Does informal childcare have a moderating impact on job losses? Evidence from covid-19 pandemic lockdown

Taiwo Aderemi
Department of Economics
Kwantlen Polytechnic University
British Columbia

Joseph Ogebe
Nigerian Economic Summit Group
Lagos

Segun Fadare
Livelihoods and Institutions Department, Natural Resources Institute, University of Greenwich, Medway Campus, UK

Abstract

Women are regarded as a vulnerable group as it is believed that they do not have equal status with men in the society. COVID-19 pandemic has had a disproportionate impact on labour market outcomes, which is biased against women.

The COVID-19 literature on Nigeria is broad in nature and do not incorporate the possible impact of childcare burden/informal childcare support on job losses among women, and moderating impact that informal childcare support may have on job losses.

We approached this topic from a unique perspective, by investigating job losses among women before and after COVID-19, providing new insights on how childcare burden and informal childcare support affect job losses of female-headed households.

The Nigeria National Bureau of Statistics/World Bank 2018/2019 General Household Survey (before COVID-19) and the National Longitudinal Phone Survey 2020 (during COVID-19) was used to track changes in job losses among female-headed households. Specifically, we adopted the difference-in-differences (DiD) method to estimate the impact of COVID-19 on job losses.

It is expected that the COVID-19 pandemic would have a minimal impact on female labour supply with no or lesser childcare burden. Also, the presence of informal childcare support could help reduce job losses among women with high childcare burden. The findings of this study will aid the design of COVID-19 related policies that are closely targeted at the vulnerable group.

1.0 Introduction and Problem

Women are regarded as a vulnerable group as it is believed that they do not have equal status with men in the society (Carpentar, 2005). In Africa, women are more likely than men to be engaged in the informal sector, constrained by social norms from active participation in the formal sector, and drop out of the labour force due to childbirth (Cameron, 2019). This work pattern hinders their productivity and makes them more vulnerable to income shocks Cameron (2019).

The COVID-19 pandemic has been regarded as one of the greatest shocks in human history, generating unprecedented global economic disruptions (Dang and Nguyen, 2020; Milovanska-Farrington, 2021). One of the fall-outs of the crisis has been huge job losses due primarily to aggregate demand contraction. In 2020, 8.8% of global working hours were lost, equivalent to 255 million full-time jobs (ILO, 2021). The job loss peaked at 18.2% in the second quarter of 2020 due to severe lockdown measures and other restrictions. Empirical evidence from different countries shows that these job losses fell disproportionately on women in the labour force (see Meekes et al., 2020 on Netherlands; Dang and Nguyen, 2020 on Asia, Italy, UK, and the USA; Farre et al., 2020 on Spain; and Bluedorn et al., 2021 on 38 advanced and emerging market economies).

Empirical findings show that the services sector which is dominated by females was badly hit[1]. Increased child-care needs and low participation of women in tele-workable jobs[2] were also primary factors responsible for the bias in gender job losses (Alon et al., 2020, 2021; Dang and Nguyen, 2021, Farre et al., 2020; Bluedorn, 2021; and Cucagana et al., 2021). School closures for an extended period meant that some working women had to abandon their jobs or reduce their work hours due to competing demand for childcare. It has been argued that women are primary caregivers for themselves, their children and are also responsible for their health and nutrition (Smith, et al., 2003).

Evidence abounds on the increased job losses during the peak of the COVID-19 pandemic, particularly among women due to increased childcare needs in advanced economies (see for example Meekes et al., 2020; Dang and Nguyen, 2021). These generalized findings have been recently contested by some studies using Africa data, which found no differential impact of

[1] Non-essential services were under severe lockdown during the crisis. These services e.g., restaurant, travel and hotel are dominated by women. Meekes et al., (2020) found that female non-essential workers were more affected by the crisis compared to male non-essential workers in terms of job losses.

[2] Tele-workable jobs account for an insignificant proportion of employment in sub-Saharan Africa compared to advanced countries (Dingel and Neiman (2020).

COVID-19 lockdown on female headed households when compared to male headed households (see for example Mahmud and Riley, 2020; Aoyagi, 2021). It is worth noting however, that some studies on Africa have also shown that women suffered disproportionate job losses during the pandemic (Contreras-Gonzalez et al., 2022; Bundervoet et al., 2022).

These mixed findings reflect the hererogenous labour market conditions in different countries and its impact in shaping labour market outcomes. For example, Dang et al. (2022) noted that tracing effects of childcare during COVID-19 pandemic on parental outcomes can differ significantly between developing and developed countries due to the systematic differences in childcare and labour market institutions. Bundervoet et al. (2022) found that a heavily agricultural-based and self-employment sector in low-income countries minimized the lockdown effect on job losses in the region.

Few studies have empirically examined the impact of COVID-19 pandemic on job losses among women in Nigeria (see Contreras-Gonzalez et al., 2022; Aoyagi, 2021; Bundervoet, 2022). While these findings are mixed, a limitation of existing studies is that they overlook the important role of informal childcare such as grandparents and other adults in the household as caregivers. This current study argues that co-residing of grandparents and adults in households during the pandemic may have had a moderating impact on childcare burden and consequently job losses, particularly in female headed households.

In Africa, households, particularly those headed by single mothers rely significantly on informal childcare arrangements to assist with childcare duties (Tsamaase et al., 2020). Co-residing of grandparents with their grandchildren, mothers' socialization within the community and neighbourhood are particularly common in this setting (Samman et al., 2016; Tsamaase et al., 2020). About 72% of grandparents lived with their children in 2014, compared to 5.1% in the Rich Anglo areas (Samman et al., 2016).[3] Evidence shows that grandparents' childcare positively influences maternal labour force participation (Posadas and Vidal-Fernandez, 2012; Du et al., 2019). Mothers in households with grandparents may therefore utilize this childcare arrangement to prevent a decline in economic activity that is induced by inadequate or costly childcare access. Blau and Robins (1988) emphasized the importance of modelling informal childcare into labour supply decisions of a household as this option could lower childcare burden and costs, and consequently increase labour force participation. This study aims to fill this gap in the literature by investigating the moderating impact of informal childcare support

[3] Rich Anglo areas refer to English speaking countries such as the USA, Canada, Ireland, Britain, Australia, and New Zealand)

on job losses among female-headed households during COVID-19 in Nigeria using the 2018/2019 General Household Survey (GHS) (pre-COVID-19 period) and the National Longitudinal Phone Survey (NLPS) 2020 (post-COVID-19 period).

2.0 Background on COVID-19 Lockdown in Nigeria

Figure 1 presents the historical trend of unemployment rate in Nigeria. The unemployment rate rose steadily from 13.8% in Q3 2016 to 20.4% in Q4 2017 and further to 23.1% in Q3 2018. Following the outbreak of COVID-19 pandemic, Nigeria embarked on a national lockdown in March 2020. Most businesses were affected by the COVID-19 lockdown, as employers either reduced workforce/hours worked, cut wages, or closed businesses. According to a joint survey carried out by the United Nations Development Programme (UNDP) and the National Bureau of Statistics (NBS), it is estimated that at least two-thirds of sampled enterprises closed during the pandemic and around 10% were still closed at the time of the survey (NBS, 2021). This partly led to an increase in unemployment rate of about 4.0 percentage points, from 23.1% in Q3 2018 to 27.1% in Q2 2020 and further to 33.3% in Q4 2020, the highest rate ever experienced in Nigeria. The World Bank (2020) reported that jobs, incomes, and welfare suffered substantially when the COVID-19 crisis first hit, as the share of household heads who were working almost halved between the pre-COVID period and April/May 2020. Figure 2 shows the historical unemployment rates of males and females in Nigeria. Female unemployment has been higher compared to male unemployment, even prior to the COVID-19 pandemic. This is because females in developing economies have been disadvantaged against and are concentrated in informal sectors that have greater vulnerability to economic shocks.

Figure 1: Unemployment rate before and after COVID-19 (Q3 2016 – Q4 2020)

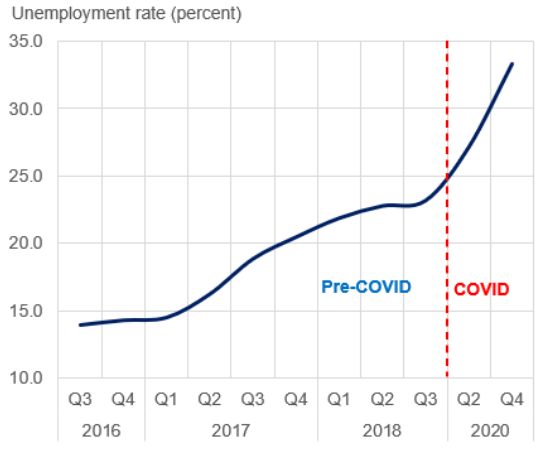
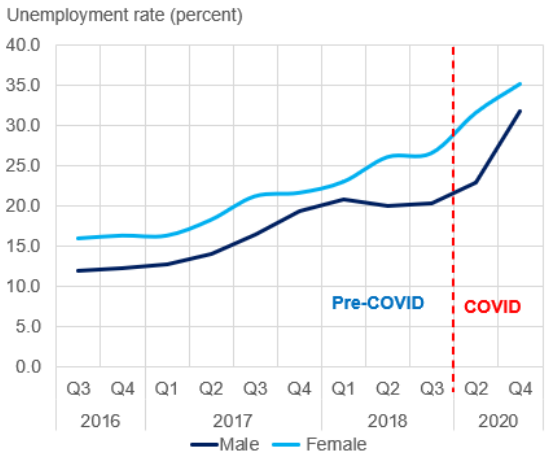


Figure 2: Unemployment rate (male and female) before and after COVID-19 (Q3 2016 – Q4 2020)

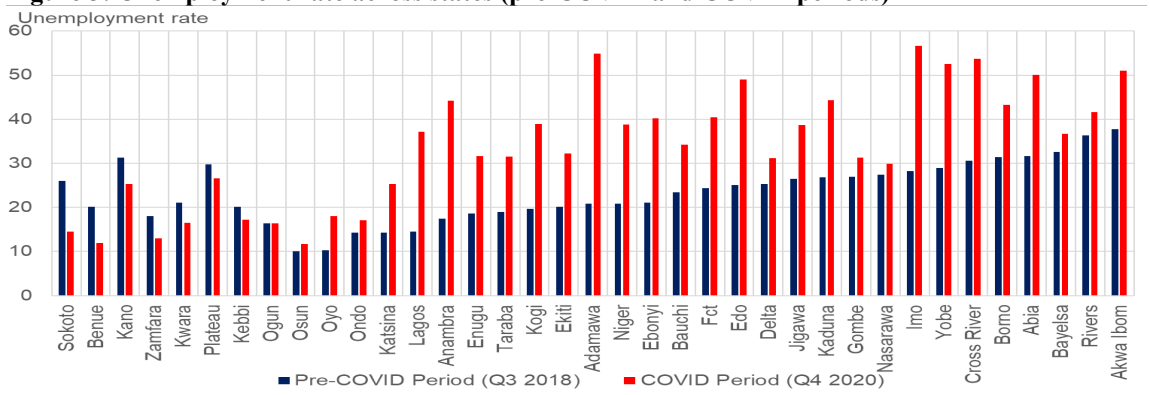


Source: Authors' computation from National Bureau of Statistics (NBS)
Note: The NBS didn't publish unemployment data from Q4 2018-Q1 2020.

Source: Authors' computation from National Bureau of Statistics (NBS)
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As shown in Figure 3, job losses were more pronounced across states in the South compared to states in the North. This is plausible given that agriculture[4] constitutes a major employer of labour in the North, while manufacturing and services account for a large share of employment in the South. The increase in unemployment rate pre-COVID and during COVID ranges between 1.5 percentage points (Osun state) and 34 percentage points (Adamawa) (see Figure 3).

Figure 3: Unemployment rate across states (pre-COVID and COVID periods)



Source: Authors' computation from NBS

This statistical evidence and current empirical literature on COVID-19 in Nigeria fail to model the potential impact of informal childcare arrangements in reducing childcare burden among mothers. It is also not clear whether the presence of younger children (childcare burden) in the households negatively impacted job losses. The primary purpose of this current study is therefore to probe into this topic.

3.0 Literature Review

In 2020, about 255 million full-time equivalent jobs were lost (ILO, 2021). These losses of employment include both a 100% employment loss and decline in economic activity. This is significantly higher than the 8.8 million Americans who lost their jobs during the 2017-2019 economic and financial crisis (Milovanska-Farrington, 2021). Unprecedented job losses during

[5] The Centers for Disease Control and Prevention in the USA recommends physical distancing of at least 6 metres apart.

COVID-19 pandemic have been linked broadly to two main channels; social distancing rules and lockdowns (Alon et al., 2020; Meekes et al., 2020).

Due to the rapid spread of COVID-19, the World Health Organization (WHO) issued public advice that people should maintain at least a 1 metre (3 feet)[5] distance. The fallout from this policy measure is that sectors which require close physical contact for transactions to take place were impacted negatively (Laborde et al., 2020). Government-imposed lockdowns which affected non-essential sectors and closure of schools and childcare centres have also had adverse effects on labour demand and supply (Meekes et al., 2020). Working women or men would have to shoulder the childcare responsibilities of the family and assist the children with their tutoring. This limits the households' aggregate labour supply.

Unlike past economic recessions, job losses during COVID-19 pandemic were disproportionate to women (Alon et al., 2020; Meekes et al., 2020). As noted in the work of Alon et al., (2020), women as caregivers bear most of the responsibilities for childcaring following the closure of schools. In addition, evidence has shown that women largely dominate the sectors that were badly affected by the pandemic such as the services sector (Alon et al., 2020; Bluedorn et al., 2021). More women also work in occupations and non-essential sectors which allow for little or no telecommuting, thus were unable to adapt to the lockdown restrictions (Alon et al., 2020; Farre et al., 2020).

Using the Dutch administrative data, Meekes et al., (2020) found that in Netherlands, female non-essential workers were more affected than their male counterparts in terms of employment losses and other labour market outcomes. Their findings pointed to a huge decline in labour supply among single parents. They attributed it to inadequate childcare arrangements for mothers with little children. The study adopted a difference-in-difference estimation technique. Similarly, Alon et al., (2021) attributed the observed gender gap in employment during COVID-19 pandemic in the USA, Canada, Germany, the Netherlands, Spain, and the United Kingdom, to women's composition in the industry and rising childcare needs. Dang and Nguyen (2021), using data from six advanced economies show that women are 24% more likely to permanently lose their jobs than men due to COVID-19 pandemic.

Generally, studies have emphasized the negative impact of increased childcare costs and childcare burden on women's labour force participation and have offered policy recommendations to increase subsidized childcare facilities. Dang et al., (2022) found that

[5] The Centers for Disease Control and Prevention in the USA recommends physical distancing of at least 6 metres apart.

availability of childcare increased the employment likelihood of a Vietnamese mother. Brewer et al. (2022) using the 2011 United Kingdom Census and Labour Force Survey had similar findings. Halim et al. (2021), also found that the expansion of government-funded preschools in Indonesia had a positive impact on women's labour force participation, mostly through unpaid family work. They however found no evidence that this policy increased earnings or work hours among women. These recent findings corroborated Blau and Robin's (1988) study which found a childcare cost elasticity with respect to family labour supply of -0.38 in the United States. For Norway, Anderson and Havnes (2019) found an elasticity of labour force participation to childcare use of 0.32.

The literature on the relationship between childcare on maternal labour force participation in Africa is still growing. Some of the existing studies such as Clark et al. (2019) found that mothers who had access to subsidized childcare in Nairobi, Kenya were more likely to be 17.3% employed compared to those without a subsidy. They did not find any evidence that the subsidy increased working hours of mothers. Also, using Kenyan data, Lokshin et al. (2004) showed that mothers' labour force participation is negatively impacted by rising childcare costs. Hill and Kohler (2021), using South African data, also found that the reduced working hours among women during the COVID-19 lockdown were due to increased childcare responsibilities during the lockdown. Contreras-Gonzalez et al (2022) also found that job losses during COVID-19 pandemic in Ethiopia, Malawi, Nigeria, and Uganda were biased against women compared to men, but that it was not attributed to increased childcare.

In another development, Aoyagi (2021), using only the first round of the COVID-19 High-Frequency Phone Survey (HFPS) survey on Nigeria and Uganda found that rural women are less likely than men to lose employment due to women's dominance in the informal agricultural employment and self-employment which allows for easy combination with chilcaring. This finding reinforces Quisumbing et al. (2007), which show that the availability of daycare does not have a large impact on earnings of mothers in Accra area of Ghana, or on the days worked due to significant informal activities in the area.

One important aspect in the women labour force participation and childcare link in Africa that has been overlooked by most studies is the role of unpaid informal childcare in freeing up work hours for mothers. Blau and Robins (1988) noted the need to incorporate this unpaid childcare in the women labour supply equation. Evidence from the United States and China as found in Posadas and Vidal-Fernandez (2012) and Du et al. (2019), respectively showed that

grandparents' childcare positively influences maternal labour force participation. This is particularly more common in Africa where grandparents assist with childcare duties at little or no cost. In Africa, about 72% of grandparents lived with their children in 2014, compared to 5.1% in the Rich Anglo areas (Samman et al., 2016). Extended family living is also common where brothers or sisters live with their older siblings and help out with house chores.

Reasoning along this line, it is expected that job losses among female-headed households in Nigeria during the COVID-19 pandemic to have been minimized by the presence of unpaid childcare assistance and the dominance of women in the informal sector. Although some studies in Nigeria have examined job losses within the context of COVID-19 pandemic (Aoyagi, 2021; Contreras-Gonzalez et al., 2022), what exists largely are broad studies on the impact of COVID-19 on the economy (see for example Andam et al., 2020; Amare et al., 2020; Ibukun and Adebayo, 2020; Balana et al., 2020; Ajibo, 2020 and Ajide et al., 2020). Their findings are also inconclusive as to whether the job losses during COVID-19 was biased against women.

Although Contreras-Golzalez et al. (2022) findings supported job losses during COVID-19 pandemic being bias against women in the early phase, they found no evidence that the job losses were attributed to increased childcare burden. They show that households with school-aged children (5-18 years) recorded jobs losses in Nigeria and Uganda, but that it was not gender-related. However, the urban sub-sample show that women with 0-4 years children had higher job losses than men. The latter age group (0-4 years) are pre-school children who also constituted childcare burden to working mothers during the pandemic. Aoyagi (2021) however concluded that women's dominance in the informal sector puts them at an advantage in losing fewer jobs when compared to men. This reinforces Mahmud and Riley (2020) findings of no differential impact of COVID-19 on gender in Uganda. These mixed findings call for further probing into the probable influence of informal childcare support in moderating childcare burden and consequently reducing job losses in households.

In this respect, our study differs from existing studies on COVID-19 pandemic in Nigeria and our contributions are in two folds. We add to the scant literature on childcare burden in Nigeria and sub-Saharan Africa, by investigating the impact of childcare burden on job losses among female-headed households in Nigeria. We model the potential lessening impact of unpaid childcare in Nigeria in relieving childcare burden, and consequently freeing up working hours for women.

4.0 Methodology

4.1 Data

This study will focus on female-headed households in both the Nigeria 2018/2019 General Household Survey (GHS) for the pre-COVID-19 period, and the National Longitudinal Phone Survey (NLPS) 2020 for the post-COVID-19 period. The NLPS was drawn from the sample of households interviewed in the 2018/2019 GHS. The GHS and NLPS datasets were conducted by the Government of Nigeria through the National Bureau of Statistics in collaboration with the World Bank, with support from other international organizations. The 2020 NLPS dataset collects information on 4,976 households that were interviewed in 2018/2019 GHS (before the COVID-19 pandemic). The households are nationally representative, and the datasets contain detailed information on key indicators such as job loss; education, social transfers as well as other household and individual characteristics[6] including the gender of all household members.

Since April 2020, Nigeria has series of rounds of the National Longitudinal Phone Survey[7]. This study will use round 1 (conducted in April), round 2 (conducted in June) and round 3 (conducted in July) surveys. The choice of these periods (April to July) coincides with the rising COVID-19 cases and lockdown/restrictions in Nigeria.

4.2 Model Specification

Based on the female labour supply theory (see Equation 6), the woman's labour force participation is a function of price (or cost) of childcare, household asset holdings (or unearned income), wage and husband's income. Female labour force participation, which is the outcome variable in the theory, will be measured by job loss of female-headed households before and during the COVID-19 pandemic. Job_Loss is measured as the number of hours worked.

Another key variable in the theoretical model is childcare services (hereafter called childcare support). Quisumbing et al. (2007) categorized childcare support as paid (formal daycare or private formal daycare) and unpaid/informal (a resident household member who is not the mother). Due to lack of data on paid childcare services in Nigeria, this study will only consider unpaid/informal childcare services. Studies have shown that unpaid childcare support such as

[6] Preliminary observation reveals that information on all key variables of interest are captured in both surveys (2018/2019 and 2020).

[7] https://microdata.worldbank.org/index.php/catalog/3712/related-materials

grandparents' childcare positively influences maternal labour force participation (see Posadas and Vidal-Fernandez, 2012; Du et al., 2019).

The theory established a negative relationship between household asset holdings/unearned income and female labour force participation. In this study, household asset holdings will be measured by the number of assets. Female wage and husband's income will be excluded from the model due to lack of data[8].

Studies have shown greater childcare burden associated with preschoolers and younger children affects female labour participation (see Goldstan and Ross, 1986, Ribar, 1992; Blau and Robins, 1988; Quisumbing et al, 2007). According to Goldstan and Ross (1986), the number of preschoolers in a household increases the mother's care burden because they tend to make mothers feel that they cannot be alone when they want. Both Blau and Robins (1988) and Ribar (1992) noted that preschool and younger children increase childcare burden, as younger children often require higher quality and more intensive care than other children.

The study will compare job losses of female-headed households in 2018/2019 (before the COVID-19 pandemic) and 2020 (during the COVID-19 pandemic). For the post-COVID-19 period, we will track job losses from April to July 2020. The difference in differences (DiD) will be used to examine the impact of COVID-19 pandemic on job losses among female-headed households, taking into consideration unpaid childcare services, household assets, sector of employment, childcare burden, female personal characteristics (such as age and education) as well as the other household characteristics (such as location and geo-political zones). The difference in differences (DiD) model is specified below;

$$Job_Loss_{ht} = \alpha_h + \alpha_0 COVID_t + \alpha_1 Lockdown * Child_Careburden_{ht} * COVID_t + \alpha_2 Occupational_sector_{ht} + \alpha_3 Child_Support_{ht} + \varphi F_{ht} + \varphi H_{ht} + \varepsilon_{ht} \quad (1)$$

Equation 1 will be estimated using the difference in differences (DiD) technique. Job_Loss_{ht} is a continuous variable which is measured as the number of hours worked. α_h captures household fixed effects. $COVID_t$ is the time dummy which captures 'before-and-after' effects of COVID-19. It assumes a value of 1 for the post-COVID-19 period and 0 for the pre-COVID-19 period. Lockdown is a dummy variable representing whether a household is in the treatment or control group (s=1,2), which equals 1 if the individual is in a state that implemented

[8] The survey data contains little or no information on wage and husband's income.

lockdown measures, and 0 if in a state that did not adopt lockdown measures. We will obtain states' information on lockdown measures and restrictions from the International Food Policy Research Institute (IFPRI) COVID-19 Policy Response Portal (IFRPI, 2020). The lockdown variable will also be validated using Google COVID-19 Community Mobility data (Google, 2022).

$\alpha_1 Lockdown * Child_Careburden_{ht} * COVID_t$ is the difference-in-differences term which measures the difference between the outcome of the treatment group versus those of the control group, across the pre- and post-COVID-19 periods. This is interacted with childcare burden variable to examine the potential differential impact of childcare burden on job losses during COVID-19 lockdown intervention measure. Childcare burden will be proxied by the number of preschool-aged children (0-5 years old) and the number of middle childhood (6-9 years). This is consistent with the definitions of Blau and Robins (1988); Ribar (1992) and Quisumbing et al (2007).

$Child_Care_Support_{ht}$ captures the moderating role of informal childcare support on job losses among female-headed households during the COVID-19 pandemic, and it is measured by a dummy variable which equals 1 if the household has a parent living with them and 0 otherwise. F_{ht} is a vector of female personal characteristics (age and education of the female household head), while H_{ht} is the household characteristic such as location (rural/urban) and geopolitical zones.

Preliminary data checks show that female-headed households constitute about 20 percent of the total households surveyed. The average number of hours worked is 34.5 in a week, while 45 percent reported that they have worked fewer hours since the COVID-19 pandemic. Most of the households use unpaid childcare services such as grandparents support and other relatives living in the households.

4.3 Robustness Checks

We will test the validity of the difference-in-differences model by conducting a parallel trend assumption test. The parallel trend assumption assumes that in the absence of the policy intervention (lockdown), outcomes in the lockdown states (treatment group) would have evolved as in the states without lockdown (control group) (Farkhad and Albarracin, 2021). The parallel trend assumption will be examined using graphical plots.

Also, this study will conduct an event study estimation for the outcome variable (job losses). The event study model has been widely used in the literature for estimating staggered policy intervention, as it assesses the evolution of relative outcomes over time by evaluating the pre-treatment dynamics between a control and treatment group using treatment leads and lags (Miller et al., 2021; Farkhad and Albarracin, 2021).

We will further conduct a sensitivity analysis of our findings by adopting an alternative measure of job loss and lockdown variables. This will allow us to examine how other measure of job loss and lockdown will affect our results. The alternative job loss variable is a binary variable which equals 1 if the female household head stopped working during COVID-19 pandemic and 0 otherwise. Lockdown will be measured by the number of days of lockdown in each state that implemented the lockdown/restriction policy.

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