rather an increase in work time for women, not a decrease. On the other side, it is a work time decrease for men. This leads to limited comparability of the two genders. Still, under current circumstances (s. Section 7.3.2) a more appropriate methodology is would be difficult to identify.

9.4 Dependent Variable Labor Force Participation

Table 5 presents the effect of a partner's working time on an individual's labor force participation. The table shows margins and uses probit regressions as well as two forms of IV probit regressions. Thus, it controls for household labor income, or it does not control for income at all.

The effect of a partner's working time on an individual's labor force participation is in all cases very small but highly significant. If a man works ten hours more per week, the chance that his partner participates at the labor market reduces by 3.52 percentage points in the standard probit model when controlling for income – or by 2.62 percentage points not considering income effects. If a woman works ten hours more per week, the chance that her partner participates in the labor market reduces by 3.23 percentage points when controlling for income or by 3.11 not controlling for income. These results are strongly supported by the reduced form regression (s. Appendix 4). The effects for men and women are very similar, only the effect of a man's work time on a woman's labor force participation seems to be affected by income. The other way around this is not the case. The results mentioned above are all covered by the IV probit 1 model, which indicates similar effects, but is less accurate due to the larger standard errors. Based on these results, H5 "The more time per week an individual works, the more likely is their partner to not participate in the labor market." But it is important to mention

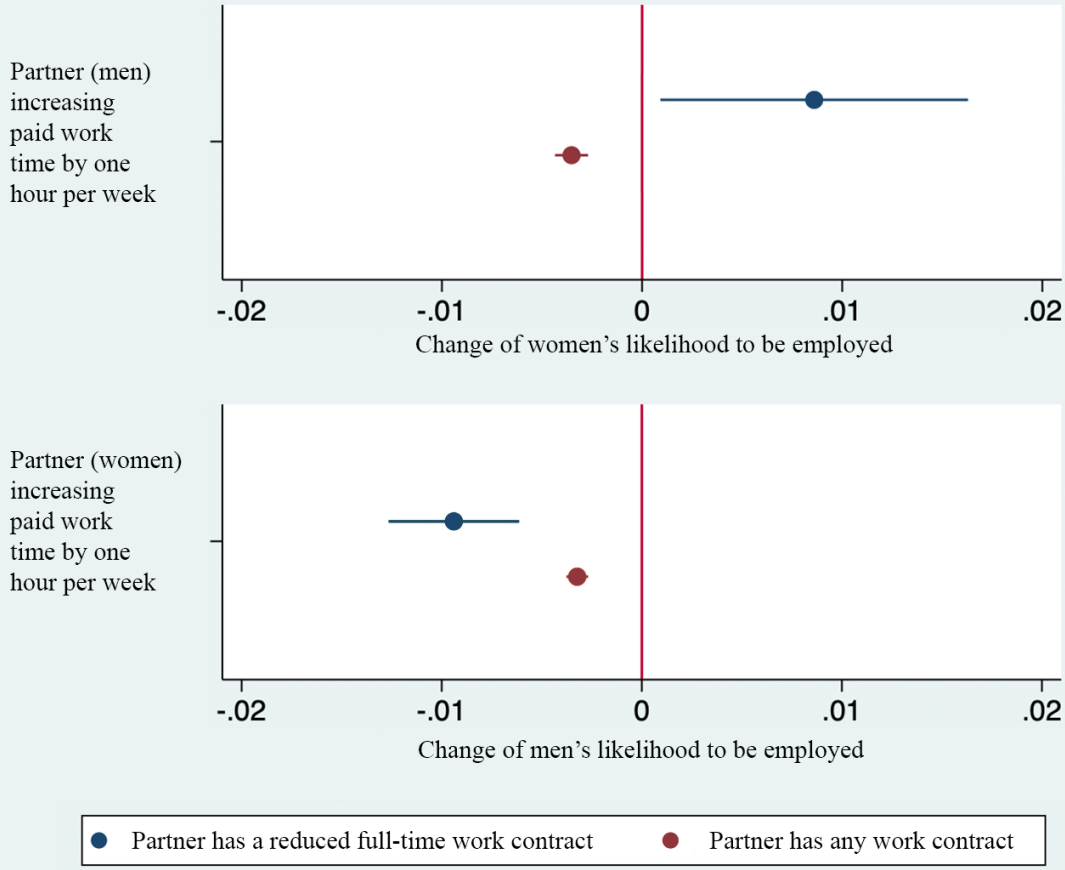
Table 5: Labor force participation in margins: Probit, IV probit 1 (Contractual working time partner), IV probit 2 (Reduced full-time work contract partner) (N = 4465)

	Dependent Variable: Labor Force Participation - Woman						Dependent Variable: Labor Force Participation - Man					
	Probit Reg	Probit Reg	IV 1	IV 1	IV 2	IV 2	Probit Reg	Probit Reg	IV 1	IV 1	IV 2	IV 2
Real Working Time (Partner)	-0.00352***	-0.00262***	-0.0110***	-0.0140***	0.00860**	0.00876**	-0.00323***	-0.00311***	-0.00404***	-0.00408***	-0.00939***	-0.00939***
	(0.000422)	(0.000394)	(0.00195)	(0.00202)	(0.00392)	(0.00376)	(0.000275)	(0.000263)	(0.000435)	(0.000439)	(0.00166)	(0.00165)
HH Labor Income	0.000000889***		0.00000113***		0.000000382		0.000000534***		0.000000580***		0.000000950***	
	(0.000000251)		(0.000000255)		(0.000000312)		(0.000000146)		(0.000000164)		(0.000000235)	
Married	-0.0403**	-0.0299*	-0.0275*	-0.00299	-0.0572***	-0.0530***	-0.00244	0.00535	-0.00571	0.00232	-0.0282**	-0.0150
	(0.0159)	(0.0159)	(0.0166)	(0.0171)	(0.0164)	(0.0171)	(0.00687)	(0.00691)	(0.00741)	(0.00748)	(0.0133)	(0.0127)
Year of Edu. (M)	0.00265	0.00606***	0.00418**	0.00987***	-0.000106	0.00143	0.00235**	0.00389***	0.00243**	0.00418***	0.00322**	0.00619***
	(0.00190)	(0.00170)	(0.00199)	(0.00186)	(0.00217)	(0.00246)	(0.000945)	(0.000828)	(0.00100)	(0.000902)	(0.00145)	(0.00133)
Years of Edu.(W)	0.00808***	0.0104***	0.00617***	0.00813***	0.0104***	0.0113***	0.000721	0.00147*	0.000953	0.00186**	0.00371**	0.00532***
	(0.00161)	(0.00157)	(0.00176)	(0.00181)	(0.00169)	(0.00160)	(0.000916)	(0.000763)	(0.000982)	(0.000845)	(0.00161)	(0.00157)
Children 0-13	-0.0597***	-0.0655***	-0.0519***	-0.0531***	-0.0673***	-0.0700***	0.00709*	0.00516	0.00570	0.00324	-0.00751	-0.0119
	(0.00545)	(0.00517)	(0.00621)	(0.00647)	(0.00549)	(0.00549)	(0.00376)	(0.00390)	(0.00401)	(0.00424)	(0.00780)	(0.00840)
Children 14-17	0.00916	0.0115	0.0138	0.0195**	0.000356	0.00172	0.00767	0.00721	0.00677	0.00616	0.00572	0.00547
	(0.00986)	(0.00969)	(0.0101)	(0.00990)	(0.0100)	(0.0101)	(0.00541)	(0.00544)	(0.00571)	(0.00581)	(0.00832)	(0.00840)
Health Status (M)	-0.0156**	-0.0119*	-0.00522	0.00646	-0.0316***	-0.0294***	0.0216***	0.0246***	0.0226***	0.0260***	0.0292***	0.0346***
	(0.00672)	(0.00667)	(0.00749)	(0.00782)	(0.00816)	(0.00861)	(0.00373)	(0.00342)	(0.00394)	(0.00364)	(0.00562)	(0.00507)
Health Status (W)	0.0386***	0.0436***	0.0375***	0.0427***	0.0369***	0.0391***	-0.00395	-0.00212	-0.00401	-0.00194	-0.000188	0.00370
	(0.00646)	(0.00645)	(0.00653)	(0.00653)	(0.00700)	(0.00738)	(0.00334)	(0.00327)	(0.00358)	(0.00355)	(0.00538)	(0.00544)

Standard errors in parentheses
* p<0.1, ** p<0.05, *** p<0.01

that the effect is quite small, with a less-than-one percentage point decrease in the probability of participating in the labor market.

Figure 10: Regression coefficients: The effect of the partner (having a reduced full-time work contract and) working one additional hour on the likelihood to be employed



In contrast to our conclusions about the first five hypotheses, the data do *not* support H6 *"If an individual has reduced full-time work contract (32-36 hours per week), working additional hours will decrease their partner's likelihood to participate in the labor market"*. Looking at the IV2 results, it is apparent that a ten-hour increase of working time by a man who has a reduced full-time work contract *increases* his partner's probability to participate in the labor market by 9 percentage points (inconsistent with H6). If a woman has a reduced full-time work contract and works ten additional hours, this *decreases* a man's likelihood to pursue paid labor by 9 percentage points (consistent with H6). This is visualized in Figure 10, which shows clearly that a woman working an additional hour decreases a man's likelihood to participate in the labor market, to an even greater extent if she has a reduced full-time work contract. There is no income effect for either men or women. Men working an additional hour increases women's likelihood to be in the work force only if the man has a reduced full-time work contract. The differ-

ence is due to the status quo in average work time between men and women, and the opposite directions a reduced full-time work contract has. But the hypothesis itself cannot fully be accepted, as it shows opposite results for men.

10 Conclusion

This thesis presents the first quantitative approach on a micro level about on how working hours affect gender equality within a household. It examined the effect of work time and having a reduced full-time work week (32-36 hours stipulated in the work contract) on three gender equality relevant variables in a household, namely (1) the time spent on care work and other household chores, (2) the working time of the adults in a household, and (3) the labor force participation of the adults in a household.

(1) The thesis finds that working hours have a strong negative effect on one's own housework hours. This effect is stronger for women than for men: While one additional hour of work per week reduces a woman's household- and care time by around 0.6 hours per week, a man working one additional hour per week only reduces his household- and care time by 0.27 hours. Furthermore, women's household- and care time is independent from their male partner's paid working hours, whereas a man's housework hours are significantly impacted by his female partner's real working time. So, there is a strong indication for asymmetry between genders in a household when it comes to the effect of work time on housework hours. Moreover, the regression results give evidence that if a man has a reduced full-time contract, this would not impact the household labor time of a woman, but it would increase his own household- and care time. Also, if a woman had a reduced full-time work contract, it would strongly increase a man's care time per one additional hour of her working and it would decrease her housework hours. Overall, having a reduced full-time work contract would create more symmetry of paid- and unpaid work per sex in a household.

(2) There is evidence to support that a partner's work time has a significantly inverse effect on an individual's work time. The effects of working time are asymmetric regarding gender. A woman's working time is more influenced by her male partner's working time than a man's working time is influenced by his female partner's working time. When controlling for income, a woman will work 0.126 hours less per additional hour her partner works, while a man will work 0.084 hours less for an additional hour a woman works. When a man has a reduced full-time work contract, a woman's work time increases significantly, not decreases, when her partner works one additional hour. This indicates that if a man has a reduced full-time work contract, this encourages women to work more hours per week. If a woman has a reduced full-time work con-

tract, this has opposite effects. If a woman has a reduced full time work contract and works an additional hour, there are no income pressures on the working time of men. If a man has a reduced full-time work contract, the income pressures persist on the working time of women.

(3) The effect of a partner's working time on an individual's labor force participation is in all cases very small but highly significant. Ten additional work hours of the partner reduce the likelihood to be in the labor market by around 3 percentage points. The effects for men and women are very similar, only the effect of a man's work time on a woman's labor force participation seems to be affected by income. The partner working under a reduced full-time work contract creates opposite results for men and women: A ten-hour increase of working time by a man who has a reduced full-time work contract *increases* his partner's probability to participate in the labor market by 9 percentage points. If a woman has a reduced full-time work contract and works ten additional hours, this *reduces* a man's likelihood to pursue paid labor by 9 percentage points.

The results presented above have certain limitations. Firstly, for women the so-called "reduced" full-time work contract is in fact not a reduction. Secondly, there is endogeneity in the regressions and the IVs do not fulfill the independence assumption or the exclusion restriction. This strongly limits the possibility to draw conclusions of causality. Thirdly, the estimators just present the effect of one variable on the dependent variable but cannot show the bigger picture of systemic interactions between the variables. Fourthly, this thesis presents the impacts of a partner's working time on gender equality relevant variables, but it does not go as far as to find causes for these effects and gendered differences.

Redistributing care work and balancing the work time of men and women remain a top priority among international gender equality politics. The reduction of weekly working hours can be an innovation in the Global Labor Governance Regime which provides ways for a transnational implementation. The results found in this thesis based on SOEP data in Germany suggest that a work time reduction can lead to more gender equality within a household, as it would cause more symmetry between men and women regarding paid- and unpaid labor in a household. This thesis presents multiple forms and ways of implementation on national and transnational levels. Importantly, measures reducing overall working hours - for example towards a four day working week - should be accompanied by policies encouraging women to take up full-time work contracts instead

of deviating from the standard work contract by pursuing part-time employment. Men, who in today's societies mostly pursue full-time work contracts, by reducing their work time pursue more household work and encourage women to work more hours. At the same time, there should be more incentives for women to work more: Based on the results of this thesis, women increasing their work time has a strong effect on her and her partner's household labor and her partner's work time. Only when allowing for the adaption of new work times for both partners more symmetry in a household can be reached on a long term.

This thesis is one of the first papers to quantitatively examine the interconnection of work time and gender equality. Still, it can only shed light onto niches in the debate and the empirical analysis applies for Germany only. The four-day work week trial programs initiated worldwide lay a solid foundation for further research in this field. Difference-in-differences or panel analyses on participants and control groups could lead to research results indicating profound causalities.

Appendix

Appendix 1: Overview of working time in industrialized nations between 1870 and 2000, from: Huberman and Minns (2007, p. 542)

	1870	1880	1890	1900	1913	1929	1938	1950	1960	1970	1980	1990	2000 (M)	2000 (F)
Belgium	72,2	69,3	66,5	64,2	*59,5*	48,2	48		42,5	39,9	38,5	36,6	37,3	36,5
Denmark	69,9	64,6	59,9	56	55,8	48,5	47,6	46	44,4	39	37,5	35	39,3	37,7
France	66,1	66	65,9	65,9	62	48	39	44,8	45,9	44,8	40,7	39,9	36,9	34,6
Germany	67,6	66,3	65,1	64	57	46	48,5	48,2	45,6	43,8	41,6	39	40,8	39
Ireland	63,8	62	60,2	58,6	*56,4*	46,6	48,2	45		42,7	41,1	42,1	40,7	38
Italy	63,3	63,4	63,6	63,8	*62,4*	48,8	48,5	47,8	42,4	42,9	42,5	39,6	41,4	35,4
Netherlands	65	63,4	61,9	60,5	*58,6*	48,1	48,5	49,2		45,1	40,8	34	37,6	30,1
Spain	64,7	62,7	60,8	59,1	*56,7*	48,5	47				40	38,9	36,9	34
Sweden	69,6	64,6	59,9	56	56	48	46,3	46,8	43,4		37,7	38,2	39,1	36,3
Switzerland	65,4	63,1	60,9	59	*56,3*	48,5	46,3	47,5	46,1		43,8	41,6		
U.K.	56,9	56,6	56,3	56	56	47	48,6	45,7	44,7	42	40	42,4	42	38,9
Australia	56,2	53,3	50,5	48,1	*44,7*	45,5	45	39,6	39,6	39,6	39,2	40,1	42,6	38,5
Canada	57,2	59	60,9	62,6	57,9	49	47,2	42,3	40,7	39,7	38,5	38	42,8	36
U.S.	62	61	60	59,1	58,3	48	37,3	42,4	40,2	38,8	39,1	39,7	43,3	37,2
World	64,3	62,5	60,9	59,5	57	47,8	46,1	45,4	43,2	41,7	40,1	38,9	40,1	36,3

Appendix 2: Reduced Form Regression: Dependent Variable Household and Care Time

Appendix 2: Reduced form regression: Dependent variable household- and care time (N = 4464)

	Household- and Care Time (Man)	Household- and Care Time (Woman)
Real Working Time (Man)	-0.258***	
	(0.0236)	
Real Working Time (Woman)		-1.001***
		(0.0326)
Constants	37.03***	74.82***
	(0.934)	(0.987)

Standard errors in parentheses
* p<0.1, ** p<0.05, *** p<0.01

Appendix 3: Reduced form regression: Dependent variable work time

Appendix 3: Reduced form regression: Dependent variable work time (N = 4464)		
	Real Working Time (Woman)	Real Working Time (Man)
Real Working Time (Partner)	-0.233***	-0.135***
	(0.0194)	(0.0112)
Constants	35.22***	45.51***
	(0.851)	(0.339)
Standard errors in parentheses * p<0.1, ** p<0.05, *** p<0.01		

Appendix 4: Reduced form regression: Dependent variable labor force participation

Appendix 4: Reduced form regression: Dependent variable labor force participation (N = 4464)		
	Labor Force Particiaption (Woman)	Labor Force Participation (Man)
Real Working Time (Partner)	-0.00292***	-0.00303***
	(0.000512)	(0.000269)
Standard errors in parentheses * p<0.1, ** p<0.05, *** p<0.01		

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