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The Plight of Female Employment in Germany under School-Related COVID-19 Control Measures

Ezgi Caki

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Hochschule für Politik München
an der Technischen Universität München
School of Management
جامعة نيويورك ابوظبي
NYU ABU DHABI
NAZARBAYEV UNIVERSITY
periscope
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The Plight of Female Employment in Germany under School-Related COVID-19 Control Measures
Authors: Ezgi Caki
Contact: ezgi.caki@tum.de
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CoronaNet is part of, and has received substantial financial support through, PERISCOPE, a consortium of 32 universities and research institutes across Europe, investigating the behavioral and socio-economic consequences of COVID-19 to increase resilience and preparedness for future pandemics and other large-scale risks. PERISCOPE has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 101016233. Additional funding support has been provided by the Chair for International Relations (Prof. Dr. Tim Büthe) at the *Hochschule für Politik* (HfP) at the Technical University of Munich (TUM), NYU Abu Dhabi, the National Council for Eurasian and East European Research (NCEEER), the Peace Research Institute Frankfurt (a member of the Leibniz Research Alliance Crises in a Globalised World), the Data4COVID19 Africa Challenge, and the Just One Giant Lab OpenCovid19 Initiative.

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The CoronaNet Researchers Working Paper Series

The CoronaNet Working Paper Series encourages CoronaNet researchers, who are mostly students volunteering their time, to go beyond the crucial work of gathering and coding information about COVID-19-related policies and hone their research and writing skills by conducting their own analyses inspired by the CoronaNet data. The working papers are the capstone of a program which offers research assistants the opportunity to explore research topics of genuine interest to them, acquire and practice the requisite skills to analyze the CoronaNet data, learn more about the dataset to which they have contributed, practice their academic writing skills, and collaborate with their peers in research and writing. To this end, the program entails seminars on research methods and academic writing, detailed introductions on the publicly released CoronaNet data structure, and tutorials on conducting quantitative analyses of the data. In addition, CoronaNet principal investigators provide oversight and feedback on paper drafts while Working Paper Series coordinators organize the program series. The papers in this series are thus *not peer-reviewed* but provide an opportunity to learn about preliminary findings that arise out of the CoronaNet database.

CoronaNet Research Project

The CoronaNet Research Project (https://www.coronanet-project.org/) gathers, systematically codes, and makes publicly available information about government policies put in place in response to COVID-19. It is led by researchers at the Chair for International Relations at the Hochschule für Politik at TUM and TUM School of Management, NYU Abu Dhabi, University of Southern California, Nazarbayev University, Universidade Brasilia, the Hertie School and the Fors Marsh Group. The project relies on the help of experienced staff researchers who serve as regional and country coordinators, and is made possible by more than 500 volunteer researchers from around the world.

Abstract

This study empirically assesses the impact of school closures on women's employment in Germany during the COVID-19 pandemic. The study's objective is to determine whether school closures have adversely and disproportionately affected women's careers. It tests the argument that the longer schools remain closed during the pandemic, the more women than men are forced to reduce their working hours, opt for part-time jobs, or ask for paid or unpaid leave, or otherwise lose their jobs. The case study reveals that, even though the German federal state has been granting financial incentives for employment during the pandemic, women remain disproportionately affected by the pandemic-related containment measures, notably school closures. This study's finding that more men were unemployed than women at the apex of the pandemic in Germany can be explained by the already higher number of employed men. Overall, the relationship between the demand for women's part-time work and women not returning to work is stronger and more significant than that of men's part-time work and men not returning to work, meaning that there is a growing demand for non-standard forms of employment, such as part-time work, for women compared to men. Childcare responsibilities, which are increasing due to the pandemic, are threatening women's significant gains for gender equality. Although the empirical assessments present varying results, gender inequality subsists and requires carefully formulated policies with a focus on enhancing gender equality and women's labor force participation during and after the pandemic.

Keywords: gender, employment, COVID-19, school closures, Germany

The Plight of Female Employment in Germany under School-Related COVID-19 Control Measures

Introduction

The COVID-19 pandemic has forced some governments to formulate policies to contain the spread of the virus. Recently, scholars and politicians have been paying more attention to the unintended consequences of pandemic-related containment measures enacted to control the spread of the SARS-CoV-2. People who were already in a disadvantageous economic or social position before the pandemic, especially women, are at the center of such concerns (Alon et al., 2020; Blaskó et al., 2020; Jessen & Waights, 2020, Power, 2020). Problems related to domestic violence, closure of health clinics, and mass layoffs have revealed that the coronavirus pandemic has impacted women and men differently.

In this paper, I focus on the impact of COVID-19 on gendered unemployment and job losses because women's job losses during the pandemic could put risks years of gain, such as the rising female labor force participation, in the last century. Long before the pandemic, women's participation in the labor force were already at risk due to accelerating digitization, automation, and other labor market challenges (Dabla-Norris et al., 2018). For example, Dabla-Norris et al. (2018, p.4) underlined that "26 million female jobs in OECD countries face a higher risk of automation within the next two decades because women perform more routine tasks—tasks that are most prone to automation—than men". Acceleration of the digital economy and digital transformation during the COVID-19 has likely penalized women with insufficient digital skills (Schilirò, 2021, p.8). Furthermore, lockdowns as well as the closure of businesses and schools are hitting women harder than men (International Labor Organization, 2021). Therefore, COVID-19 containment measures are likely to exacerbate problems concerning women's employment. This study argues that containment measures, such as school closures, worsen gender equality by putting more pressure on women's employment. It empirically tests the impact of school closures on women's unemployment and analyzes the broader ramifications of this policy by looking into the case of Germany and 16 German Länder.

There is ample reason to believe that COVID-19 may indeed have asymmetric impacts depending on one's gender. First, the different gender roles between men and women within the family, particularly the expectation for men to act as the breadwinner and for women to bear care responsibilities and housework, contribute to gender inequality (Bianchi et al., 2012).

Second, the so-called positive masculine identity and devalued feminine identity can wane or strengthen during a crisis (Bianchi et al., 2012, p.61). It seems likely that the pandemic will have long-term consequences for gender inequality and women's representation in the labor force. If the COVID-19 pandemic does indeed generate a negative impact on women's labor market, countries should either focus on preventing such impacts or alleviating gender inequality problems resulting from the pandemic. Importantly, this timely study can help policymakers assess the short and long-term consequences of confinement measures on women's labor force participation.

Third, burdens at homes have increased during the pandemic hence reducing women's productivity at work outside the home. As primary carers and secondary earners, women are more involved than men in atypical work arrangements during the pandemic, such as part-time work and unpaid leave. Since women's participation in non-standard employment does not bring economic independence and improve gender inequality due to its temporary nature, the study concludes that the pandemic leads to household income differences and exacerbates gender inequality. Using Ordinary Least Squares (OLS) regression analysis, this study finds that containment measures in Germany have led to the layoffs of female workers and exclusion from the job market. There are also significant variations in men and women's part-time work and return to work.

The paper is organized as follows: The proceeding section reviews the literature and demonstrates the theoretical background. The third section introduces the methodological framework and tests the hypothesis empirically. The fourth section discusses the study's empirical findings and potential future research areas.

Primary Carers and Secondary Wage Earners

Women bear a larger burden in childcare and housework than men and it can be said that unpaid housework by women is considered a second work shift (Bianchi et al., 2012). In their analysis, Fouarge et al. (2010) documented the negative effect of childbirth on mothers' labor supply in Europe which revealed that women's labor force participation rate does not return to pre-birth levels. After the child's birth, many women become primary carers and secondary earners and are likely to work part-time or have a temporary contract (Laß, 2020). In addition, long maternal leaves reinforce traditional labor divisions where women are responsible for domestic work and childcare while men work full-time. Although men's participation in unpaid

housework dramatically increased throughout the 1965-2010 period, women still did most of the housework (Bianchi et al., 2012, pp.56-58). Recent research by Jessen and Waights (2020) has also revealed that mothers spend more time on housework and childcare during a typical day, with or without daycare. Therefore, if women rejoin the labor force after birth, they are usually employed in non-standard forms, such as temporary work, part-time work, fixed-term contracts, or self-employment to meet household and career demands.

Women who have children typically drive the pattern of non-standard forms of employment, such as part-time and temporary work or fixed-term contracts (Hoque & Kirkpatrick, 2003; Schmid, 2010). Some scholars like Schmid (2010) argue that when women take non-standard employment, they strive for economic independence. For this reason, feminization of the labor force is crucial to gain economic independence for women, and non-standard employment should be seen to improve work opportunities. This way, women transform previously unpaid housework into market work (Schmid, 2010, p.41). However, Schmid (2010) also stated that non-standard employment does not yield fruitful results in the long-term. Standard employment contracts, an arrangement between employee and employer that is full-time and permanent, usually offer fringe benefits, better social security, training, and other opportunities. Thus, non-standard forms of employment carry a higher risk of unemployment, income, and social security. Then, women's participation in the non-standard form of employment does not result in economic independence nor does it reduce gender inequality in the medium and long-run. The pandemic triggered a health and economic crisis that has worsened gender inequality by further disproportionately impacting women's livelihoods and ability to engage in paid work (Cook & Grimshaw, 2021).

Since the beginning of the pandemic, scholars have explored how the pandemic affected women's labor force participation. Fuchs-Schündeln et al. (2020) explained that at the onset of the pandemic, women lost their jobs because i) women are more likely to be employed in the worst-hit sectors more, including textile and tourism, and ii) women are more likely to leave their jobs to take care of their children. When women with caring responsibilities do not leave their jobs, there are two likely scenarios which can hurt them: i) women's productivity at work diminishes because of additional caring responsibilities; and ii) women ask for non-standard forms of employment due to additional workload at home. Recent studies (Alon et al., 2020; Blaskó et al., 2020; Power, 2020) have also shown that women either reduced their working hours and worked in part-time jobs or asked for paid or unpaid leave. Even if women were working from home during the pandemic, their workload would increase due to increased

unpaid housework, such as childcare. According to Kreyenfeld and Zinn's (2021) study, women in Germany spent 9.6 hours per day for housework during the first lockdown when day-care centers and schools were closed, whereas men spent 5.3 hours. Pre-pandemic, women spent 6.7 hours per day to do housework whereas men 2.8 hours. This demonstrates how women must sacrifice more than 8 hours a day to take care of children, and this increased workload is likely to diminish the productivity of women at work. Power (2020, p.69) sees additional caring responsibilities as "an impact that could negatively affect lifetime incomes including pensions" or worse, women will be out of the labor force.

This indicates that pandemic-related measures, including school and childcare closures, will have macro-economic implications meaning that market work will be transformed into unpaid housework. It is essential to recognize that women will still tend to childrearing responsibilities when there is no school. Although some have claimed that crises like the coronavirus pandemic may result in a detraditionalization of housework behavior, including childrearing, and lead to increased paternal involvement, it has instead revealed that women have had to grapple with additional childcare tasks (Kreyenfeld and Zinn, 2021, p. 108). Moreover, the reopening of the economy without the reopening of schools puts more burden on women because employed women are more likely to stay at home and be occupied with child-rearing than employed men.

Women who work from home also face the dilemma of having to narrow their focus on either work or children. They are likely to be less productive on their jobs because remote working forces women to simultaneously be involved in child-rearing. This may lead them to either opt for part-time work or leave the workforce to take care of their children during the school closures. For each scenario, a school closure policy negatively impacts women’s participation in the workforce. Before the pandemic, women were already experiencing workplace biases and the stigmas of pregnancy and motherhood. According to Skorinko et al. (2020), pregnant women and new mothers are less likely to be hired and more likely to be paid less. Like stereotypes and stigmas, traditional gender norms make the situation worse for women. Employers may think that men are the breadwinners (Blaskó et al., 2020, p.10). In such situations, employers are likely to fire women first; this tendency further hurts women during the pandemic, as women are more prone to struggle with efficiency and productivity due to the increase in housework and caring duties (Blaskó et al., 2020).

Some scholars have compared pandemic-related recessions with other recessions and argued that pandemic-related recessions are different from others. For example, in a typical financial

recession, men are prone to losing their jobs because their employment fraction is higher in construction, manufacturing, and other sectors that suffer from normal recessions (Alon et al., 2020). On the other hand, according to Alon et al. (2020), during the pandemic, women are more prone to losing their jobs because the share of men in tele-commutable and critical sectors is higher. Further research has revealed that confinement measures, namely business closures and social distancing, often impact the most vulnerable and disadvantaged workers, such as women, minorities, immigrants, people with disabilities, among others (Torrejón et al., 2020).

Much of the literature pays particular attention to previous health crises and their distributional consequences. For example, significant epidemics this century, including SARS, H1N1, MERS, Ebola, and Zika, have had similar distributional consequences compared to the COVID-19 pandemic and exacerbated income inequality (Furceri et al., 2020). Further, low-skilled workers face a high risk of displacement than workers with a college education. Other researchers have analyzed specific containment measures, such as compliance with social distancing and employees' financial concerns (Blake et al., 2010). Previous health crises also revealed how school closures, which are aimed at mitigating the spread of a disease outbreak, have had negative consequences on the workforce and economy (Sadique et al., 2008). This study aims to contribute to this growing area of research by exploring the relationship between confinement measures by explicitly focusing on school closure policies and their gendered labor market implications. More research is required to understand the impact of this measure on women's unemployment and employment in non-standard forms. This study will strengthen the previous research findings, mainly focusing on the closure of schools and its repercussions on gender equality.

Hypotheses

Many theoretical arguments about the COVID-19 pandemic point out how women are disproportionately affected in terms of employment and why containment measures are likely to exacerbate existing income inequalities (Blaskó et al., 2020; Fuchs-Schündeln et al., 2020). To summarize, the following situations are expected during the pandemic: Women, traditionally primary caregivers of children, are expected to be disproportionately affected in terms of their free time and income due to containment measures, especially school closures. Women in the workforce are more likely to lose their jobs or choose part-time positions because they feel compelled to quit to take care of the children and household. They are in a difficult

position because they need to decide what is best for their economic well-being and children. In addition, due to problems in women's productivity and efficiency in the labor force during the pandemic, employers may decide to fire more women than men. In other words, school closures make employers rethink their female employees' childcare responsibilities because if schools remained closed, female employees would be tasked with child-rearing duties. Working women, who already bear most housework and childcare burdens during regular times, struggle to balance paid and unpaid work during the pandemic. Women are already taking care of more housework responsibilities than men, but that pressure intensifies due to increased parental duties stemming from school closures.

Given the above, I hypothesize that the longer schools remain closed during the pandemic, the more women (i) are likely to reduce their working hours and (ii) work in part-time jobs or (iii) ask for paid or unpaid leave or lose their jobs. In other words, women more likely to take non-standard forms of employment than men due to additional childcare responsibilities. Before the pandemic, atypical work arrangements were already common among women in many countries for many years, and as Allmendinger et al. (2013) underlined, this type of work has become typical for women due to its frequency among female labor force participation. Because of greater childcare needs, women have been unable to work full-time or at all. To test the hypotheses, I assessed the possible link of school closures on female representation in the workforce.

In the next section, I will empirically test whether women are more likely to reduce their working hours and work in part-time jobs or ask for paid or unpaid leave or lose their jobs because of school closures by focusing on Germany’s case. In Germany, women can choose any atypical arrangements depending on their families’ needs and free time. In the absence of further individual information, I do not expect differential effects in atypical arrangements depending on school closure; instead, I argue that women overall will be more interested in non-standard forms of employment than men.

Research Design and Methodology

Case Selection

Research has shown that the burden of unpaid housework and childcare is influenced by individual and family attributes and states' regulatory frameworks, cultural norms, policy formulations, and masculinity (Bianchi et al., 2012, pp.61). The availability of public childcare,

proper funding, state-level educational plans, and curricula can vary across countries. Likewise, mothers' education levels, the socioeconomic status of families, and institutional and societal norms also vary. The analysis aims to understand the impact of school closures in which I control some variations to some extent. Focusing only on a single country enables controlling certain factors such as the availability of public childcare and institutional norms. As such, this research chooses Germany and 16 German Länder as a single country study to test the hypotheses. Even though German states have different backgrounds, regulations, and norms, they share similar features due to the federal government's unified policies on childcare. For example, the local authorities have to invest in childcare infrastructure and extend childcare spaces based on the federal government's 2004 bill (Rüling, 2010, p.160).

During the 2000s, the federal government developed federal-level educational plans, funding, and curricula making childcare guaranteed across 16 states in Germany (Rüling, 2010, p.158). Although variations still exist today, the federal government introduced bills such as the expansion of childcare facilities to eliminate disparities between East and West German states (Schober & Stahl, 2014, p.53). Moreover, as the Federal Ministry of Finance (2020) stated, the federal government has granted multibillion-euro assistance programs, tax-related measures, and job safeguarding to prevent the pandemic's social and economic impacts. Some scholars even argue that Germany is one of the few countries that sheltered the pandemic's economic consequences so far (Fuchs et al., 2020). Regardless of where German citizens live, citizens in every state have been supported financially by the federal government. Although the move should protect German citizens from the catastrophic results of the pandemic to some extent, I will show more fully in the next section that if one looks at the change in percentage in unemployment numbers, there is a striking difference between male and female groups.

I chose to test the argument that the longer the schools stay closed, the more likely it is for women across the 16 German Länder to work in part-time positions, take a paid or unpaid leave, or become unemployed because they remain the primary carers of children. There are three reasons to test the argument using Germany as a case study: First and foremost, it is vital to have available and accurate data in a short amount of time. Without accurate data, it is challenging to assess pandemic-related policies' impact on women's unemployment. Employment data on Germany and the data related to school closures in Germany are available. First, the Federal Employment Agency provides up-to-date data on employment. Additionally, the CoronaNet Research Project and the Corona-KiTa-Study by the Robert Koch Institute provide data related to school closures. Second, Germany's relative success in weathering the

economic effects of the pandemic means that whatever effects I find on how school closures affect women's labor force participation are likely to be conservative. Germany introduced several policies to address the challenges posed by the COVID-19 crisis. For example, Germany ensured employment protection during the pandemic by allowing workers to stay on employers' payroll even though workers faced a reduction in working hours or did not work at all (Alon et al., 2020, p.25). Further, the federal government adopted a €500 billion loan package and provided credit assistance, guarantees, and tax deferrals for companies (Abodunrin et al., 2020, p.21; Şenol & ZEREN, 2020, p.5). As Vanini (2020) noted, Germany provided the necessary financial resources and protected the people and the economy by introducing a US$ 672 billion fiscal stimulus or 17.5% of its GDP (pp.2-3). If a country endures an economic recession unscathed, yet still struggles with women's unemployment and layoffs during the pandemic, then countries that perform worse economically due to a crisis are likely to experience a deterioration in gender equality. Third, Germany's relatively good record in gender equality and women's workforce representation also makes it a 'hard case' for finding any effect at all.

According to the World Economic Forum's "Global Gender Gap 2020" report, Germany climbed the ranks and returned to the top-ten position for the first time since 2007 (p.29). The report highlights the increase in the Political Empowerment Subindex and owes Germany's recent success to the increased participation of women in politics (p.13). Yet, in terms of the Economic Participation and Opportunity Subindex, the report finds that the country still struggles with gender equality, and there is a room for progress (p.12). Similarly, Germany ranks 12th in the EU on the Gender Equality Index 2020, scoring 0.4 points below the EU average. This is despite Germany—along with some other European countries including Norway, Sweden, Iceland, and France—offering father quotas for parental leave since 2007 (Bünning, 2015; Tamm, 2018, p.2). The study by Tamm (2018), provides a comprehensive analysis of how reforms like the introduction of a father quota increased fathers' time dedicated to housework and childcare. Recently, the federal government introduced a national plan centered on achieving gender equality by reducing the gender pay gap and introducing a quota for leadership positions (DW, 2020). In short, if a country has a relatively good record of women's equality and empowerment and still struggles during the pandemic, then the countries that already struggle with gender equality are likely to have even worse outcomes for women's labor force participation during the pandemic.

Even though Germany has a better track record for women's workforce participation in the workforce compared to other countries, it does not mean that it has achieved gender parity. Before the pandemic, the total number of employed women and women's employment rate (76% for women and 84% for men) were already lower than men in Germany (The European Institute for Gender Equality, 2019, p.2). Pre-pandemic, around 47 % of women work part-time, whereas around 11 % of men work part-time. There is also a working hour gap between men and women, accounting for 30 hours for women and 39 hours for men. As expected, the gender gap also exists in Germany, with women earning 22% less than men. On the other hand, in terms of state-level family policies, Germany has been implementing parental leave for fathers since 2007. Shifting focus from the male breadwinner model to the dual earner model, the latter has transformed gender role attitudes in the last decade (Bünning, 2015, p.745). If public childcare is available for men, women usually do less housework (Hook, 2010). As one can see, national-level policies directly or indirectly impact gender inequality.

Using ordinary least squares (OLS) regression, this study examines whether school closures have a negative association with employment in Germany. OLS analysis allows us to determine whether the predictor variables and outcome variables have a statistically significant correlation or not.

Data

Outcome Variables

Over-the-Year Changes in Women's Unemployment Rate Compared to Men

I used the aggregate unemployment data of all women and men across the 16 Länder. Due to the difficulty in obtaining data for married women and women who are mothers or caring for children across the 16 Länder, the analyzed data includes both mothers and women without caring duties. On the one hand, one might point out that using aggregate data would not necessarily reflect the impact of school closures on women's employment because not everyone in the labor force has childcare responsibilities. On the other hand, in the German employment trend, aggregate employment growth in recent years is attributed to growing atypical work forms and women's growing share in it (Weinkopf, 2014). In fact, part-time work is preferred by married mothers (Eichorst et al., 2013, p.7). As a result, the proportion of working mothers has increased to 74.7% from 66.7% in the last decade whilst the percentage of working fathers remained unchanged (92.9%) during the same period (Destatis, 2022). Thus

fluctuations, especially in atypical forms of employment, are still valuable in understanding the impact of school closures on working mothers' participation rate.

I operationalized the over-the-year (OTY) changes in women's unemployment compared to men's unemployment from 2019 to 2020 in two ways. "Over-the year changes represent the change between the given data point, and that same data point for the prior year," according to the U.S. Bureau of Labor Statistics (2020). For example, the OTY change in May unemployment is the change between May 2019 unemployment and May 2020 unemployment. Year-Over-Year change allows effective evaluation, and it shows whether a situation is improving or deteriorating; it further eliminates seasonal changes. My assessment applies from January to September for each Länder during the first wave of the pandemic. Although every German Länder decided to implement measures at different times, the majority closed schools around March, and in September, almost every state reopened schools after the summer break. The study thus assesses the first nine months before and during the pandemic. It also includes summer breaks when childcare responsibilities increase and after the summer break when schools re-opened.

For the assessment, I used the comparison between women and men's relative OTY change in unemployment during the 2019 and 2020 periods for each German Länder as my first outcome variable. For instance, if unemployment for women in Bavaria increased by 1% from May 2019 to May 2020, and unemployment for men increased by 1.3% from May 2019 to May 2020, the outcome variable for this province would be 77% (1%/1.3%). I also use the absolute OTY change in women's unemployment compared to men's between 2019 and 2020 for each German Länder as my second outcome variable. For instance, if women's unemployment in Bavaria increased by 1% from May 2019 to May 2020, and men's unemployment increased by 1.3% in Bavaria from May 2019 to May 2020, the outcome variable for this province would be -0.3% (1%-/1.3%). Absolute change on small numbers can appear small even if the relative change is significant and as such focusing on relative change may not represent what is happening and so I decided to provide both numbers; the data comes from the Federal Employment Agency (2020).

Figure 1. OTY Bavaria Statistics from May 2019 to May 2020

Unemployment Increase in Women	Unemployment Increase in Men	Relative Change (%)	Absolute Change (%)
1%	1.3%	77% (1%/1.3%)	-0.3% (1%-/1.3%)

Over-the-Year Changes in the Demand for Women's Part-Time Work Compared to Men's

I operationalized the OTY changes in the demand for women's part-time work compared to men's the same way I assessed the unemployment figures. I used the relative OTY change in the demand for women's part-time work compared to men's for the 2019 and 2020 period for each German Länder as my first outcome variable. For instance, if the demand for women's part-time work in Bavaria increased by 28.6% from May 2019 to May 2020, and the demand for men's part-time work increased by 21.6% from 2019 to 2020, the outcome variable for this province would be 133% (28.6%/21.6%). I also use the absolute OTY change in the demand for women's part-time work compared to men's between 2019 and 2020 for each German Länder as my second outcome variable. For instance, if the demand for women's part-time work in Bavaria increased by 28.6% from May 2019 to May 2020, and the demand for men's part-time work increased by 21.6% in Bavaria from May 2019 to May 2020, the outcome variable for this province would be 7.07% (28.6% -/21.6%). This data was obtained from the Federal Employment Agency (2020).

Over-the-Year Changes of Women Returners Compared to Men

The same operationalization applies to returners. Returners represent people who had a family-related career break before resuming back to work. A family-related career break can stem from childcare or elderly care. It is different from parental leave that comes after the birth of a child. The data for this variable was also sourced from the Federal Employment Agency (2020).

Predictor Variable

Preschool Closures

School and childcare closures have led to an increase in part-time demand among women, higher female unemployment during the pandemic, and paid or unpaid leave because women are still the primary caregivers of children at home (Alon et al., 2020; Blaskó et al., 2020; Power, 2020). Regarding the school closure policies, there are four different school types, namely preschool (Kita in Germany), primary, secondary, and higher education. Children at secondary and higher education can care for themselves better compared to children in preschool and primary education. However, it is difficult to stipulate that primary school children require as much care during the day as preschool children. This study acknowledges the effect of primary school children at home on women's labor force participation. However, the detriment from their presence may not be as great as the one imposed by the presence of

pre-school children. For example, several studies have indicated that the absence of childcare facilities in pre-school age than the primary school has a more noticeable impact on a mother's decision not to participate in the labor force (Berthelon et al., 2015, p.29; Halim et al., 2019, p.12); this impact diminishes as children get older. For this study, the closure of preschools for children under six years old is the only indicator of school closure policies for the assessment.

The data relating to school closures comes from the Corona Net Research Project and the monthly reports of the Corona-KiTa-Study by the Robert Koch Institute. The preschool closures variable ranges between 0 and 1. For every month, the variable is calculated by the following formula: the number of closed days over total working days. For example, if a preschool is closed for the whole month, the variable indicates 1 in the analysis and if the preschool is open it indicates 0. In addition, attendance rates of children in day-care centers change for every Länder hence the indicator here is weighted according to Länder attendance rates in a day-care center.

Control Variables

Gross Regional Product (GRP) per Capita

Values, including GDP and GRP per capita, are crucial factors for regions that receive funds, especially in the EU, such as structural funds (Eurostat, 2017). GDP is used to monitor economic developments in a particular country, and it is one of the primary indicators to determine the economic position of a country or region. It can also be considered as a proxy variable for the standard of living. The latest nominal GRP measures are from the federal and state statistical offices.

Women's Parliamentary Representation

This variable is used to control the representation of women's interests. The idea is that women's interests and needs are better represented in countries where women's representation in parliaments and government positions is higher (Coka et al., 2017, p.365). The data comes from the State Center for Political Education Baden-Württemberg, a non-partisan state institution. (Dörr et al., 2021).

Statistical Analysis and Model Specification

Empirical Results

Table 1. Over-the-Year Change in Women's Unemployment Compared to Men

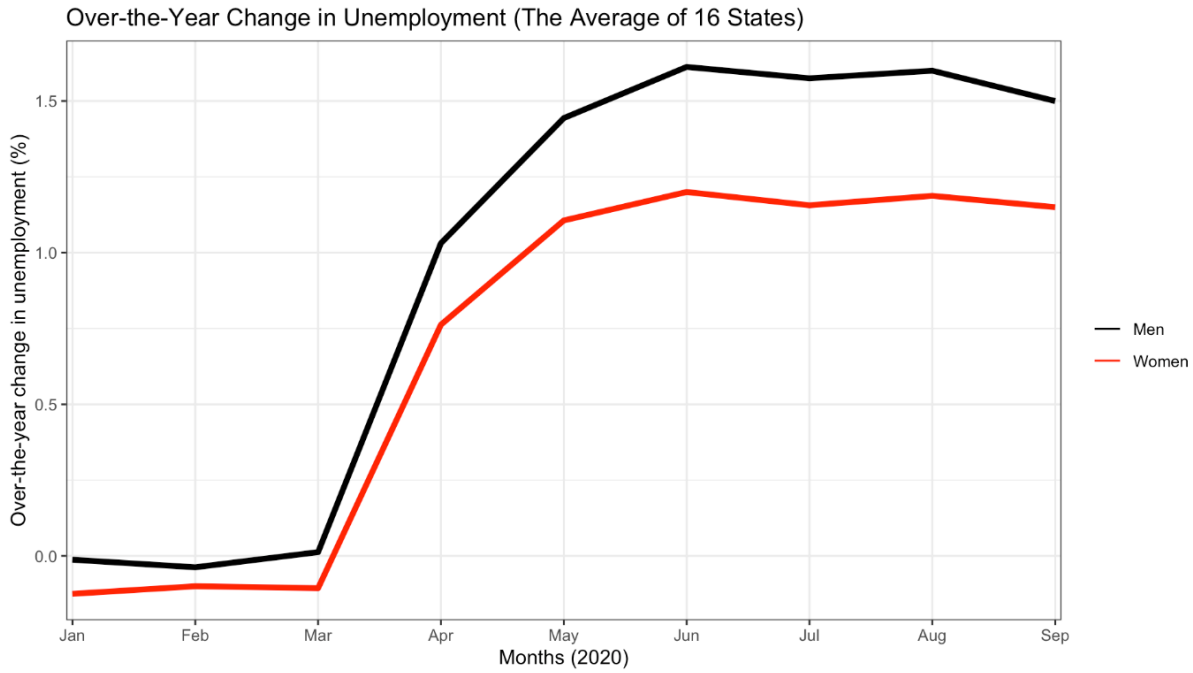
Results of Ordinary Least Squares (OLS) Regression

	Model 1	Model 2	Model 3	Model 4
(Intercept)	0.77 ***	-0.28 ***	0.77 ***	-0.28 ***
	(0.03)	(0.02)	(0.03)	(0.02)
Preschool Closures	-0.02	-0.04*	-0.02	-0.04*
	(0.03)	(0.02)	(0.03)	(0.02)
GRP			-0.01	0.03
			(0.05)	(0.02)
Parliament Representation			0.06	-0.00
			(0.05)	(0.02)
N	144	144	144	144
R2	0.00	0.05	0.02	0.06

All continuous predictors are mean-centered and scaled by 1 standard deviation. *** p < 0.001; ** p < 0.01; * p < 0.05.

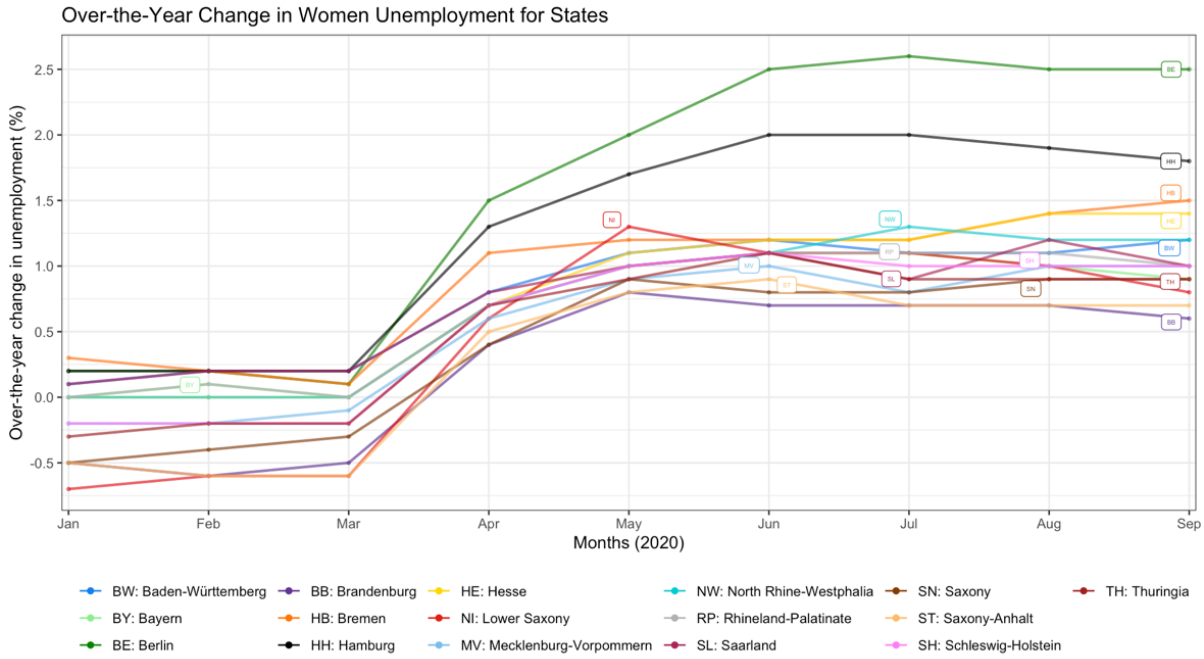
Model 1 and Model 3 in Table 1 and Table 2 represent the relative change, whereas Model 2 and Model 4 represent the absolute change outcome variables. There are no statistically significant relations in Model 1 and Model 3; however, there are negative statistical relations in Model 2 and Model 4. After adding the control variables, the relations stay the same. Contrary to expectations, it is not possible to argue from this model that school closures lead to higher layoffs of women compared to men in Germany. If we check the unemployment numbers in Graph 1, we might have a better understanding of why.

Graph 1. Over-the-Year Change in Unemployment (The Average of 16 States)



Graph 1 shows the average of the 16 states' OTY in unemployment figures for men and women. A more detailed analysis of each Länder can be found in Graph 2 and Graph 3. After April 2020, more men compared to women have become unemployed. Germany's economy shrunk by 5% in 2020, and the change in the same quarter a year earlier was negative for every quarter. The economic contraction within 2020 is similar to 2009, a year after the 2008 fiscal crisis. Contrary to expectations, men take the lead in unemployment figures. The problem with the unemployment numbers is that before the pandemic, the employment rate was 76% for women, and 84% for men. Thus, it is no surprise that more men than women have become unemployed over the year, considering the uneven representation of gender in employment. This analysis does not consider the concentration of women and men in different sectors. A more detailed analysis that considers the concentration of gender in different sectors is required.

Graph 2. Over-the-Year Change in Women's Unemployment for 16 Länder



Graph 3. Over-the-Year Change in Men's Unemployment for 16 Länder

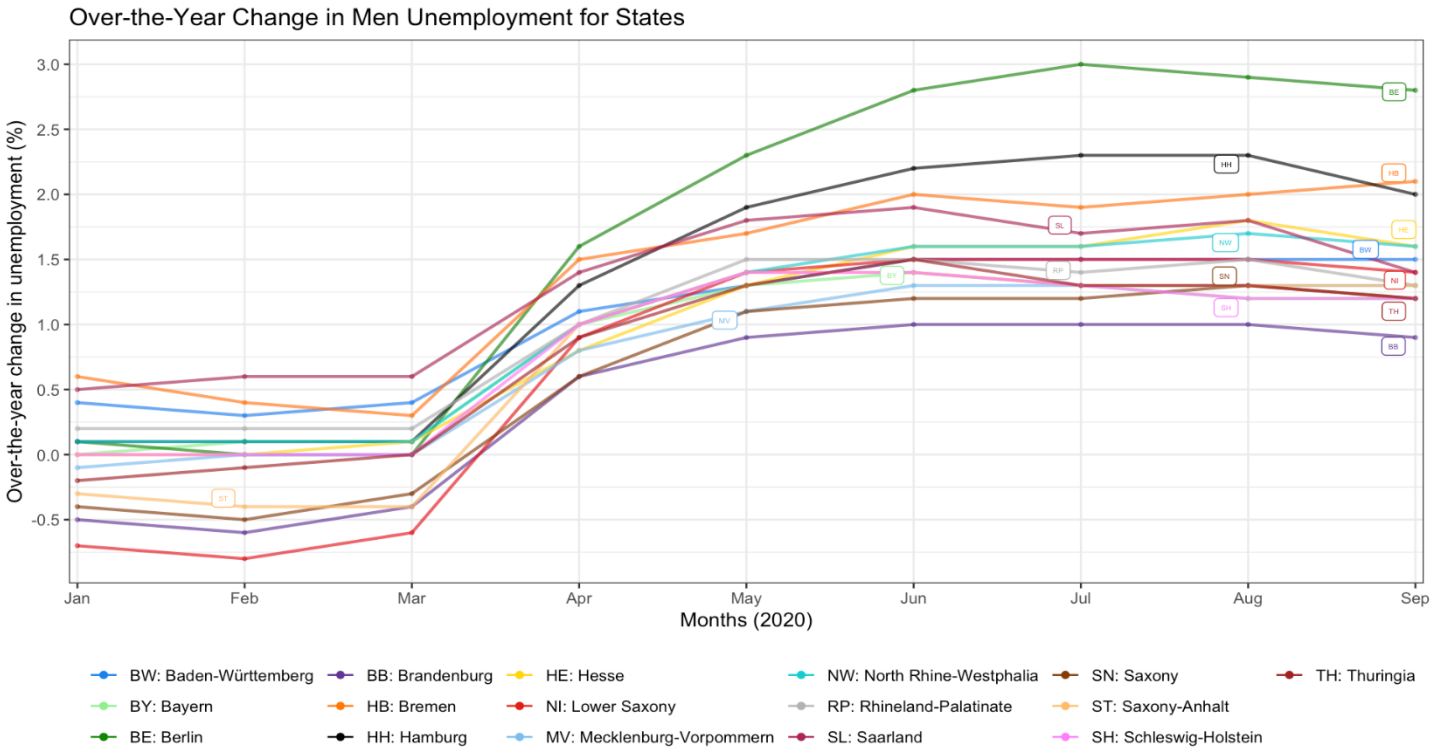


Table 2. Over-the-Year Change in the Demand for Women's Part-Time Work Compared to Men's

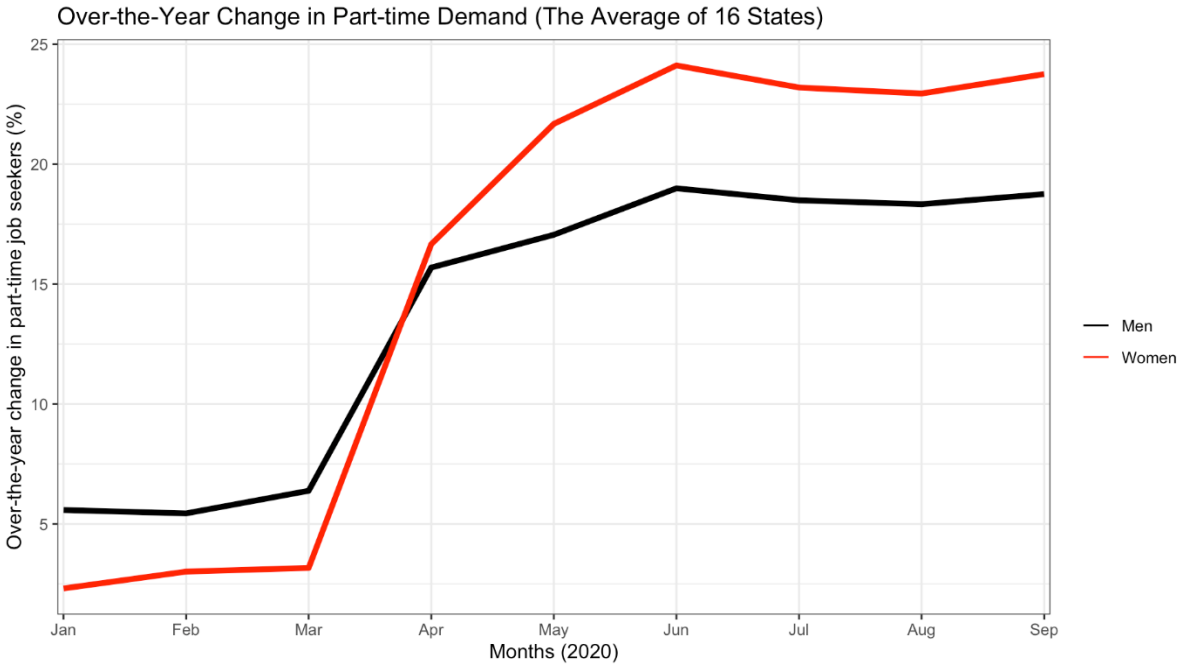
	Model 1	Model 2	Model 3	Model 4
(Intercept)	0.98 ***	1.79 ***	0.98 ***	1.79 ***
	(0.04)	(0.39)	(0.04)	(0.39)
Preschool Closures	0.22***	1.34***	0.23***	1.35***
	(0.04)	(0.39)	(0.04)	(0.39)
GRP			0.06	0.44
			(0.06)	(0.56)
Parliament Representation			-0.01	-0.48
			(0.06)	(0.56)
N	144	144	144	144
R2	0.15	0.08	0.16	0.08

All continuous predictors are mean-centered and scaled by 1 standard deviation. *** p < 0.001; ** p < 0.01; * p < 0.05.

Table 2 examines school closures and the increasing demand for women's part-time work compared to men. There is a strong, statistically significant relationship between the predictor variable and the outcome variable for every model. After adding the control variables, the

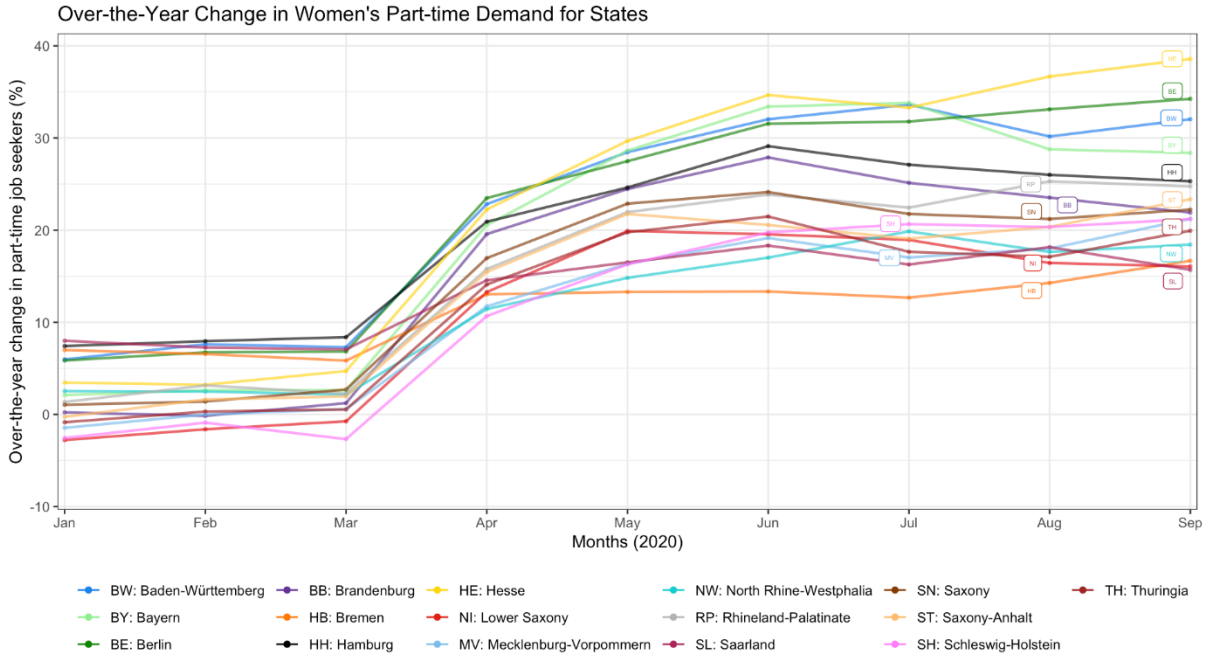
relations remain the same. This analysis concludes that the more schools remain closed, the more women than men applied for part-time positions.

Graph 4. Over-the-Year Change in the Demand for Part-Time Work (The Average of 16 States)

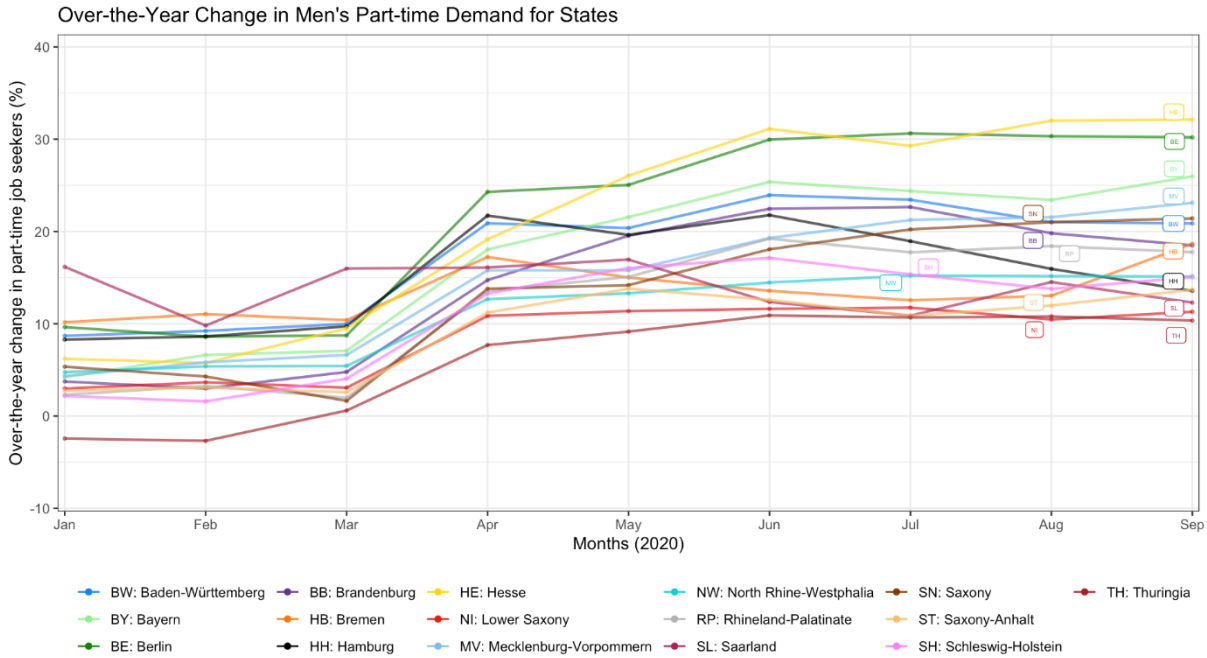


Graph 4 shows the average demand for part-time work across the 16 states, which shows that before April 2020, the demand for part-time jobs was fewer among women than men on average. All schools were closed after 13 March 2020 in Germany, and during April 2020, schools remained closed. Preschools were partially operational in May 2020 and were completely reopened by the end of June 2020. After April 2020, there was a noticeable increase in demand for women's part-time positions on average. The difference in demand between men and women became more prominent as the months' passed and continued until September 2020. The Graph 5 and Graph 6 also reveal the situation for men and women separately in every Länder.

Graph 5. Over-the-Year Change in the Demand for Women's Part-Time Work for 16 Länder



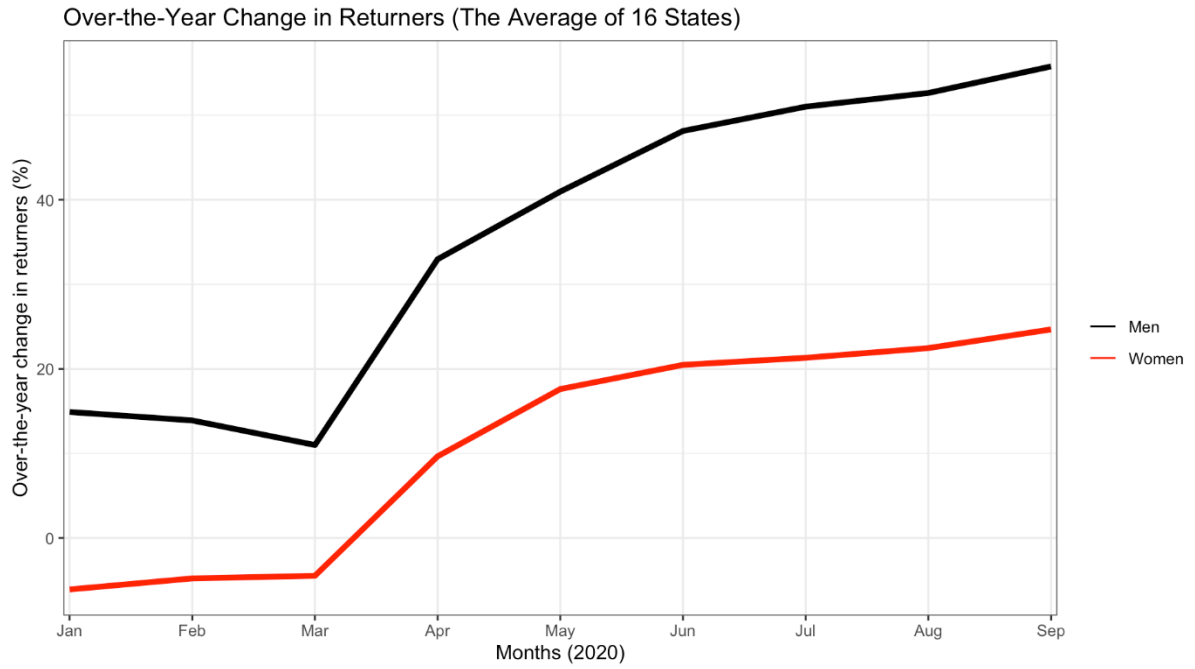
Graph 6. Over-the-Year Change in the Demand for Men's Part-Time Work for 16 Länder



The third analysis assesses the relationship between school closures and returners. There is no statistically significant link in each model hence no results are provided. However, Graph 7 reveals interesting observations. Returners represent the people who had a family-related career break then resumed work. A family-related career break can stem from childcare or elderly

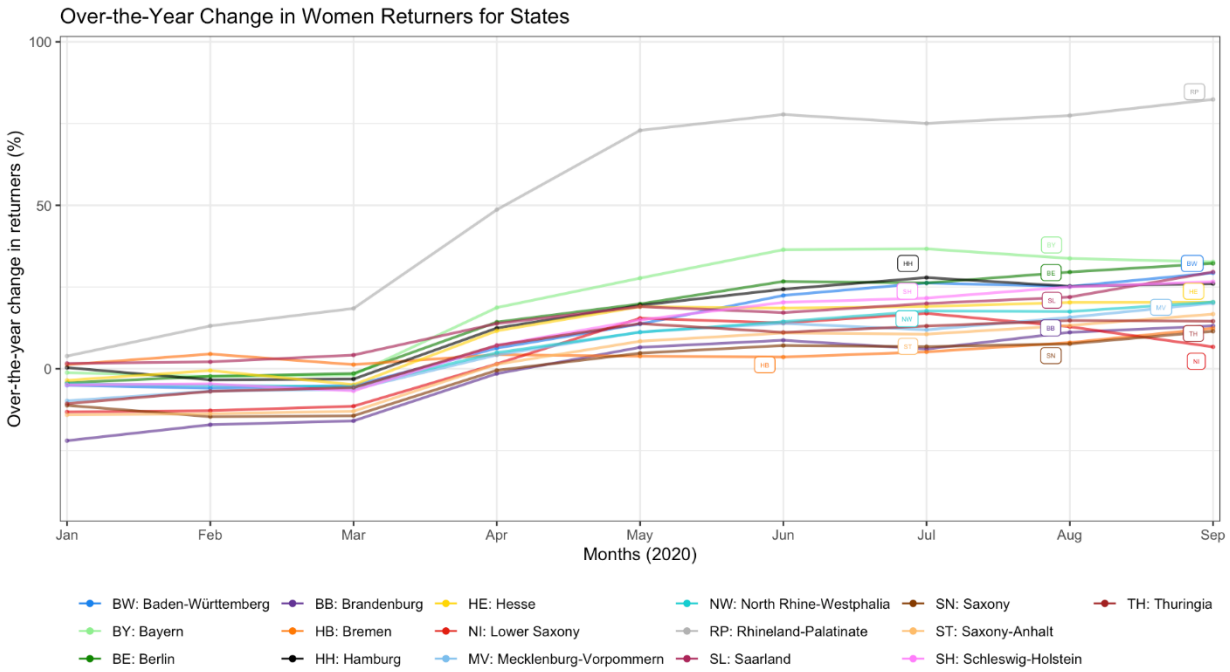
care and it is different from parental leave that comes after the birth of a child. Although there is no statistically significant relation between school closures and returners, Graph 7 indicates that women are not returning to their job as much as men, particularly after April 2020 when schools remained closed, and for that reason, the difference widened. Graph 8 and Graph 9 reveals each of the Länder's trends. It seems that, except for Rhineland-Palatinate, there is a similar pattern in women's return to work.

Graph 7. Over-the-Year Change in Returners (The Average of 16 States)

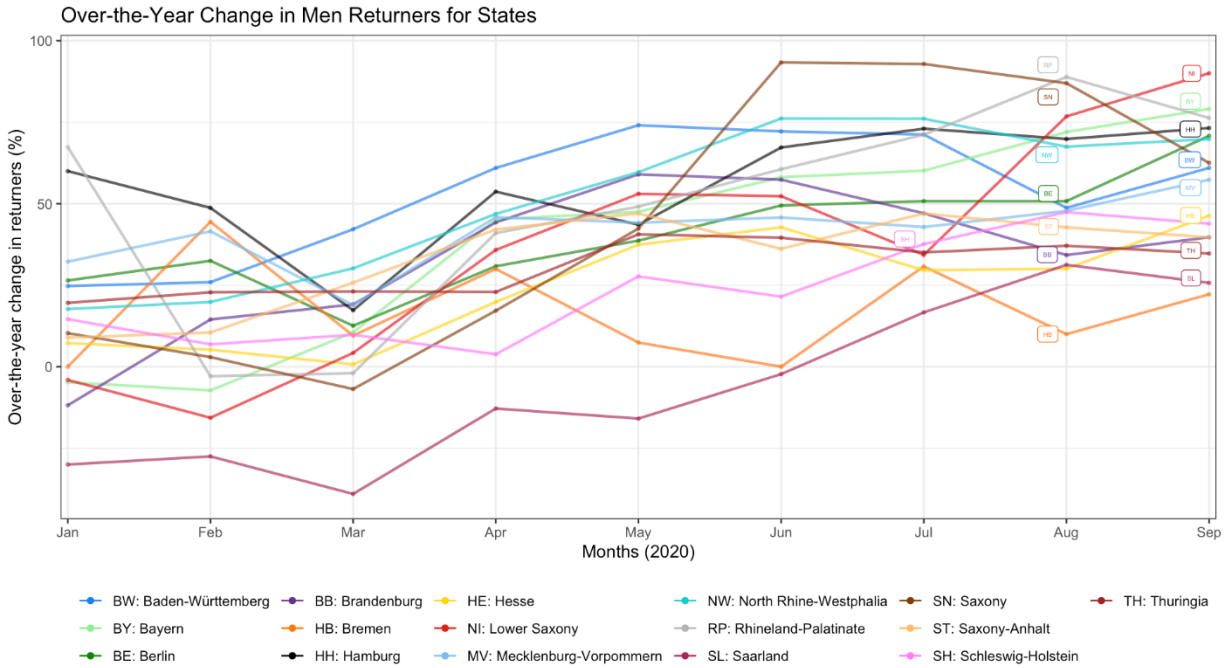


Before moving into the next section, there are two clarifications. As previously noted, summer breaks are also considered for this analysis because there is additional responsibility during the summer even though parents can opt for alternatives during the break. Due to the pandemic, the previous alternatives such as summer schools, may not be available, too. Nonetheless, if the analysis excludes summer break and only examines the period between January and July 2020, the results do not change.

Graph 8. Over-the-Year Change in Women Returners for 16 Länder



Graph 9. Over-the-Year Change in Men Returners for States



Discussion

This paper acknowledges the fact that working mothers and fathers have alternative solutions to childcare without leaving their jobs and choosing flexible arrangements. A significant

revelation is that some employed women who worked from home due to the pandemic have preferred to bear the extra burden of child-rearing and housework with work instead of leaving their jobs. Regardless, it is worth noting that additional demands at home reduce women's productivity at work. For example, one study displayed that female academics' productivity dropped by 13.9% relative to male academics during the pandemic (Cui et al., 2020). Further, Power (2020) found that diminishing productivity due to additional caring responsibilities would have a lifelong impact on women's employment, notably negative impacts on incomes, pension, and promotion. In general, working mothers and fathers spend more time taking paid and unpaid work together because the pandemic has forced them to care for their children at home during school closures. Nonetheless, working mothers are disproportionately affected than working fathers. Although this does not result in layoffs of working mothers, the study suggests that an increase in part-time demand or requests for paid or unpaid leave still impacts the productivity and efficiency of working mothers in the labor force.

The empirical results of the German case study demonstrate that the longer schools stay closed, the more women relative to men applied for part-time work. This thus leads to the question of whether part-time jobs, as a non-standard form of employment, harm gender equality. The literature's answer is mixed, but overall, the negative effects of part-time work on women outweigh its benefits. On the one hand, part-time employment facilitates work-life balance for women and keeps women in the workforce who have additional responsibilities at home (Weinkopf, 2014, p.195). As such, women who temporarily work part-time positions remain in the job market after childbirth and once their responsibilities are completed, they can return to a full-time job position. Also, in her major study, Hakim (1995) claimed that many women are content with their part-time arrangements and do not plan to return to work even after their children have left home.

On the other hand, in contrast to the positive approach to part-time work, there is ample research that shows opposing results. First, Power (2020) argues that "adaptable working arrangements further cement traditional gender roles" (p.68). Flexible arrangements take the following assumption: Women need to take care of housework, so there is a need to balance work and life. In the flexible arrangements, women usually reduce their work time and care for housework, whereas men tend to telework or work a second main job (Chung & Van der Lippe 2018). Additionally, the German employment trend reveals that while male part-time workers or mini jobbers mainly belong to younger and older age groups, women in the same group are primarily middle-aged with childcare responsibilities (Weinkopf, 2014, p.207). Second, in

contrast to expectations, women in Germany who work part-time do not resume their full-time positions that quickly (Weinkopf, 2014, p.208). Weinkopf (2014) reported that married women with additional responsibilities who are either employed part-time or are mini jobbers retain those jobs for around 90 months. Consequently, these types of arrangements position women as secondary earners and the more women are retained in part-time jobs, the less they receive promotions and pension benefits.

Before the pandemic, Pettit and Hook (2005, p.21) pointed out that additional responsibilities due to marriage are negatively associated with the women's employment probability in Germany. Part-time work is particularly prevalent in Germany because almost one in two women work part-time, and mothers with young children are not expected to work full time (Weinkopf, 2014, p.192; Barbieri et al., 2019, p.252). While Germany offers strong public support and parental leave schemes than in other EU countries, it also creates a dilemma (Fouarge et al., 2010, p.490). For example, Fouarge et al. (2010) argued that mothers in Britain re-enter the workforce quickly due to weak parental leave support than in Germany. Weinkopf (2014) and Davies & Pierre (2005) noted that structural arrangements such as joint taxation systems and part-time arrangements support the male breadwinner-based approach and punish the dual full-time earners while rewarding non-work or part-time work in Germany. Yet, it is difficult to blame the tax regime because it generates mixed results for different countries (Van der Lippe & Van Dijk, 2002, p.233).

Regardless, we can still argue that countries such as Sweden and Denmark are better off in achieving gender equality because they discriminate against single-earner families and promote father's involvement in childcare (Hakim, 2003, p.367; Lind & Rasmussen, 2008; Chung & Van der Lippe 2018, p.372). For example, Lind and Rasmussen (2008) traced the patterns of part-time employment in Denmark and concluded that the better provision of childcare, a financially less favorable outcome of part-time jobs, and increased paid parental leave changed the country's labor market dynamics. Today, part-time work is considered a youth phenomenon in Denmark, and there has been a considerable reduction in part-time jobs "among 25- to 54-year-old women and women in the 55–64 age group" in the last 50 years (Lind & Rasmussen,2008, pp.527-528). It seems that Germany's policies mainly prioritize women's parental leave schemes and facilitate women's participation in part-time work arrangements. Such policies have proven to have adverse effects on female labor force representation meaning that women in Germany stay in part-time positions for years, and after that, they rarely take full-time jobs. Generally, they are employed, but it is difficult to definitively claim that there

has been an improvement in women's representation in the labor force and gender equality. Instead, it has demonstrated that traditional gender roles remain and that flexible arrangements support the male breadwinner model.

In essence, increasing demand for part-time work by women in Germany due to school closures during the pandemic is likely to negatively impact women's participation in the labor force. We need to understand women's increasing part-time demand preference or their decision to leave the workforce as an adaptive preference formation instead of a genuine choice (Leahy & Doughney, 2006). Of course, it is difficult to treat all part-timers as a homogenous group and expect the same problems, but one thing is clear: the pandemic presents new challenges to motherhood and women's employment hence countries should provide special attention to invisible care work and its broader ramifications.

Understanding the economic impact of the pandemic is crucial because COVID-19 generated an asymmetric impact depending on one's gender. Perhaps, an analysis that includes sectoral focus is also required since the measures to contain the spread of the virus affected female-dominated occupations such as retail and hospitality. Likewise, future research expansion to Denmark and Sweden can reveal whether school closure policies have generated unequal labor market impact in countries better off achieving gender equality.

Conclusion

The changing labor market dynamics have had an impact on household income and gender inequality. Policy responses and confinement measures related to the pandemic in Germany, notably school closures, generated unintended consequences for people who are already in a disadvantaged position. Although this study cannot definitively assert that confinement measures—particularly school closures trigger greater fluctuations in the layoffs of women than men in Germany, there is an alarming change in employment figures. Specifically, more women are demanding part-time jobs. Before the pandemic, there were ongoing discussions around women's part-time employment in Germany and its negative impact on women's representation in the workforce. Almost 47% of women work in part-time positions and the number has gradually increased. If this trend continues, women are likely to remain in second-earner positions while men recommence to full-time work. Additionally, women are not returning to work as much as men after their break. It is still too early to assess returners' behavior, but this pattern also requires careful investigation. What can be noted is that school

closure measures are still significant policies that foster the unemployment of women and hinder their participation in the workforce. Germany's case also indicated that people are losing their jobs disproportionately regardless of economically sheltered policies. For that reason, policy responses to COVID-19 should bear in mind the social consequences of the pandemic along with the economic and political aspects.

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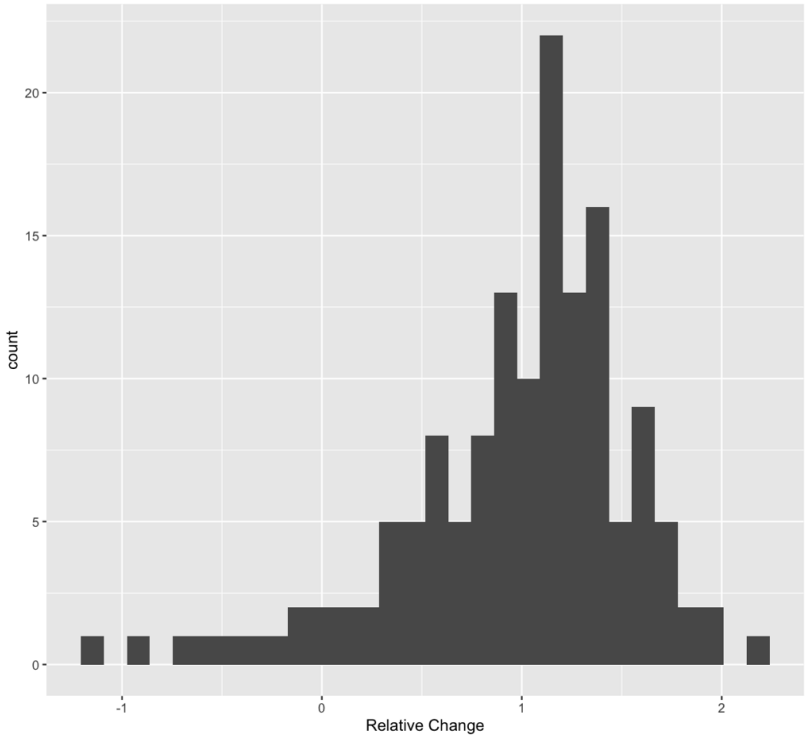
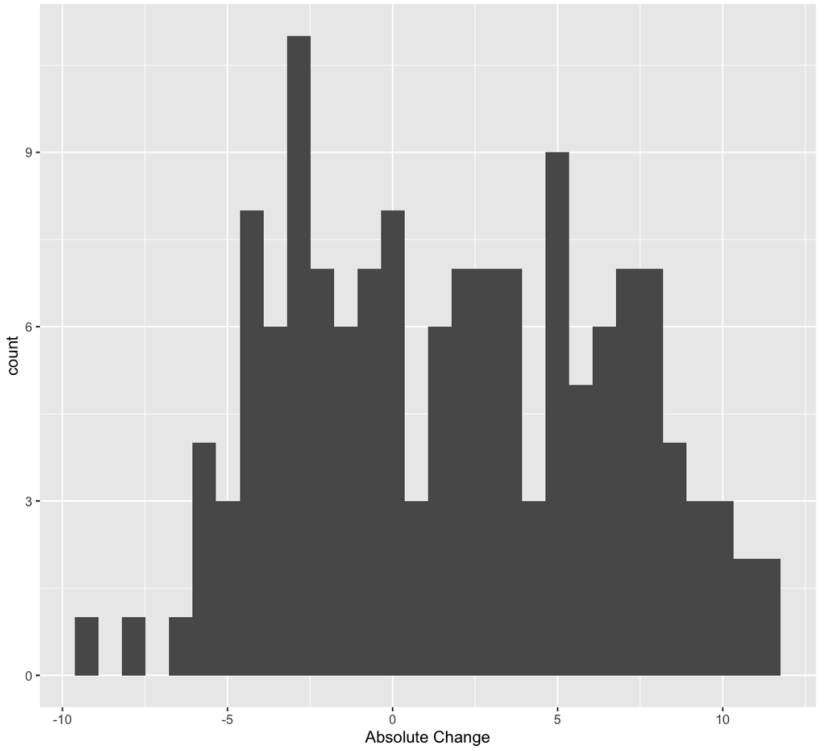
Appendix

Graph 10 Histogram of the Relative OTY Change in Part-Time Demand for Women Compared to Men Between 2019 and 2020



Graph 11 The Histogram of the Absolute OTY Change in Part-Time Demand for Women Compared to Men Between 2019 and 2020



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CoronaNet Research Project Principal and Co-Principal Investigators: Cindy Cheng, Luca Messerschmidt, Allison Spencer Hartnett, Caress Schenk, Joan Barceló, Robert Kubinec, Svanhildur Thorvaldsdottir, Vanja Grujic, Timothy A. Model
CoronaNet Working Paper Series Coordinators: Fadhilah Fitri Primandari, Naela Elmore , Zahrah Sahib

Contact: admin@coronanet-project.org https://www.coronanet-project.org