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WAS THE GEORGIAN POLICY SHIFTING PUBLIC SECTOR WORKING HOURS BY ONE HOUR "FAMILY FRIENDLY" AND DID IT INCREASE FEMALE LABOR PARTICIPATION?

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Was the Georgian Policy Shifting Public Sector Working Hours by One Hour "Family Friendly" and Did It Increase Female Labor Participation?

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Abstract:
On September 1, 2014, Georgia enacted a one-time, immediate policy shifting public office working hours from 10:00-19:00 to 9:00-18:00 and affected the work schedules of all subjected employees. Due to professional scheduling conflicts faced by women with household responsibilities, some members of parliament believed that the new hours may be "family friendly", i.e. convenient for combining career and household activities, and increase female labor participation. The policy affected approximately 200,000 employees, but had never been evaluated, nor had any similar policy in any economic literature.
Given that the policy did not affect the private sector, we employed a difference-in-differences approach using the National Statistics Office of Georgia Households Incomes and Expenditures Survey from 2013 - 2016. We find that the policy did not lead to more women working in the public sector, but did end up leading to an increase in female working hours. It was not through the expected channel, but rather through the taking up of the reduced working hours of employees with children that had been working over 40 hours, especially by married women without children, followed by unmarried without children, and by part-time employees with children. Effectively, the policy directly reduced the engagement of full-time employees with children and slightly increased the engagement of part-time employees with children. It did not directly increase female labor participation.

As male working hour engagement was most negatively affected and those hours were mostly taken up by females, it could be argued that the policy did, indirectly, have a positive impact on gender equality in the labor market and, possibly, even domestically.

JEL: I38, J21, J22, J23
Keywords: policy evaluation, one-time & immediate policy implementation, Georgia, Georgian, work schedule, working hours, engagement, gender inequality, household distribution of labor, intra-familial bargaining, intra-household bargaining, labor participation, female labor participation, family friendly, personal professional conflict, career and household activities, work-life balance, gender differences in market and home labor, gender wage gap, asymmetric effects by gender and family type, labor market barriers, difference-in-differences, private sector, public sector, public service efficiency

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1. Introduction

On August 1, 2014, the prime minister of Georgia announced a countrywide initiative to shift the working hours in the public sector[1] from 10:00-19:00 to 9:00-18:00 (Khunashvili, 2014). There was no parliamentary pushback, no protests by citizens or public employees, no journalistic coverage beyond the announcement, not even any related google search keyword trends. Within a month, it passed through parliament and was enacted on September 1, 2014. This example is as close to a theoretical one-time, immediate policy shift as practically possible. Officially, the rationale of the new policy was to adjust the working hours of public offices to those more common in "the modern world". In fact, the policy was one of several that aligned Georgia more with practices of OECD countries. Unofficially, there is anecdotal evidence that some parliament members also thought the new hours could improve public service efficiency and encourage women to participate more in the labor market.[2] It affected approximately 200,000 public sector workers or 13.4% of the total workforce; certainly a nontrivial amount, and yet, the consequences of this policy have never been studied. Importantly, this is the only policy that specifically affected public employees in the years before and after its implementation.

While there is a wealth of economic literature about working hours related to a myriad of economic topics, there is a complete dearth of research about the effects of a mandated change in working hours. Amongst the plethora of empirical studies focusing on the considerable impact work hours have on our everyday lives and the overall economy, one may find literature about work hours and productivity (Golden, 2006), efficiency (Hanse, 1993), types of employment (Wasserman, 2015), wage inequality (Carr, 2011), educational outcomes (Baffoe-Bonnie & Golden, 2007), benefits of their flexibility (Bird, 2014), related laws (Morag-Levine, 2013), work-life balance (Holly & Mohnen, 2012), intra-household bargaining (Rangel, 2003), gender differences in market and home labor (Goldin, 2014), gender wage gap (Blau & Kahn 2017), impact on health (Dawson, 2005), impact on happiness (Galay, 2007), and even impact on the environment (Knight et. al., 2013). As far as we are aware, however, there is not a single paper evaluating the effects of any policy exogenously shifting working hours of a major cross-section of workers, making this policy worthwhile to examine

Logically, and by intention (of at least some members of parliament), the policy asymmetrically affects genders and family types, relating this paper most closely with gender inequality, household division of labor, and intra-household/intra-familial bargaining literature. According to Sayer (2005), since the 1960s, there has been an ongoing convergence in the manner in which men and women use their time. Females gradually shifted from being focused primarily on unpaid, family

[1] Affected most Government, Ministry, National Bank, National Statistical Office, and other bureaucratic offices.

[2] Anecdotal evidence gathered from discussions with government officials. It is not surprising that Georgian parliament members would have such concerns in mind, since, despite the recent history of many progressive Governmental initiatives promoting female labor participation in Georgia, traditional gender roles remained culturally dominant for both men and women (Kachkachishvili et al., 2014). Also, as a signatory participant of the 1995 World Women's Conference Platform of Action (Jashi, 2005), Georgia should initiate and assess such policies.

care activities (cooking, household chores, childcare, and other family-centered activities) increasingly towards paid, labor-market employment. Despite the cultural shift, women remain primarily responsible for most household activities. This convergence appears to lead to a reduction in leisure time for females without significantly affecting leisure time for males. Analogous data is found in the United Nations' survey "Men and Gender Relations in Georgia" (Kachkachishvili et al., 2014). Notwithstanding the gains women have made towards equality with men in education, work, and at home throughout most of the world over the past half century, there is a clear positive correlation between the gender gap in unpaid, domestic labor and gender gaps in paid, market labor in terms of participation, time spent, wages, and type and quality of employment (Ferrant et al., 2014).

We hypothesize that the policy heterogeneously impacts affected populations by gender, marital status, family type and size, and otherwise. For example, families with young and school-age children are probably much less flexible in their daily schedule than couples without children, single people, or older people with or without older children. In Georgia, the vast majority of family-related household activities are conducted in the evening and by females. As later working hours were known as a source of personal-professional scheduling conflict for women with household responsibilities, it is understandable why some members of parliament felt that the new initiative might be more "family friendly", i.e. convenient for successfully combining economic and family activities; thus removing barriers for women with families seeking employment in the public sector. Moreover, the policy was put into effect with family schedules in mind. Those with 12-years-old-or-younger children were given a half hour of flexibility in their work schedules to relieve the resulting burden from the convergence of their new starting time and the legally-established, universal school starting time of 9:00am (Farulava, 2014). In addition, public office employment in OECD countries generally offer stability, reasonable financial security, and some flexibility, which tends to attract women (Wasserman, 2015; Goldin, 2014; and Gicheva, 2013). In Georgia, the public sector holds a greater place in the economic hierarchy than in most OECD countries, with public sector employees earning well above median wages, having higher average levels of education, and enjoying a generally esteemed position in society. Altogether, it is clear that the policy could make public sector employment more attractive for young mothers and increase female labor participation.

On the other hand, the less flexible schedules of those already-working or considering-working parents could result in conflicts with their established household schedules that even the added flexibility and increased evening time with the family would not resolve. These parents could find it more difficult to participate in this labor market under the new schedule. Furthermore, it is even less clear whether those without younger children would find this time shift attractive or not. For example, perhaps some younger, single people might find the possibility of having more free time in the evenings to pursue social activities appealing, while others may be used to sleeping longer in the mornings and find the change off-putting.

This economically-unique policy has never been evaluated, even though it directly may impact gender inequality and should be studied as part of Georgia's commitment to the 1995 World Women's Conference Platform of Action. Hence, it remains unclear if the effects of the policy were "family friendly", broke down barriers for women to enter the public sector, increased female labor participation, or otherwise affected the vast number of people on whom it was enacted. While the policy could give rise to many compelling research questions, we concentrate on how it may have impacted gender inequality through female labor participation in government jobs. Specifically, we explore whether or not this policy directly increases female employment.

Since the policy had no effect on the private sector (where the standard working hours largely remained at 10:00am - 7:00pm), we are able to employ difference-in-differences methodology (comparing public and private sectors, before and after policy implementation). Given the circumstances and data, DD is the optimal methodology to identify the precise effects of the policy upon labor engagement as it separates out all other effects experienced by both control and treatment groups. We find that the policy did not increase female labor participation through an increase in women entering the public sector. Instead, it directly led to a material reduction in the level[3] of hours worked by full-time employees with children. While the main analysis results reported a significant increase in working hour engagement by women without children, the placebo effect analysis identified this as not directly caused by the policy, and short-term analyses indicate that it is in response to the reduction of engagement by full-time employees with children. However, the results also uncover some modest positive effects on the engagement of part-time employees with children. As the negative effect upon full-time employees with children is of considerably greater magnitude, we conclude that the policy did not directly cause an increase in female labor participation, but since men with children were most negatively affected and women picked up the gains, it may have indirectly increased overall gender equality.

2. Literature review

Gender inequalities in unpaid, household work are known to be directly related to gender inequalities in the paid labor market in terms of participation, engagement, type of employment, vulnerability, career progression, wages, retirement savings, and more (Ferrant et al., 2014). Bearing the majority of responsibility for household duties and the need to coordinate those with paid economic activities results in female "occupational downgrading", accepting worse conditions and below-skill-level employment (Hegewisch and Gornick, 2011).

Empirical studies of female labor participation are innumerous and results typically point, in one manner or another, to the relationship between household and market labor. Vlasblom and

[3] The GeoStat survey data employed does not offer exact numbers of hours worked by participants, rather providing intervals of weekly hours worked (1-20 hours, 21-40 hours, 41-60 hours, and more than 60 hours).

Schippers (2004) identified “low education” and “having children” as the most important barriers to female participation in the labor market. Cortes and Pan (2017) concluded that females that anticipate difficulties in balancing career and family are more likely to exit the labor market and specialize at home than their male peers. Herr and Wolfram (2012) claim that an inflexible work environment is a major force driving women to opt-out of the labor market at motherhood. Similarly, women might respond to greater occupational time demands by shifting to more family-friendly occupations or by withdrawing from the labor force (Cortes & Pan, 2017). Altogether, the time demands of a given occupation seem to, on average, prevalently affect women, who already have a tendency to work less than men, causing women to switch into positions with more flexible time requirements in order to be able to combine professional and household activities (Wasserman, 2015; Goldin, 2014; Gicheva, 2013).

Social norms and expectations concerning the female role in society have been evolving, with a growing emphasis being placed on the importance of earning wages and economically contributing to their households. However, carrying out domestic labor is still commonly accepted as part of the feminine domain, constituting an integral part of being a "good" wife and mother (Riggs 1997). Having analyzed US household data, Sayer (2016) argues that, although men have been spending an increasing amount of time on household activities such as cleaning, childcare, and cooking, women remain the main contributors of unpaid, family care work. In Georgia, the government enacted initiatives that have been promoting gender equality since 1997 (Jashi, 2005) and there has been a steadily increasing female labor participation rate over the last decade (ILO, 2019). Nevertheless, 89% of the UN’s gender relations survey respondents, both men and women, agree that “a woman’s main responsibility is to take care of the family”: 50.8% of Georgians respondents were identified as having a “negative” attitude toward gender equality, only 3.7% had a “positive” attitude, and even the “positive” group maintained a ‘patriarchal’ pattern of gender divided household duties (Kachkachishvili et al., 2014).

The traditional Georgian roles of the “strong and honorable” man, the modest woman, and clearly separated household positions maintain dominance for the vast majority of the population despite the fact that women gained equal access to education and employment under Soviet rule (Torosyan et al., 2016). In fact, after the fall of the Soviet empire, there was a reversion to more nationalistic and religious views that reinforced the traditional ideals. The UN gender relations survey report concludes that any recent changes in the distribution of household tasks are “quite superficial” with only a limited amount of actual behavioral and attitudinal modification, while the underlying culturally-rooted gender biases have not transformed (Kachkachishvili et al., 2014). Georgia is experiencing similar, or more severe, trends as those identified by Sayer.

A closer examination of why the prevailing attitudes towards gender roles endure (sometimes even intensify as in Georgia after the fall of the USSR), reveals a complex, psychological web of attitudes, socialized beliefs, evolutionary differences, and individual thresholds and proclivities that commingle to result in individual, group, and societal standards. For example, in many cultures,

the nature of the female gender is perceived as more fluid than that of the male gender. In the context of labor division, this means that it is more acceptable for women to adopt "masculine" behaviors, such as taking up paid work, than it is for men to adopt "feminine" behaviors, such as doing unpaid domestic work (Sayer, 2016). By not doing unpaid work, or at least minimizing their involvement in such activities, men may have (perhaps subconsciously) emphasized their masculinity and reinforced their social power (Brines 1994; Risman 1999). Extrapolating, it may follow that women performing a greater amount of domestic labor, even under changing socioeconomic conditions, regardless of how much time they spend in paid employment, could persist as a culturally-accepted norm. This has, so far, been reflected in what Sayer (2016) found from five U.S. time use datasets from 1965 to 2012.

Alberts et al. (2011) put forth a compelling theory of domestic labor division that addresses and infuses several single-explanation theories into a more complex framework and helps explain many contrary phenomena that persist in household labor division, including why many full-time employed wives still do a majority of domestic work, why even men that earn less and/or work fewer hours still do not do more domestic work, and why both genders tend to view the currently unequal distribution as equitable. More specifically, the theory explains that small differences in traits, informed by evolutionary biological differences and biosocial conditioning (women, through survival, developed a better sense of smell as well as more attention and sensitivity to household cleanliness, combined with reinforcement from more time spent in the home due to childbearing), result in disparities in responses to stimuli. Divergent self-organizing systems and response thresholds[4] cause repetition of behaviors that lead to "expertise" and large behavioral differences that become ingrained over time and across contexts. Moreover, few couples and dyads explicitly discuss domestic labor division and, instead, default to individual response thresholds, social customs, and habits to guide their behavior and only address issues explicitly once discord occurs. On average, women have lower innate thresholds for domestic disorder, certain biological characteristics, and different competencies from gendered socialization, which typically leads to higher standards of cleanliness and frequency of household task performance. This puts women at a disadvantage, on average, in the formation and longer-term organization of domestic labor. Altogether, this theory may substantially explain why the majority of household task responsibility and performance remains with women, despite labor market trends.

Whatever the underlying cause, the contemporary global labor market is a diverse place, characterized by individual, occupational, local, national, and regional variation in work cultures,

[4] Self-organization systems, evident throughout the living world, explain how local, individual interactions lead to group-level attributes (Camazine et al., 2001). "Convergent" self-organization is when the behaviors of individuals become more alike. "Divergent" self-organization is when the behavior of an individual causes the same behavior to be less likely in others and the act of performing the behavior also reduces stimulus-level-causing responses. Response thresholds are "the perceived stimuli that must exist for an individual to decide to perform a task (Theraulaz, Bonabeau, & Deneubourg, 1998). Like Hrdy's (1999) responsive mothers, individuals with low response thresholds for a specific task are moved to perform the task earlier than individuals who have a higher threshold for the task (Breshers & Fewell, 2001; Robinson & Page, 1989)" (Alberts et al., 2011, page 7).

work-life balances, standard working hours, and gender-based differences. The policy being evaluated here, while not revolutionary by any means, imposes a foreign cultural timing onto a significant percentage of the population in an economic ecosystem that was built up, over time, in a local culture. Economic actions cause interactions and externalities. Institutional working hours may have, in part, led to the establishment of specific working hours elsewhere, such as directly related service providers, associated private sectors, schools and childcare facilities, and restaurants, afterwork, and nightlife venues that follow employee schedules. It is reasonable to expect that even a one-hour shift in work hours disrupts a steady-state element of the Georgian society and could cause behavioral adjustments at the individual and/or organizational level. Will the effects of this policy follow more along the lines identified by Cortes and Pan (2017), where women may consider the policy as increasing the difficulty of balancing career and family and exit the sector or the entire labor market, or will they find it more flexible and increase their participation as in Herr and Wolfram (2012)?

In order to assess whether the policy increases female labor participation in the affected sector, we turn to the difference-in-differences method using the affected public sector as the treatment group and the unaffected private sector as control. We begin by confirming that the private sector is, in fact, unaffected and that the consequent adjustments are at the individual level. Next, we assess the differences between the employee behaviors in the two sectors following policy implementation. While this paper may be the first to evaluate such a working hour shift policy, it is not the first to use DD methodology to assess outcomes between affected and unaffected sectors. Some recent examples include the specific use of public and private sector employees to evaluate the impact of a Taiwanese pension policy shift to identify the effect employer-sponsored pensions have on household saving (Yang, 2020), the use of sector-specific import tariff increases to estimate their impact on U.S. export growth (Handley et al., 2020), and the use of differences in implementation of anti-smoking regulations amongst sectors and countries across Europe to determine the economic effect upon restaurants, bars, and cafes (Pieroni & Salmasi, 2017). More closely related topic-wise, a recent paper from the Journal of Labor Economics (though it did not use sectors as an instrument to evaluate a policy) employed DD methodology to assess the long-term effects upon gender wage gap and female labor participation from entering parenthood (Angelov et al., 2016). Generally, DD methodology is common in labor economics research and we believe it appropriate and optimal herein.

3. Data

3.1. Primary Dataset

The primary data used in this study is publicly available on the web site of the National Statistics Office of Georgia (GeoStat). In particular, we utilized individual level data from the Households

Incomes and Expenditures Survey for the four calendar years 2013, 2014, 2015, and 2016. Every quarter, GeoStat surveys approximately 3,500 Georgian households and aims to have each randomly selected household participate in the survey four consecutive times. The outcome is a semi-panel dataset made up of repeated individual observations for up to a one-year history of a household's socio-economic, gender, and geographical characteristics.

As true for any survey dataset, the household budget survey data is expected to contain some measurement error. Each respondent reports detailed information regarding household or private socio-economic and geographical information for the past quarter, which can lead to recall and other inaccuracies while reporting numbers. According to GeoStat documentation as well as direct discussions with data collectors, the collection process uses a best-practice methodological approach supervised by the statistical department and the collected data is a population-representative sample with a small margin of error. All things considered, there seems to be no evidence that the measurement error would not be random.

The following variables were used in the analyses to carry out the research.

Table 1: GeoState household survey variables and their descriptions

Variables	**Description**
Weekly working hours (intervals)	The amount of working hours during the week. Categorical variable: "20 hours and less; 21-40 hours; 41-60 hours; Depends on a period (season); More than 60 hours."
Activity	Economically active according to the ILO strict criteria. Binary variable: "Yes; No"
Urban or Rural	Rural\Urban Classification. Binary variable: "Rural; Urban"
Owner of home	Owner of the dwelling (ownership type). Categorical variable: "Belongs to the household; Mortgaged; Rented; Used without payment"
Assistance	Whether the household received assistance or any kind of advantage or not. Binary variable: "Yes; No"
Age	Age of an individual
Family size	Number of household members
Education	Categorical variable: "Illiterate; Does not have primary education; Lower secondary education; Primary education; Secondary professional program; Higher professional program; Upper secondary education; Vocational program;

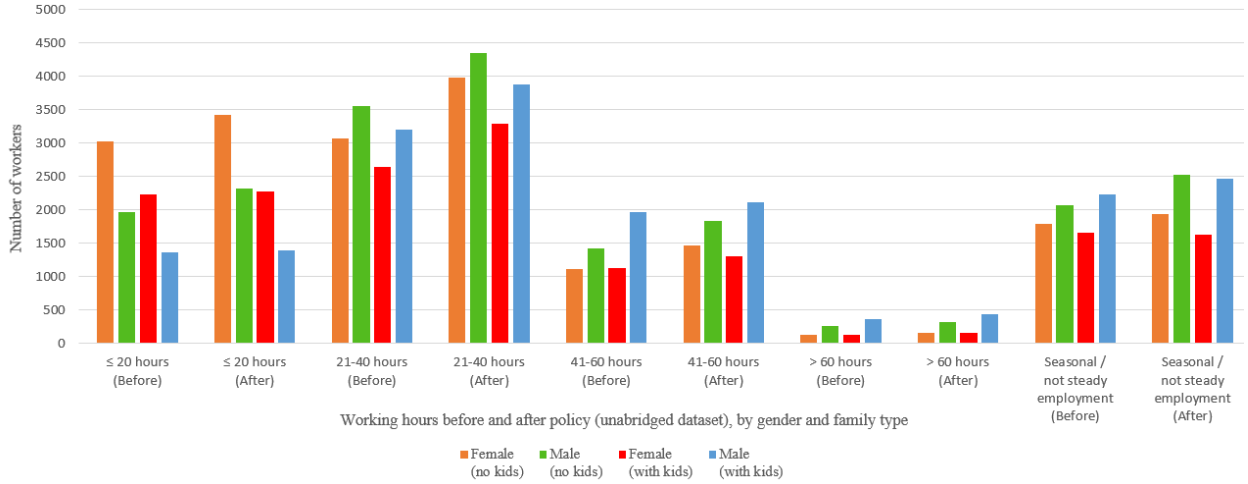
	Bachelor; Master; Doctor.”
Small kids	Number of children (0-7 years old)
Big kids	Number of adolescents (8-15 years old)
Working man	Number of working age men (16-64 years old)
Working woman	Number of working age women (16-59 years old)
Duration in the living place	Duration of living at this address
Dwelling selling price	The amount in local currency that the household would pay to buy a dwelling similar to theirs.
Change in financial condition	Financial condition of the household has changed during the past 12 months (subjective evaluation). Categorical variable: "improved very much; not changed; slightly improved; slightly worsened; worsened very much"
Attending any professional courses	Whether the household member attended any courses for learning new professions/skills during the past three months. Binary variable: “Yes; No”
Never worked before	Whether a household member has never worked. Binary variable: “Yes; No”
Economic condition based on income	Economic condition of the household based on household income (subjective evaluation). Categorical variable: “Very bad; Bad; Satisfactory; Middle; Good”
Profession	Profession or specialty defined by a diploma, certificate or other document or gained another way. Categorical variable, listed more than 200 professions at the level of 4 digit code adopted to International classification of ISCO-88
Marital status	Categorical variable: "Single; Married; Non-registered marriage; Divorced; Widowed"
Migration	If a household member moved. Categorical variable: "From other country; From another region in Georgia; From the same region in Georgia"
Economic condition based on property	Economic condition of the household based on household property (subjective evaluation). Categorical variable: "Extremely poor; Poor; Middle; Rich; Well-off"

Reason for not applying for assistance	Reason the household has not applied to the Social Service Agency. Categorical variable: "I don't hope to get the assistance; Our family doesn't require social assistance; It's difficult to answer; I don't know where to apply; I can't do it myself and there is nobody to whom I can address for help; I consider it being humiliating for our family"
Special status	Special status of the household member. Categorical variable: "Chronic patient; Disabled (I group); Disabled (II group); Disabled (III group); IDPs"
Area of dwelling	Total area of the dwelling (in square metres)
Pensioner man	Number of pension age men (65 years and older)
Pensioner women	Number of pension age women (60 years and older)
Mobile phone	Quantity of the owned durable good
Additional activity	Secondary employment

Notes: Variable names adjusted for ease of comprehension. For example, "Weekly working hours (intervals)" is actually "TimeDuration".

The following figures present an examination of our dataset, beginning with a breakdown of weekly working hours before and after policy implementation, delineated by gender and sector.

Figure 1: Weekly working hours (intervals), by gender, sector, and implementation



Within our dataset, 13.7% of all working people are employed in the public sector and 86.1% work in the private sector. Segregating by gender, 56.2% of public sector employees are female and 43.8% are male. Unlike the government sector, the number of men exceeds the number of women

working in the private sector. Men make up 53.6% and women 46.4% of workers in the private sector. On average, over the entire period of the dataset, 19.54% of the public sector employees worked 20 hours and less per week, 48.79% worked 21-40 hours per week, and 25.95% worked 41-60 hours per week. Only 1.96% were employed in a seasonal / not steady public sector position and 3.76% worked more than 60 hours per week. Further partitioning this information by whether or not the employees had children gives us the next three figures (for all workers, private sector workers, and public sector workers). In Appendix Tables A60-A67, we further provide this and additionally delineated descriptive statistics in table form as well as partition the public sector observation numbers by monthly mean, maximum, minimum, and standard deviation. Given that it is a representational sample, the tables show a reasonably balanced division amongst the subsample groups.

Figure 2: Weekly working hours, by gender, parental status, and implementation

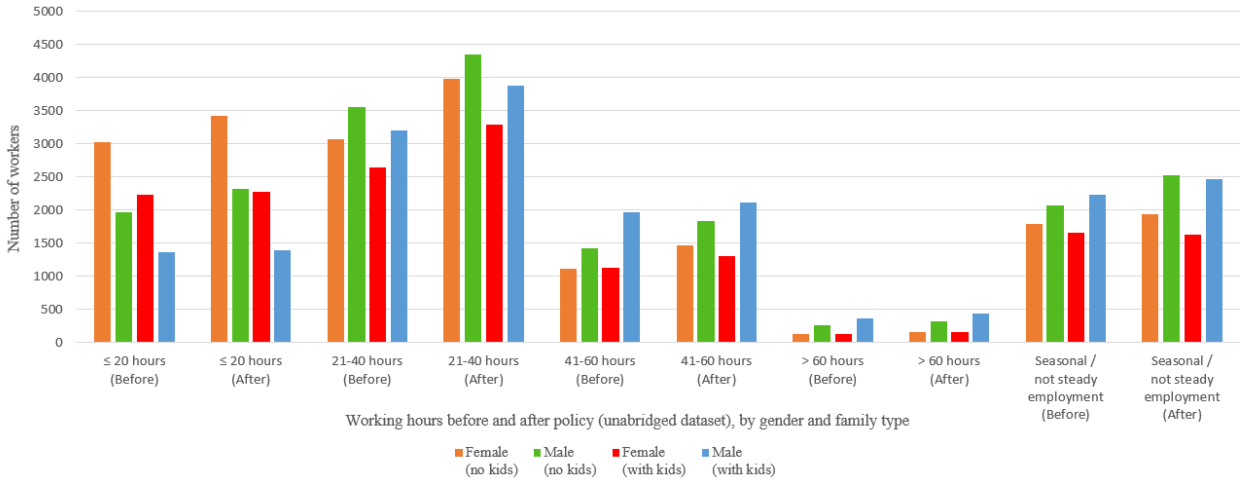


Figure 3: Private sector weekly working hours, by gender, parental status, and implementation

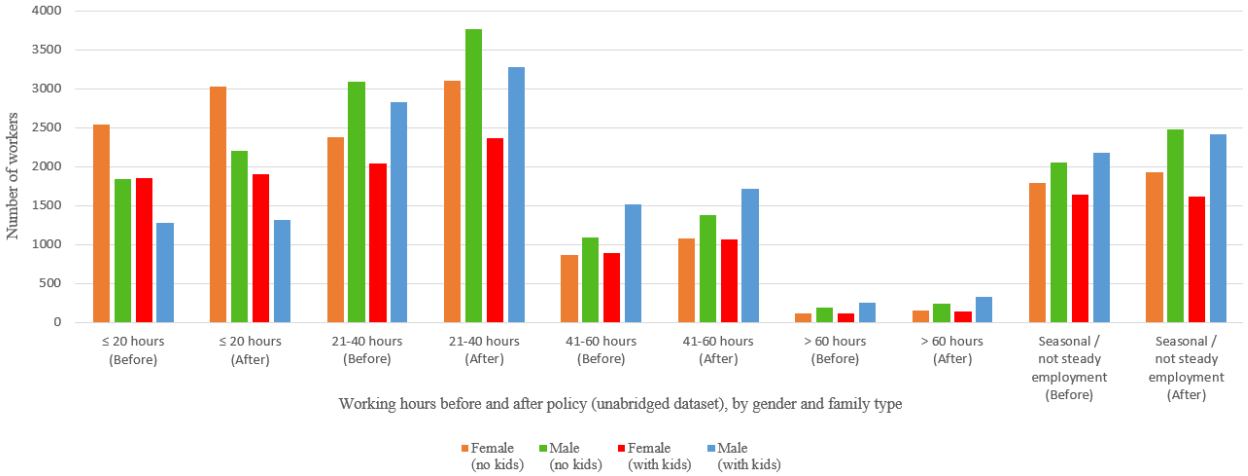
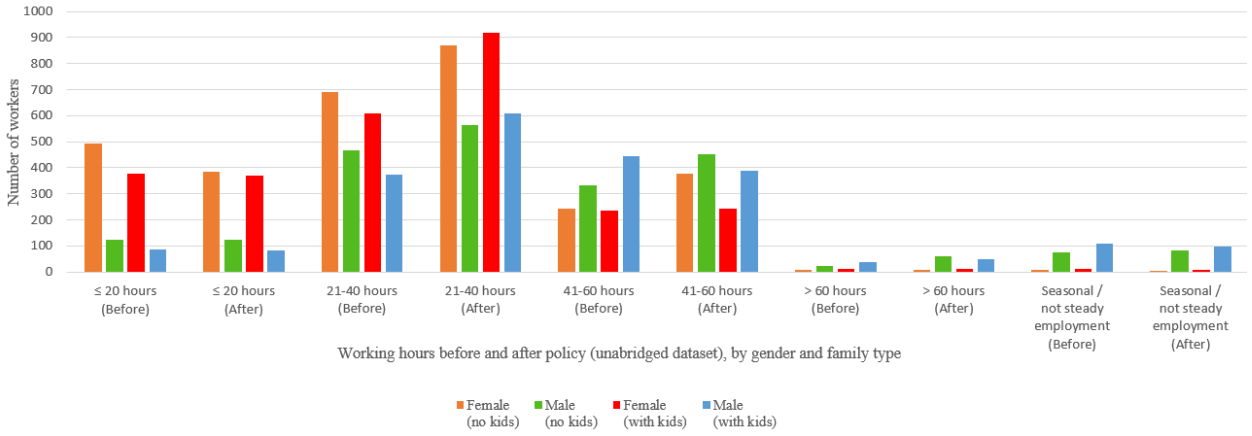


Figure 4: Public sector weekly working hours, by gender, parental status, and implementation



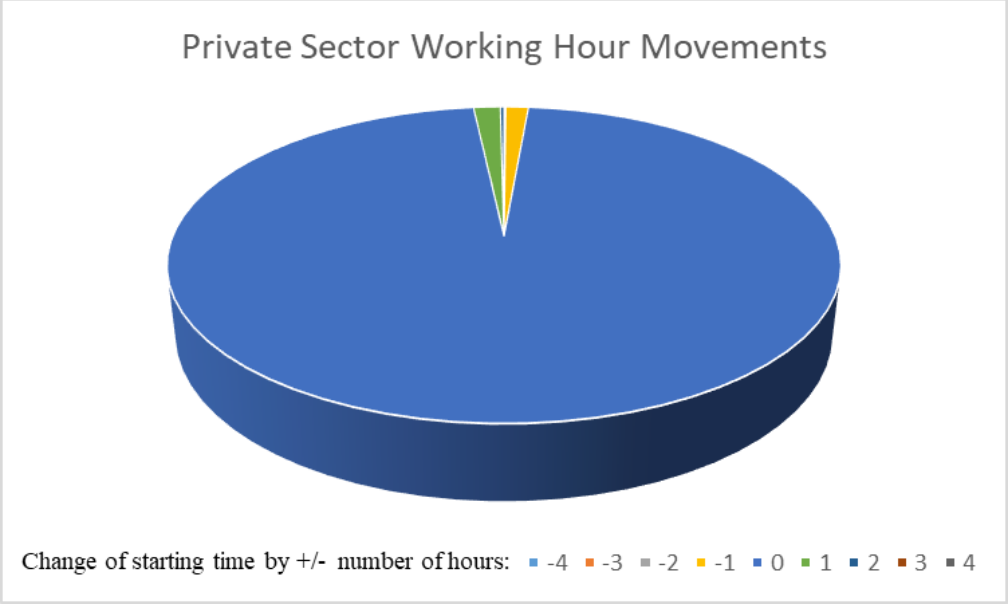
Figures 2, 3, and 4 visually communicate the total number of weekly working hours (intervals) observations in our dataset before and after the policy implementation broken down by gender, parental status, and sector. In total, a slim majority of employees working 40 hours or less are females, while employees working overtime hours are mostly male. On the face of the data, it seems that there is a significant increase in the number of female (and male) employees with children working 21-40 hours in the public sector, which some might claim as evidence of "family friendliness" and increased female labor participation. However, increases are also present for their male, no children, and private sector counterparts, hence the need for the methodology described in the next section to do a proper evaluation of the policy. While several such regressions without covariates return positive gains, especially for women with small children, after controlling for numerous alternative sources of this increased employment, the policy's direct effect is weakened and becomes statistically insignificant. A notably important revelation is the extremely small number of observations in our dataset of females working 60 hours or more in the public sector. Such a small sample size is insufficient for any reliable inference regarding female labor participation around the 60-hour threshold. While not as impactful to inference, another questionable sample size revealed by the descriptive statistics is the relatively small sample size of men with big kids working more than 60 hours.

3.2. Supplementary Dataset

A supplemental, firm-level database is used in order to check whether the implementation of the government's new policy led the private sector to adjust working hours for their employees. The Business Information Agency (BIA) is a leading data collector of company profiles operating in Georgia. Their database consists of statistical information for more than 45,000 active companies. Each firm's general information (e.g. trademarks, products, registration date, VAT number, business activity, legal address, website, and working hours) are publicly available on BIA's webpage. We extracted and analyzed the data for a subsample of firms that had observations

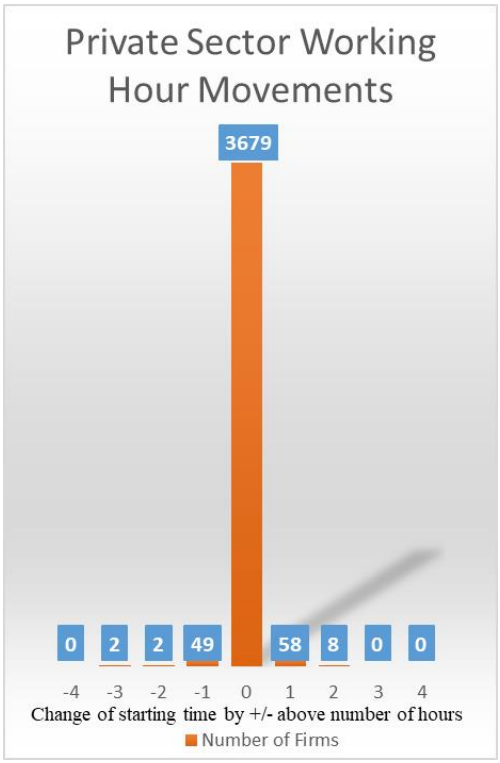
recorded before and after the policy implementation between 2013 and 2016. We found 3802 firms with observations both before and after the policy implementation between 2013 and 2016. Only 3.2% of those firms changed their business hours after the policy had been applied by the government. Moreover, as evidenced by Figures 6, the changes were normally distributed around the mean and mode of zero change. Additionally, we analyzed the shift of working hours for the placebo threshold of one year before as well as one year after the policy to check that the trend holds for the other periods. The results show that only 4.2% and 3.2% of firms shifted their business-operating hours, respectively, and in a similarly distributed manner. The following figures visually demonstrate a lack of direct effect on private sector working hours from the policy.

Figure 5: Private business starting time movements post policy



Notes: The blue portion represents business that did not change their starting times after the policy was implemented. The legend identifies the colors that represent the amount of hours by which the business changed their starting time after the policy was implemented.

Figure 6: Distribution of private business starting time movements post policy



Notes: The bar chart shows the relative amounts visually and the actual numbers above the bars of changed starting times by private sector business after the policy was implemented.

4. Methodology

Having confirmed that the working hours of the private sector were in no way systematically affected by the policy change that directly altered them in the public sector, we now detail how the difference-in-differences method is utilized to determine how the new government policy affected participation in the labor market. According to Angrist and Pischke (2008), the method estimates the effect of the treatment (i.e., an explanatory variable or an independent variable) on the outcome (i.e., the response variable or the dependent variable) by comparing the average change over time in the outcome variable for the treatment group, compared with the average change over time for the control group. We designate the private sector as the control group and the public sector as the treatment group. In formal terms, *s* denotes sector (either public or private) and *t* denotes time period. As the policy was implemented on September 1, 2014, with essentially no notice, we believe that any direct effect of the policy change upon labor market participation would not occur before 2 months at earliest due to established employment notice periods for leaving a position, the time it takes to process and hire a new employee, and the time it takes for managers and employees to asses the policy's actual effects and permanently adjust work hour schedules internally. This assumption is further confirmed by the short-term-effect and September threshold analyses, discussed in section

5.1. Accordingly, the main time threshold was set as November 1, 2014. In formal terms, this outcome variable takes the form:

Y_{ist} = 1, if an individual is working a specified range of hours per week

Y_{ist} = 0, if an individual is working an alternate range of hours per week

In particular, Y_{ist} equals zero (below) or one (above) across the specific binary extensive margin threshold of 0 hours and more than zero hours (including seasonal / not steady employment), and the following intensive margins (working hour engagement of employees: these do not include those working 0 hours nor seasonal / not steady employment): above and below 20 hours, above and below 40 hours, above and below 60 hours, and pairwise amongst the individual weekly working hour values. DD regression equations take two conventional forms (ending up with the same result), we opt for the interaction term form:

$$Y_{ist} = \alpha + \beta_1 Treatment_{is} + \beta_2 Time_{it} + \beta_3 Treatment_{is} * Time_{it} + \beta_4 X_{iat} + \varepsilon_{ist} \qquad (1)$$

Where $Treatment_{is}$ is a dummy variable that equals one if the observed individual is in the public sector, $Time_{it}$ is a dummy variable that equals one if the time of the observation occurred in November 2014 or later, α is a constant, and X_{ist} is a set of covariates that includes an individual's characteristics and answers to other survey questions that are correlated with the outcome variable. The resulting coefficient, β_3, expresses the post-policy correlation difference between the control and treatment groups, making it the only consequential and relevant coefficient to this research and the only coefficient reported in the output tables. We attempt to further distinguish the specific correlation of the policy on Y_{ist} by executing the regression using three sets of covariates[5] that increase the precision of the coefficient and the explanatory power of the regression. Furthermore, we also aim to increase the precision by more accurately defining the treatment threshold.[6] All coefficients in the tables in section 5 display only the coefficients with the full covariate schedules,

[5] First, we run the regressions without controls. Next, we add several substantial covariate controls for individual, household, and professional attributes; including age, education, family size, number of working age people in the household, number of children, living in an urban or rural area, length of time living there, owning their own home, a few objective and subjective measures of income and wealth, if they are economically active, and if they have ever been unemployed. Finally, we add all remaining covariate controls that had any statistically significant correlation from the DD regression; including marital status, migration history, profession category, additional wealth measures, number of retired family members in the household, and disability status. While only the full covariate results are presented in the body and attached appendices of this paper, a full appendix with all results is available by request. Across the regressions of the main thresholds, the covariates that were consistently most correlated with Y_{ist}, which is evident through their statistically significant coefficients (available in Appendix Tables A56 – A59) were urban location, years in this city, wealth and ownership measures, and age.

[6] The baseline is all public employees as treatment and private as control. However, as noted in the introduction, not all public employees were affected by the policy. Therefore, in the second specification, we move the employees from the entirely unaffected public fields, such as public education employees (teachers, school administrators, etc.), to the control group. In the third specification, we move expectedly unaffected public employees to the control group as well. That is, while the expected majority of public employees in specific professions should not be affected, such as dentists, some may happen to be affected by the policy due to certain idiosyncratic peculiarities (such as office location) or the ambiguous nature of certain professions. Hence, they are included only in the final specification.

broken down by increasing particularization of the treatment group. While all the coefficients in the tables in section 5 display only the coefficients with the full covariate schedules, they are broken down by increasing particularization of the treatment group.

In order to support causality inferences of certain β_3 covariates, we provide parallel trends analyses to assess whether or not the two groups had similar trends over time prior to the policy implementation, which then diverged due to the effect of the policy on the treatment group. In addition, we check causality by conducting placebo effect analyses, counterfactually changing the time threshold to twelve months prior to the actual change. A resulting lack of a statistically significant β_3 bolsters the notion that effects found from the difference-in-differences regressions were specific to the policy change and not just random noise. Consequently, we consider a strongly statistically significant β_3 coefficient that holds in the most stringent control configuration, has an evident parallel trend that diverges post-policy, and does not produce a placebo effect, to be a credible substantiation of a causal effect of the policy upon those treated.

Since we employ a two-month lag from the actual initiation of the policy, we further supplement the main analyses with DD regressions of the main thresholds using the September 1, 2014 threshold. Furthermore, we run short-term analyses of the effects for three months, six months, and twelve months from both the November and September thresholds. These results reveal an ordinal nature of the effects of the main analysis, with some of the effects beginning as early as three to six months after policy initiation only to have the strength of those effects depleted by the end of 2016, while others begin later and grow stronger and more statistically significant through 2016. Lastly, though we control for age throughout the analyses, we also divided the sample in half by median female age (49 years old) and median male age (45 years old) and run separate analyses for the younger and older groups to assess whether the policy had age-specific implications as well. Full result tables are presented in Appendices Table A1 – A53.

5. Results

In this section, we present and discuss tables that highlight the most significant and relevant regression findings from all three treatment specifications and binary thresholds listed in section 4. Only select subsample groups that give an overview or provide statistically significant results or their counterparts are featured herein. Complete full covariate control output tables that exhibit all results for every subsample group are presented in the Appendix. An unabridged appendix that features all subsamples and all covariate specifications is available on demand.

5.1. Main Results

5.1.1. Extensive Margin

The first output table we present is the 0 hours and more than zero hours threshold (the extensive margin between working and not working; including seasonal / not steady employment). As can be seen in Table 2, all of the resulting β_3 coefficients are weak and statistically insignificant.

Table 2: DD regression results for weekly working hours (intervals), extensive margin

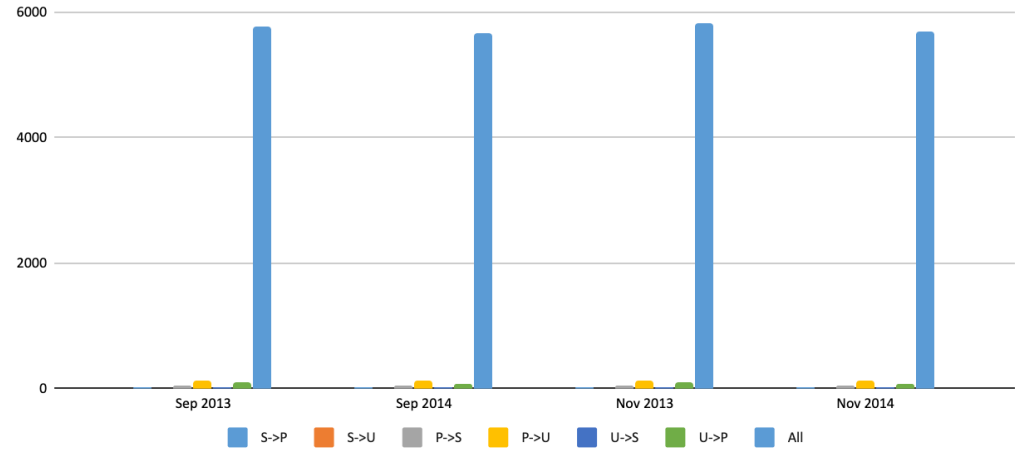
Subsample	Gender	(1)	(2)	(3)	N	R^2
All	All	-0.00233	-0.0006	0.000152	85523	0.34
		(0.005)	(0.006)	(0.006)		
	Male	-0.00764	-0.00817	-0.00389	45627	0.32
		(0.009)	(0.009)	(0.01)		
	Female	0.0016	0.006	0.00398	39896	0.38
		(0.006)	(0.007)	(0.008)		
With kids	All	0.00169	0.00352	0.00656	40124	0.31
		(0.008)	(0.009)	(0.009)		
	Male	-0.00514	-0.00712	-0.00172	21979	0.26
		(0.013)	(0.013)	(0.014)		
	Female	0.00675	0.0146	0.02	18145	0.41
		(0.009)	(0.011)	(0.012)		
Without kids	All	-0.00864	-0.00687	-0.00561	45399	0.36
		(0.007)	(0.008)	(0.009)		
	Male	-0.0163	-0.0143	-0.00898	23648	0.37
		(0.012)	(0.012)	(0.013)		
	Female	-0.0012	0.00186	-0.00168	21751	0.36
		(0.008)	(0.009)	(0.011)		

Notes: 10%, 5%, 1%, and 0.1% levels of confidence are indicated by (+), (*), (**), and (***), respectively. Standard errors are in parentheses. Column labels: (1) is the pure sector division of public and private as treatment and control, respectively; (2) adds employees from entirely unaffected public fields, such as public education, into the control group; (3) adds employees with professions where the expected majority would not be affected, into the control group.

While our original intention had been to concentrate this research on the extensive margin, after encountering insignificant β_3 coefficients with higher covariate controls, we found that the data is structured in a sectorily-skewed manner regarding unemployment, causing a lack of variance that biases the DD results. Moreover, the related extensive movements still do not amount to any statistically significant changes at this margin. Figures 7 and 8 visualize the extensive margin data points for both the official implementation timing and the lagged threshold used in the DD regressions. The analysis uncovered that there were only 303 [311] extensive margin moves out of 5964 [5667] total panel observations and only 102 [102] extensive margin moves involving the

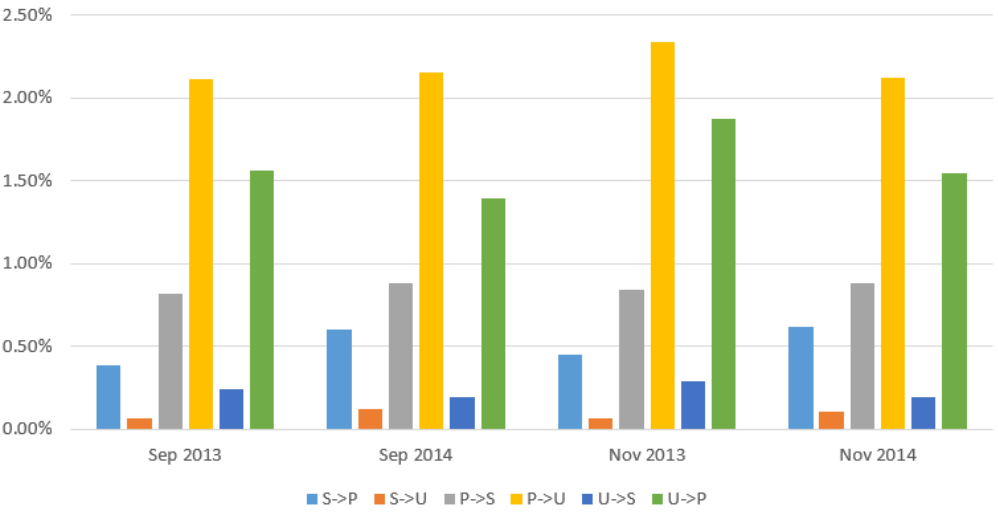
public sector around the threshold [lagged] of the policy implementation. These movements are meager (see Figure 7) and not statistically different from the extensive margin moves from the placebo thresholds of one year prior (see Figure 8). Furthermore, the September, short-term, and age[7] analyses all return weak and insignificant results. Therefore, we conclude that the policy did not have a statistically significant effect on the extensive margin of employment.

Figure 7: Same-employee observations before and after specified threshold



Notes: "P" stands for "Private", "S" stands for "State" (public sector), "U" stands for "Unemployment", and "All" refers to the amount of individual employees in total that have data points before and after each listed threshold. Both the actual implementation month and the lagged threshold are shown as well as one year prior to both for comparison.

Figure 8: Same-employee observation shares before and after specified threshold



Notes: "P" stands for "Private", "S" stands for "State" (public sector), "U" stands for "Unemployment", and "All" refers to the amount of individual employees in total that have data points before and after each listed threshold. Both the actual implementation month and the lagged threshold are shown as well as one year prior to both for comparison.

[7] Of minor note, the younger group had a few β_3 coefficients at the 10% level and had considerably greater magnitude than their older counterparts, but given the issues with the data, these results do not change our conclusion. If anything, this may indicate that the few extensive margin movements were mostly by younger workers.

5.1.2. Intensive Margin

Further analysis revealed that there was enough statistically significant movement within the intensive margin of labor participation through the variable weekly working hours (intervals). The DD analysis was restructured to assess those effects by creating specific binary thresholds using the survey's interval responses to the question of how many hours each employed individual works to construct the thresholds of above and below 20 hours, above and below 40 hours, above and below 60 hours, as well as pairwise amongst the individual weekly working hours values. As our dataset has a serious lack of women working more than 60 hours and since the 20- and 40-hour thresholds represent standard part-time and full-time working hours and most employment is bunched there, those two thresholds are most pertinent to this evaluation. We begin the intensive margin analyses with the 20 hours or less versus 21+ hours threshold in Table 3.

Table 3: DD regression results for weekly working hours (intervals), 20-hour threshold

Subsample	Gender	(1)	(2)	(3)	N	R^2
All	All	0.0396***	0.0187+	0.0190+	60234	0.15
		(0.009)	(0.01)	(0.011)		
	Male	0.011	0.00611	0.00822	30740	0.13
		(0.013)	(0.013)	(0.014)		
	Female	0.0597***	0.0292*	0.0323+	29494	0.14
		(0.013)	(0.015)	(0.017)		
With kids	Female	0.0335+	0.0102	0.00403	13154	0.14
		(0.019)	(0.022)	(0.025)		
Without kids	Female	0.0854***	0.0414*	0.0575*	16340	0.16
		(0.018)	(0.02)	(0.023)		
Without kids (family size>1)	Female	0.0830***	0.0381+	0.0631**	14363	0.14
		(0.019)	(0.021)	(0.024)		
Without kids (family size>1, married)	Female	0.0933***	0.0518+	0.0821**	9472	0.12
		(0.024)	(0.027)	(0.031)		

Notes: 10%, 5%, 1%, and 0.1% levels of confidence are indicated by (+), (*), (**), and (***), respectively. Standard errors are in parentheses. Column labels: (1) is the pure sector division of public and private as treatment and control, respectively; (2) adds employees from entirely unaffected public fields, such as public education, into the control group; (3) adds employees with professions where the expected majority would not be affected, into the control group.

Regression results for the entire subsample indicate that there is a positive correlation between the DD identified policy effect and weekly working hours, but when dividing the subsample by gender, it is evident that correlation is heavily driven by female working hour engagement. Further dividing that sample into those with and without children, it becomes clear that those who have most increased their engagement are women without children. Once more dividing the women without children into married and not married subsample groups, it becomes clear that the increase is driven

by married women without children. This is an unexpected result, especially for those that believed that changing the public office working hours would break down barriers for women with children. Moreover (visible in the unabridged table in Appendix Table A2), at the 20 hour-working-week threshold, there is no significant difference if the children are small (0-7 years old) or big (8-15 years old). According to the output of the short-term analyses, these effects only begin to become evident and significant about 8 months post policy initiation and strengthen through the end of 2016. The age analysis reveals that these effects were slightly stronger for younger women without children, but more consistently occurring for their older counterparts, who also displayed strong, positive effects by singles that were the sole member of their household, though the sample size may already be an issue here.

Table 4: DD regression results for weekly working hours, 40-hour threshold

Subsample	Gender	(1)	(2)	(3)	N	R^2
All	All	-0.0289***	-0.0365***	-0.0488***	60234	0.16
		(0.009)	(0.009)	(0.01)		
	Male	-0.0541***	-0.0543***	-0.0596***	30740	0.17
		(0.014)	(0.014)	(0.015)		
	Female	-0.00835	-0.0168	-0.0353**	29494	0.17
		(0.011)	(0.012)	(0.013)		
With kids	All	-0.0898***	-0.105***	-0.120***	27868	0.16
		(0.013)	(0.014)	(0.015)		
	Male	-0.109***	-0.106***	-0.116***	14714	0.17
		(0.02)	(0.021)	(0.022)		
	Female	-0.0682***	-0.0879***	-0.110***	13154	0.15
		(0.016)	(0.019)	(0.021)		
With small kids	All	-0.118***	-0.127***	-0.116***	12630	0.17
		(0.02)	(0.021)	(0.023)		
	Male	-0.140***	-0.122***	-0.107***	6994	0.17
		(0.03)	(0.03)	(0.032)		
	Female	-0.0829**	-0.108***	-0.0898**	5636	0.18
		(0.026)		(0.033)		
With big kids	All	-0.0683**	-0.0861***	-0.139***	9727	0.18
		(0.021)	(0.024)	(0.026)		
	Male	-0.106**	-0.125***	-0.149***	4787	0.2
		(0.037)	(0.038)	(0.041)		
	Female	-0.0302	-0.0309	-0.115***	4940	0.17
		(0.026)	(0.03)	(0.035)		
Without kids	Female	0.0452**	0.0432**	0.0272	16340	0.2
		(0.014)	(0.015)	(0.017)		

Without kids	Female	0.0364**	0.0344**	0.0208	29354	0.17
(family size>1)		(0.012)	(0.013)	(0.014)		
Without kids	Female	0.0610***	0.0535**	0.0521*	9472	0.16
(family size>1, married)		(0.018)	(0.02)	(0.022)		

Notes: 10%, 5%, 1%, and 0.1% levels of confidence are indicated by (+), (*), (**), and (***), respectively. Standard errors are in parentheses. Column labels: (1) is the pure sector division of public and private as treatment and control, respectively; (2) adds employees from entirely unaffected public fields, such as public education, into the control group; (3) adds employees with professions where the expected majority would not be affected, into the control group.

Table 4 displays the results for the 40 hours or less versus 41+ hours threshold. It is common for those with a full-time job in Georgia to work slightly longer than 40 hours, so movements below this threshold may cause significant externalities upon overall office schedules as well as those of coworkers. From the full subsample results, it is evident that the effect is strong at this threshold. Dividing it by gender reveals that both men and women are affected at this threshold, but mostly men. This gender difference reduces as the subsample is further reduced to include only those with children. Those with small children seem most likely to reduce their work engagement across this threshold in general, though men with bigger children seem more affected than their female colleagues. The lack of effect on women from the full sample population seems to be due to the countering effect from women without children increasing working hour engagement at this threshold, especially those that are part of a household of two or more people and married.

Further refinements are revealed by the age analysis. While women with children were similarly affected across the age groups, older men with children were much more impacted than their younger counterparts. Older men and women with smaller children were the most negatively affected at this margin (perhaps representing the effects upon families with unanticipated, later-in-life fecundity), while only older men with older children were affected and not as strongly. For the younger group, the exact opposite is true with the greatest effects felt by both genders with young kids and for younger women with older kids. The vast majority of the positive effects at this margin for those without kids was experienced by the younger group. Both the September threshold and short-term analyses (from about 5 to 14 months) consistently display slightly stronger and more statistically significant results at this threshold than the full data, November threshold results above. This indicates that the effects upon working hours at this margin are primary and early ordinal results of the policy. It seems the effects at this margin were greatest probably about 12-14 months or so after the policy went into effect and then began to decline over time. Considering the fact that the policy impacted individual (and by interaction, household) schedules by 30-60 minutes, it seems logical that they would have a transitory nature and be more intense in the short-term and then dissipate as a new steady state is achieved.

Table 5: DD regression results for weekly working hours, 60-hour threshold

Subsample	Gender	(1)	(2)	(3)	N	R^2
All	All	-0.0117**	-0.0108**	-0.00870+	60234	0.03
		(0.004)	(0.004)	(0.005)		
	Male	-0.0181**	-0.0131+	-0.0102	30740	0.03
		(0.007)	(0.007)	(0.007)		
	Female	-0.00588	-0.0068	-0.00534	29494	0.03
		(0.004)	(0.005)	(0.005)		
With kids	All	-0.0189**	-0.0196**	-0.0135+	27868	0.03
		(0.006)	(0.007)	(0.007)		
	Male	-0.0271**	-0.0207+	-0.0104	14714	0.04
		(0.01)	(0.011)	(0.011)		
With small kids	Male	-0.0417**	-0.0394*	-0.0398*	6994	0.05
		(0.015)	(0.016)	(0.017)		

Notes: 10%, 5%, 1%, and 0.1% levels of confidence are indicated by (+), (*), (**), and (***), respectively. Standard errors are in parentheses. Column labels: (1) is the pure sector division of public and private as treatment and control, respectively; (2) adds employees from entirely unaffected public fields, such as public education, into the control group; (3) adds employees with professions where the expected majority would not be affected, into the control group.

At the 60 hours or less versus more than 60 hours threshold, presented in Table 5, the results are somewhat similar to those of the 40-hour threshold, except they are weaker and less statistically significant. Due to the lack of female representation of public employees working more than 60 hours, it is not remarkable that both women with children and women without children have completely insignificant and low magnitude results at this threshold. Men, however, are affected at this margin. In particular, men with children have the largest reduction in working hours, especially those with small kids. The age analysis reveals that these effects are all driven by younger workers. From the September and short-term analyses, we learn that the effects of the policy are even more immediate than at the 40-hour margin, being felt within three months of the commencement of the policy and, therefore, already captured in the time prior to the two-month lag of the November threshold, resulting in them being partially lost in the DD comparison. As those who had such full schedules as to work more than 60 hours per week, it makes sense that they would be so immediately impacted by this exogenous schedule change. As with the 40-hour margin, the effect seems to peak somewhere around 12 months after the policy went into effect and then dispersed into 2016. The most notable difference between Table 5 and the related September and short-term analyses is that men without children also display a significant and greater negative effect (amounting to about 2-3%) than their counterparts in the private sector.

5.1.3. Pairwise analyses

Possible weekly working hours replies are in 20-hour intervals and a mergeable dataset with more detailed data regarding specific working hours does not exist, so it is unclear whether the policy may be resulting, on average, in just a few hours adjustment or complete moves from part-time to/from full-time positions. To further enhance the perception of the movements, we analyzed the four intervals pairwise in order to reduce noise from movements in both directions throughout the entire sample. Given the nature of the methodology employed, only the positive β_3 coefficients from the lowest interval pair and the negative β_3 coefficients from the highest interval pair have undeniable value for interpretation, because only those movements are bounded by absolute frontiers (zero hours and all hours greater than 60). They are presented below. As all other pairwise output is not necessarily capturing movements across the given threshold, those results may only be implicative. Nevertheless, the pairwise analyses provide some additional insight even at the middle margins and are discussed below. The output tables are presented in Appendices Tables A5 – A10. Table 6 examines the movements in the weekly working hours variable from the 20 hours or less interval to/from the 21-40 hour interval.

Table 6: DD regression results for weekly working hours, pairwise, 20 hours or less ↔ 21-40 hours

Subsample	Gender	(1)	(2)	(3)	N	R^2
All	All	0.0656***	0.0406**	0.0433**	45937	0.11
		(0.012)	(0.013)	(0.015)		
	Male	0.0383*	0.0278	0.0326	22024	0.11
		(0.019)	(0.02)	(0.022)		
	Female	0.0774***	0.0465**	0.0542**	23913	0.10
		(0.016)	(0.018)	(0.02)		
With kids	All	0.0549**	0.0450*	0.0426*	20275	0.11
		(0.017)	(0.02)	(0.022)		
	Male	0.0565*	0.0585*	0.0584+	9846	0.11
		(0.028)	(0.029)	(0.031)		
	Female	0.0577*	0.0368	0.0376	10429	0.11
		(0.023)	(0.027)	(0.03)		
With small kids	Female	0.0781*	0.0471	0.0777	4453	0.11
		(0.037)	(0.043)	(0.047)		
With big kids	Male	0.102*	0.0915+	0.108+	3313	0.13
		(0.05)	(0.052)	(0.056)		
Without kids	Female	0.0914***	0.0480*	0.0721**	13484	0.11
		(0.021)	(0.024)	(0.027)		
Without kids (family size>1)	Female	0.0852***	0.0421+	0.0779**	11742	0.10
		(0.023)	(0.025)	(0.028)		

Without kids	Female	0.0830**	0.046	0.0842*	7994	0.09
(family size>1, married)		(0.028)	(0.032)	(0.035)		
Without kids	Female	0.0872*	0.0508	0.0536	3748	0.16
(family size>1, not married)		(0.04)	(0.045)	(0.048)		
Just singles	Female	0.179*	0.131	0.0262	1742	0.20
(family size=1)		(0.081)	(0.093)	(0.106)		

Notes: 10%, 5%, 1%, and 0.1% levels of confidence are indicated by (+), (*), (**), and (***), respectively. Standard errors are in parentheses. Column labels: (1) is the pure sector division of public and private as treatment and control, respectively; (2) adds employees from entirely unaffected public fields, such as public education, into the control group; (3) adds employees with professions where the expected majority would not be affected, into the control group.

From this pairwise analysis, just above and below the 20-hour threshold, an enhanced picture of the effects of the policy at this margin has emerged. The β_3 coefficients follow the same pattern as the 20-threshold analysis, but have become stronger and more statistically significant. Moreover, some new patterns have been revealed. Of those new revelations, the most pertinent to the research question at hand are the positive effects on working hour engagement experienced by parents with children, which are most consistent across the treatment specifications for men with children, especially driven by men with big children (8-15 years old). Furthermore, both women without children that are married and unmarried seem to be experiencing positive effects from the policy change, though the effect seems to be more consistent for the married ones.

Table 7: DD regression results for weekly working hours, pairwise, 41-60 hours ↔ more than 60 hours

Subsample	Gender	(1)	(2)	(3)	N	R^2
All	All	-0.0247+	-0.0162	-0.00682	14297	0.05
		(0.014)	(0.014)	(0.015)		
	Male	-0.0165	-0.00259	0.00477	8716	0.05
		(0.019)	(0.019)	(0.02)		
	Female	-0.0218	-0.023	-0.017	5581	0.07
		(0.02)	(0.021)	(0.024)		
Just singles	Male	-0.592*	-0.592*	-0.601*	155	0.72
(family size=1)		(0.291)	(0.291)	(0.288)		

Notes: 10%, 5%, 1%, and 0.1% levels of confidence are indicated by (+), (*), (**), and (***), respectively. Standard errors are in parentheses. Column labels: (1) is the pure sector division of public and private as treatment and control, respectively; (2) adds employees from entirely unaffected public fields, such as public education, into the control group; (3) adds employees with professions where the expected majority would not be affected, into the control group.

Table 7, shows a zoomed-in view of the 60-hour threshold. This time the results are weak in magnitude and statistically insignificant across the board of all subsample divisions. It seems that any substantial policy-related effects of the 60-hour threshold are captured in the pairwise analyses

of Appendix Tables A7 and A9. Once more, similarly to Table 7, there is a noteworthy result for men that make up the whole of their household. The effect appears to be an extreme decrease in working hours across these intervals, but the sample size is minuscule, which probably means the result is specious.

Regarding the remaining pairwise analysis output, Appendix Table A6 examines the pairwise intervals of 20 hours or less and 41-60 hours. Here only the positive effects experienced by the women without children are significant. While not as strong as the effects experienced by the married women, the unmarried women from households with two or more members now also exhibit statistically significant effects consistently across treatment specifications. The pairwise analysis between less than 20 hours and more than 60 hours in Appendix Table A7 does not have many β_3 coefficients with statistical significance and does not reveal much new information. A consistent negative effect, though neither strong in magnitude nor statistical significance, seems to be occurring for women with children, but this is a specious result given the lack of women in the sample that work more than 60 hours. Moreover, the results from the subsample groups of small and big children are both insignificant. One other noteworthy result in Appendix Table A7 is that men who are the only members of their household display a distinct increase in working hour engagement across this pair, though the sample size is already rather small and probably also indicate only a specious outcome of happenstance.

As in Tables 6 and 7, Appendix Table A8 is a pairwise analysis that provides an enhanced depiction of one of the main thresholds: just above and just below the 40-hour threshold. It mostly echoes the 40-hour threshold analysis with a strong negative effect on working hours for all people with children, especially for men, and while the effect is more balanced across genders with small children, it is more pronounced for men with big children. Furthermore, women without children continue to display a strong positive effect, driven by women that are married and part of a household of two or more people.

Similar to the 60-hour threshold, the 21-40 hour and more than 60 hours interval pair in Appendix Table A9 shows only negative effects upon work engagement, driven by men with kids, especially those with small kids. However, unmarried men without children in households that are made up of two or more people also display a modest negative effect here. Expectedly, between this pair of intervals, women have almost uniformly insignificant and low magnitude results, with the positive effect women without children have at the lower thresholds completely disappearing in terms of magnitude and significance. While women with big children exhibit a single statistically significant, negative β_3 coefficient at the strictest treatment specification, it is another specious result due to the small sample size of women working more than 60 hours.

5.2. Robustness Checks

As noted in the methodology section, the legitimacy of difference-in-differences regression results rests upon certain underlying assumptions, which can be substantiated through parallel trends and placebo effect analyses.

5.2.1. Placebo Effect

Placebo effect analysis confirms that the identified effect is actually directly related to the effect of the policy and not some other cause. This is generally conducted by changing one of the difference points in the DD regression to something that should not be causing an effect similar to the policy. When the resulting β_3 coefficient is statistically insignificant, that supports the contention that statistically significant β_3 coefficients from the actual DD analyses are caused by the policy and not some other phenomenon. In our case, we elected to use the fairly standard placebo threshold of one year prior to the threshold used for main analysis. The complete results of the placebo effect analysis are in Appendix Tables A40 - A45.

Table 8: Placebo analysis results for weekly working hours (intervals), multiple thresholds

Subsample	Gender	(1)	(2)	(3)	N	R^2
	All	0.00222	0.00929	0.00607	25051	0.16
		(0.015)	(0.016)	(0.017)		
All	Male	-0.00419	0.00944	0.0103	12834	0.15
(20-hour threshold)		(0.02)	(0.021)	(0.022)		
	Female	0.000653	0.00637	0.00512	12217	0.15
		(0.021)	(0.024)	(0.026)		
With small kids	Female	0.0658	0.0769	0.120+	2316	0.15
(20-hour threshold)		(0.05)	(0.057)	(0.064)		
	All	0.0154	0.00634	0.015	25051	0.18
		(0.013)	(0.014)	(0.016)		
All	Male	-0.0078	-0.0101	0.0128	12834	0.2
(40-hour threshold)		(0.021)	(0.021)	(0.023)		
	Female	0.0279+	0.0182	0.0197	12217	0.17
		(0.016)	(0.018)	(0.021)		
With small kids	Female	0.0474	0.0479	0.111*	2316	0.2
(40-hour threshold)		(0.041)	(0.046)	(0.052)		
Without kids	Female	0.0567**	0.0668**	0.0483+	6652	0.2
(40-hour threshold)		(0.021)	(0.023)	(0.026)		
Without kids	Female	0.0588**	0.0731**	0.0564*	5858	0.19
(family size>1)		(0.022)	(0.025)	(0.028)		

(40-hour threshold)						
Without kids (family size>1, married) (40-hour threshold)	Female	0.0411 (0.027)	0.0593+ (0.03)	0.0203 (0.034)	3824	0.18
Without kids (family size>1, not married) (40-hour threshold)	Female	0.0527 (0.04)	0.0648 (0.044)	0.0887+ (0.046)	2034	0.28
Just singles (family size=1) (40-hour threshold)	Female	-0.0556 (0.063)	-0.150* (0.073)	-0.214** (0.079)	794	0.45
	All	2.12E-05 (0.006)	-0.00143 (0.006)	-0.00378 (0.007)	25051	0.03
All (60-hour threshold)	Male	-0.00248 (0.01)	-0.00576 (0.011)	-0.00584 (0.011)	12834	0.04
	Female	0.000567 (0.006)	0.00231 (0.007)	-0.00149 (0.008)	12217	0.03
With big kids (60-hour threshold)	Male	0.0559* (0.025)	0.0735** (0.026)	0.037 (0.028)	2108	0.07
Without kids (family size>1, married) (60-hour threshold)	Male	0.0320+ (0.017)	0.0141 (0.018)	0.022 (0.019)	3997	0.07
Without kids (family size>1, not married) (60-hour threshold)	All	-0.0291* (0.013)	-0.0325* (0.014)	-0.0298* (0.015)	4194	0.05
Just singles (family size=1) (60-hour threshold)	Male	-0.0703+ (0.041)	-0.0573 (0.042)	-0.0639 (0.045)	407	0.28

Notes: 10%, 5%, 1%, and 0.1% levels of confidence are indicated by (+), (*), (**), and (***), respectively. Standard errors are in parentheses. Column labels: (1) is the pure sector division of public and private as treatment and control, respectively; (2) adds employees from entirely unaffected public fields, such as public education, into the control group; (3) adds employees with professions where the expected majority would not be affected, into the control group. Time threshold set to one year prior to lagged threshold used in main analysis. All observations up until implementation used to assess placebo effects.

Table 8 displays the output of the placebo effect analysis for the complete sample population at each main threshold as well as all statistically significant findings from the main threshold analyses. Most of the β_3 coefficients from all the placebo analyses are weak and statistically insignificant, confirming that the vast majority of the main analysis results are not caused by some other effect. There are a few β_3 coefficients above and in the pairwise placebo analysis that come out as statistically significant, but do not counter any findings from the main analysis. These results include the ones for women with younger children at the 20-hour threshold, single women with households made up of just themselves at the 40-hour threshold, and women with children, men

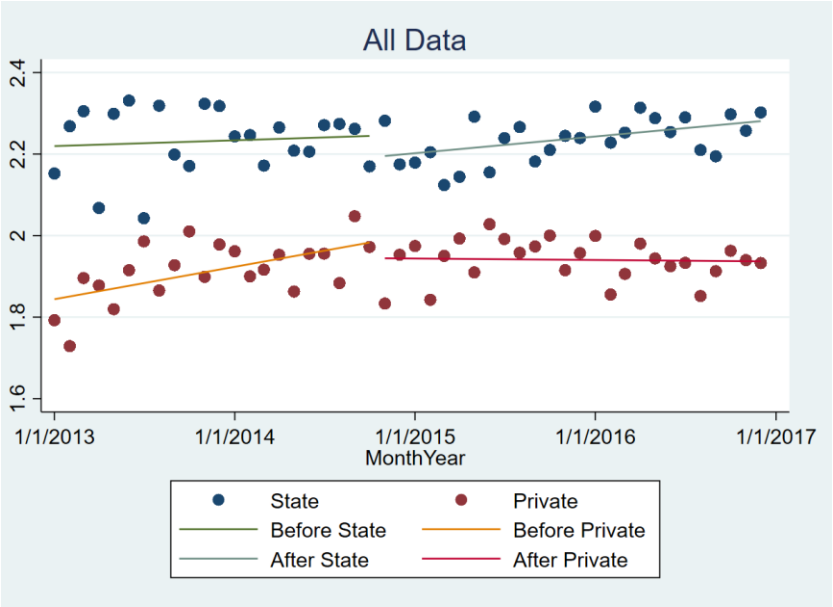
with older children, and men without children at the 60-hour threshold. Furthermore, the indication of a negative effect for single household males at the 60-hour threshold with a small sample size, further supports the earlier supposition that similar findings in Appendix Table A7 and Table 7 are specious.

One major exception to this begins to appear with the faint, positive β_3 coefficient statistically significant at the 10% level for all females at the 40-hour threshold under the pure public treatment specification. Similar to the indication of an effect in Table 3, this lone result is, in fact, an indication of other effects occurring within the overall female group at this threshold. Most distinctly are the strong and statistically significant positive β_3 coefficients from the women without children (including those from families made up of two or more people, both married and unmarried). This indicates that women without children were gaining more working hours in public sector jobs than their counterparts in the private sector prior to the policy implementation, ruling out the policy as the explicit cause. Instead, the policy may have aided in the continuation of this trend by providing additional hours for women without children in the public sector to acquire. This interpretation is echoed in the ordinal findings of the short-term analyses. Hence, the main conclusions above still hold, but with the mitigating provision that it was not the policy that caused women without children to take up more working hours. Since the increase of working hours by women without children had been identified as one of the few positive consequences on female labor participation from the policy, this may further dismay those who had predicted the policy was going to positively stimulate female labor participation.

5.2.2. Parallel Trends

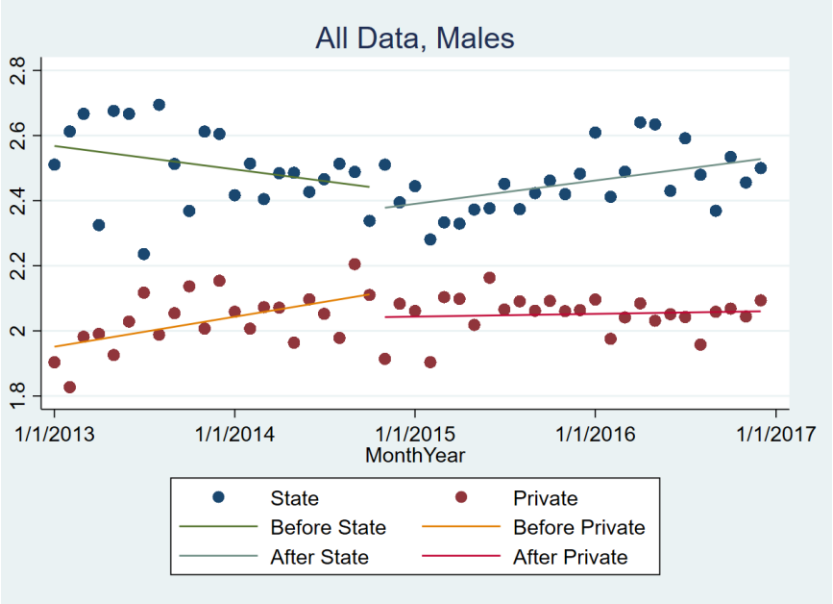
Parallel trends analysis assesses whether the control and treatment groups were on a trend prior to the implementation of the policy in question and diverged thereafter so that the difference experienced between the groups after implementation can be identified as causal. Figure 9 below is a visualization of mean working hours for the entire sample data split by the lagged threshold used in the DD regressions. Figures 10 and 11 break that down by gender. The trends are represented by linear best fit lines for the control and treatment groups for the period prior to and post threshold. As the name, parallel trends, suggests, the ideal validation is when the two lines (or the pattern in the data points) prior to the threshold are reasonably parallel to one another to substantiate that the two groups were on a similar trajectory prior to the policy. Post threshold, the lines (or the pattern in the data points) should diverge to confirm that the policy altered their trajectories. Undoubtedly, linear best fit lines are imperfect, so latitude on their similarity is expected. Sometimes, general patterns in the data points, which may not necessarily match the fitted lines due to outliers or bunches, are visually discernible, as is the case with Figure 10.

Figure 9: Parallel trend scatter plot with linear fitted lines, all data, all observations



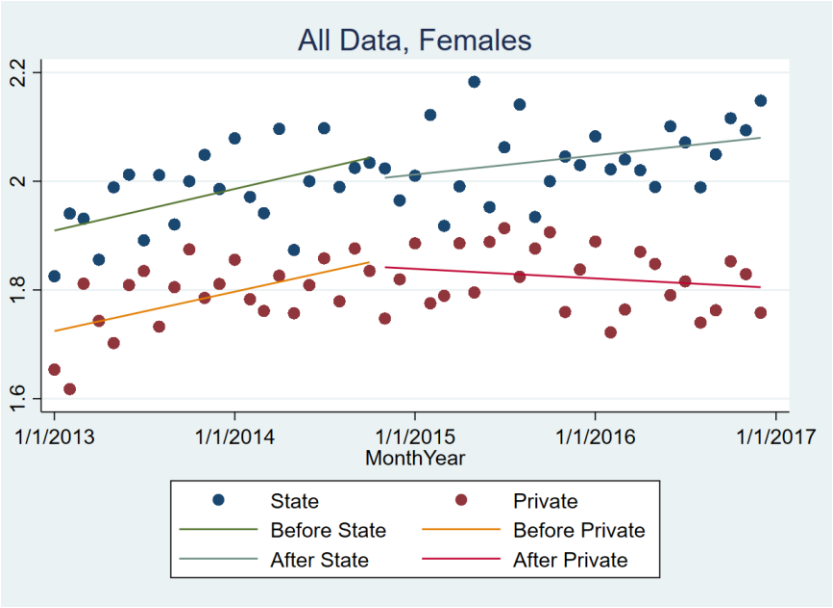
Notes: "Private" includes all workers in the private sector as well as the certainly unaffected public field workers. "State" includes all remaining public sector workers. Threshold is set at two months post policy implementation.

Figure 10: Parallel trend scatter plot with linear fitted lines, all data, males



Notes: "Private" includes all workers in the private sector as well as the certainly unaffected public field workers. "State" includes all remaining public sector workers. Threshold is set at two months post policy implementation.

Figure 11: Parallel trend scatter plot with linear fitted lines, all data, females



Notes: "Private" includes all workers in the private sector as well as the certainly unaffected public field workers. "State" includes all remaining public sector workers. Threshold is set at two months post policy implementation.

While Figure 9 and Figure 11 more clearly confirm that the groups were following a similar general trend prior to the policy and then diverged thereafter, Figure 10 is not quite as plainly conclusive. The diverging trend in Figure 10 is evident, but the pre-policy fitted line for the treatment group seems to be skewed up and to the left by a bunching of a few early data points. The variance in the related data point pattern, however, seemingly signals a flatter general trend. Moreover, there appears to be a very similar upwards sloping pattern throughout 2014 to that of the control group. Therefore, we feel that the figures generally validate that the overall groups were on a similar trajectory prior to the threshold and diverged after the policy implementation. Additional parallel trend figures for every subsample regression that led to the main findings discussed above are available in Appendix Figures A1 – A6.

Most of the figures, similarly as above, readily confirm the validity of the parallel trends assumption. Moreover, while some of them are not as clean as Figure 11 (including some that have crossing fit lines, akin to the issue in Figure 10), they mostly show more-or-less similar trends pre-policy and conclusive differences in their respective trends post policy implementation. There are a few where the parallel trend assumption begins to get questionable. Most distinctly are the figures for females and married females without children at the 40-hour threshold, which show them diverging with their counterparts prior to the threshold and then seemingly following a more parallel trend post implementation this is not surprising though, given the placebo effect analysis outcome. Another is for females with small children at the pairwise 40-hour margin. When carefully examining that data point pattern, it appears that there was a horizontal drop in their working hours directly following the policy, which then slightly recovered over time, giving the illusion that it diverges pre-policy and becomes parallel post policy. For males with older children at the 40-hour

pairwise margin, the fit lines also are rather deceiving as there is a decreasing trend in the treatment group prior to the policy, which then seems flat thereafter, but that is really due to an increase in variance for that group in that subsample post policy implementation. Finally, treatment males with small children at the 60-hour pairwise margin seem to have a decreasing trend pre-policy that flattens out and becomes parallel with the control group, but it may be that the fit line is being flattened out by what seems to be a single data point that is low at a later date. This is supported by the facts that the same figure for the 60-hour threshold shows clear divergence post implementation and both figures show almost no change in the trend for the control group pre- and post-implementation. Consequently, we conclude that the parallel trends analysis supports the parallel trends assumption and the findings above.

6. Discussion

An overall depiction of the effect of the policy upon labor participation has been revealed from the main threshold results. Despite the beliefs and intentions of some members of the Georgian parliament, the public office working hours do not seem to have been a "family friendly" barrier to female labor participation. In fact, employees with children reduced their working hour engagement more than their private sector counterparts, because of the policy. On the other hand, the engagement of women without children substantially increased, both across the 20- and 40-hour thresholds, especially for married women without children. Furthermore, there is already a weak indication in the output that there was a small positive effect upon working hour engagement for women with children across the 20-hour threshold. In addition, the age analyses uncovered an inconsistent pattern of effects across age groups, with not much difference at the 20-hour threshold, older people with children bearing the greater brunt of the negative effects and younger women without children experiencing most of the positive effects at the 40-hour threshold, and younger men being most negatively impacted at the 60-hour threshold.

This shifting of working hours seems to have been caused by the policy negatively affecting the ability of full-time and over-time employees with children to work the longer hours that they had been working prior to the implementation of the policy. Married women without children were probably then able to take up most of those hours, perhaps due to the combination of having more flexible schedules than their colleagues with children and more free time from a more settled-down personal life than their single colleagues. This finding is further supported by the robustness checks results and the ordinal findings of the short-term and September analyses, which showed negative effects upon working hour engagement beginning to occur much earlier and dissipating into 2016 and the positive effects beginning to occur later on and accumulating into 2016. The analyses also revealed that the policy, which caused a 30-60 minute impingement upon individual and, by proxy, household schedules, is transient in nature, with stronger effects in the short-term that disperse over time as a new steady state is attained.

Supplementing the main threshold analyses with the pairwise analyses both confirmed and enhanced many results from the threshold analyses as well as further revealed new findings. Tables 6, 7, and Appendix Table A8 focused on the intervals just below and above each of the thresholds in the previous section. Altogether, they reinforced the conclusions above as well as additionally demonstrated that employees with children that were working part-time (20 hours or less), especially men with older children, also experienced an increase in their working hours as a direct result of the policy. This is the only evidence of any positive, "family friendly" effects resulting from the implementation of the policy. Moreover, the pairwise analyses helped confirm that the reduction in working hour engagement experienced by employees with children, was borne most by men with older children around the 40-hour margin, women with younger children around the 40-hour margin, and men with younger children around the 60-hour margin. Furthermore, they uncovered that unmarried women without children may have increased engagement across both the 20- and 40-hour margins, which had not been evident from the threshold analyses. All in all, the pairwise analyses proved to be worthwhile as well as motivated further investigation.

6.1. Further Investigation

While the above substantially resolves the research question we set out to answer, we continue to use the methodological setup to attempt to further investigate additional subsample groups in order to see if we could identify any more circumstantially-specific effects of the policy. One circumstance that we conjectured as potentially influential on one's decision to increase or decrease labor participation at work is if they happen to be working in multiple jobs. Another circumstance is related to the makeup of a household. Specifically, we supposed that married couples with one partner in the treatment group and one in the control group may face a greater strain to their previously established status quo. Moreover, this may be especially true for couples with a single vehicle.

6.1.1. Multiply-employed

The GeoStat survey asked participants if they held secondary employment. By dividing those that answered yes and no into two different subsample groups, we evaluated how each group was affected by the policy. Subsample groups by multiple employment make up part of every main analysis table in the Appendix. Appendix Table A54 breaks down the two subsample groups, those with one job and those with more than one job, by threshold and gender. Across the thresholds and genders, the results tend to follow the main results with the single employment group being stronger, more statistically significant versions of the full sample group and the multiply-employed group displaying much weaker, insignificant results. Furthermore, while the results from the more strict treatment groups tend to be reflective of those in the pure public/private sector specification, one result that stands out in opposition to both of these trends is that of multiply-employed females at

the 20-hour threshold for the stricter treatment specifications. Since the effect at the 20-hour threshold is undeniable, not opposed by the placebo analysis, and the sample size large enough, we further divided that group into the subsample groups used in Appendix Table A54.

As the sample sizes tend to get rather small in Appendix Table A55, we must weigh the results carefully. It seems that multiply-employed female workers without children continue the previous pattern of increasing their working hour engagement at the 20-hour threshold, but there is further indication that women with children had increased engagement at this threshold. Additionally, providing support for the unique finding in Table 7, there is a potentially adequate sample size showing men without children giving up working hours as a result of the policy. This time the magnitude and statistical significance are both strong. The placebo effect analysis finds no opposing results, though that is based upon a very small sample size.

6.1.2. Mixed Sector Couples

In order to evaluate how mixed sector couples may have been affected by the policy, we limited the subsample to only married couples. Then we identified which couples had one partner in the private sector and one in the public sector.[8] Next, we summed up all the automobiles, trucks, minibuses, and motorcycles into a single variable we dubbed "vehicle" and divided the mixed sector couples into groups that had zero, one, or more than one vehicle. We also then further divided the mixed sector couples into smaller subsamples by which spouse was in the private sector and which was in the public sector. For the vast majority of the couples in the dataset, the "head" of the household in a married couple is the husband and the "spouse" is the wife. Finally, we again divided these subsamples by those that had zero, one, or more than one vehicles. It is presumably not surprising that our sample sizes sometimes dropped far below a minimal level for central limit theorem to reasonably be in effect. Nonetheless, we present all the results of these analyses as part of every main analysis table in the Appendix.

At the 20-hour threshold (Appendix Table A2), the mixed-sector-couples results reflect the findings of the corresponding main sample analysis at a generally lower statistical significance. It seems that females in couples without vehicles increase their engagement most at this threshold, which may be more related to their income and wealth circumstance than anything related to the disruption of their transportation routine. While there are not too many divergent results, one that stands out is for men that are part of a couple where the head of the family is in the public sector and the spouse in the private sector. These men's hours seem to be severely reduced below the 20-hour threshold because of the policy. However, given the sample size, this result is probably specious.

[8] This may not be exactly treatment versus control, as evidenced by our treatment specifications. However, technical limitations and sample sizes resulted in this division. Moreover, this analysis is beyond the scope of our main research question and we consider this close enough to satisfy curiosity and possibly intrigue future research.

Appendix Table A3 may indicate a few new insights on top of those from the 40-hour threshold in the main analysis, though the sample sizes in the majority of the further divided subsample groups tend to be unreliably small. One finding that does seem to come with a large enough sample size for proper inference is that men in mixed sector couples reduce engagement more than their full subsample counterparts (at a substantially increased percent compared to the main analysis), especially for those in couples with just one vehicle. However, there is a modestly statistically significant effect found in the placebo analysis for the mixed sector couple males with just one vehicle, so the policy may be exacerbating an underlying trend. The output would also indicate that the effect is driven mostly by men in a mixed sector couple where the head of the family is in the public sector, but the sample size is already too small to consider this a reliable inference.

One result for women that may be approaching a large enough sample size is the strong, positive effect displayed by women that are part of a mixed sector couple where the head is in the private sector and the spouse is in the public sector. The combination of the negative effect experienced by men in mixed sector couples (especially with just one vehicle) and positive effect experienced by women in mixed sector couples where the spouse is in the public sector may imply updates in social norms or that women have gained intra-familial bargaining power over their careers, their husband's time, and limited households resources (exemplified by the couples with only one vehicle). Furthermore, the negative effect experienced by males in mixed sector couples is driven mostly by men in couples where the head of the family is in the public sector. Moreover, the considerable increase in female working hours for mixed sector couples is most driven by women in couples with more than one vehicle and in couples where the spouse is in the public sector with only one vehicle. Of course, these findings come with the consequential caveat that the sample size is very small in the detailed subsamples.

The 60-hour threshold by mixed sector couple analysis in Appendix Table A4 expectedly returns almost no statistically significant β_3 coefficients, except with mixed sector couples, where the head of the family is in the private sector and the spouse in the public sector.

6.1.3. Interpretation of Further Investigations

Altogether, the household makeup analyses seem to indicate that being part of a mixed sector couple does seem to make a material difference to those affected by the policy. For full-time male employees, especially those that have only one vehicle, the effects are substantially more negative. For part-time female employees, the effect may be moderately more positive for those in a mixed sector couple with one or zero vehicles, though the latter is probably more related to a lack of wealth and income than to transportation turmoil (i.e. indicative of an employee that would work more hours if the opportunity arises). Finally, while there is some evidence that full-time female employees in couples where the spouse is in the public sector experience much stronger positive effects, it is unclear whether or not the inference is reliable due to sample size. Altogether, these

findings may signify an overall change in social norms or female gains in intra-familial bargaining, perhaps affecting resource distribution and household division of labor; though considering the findings by Kachkachishvili (2014), changes in the household division of labor would more probably be minor in nature.

The multiply-employed analysis found that the only divergence from the main analysis was occurring at the 20-hour threshold. Pairwise analyses reflected these trends at the 20 hours or less versus 21-40 hour interval pair, but also revealed a negative effect occurring for those with the most working hours (at the 60-hour threshold), though with a small sample size. It may be that most of those who worked 20 hours or less in the public sector and were multiply-employed added hours to their public sector jobs once it became possible. Those that were working more than 60 hours may have been more bound by physical and scheduling constraints, related to their other employment and biological needs, and were forced to give up working hours. Further delving into the 20-hour threshold revealed that multiply-employed female workers without children continued the previous pattern of increasing their working hours at the 20-hour threshold. However, we know from the earlier placebo effect analysis that this is probably not directly caused by the policy. There is also fairly strong evidence from a potentially large enough sample size showing multiply-employed men without children giving up working hours due to the policy. It could be that the new hours conflicted with their other jobs and, therefore, they reduced their hours in the public sector job to adjust. Furthermore, there is once again an indication of women with children gaining working hours at this threshold, though with a questionable sample size, which yet might echo the earlier interpretation that the policy may have been "family friendly" for at least part-time employees.

7. Conclusion

On September 1, 2014, the country of Georgia enacted a unique policy moving the working hours of public office employees from 10:00-19:00 to 9:00-18:00, impacting the working hour schedules of all affected employees. While not the official or main reason for implementing such a policy, some members of parliament had believed that the new hours may be "family friendly", making it easier for women to balance household and professional responsibilities, and thus increase female labor participation. This policy affected an estimated 200,000 employees, yet the impact of this policy had never been evaluated. Moreover, we were unable to find any economic literature evaluating any policy that exogenously adjusted the working hours of a significant portion of employees in an economy. Nevertheless, since the effects of the policy variously impacted employees across multiple characteristics, especially by gender and family type, this study is most related to gender inequality, household division of labor, and intra-familial bargaining literature. Due to the access the Georgian government provides for their household data survey combined with the fact that the policy did not affect the private sector, we were able to implement a difference-in-

differences methodology to accurately analyze whether or not the policy increased female labor participation and gender equality.

The results discussed in the last section of this paper revealed that the policy had no effect upon the extensive margin and, instead, directly led to a substantial decrease in working hour engagement by full-time employees with children. While there was a greater expansion in engagement in the public sector than in the private sector by women without children, the placebo effect analysis discovered that this was a trend already occurring prior to policy implementation. We infer that those hours gained by married women without children and, to a lesser extent, unmarried women without children, were more a repercussion of the negative effect upon working hours of full-time employees with children. Although there was evidence of a modest increase in engagement by part-time employees with children, representing the only positive "family friendly" effect, it does not come close to the magnitude of the negative effect upon the full-time employees with children. Therefore, we assert that the policy did not directly lead to an overall increase in female labor participation. Nevertheless, as the majority of the negative effects upon engagement were upon male employees, and as female employee engagement increased, it could be argued that the policy did indirectly result in increased female labor participation, increasing the female side of the gender balance in the labor market, and thus increase gender equality.

Moreover, there were a few additional insights gained into the effect of the policy. The analyses revealed that male employees with older children were both those that had the largest general negative effect on their engagement when working 40+ hours (though just slightly more so than men with younger children) as well as the largest general positive effect on engagement for part-time employees working 20 hours or less. Hence, despite the female-focused intentions of certain parliament members, the policy directly affected male employees on both sides of the spectrum more than female employees. It was also found that there were especially negative effects upon engagement of male employees that were part of a mixed sector couple, especially when they had only one vehicle. There are even indications that unmarried men without children had some modest negative effects on engagement from the policy. On the more positive side, part-time female employees in a mixed sector couple having zero or one vehicle showed considerably positive effects upon their engagement. This may also be true for full-time female employees in couples where the head of the household in the private sector and the spouse in the public sector, but this result has a questionable sample size. All in all, the additional insights may imply increased female intra-familial bargaining power, or that Georgian fathers and husbands have begun to participate more in household duties and are open to more modern feminist outcomes than the UN gender survey found. Both the former and latter explanation imply an occurring or future evolution in social norms. Perhaps this may motivate future research.

Regarding future research, we would recommend studies into the associated energy consumption effects (could be of considerable value to environmental and daylight savings time literature), the resulting change in accessibility of governmental service provision, the effects upon income and

consumption of the affected employees, and how the policy may have affected the amount and manner family members spend time together. For example, the policy may have led some families to spend less time together which may negatively influence family well-being, especially for spouses, as, ceteris paribus, the more time spouses spend together, the more satisfying the marriage (Kingston & Nock, 1987).

This paper contributed to the vast working hours research literature by being the first paper that evaluated such a work hour shift policy. It may also directly contribute to the gender inequality and intra-household/intra-familial literatures. To a lesser extent, it may be useful to those that study changes in work shifts, work-life balance, impact on happiness, and impact on the environment. While the policy evaluation successfully answered the research question and provided a few interesting insights, the research is not without limitations. Since the survey responses for weekly working hours were in intervals as well as subject to measurement error, our results are inexact and only orientational. Furthermore, the external validity outside of the region or with alternative working hour status quos is certainly debatable. While we do not believe the results herein would extend directly to counterfactual situations around the world, we would venture to presume that the random disruption of a steady state in working hours would likely result in generally negative consequences for employees with children, at least for the short- to mid-term, probably because such employees have set up their household schedules around their working hours. Moreover, as Alberts et al. (2011) have shown that the intrahousehold division of labor may be rather universally human in nature, perhaps some of our findings would translate directly into counterfactual situations. They would probably be most mitigated by the nature of the working hour shift, the makeup of the affected workplaces, the related societal conditions (i.e. school starting times and other major scheduling conflicts), and the social norms and/or intra-familial bargaining circumstances. To any policy makers that are considering a similar work hour shift and wish to ensure less negative effects, we would recommend that the policy be accompanied by even greater flexibility, daycare, and/or other support for their employees with children.

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Appendix (Available Online)

This policy evaluation has two appendices. Please follow the link below to access the appendix with all cited tables, figures, and full covariate results. The unabridged appendix with all results is available by request.

https://www.dropbox.com/s/gcmajfkwzyajogv/OAFGPSPSWH.pdf?dl=0

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