

Childcare, COVID-19 and Female Firm Exit

Impact of COVID-19 School Closure Policies
on Global Gender Gaps in Business Outcomes

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Abstract

This paper estimates the impact of a large negative childcare shock on gender gaps in entrepreneurship using the shock created by national COVID-19 school closure policies. The paper leverages a unique data set of monthly enterprise data collected from a repeated cross-section of business owners across 50 countries via Facebook throughout 2020 and in 2021. The paper shows that, globally, female-led firms were, on average, 4 percentage points more likely to close their business and experienced larger revenue declines than male-led firms during the COVID-19 pandemic in 2020 (male firms closed at a rate of 17 percent in 2020, and 12 percent in 2021). The gender gap in firm closures persisted into 2021. The closing of schools, a key part of the care infrastructure, led to higher business closures, and women

with children were more likely to close their business in response to a school closure policy than men with children. Female entrepreneurs were found to take on a greater share of the increase in the domestic and care work burden than male entrepreneurs. Finally, the paper finds that women entrepreneurs in societies with more conservative norms with respect to gender equality were significantly more likely to close their business and increase the time spent on domestic and care responsibilities in response to a school closure policy, relative to women in more liberal societies. The paper provides global evidence of a motherhood penalty and childcare constraint to help explain gender inequalities in an entrepreneurship context.

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1 Introduction

Female entrepreneurship is an important vehicle for women’s empowerment and economic growth (Duflo, 2012). Yet, women only represent 34% of all business owners worldwide (World Bank, 2020), and a gender gap in firm performance has been shown across a number of country contexts (De Mel, McKenzie and Woodruff, 2009; Fafchamps et al., 2014; Berge, Bjorvatn and Tungodden, 2015; Hardy and Kagy, 2018; World Bank, 2019). Labor economists who study the gender wage gap often highlight a childcare constraint and motherhood penalty to explain remaining gender inequalities in labor market outcomes (Goldin, 2021; Bertrand, 2020). However, in entrepreneurship, there is less evidence linking childcare and gender inequalities in firm performance, with a few exceptions (see for example, Delecourt and Fitzpatrick (2021)).

This paper examines childcare as a constraint to women’s entrepreneurial success. Specifically, we examine the impact of national school closure policies related to COVID-19 on business outcomes, disaggregated by the gender of the firm owner. We consider a government-mandated COVID-19 school closure policy within a country as a shock to the domestic and childcare-related activities for households.¹ Overall, the COVID-19 pandemic has led to increased scrutiny on the public policies around childcare and norms around unpaid domestic and care work. For example, in the US there were frequent media reports of a greater exodus of women from the labor market, largely due to the increase in the domestic work burden as a result of the closures of schools and childcare facilities (Pitts, 2021).

The paper asks whether COVID-19 related school closure policies had a differential impact on the time spent on care and domestic responsibilities and business performance outcomes for male and female entrepreneurs. To shed light on this, the paper links entrepreneur-level and firm-level data collected from business owners across 50 countries in 2020 and 2021

¹According to UNESCO, more than 1.5 billion children were out of school in April 2020, with a quarter of a billion still out of school by the end of October 2020. Moreover, the COVID-19 pandemic has also dampened or removed the possibility of informal childcare through extended family support networks (UNESCO, 2020 and 2021).

with publicly-available time-series data on school closure policies and mobility in those countries.

The firm-level data was collected as part of the Future of Business (FoB) survey which is administered on Facebook to business owners and managers with a Facebook Business Page (see global descriptive report Facebook Data For Good (2020)).² The data are a repeated cross-section of approximately 25,000 firms across 50 countries surveyed every month over six months in 2020 and in the last two weeks of September 2021 for a total sample size of 154,458 firms.³ The survey was designed specifically to examine how childcare and domestic responsibilities affect business performance and included questions on gender, family characteristics, childcare arrangements, time spent on childcare and domestic responsibilities, as well as core firm-level outcomes such as business closure and revenues.⁴

In our main analysis we trace through the effects of school closure policies to increased care and firm closure, controlling for a mobility index in the country that captures the contemporaneous economic impact of the COVID-19 shock on business demand. Accounting for movement in the country helps us to isolate the impact of the childcare shock from an overall COVID-19 related demand shock on business outcomes.⁵ We also control for a country's wealth using 2019 level of GDP in each country. In the paper we show that school closures lead to higher firm closures and increased responsibilities within the home and this effect is only present for women entrepreneurs with children under 18. Women entrepreneurs with older children or no children, are not differentially affected by school closure policies than male entrepreneurs.

Our contributions are threefold. First, we contribute to a growing literature documenting

²In May 2020, the Future of Business (FoB) survey was adapted from its standard bi-annual approach to run six monthly survey waves to provide timely insights on the impact of the COVID-19 pandemic on small businesses and to take the pulse of their needs and challenges.

³High-frequency survey data was collected in the last week of every month throughout 2020 from May 2020 to October 2020, and September 2021 at a time when traditional data collection systems were disrupted.

⁴Domestic responsibilities include household chore activities such as cooking and cleaning.

⁵School closure policies related to COVID-19 are taken from data collated by UNESCO that indicates whether a country was fully open, partially open, on an academic break or closed due to COVID-19 over time (UNESCO, 2020 and 2021). Mobility data is from Google mobility data which records the change in mobility relative to pre-COVID-19 pandemic levels (Google, 2020 and 2021).

the gendered economic impacts of the COVID-19 pandemic that shows the employment shock from the pandemic disproportionately impacted women (Kugler et al., 2021; Oreffice and Quintana-Domeque, 2021) and women-led firms (Torres et al., 2021; Liu, Wei and Xu, 2021). We show that the COVID-19 pandemic impacted male and female entrepreneurs differently throughout 2020 and persisted into 2021. We find, globally, more female-led businesses were closed during the COVID-19 pandemic, and experienced greater sales and employment reductions than male-led businesses throughout the 2020 survey period. Specifically, female-led businesses were 4 percentage points more likely to close their business than male-led businesses in 2020.⁶ When we account for firm characteristics such as sector of operation, firm size and firm age, the gender gap in business closures narrows slightly to 2.9 percentage points but these characteristics do not fully explain the difference. In 2021 we find a similar gender gap in business closures of 2.8 percentage points after controlling for firm sector, size and age to show gender gaps in business outcomes found in 2020 persist into 2021. We examine alternative explanations for the gender gap in firm outcomes and show that entrepreneurs are having to devote a significant proportion of time to domestic and care responsibilities, with women still doing the bulk of this work.⁷ The paper contributes to the literature that examines the intrahousehold allocation of time on paid and unpaid work and the gendered division of domestic labor, especially during the COVID-19 pandemic (Giurge, Whillans and Yemiscigil, 2021).

Second, we analyze the impact of COVID-19 related school closure policies on the intrahousehold allocation of time spent on paid and unpaid care work, and business outcomes for entrepreneurs with child dependents. We show that a school closure policy in response to COVID-19 led to greater time spent by both male and female entrepreneurs on domestic and care responsibilities, as one might expect. However, we find evidence of a motherhood penalty and show that COVID-19 related school closure policies had a disproportionate im-

⁶Male firms closed at an average rate of 17% in 2020.

⁷There is an average 1.9 hours per day gap on the time spent on domestic and care responsibilities when comparing female and male entrepreneurs for the full sample of firms.

impact on the time spent on domestic and care responsibilities of female entrepreneurs, relative to male entrepreneurs. That is, women entrepreneurs took on a greater share of the increase in domestic and care work than men in response to a school closure policy. As a result of this extra domestic work burden, female-led businesses were 2 percentage points more likely to close their business in response to a school closure policy than male-led businesses and spent less time working in their business.⁸ Married women with children are also more likely to explicitly report that caring for children, household chores and homeschooling affected their ability to focus on work than married men with children throughout the pandemic.

Third, we show how the impacts of school closure vary as a function of pre-existing beliefs and norms around gender equality in a country. We test how gender norms, measured in 2019 before the onset of the COVID-19 crisis, may have mitigated or exacerbated the gender-differentiated economic impacts of a school closure policy.⁹ Heterogeneity analysis by beliefs and norms suggests that the school closure impacts were greater in societies with more conservative views towards gender equality relative to those with more liberal views. Specifically, women entrepreneurs with children in relatively more conservative societies were more likely to close their business and spend a greater amount of time on domestic and care work than women in more liberal societies, in response to a school closure policy.

Norms around care differ across societies but are highly gendered within all societies – women often shoulder a larger share of domestic and care work than men. Among parents, mothers are traditionally the main providers of childcare and accumulate a disproportionate amount of housework (Gimenez-Nadal and Sevilla, 2012). In this paper we find that a childcare shock and increased responsibilities within the home disproportionately impacted women entrepreneurs with children. Our results are directly relevant to the ongoing policy debate on advocating for care-related policies, as well as programs addressing gender norms in unpaid domestic and care work, and engaging men in fatherhood care duties (Devercelli

⁸The average closure rate over the six survey waves in 2020 was 17% for male-led businesses.

⁹Norms and personal beliefs towards gender equality were collected prior to the start of the pandemic from entrepreneurs in the FoB survey in December 2019 from 108 countries.

and Beaton-Day, 2020). The childcare shock has raised the question of whether we can expect the gender norms around care responsibilities to be permanently shifted as a result of the pandemic. The optimistic view is that the COVID-19 crisis presents an important window of opportunity to encourage a lasting shift in gender norms that enables a transition to a more equitable distribution of care and domestic work between men and women after the pandemic (Bolis et al., 2020).

Globally, a lack of affordable and quality childcare services is often associated with lower rates of female labor force participation (Heath and Jayachandran, 2018; Pettit and Hook, 2005). Moreover, when countries have better childcare availability, women are more likely to manage businesses with higher growth potential (Thébaud, 2015). While the gender gap in unpaid care work was an acknowledged constraint to female labor force participation and productivity before the pandemic, COVID-19 has exposed the extent of the inequality, and led to increased advocacy for public policy initiatives that support families (Sevilla and Smith, 2020). The COVID-19 pandemic has put the unequal burden of domestic responsibilities into focus and the policy choices made today could have important consequences on women’s economic empowerment and gender equality for decades to come.

The remainder of this paper is organized as follows. Section 2 highlights some of the literature on existing interventions and policies related to childcare. Section 3 describes the data, outcomes and sample. Section 4 details the empirical strategy used for the analysis. Section 5 presents the results, including heterogeneity analysis by pre-pandemic gender norms; and Section 6 concludes.

2 Childcare, Gender Norms and Female Labor Supply

The spike in married American women’s employment in the 1940s is often credited with a shift in social norms around gender roles after women had to take on work outside the home during the Second World War (Goldin, 1991). In 1941, the US federal government enacted a policy to provide funding for high quality government-run childcare centers so

that women could work as part of the war effort. The war created a sufficient shock that allowed American women to rethink the roles that they should assume in their families and communities and redefined their role in the labor market with quality childcare provision recognized as an important contributing factor to their participation.¹⁰ More recent work by Goldin (2021) in the US suggests that understanding the dynamics within the household and the allocation between unpaid work and paid work responsibilities between men and women is key to understanding the comparative advantages in the labor market.

Work such as childcare, cleaning, and cooking is necessary for a household's welfare, however, women still shoulder the brunt of this often invisible and undervalued workload (ILO, 2018). The unequal sharing of domestic responsibilities between men and women constrains women's leisure and time for income earning. One way to alleviate some of the burden of domestic and care work on women is to redistribute responsibilities within households, so that the work is shared more equally across genders. However, redistribution of this work may require addressing social norms that characterize housework and care work as the responsibility of women. For many men, engaging in housework is inconsistent with their male gender roles and indicates weakness. When men feel threatened in their role as providers, they may be even less inclined to engage in behavior associated with female gender roles (Muñoz Boudet et al., 2013). The increased focus on childcare as a constraint to economic activity during the COVID-19 pandemic is potentially an opportunity to change and transcend traditional gender roles (Hennekam and Shymko, 2020). Countries that advocate for women's economic empowerment and care related policies need to confront and address the beliefs and norms around traditional roles of the female caretaker and male breadwinner (Jayachandran, 2021). In order to see a real and lasting shift in norms may require a more targeted approach that encourages and applauds deviation from the gender norms around sharing domestic and care responsibilities.

Gender norms training programs in developing country contexts have shown some promise

¹⁰In contrast to this is the 1950s imagery of the domestic housewife that attempted to guide women to conform and adhere to traditional norms around gender roles.

in encouraging a more gender equitable sharing of domestic and care tasks. For example, in Rwanda, a training for couples (called *Bandebereho-Kinyarwanda* for “role model”) engaged expectant fathers and their partners in sessions of critical reflection on fatherhood and caregiving resulted in higher levels of men’s participation in childcare and household tasks compared with participants in a comparison group who did not receive training (Doyle et al., 2018). Similarly, in the Democratic Republic of Congo, the Engaging Men through Accountable Practice (EMAP) program, a 16-week men-only discussion group, led to higher levels of male participation in childcare and household tasks compared with a comparison group (Vaillant et al., 2020; Pierotti, Lake and Lewis, 2018).

Furthermore, control over the time and location of work through greater workplace flexibility may help close gender gaps in earnings (Goldin, 2014). Laws and policies around work flexibility may allow parents to better combine career and family responsibilities. For example, the German government signed the “Charter on Family-Oriented Working Hours” in 2011 that supports initiatives to develop family-friendly workplaces that allows for flexible working arrangements (OECD, 2017). As a business owner the sector of operation may determine the potential to benefit from flexible hours (Goldstein, Gonzalez and Papineni, 2019). For example, in a consumer facing sector such as retail we might expect the hours of work to be driven by customer demand. During the COVID-19 pandemic the business sector may have also determined an entrepreneur’s ability to work from home. For example, those running a business in a non-consumer facing sector (e.g. ICT) may have been able to find hours to work from home that better fit around their children’s schedule.¹¹

While the closing of schools due to COVID-19 was a necessary policy response to contain the coronavirus, the results in this paper put into perspective the extent of the gender inequality of the childcare responsibility and the need for appropriate policies around childcare provision beyond the pandemic. Policies that increase access to quality, affordable early

¹¹In the analysis for this paper there was not enough granularity in the data on sector for us to establish whether a sector is relatively more or less flexible. We encourage future research to look into the question of flexibility of business sectors as it pertains to gender gaps for entrepreneurs. In the paper we show that the gender gap in firm closures narrows slightly when accounting for sector but is not fully explained by sector.

childcare services would expand the amount of time that parents have available for paid work. In developed countries women's access to childcare (mainly through cost subsidies) has been found to increase female labor force participation (Bick, 2016; Givord and Marbot, 2015). For example, in the US, the military provides subsidized childcare for military families and the government provides public schooling but not pre-school or daycare. Evans, Jakiela and Knauer (2021) review 478 studies on early childhood development (ECD) interventions in low- and middle-income countries to find only 19 of them (4%) examined impacts on labor market outcomes for mothers. Scaling up public and private services for childcare (especially for preschool-age children) can be done through a range of policies.

In many developing countries, parents rely heavily on informal childcare arrangements in the absence of institutional childcare arrangements (Halim and Reynolds, 2021). In Kenya, a program that subsidized center-based childcare improved women's ability to work. Women in Nairobi, Kenya, who were offered vouchers for subsidized early childcare were, on average, 8.5 percentage points more likely to be employed than those who were not given vouchers (Clark et al., 2019). In Mozambique, the provision of childcare through community-based pre-schools had a positive impact on mothers' labor supply (Martinez, Naudeau and Pereira, 2017). Similarly, in Burkina Faso the provision of childcare as part of a public works program increased women's employment (Ajayi, Dao and Koussoubè, 2022).

The failure to address the childcare needs of women who want to work undermines efforts to promote women's economic empowerment. In the following we document the impact of a negative childcare shock and increased responsibilities within the home in a business context.

3 Data and sample

3.1 Data

Our main data comes from seven waves of the Future of Business (FoB) survey that collected data from business owners and managers from over 84 countries.¹² The FoB survey is a collaboration between Facebook, the Organisation for Economic Co-operation and Development (OECD), and the World Bank to survey micro, small and medium (MSME) sized businesses on Facebook.¹³ In May 2020, Facebook adapted the standard bi-annual approach of the FoB survey to instead run monthly waves of the survey to provide timely insights on the impact of the COVID-19 pandemic on small businesses. The partners developed a short enterprise survey instrument to collect data from business owners and managers who have a Facebook Business Page. The questionnaire is designed to measure the impact of COVID-19 on some key dimensions: operation of the business, revenues, employee adjustments, expectations and uncertainty about the future, and preferred methods of policy support during COVID-19. A number of demographic questions (for example, gender, age, and marital status) as well as time spent on work and domestic and care responsibilities for the respondent and their spouse, and breadwinner status within the household were also included.

The COVID-19 monthly waves sampled from over 84 countries around the world where the Facebook small business penetration is sufficient to achieve a meaningful sample.¹⁴ The first of these monthly surveys Wave I from 28-31 May 2020 surveyed around 26,000 mostly small businesses.¹⁵ The monthly survey waves are a repeated cross-section of approximately

¹²The sample for this paper consists of approximately 150,000 business owners from 50 countries as we restrict the sample to those countries with sufficient sample size to conduct gender-disaggregated analysis in each survey wave.

¹³The country level aggregated data set from the Future of Business Survey is provided for free through a Creative Commons license and is available on the World Bank Data Catalog as well as on Humanitarian Data Exchange.

¹⁴The bi-annual FoB surveys typically are done June and December of every year and cover a larger set of over 100 countries. While 84 countries were surveyed for the COVID-19 high-frequency waves in 2020, only 50 countries had sufficient sample size to conduct gender-disaggregated analysis.

¹⁵Each survey wave was targeted in the last week of every month over a six-month period in 2020. The first wave (Wave 1) of the FoB COVID-19 survey was conducted in May 28th to 31st 2020, Wave 2 June 24-30, Wave 3 in July 23-31, Wave 4 in Aug 24-31, Wave 5 September 23-30, and Wave 6 October 24-31.

25,000 businesses. In this paper we restrict the sample to the 50 countries that have sufficient sample size to conduct gender-disaggregated analysis to form a total sample size of 154,458 businesses. The target population of the Future of Business Survey are Facebook Business Page administrators that identify themselves as business owners and managers who take the survey on their Facebook mobile application.¹⁶

In order to look at the impact of school closure, we use school closure policies related to COVID-19 extracted from data collated by UNESCO that indicates whether a country was: fully open, partially open, on an academic break, or fully closed due to COVID-19 across time measured in daily increments (UNESCO, 2020 and 2021).¹⁷ In this paper we create a dummy variable to indicate whether schools were partially or fully closed in a country at the time of each survey wave (School Closure = 1 if schools fully or partially closed due to COVID-19, and 0 otherwise). Appendix B provides a table of the COVID-19 related school closure policies in place for all countries included in the analysis at the time of each survey wave throughout 2020 and in September 2021.¹⁸

Fears about virus contagion that were often coupled with lockdown measures to contain the COVID-19 virus reduced mobility and social interactions leading to a large shock to business demand, while also restricting the ability of firms to perform key business activities such as in-person sales. To account for this in our analysis we measure mobility in a country at the time of each survey wave by utilizing Google’s Community Mobility Reports (Google, 2020 and 2021). The Google mobility data are created with aggregated, anonymized sets of data from users who have turned on the ‘Location History’ setting on their phone and show how visits and length of stay at different types of places change compared to the median value, for the corresponding day of the week, during the 5-week period from January 3, 2020 to February 6, 2020. That is, mobility is indexed relative to a “baseline” level

Wave 7 was conducted in the last 2 weeks of September 2021. Appendix C includes further methodological details of the Future of Business survey.

¹⁶Over 90 million businesses estimated to be represented in this sampling frame (Facebook, 2019).

¹⁷UNESCO records the evolution of national school closures and re-openings on a daily basis.

¹⁸School closure status was fixed according to the first day of data collection for each survey wave e.g. for wave 7 on September 15, 2021.

that can be considered before the COVID-19 pandemic. The Google mobility data contains information on various categories of places such as: i) retail and recreation, ii) grocery and pharmacy, iii) parks, iv) workplaces, v) transit stations, and vi) residential areas. In the school closure analysis, we include control variables for mobility around retail and recreation, and workplaces since they are the most relevant for business outcomes.¹⁹

The final main piece of data we use provides us with a measurement of social norms around gender equality. In December 2019, prior to the start of the COVID-19 pandemic, the standard bi-annual Future of Business survey collected data on individuals' personal beliefs and norms towards gender equality across 109 countries (based on measures from Bicchieri (2016)). The survey elicited individual beliefs on gender equality by asking how much the survey respondent agreed with the following statement: do you think "men and women should have equal opportunities" using a four-point scale: strongly disagree, disagree, agree and strongly agree. The individual belief variable was coded as 0/1 where 1 is the respondent agrees or strongly agrees with equal opportunities; and 0 if respondent does not agree with equal opportunities. These beliefs are then aggregated at the country level to give a measure of the share (percentage) of the country who agree with gender equality in opportunities among the study sample.²⁰ A low share of agreement indicates more conservative views towards gender equality within a country and a higher share of agreement indicates more liberal or progressive views towards gender equality within a country. See Appendix D for a full description of the norms constructs used in this paper.

¹⁹Retail and recreation index covers visits to restaurants, cafes, shopping centers, theme parks, museums, libraries, and movie theaters. For example, during wave I of the Future of Business survey, on May 23rd 2020, globally, retail and recreation has a mean of -38, suggesting a 38 percentage point drop relative to pre-pandemic baseline levels for the 50 countries in the sample. In wave 6 of the FoB survey, on October 28th 2020, retail and recreation has a mean of -21, suggesting a 21 percentage points drop relative to pre-pandemic baseline levels.

²⁰The analysis for this paper includes countries with at least 100 male and female observations.

3.2 Sample

The sample for this paper consists of 150,000 business owners across 50 countries where there was sufficient sample size per country to conduct gender-disaggregated analysis. Facebook implements a modified simple random sample for survey invitations within each country.²¹ Sampling weights are determined for survey non-response patterns using characteristics most closely associated with non-response to Facebook surveys.²² We present the descriptive statistics of our sample by gender in Table G1 in Appendix G and describe them here.

The sample consists of male and female business owners and managers that are similar in age, education and household composition. The average age of male and female entrepreneurs is 37 years old; 57% of women entrepreneurs in the sample have at least a university or college degree relative to 54% of male entrepreneurs; and 97% of the sample have at least some secondary education. In terms of marital status: 78% of men and 75% of women surveyed report that they have a long-term partner or spouse. In the survey we ask about the types of dependents in their household: 41% of men and 37% of women in the sample report that they live with children under 5 years old, 59% of men and 66% of women in the sample report that they live with children aged 6-18 years old, and 30% of men and 25% of women in the sample report that they live with elderly dependents aged over 65 years old. The average income for the households in the sample in the past 30 days is USD2,733 for men; and USD2,729 for women, however this is mostly driven by households in North America and Europe.²³ Within their households, 83% of men and 56% of women report that they consider themselves to be the main income earner in their household.²⁴

²¹Once a respondent has been invited to a survey, they are ineligible for another survey for six months in order to reduce response burden and maintain response quality.

²²Non-response weights are constructed using an inverse-probability weighting approach (IPW) and a logistic regression is used to predict the probability of response given eligibility for the survey. Further details of sampling weights can be found in Appendix A.

²³Household income and revenues were reported in local currency of the respondent's country and converted to a US dollar amount by the research analyst using an average of the exchange rate for the survey period. The value was then rounded to the nearest 100 USD to mask information for data privacy reasons.

²⁴Breadwinner status was only collected for waves 2-5 and therefore is not used in the analysis for this paper.

Turning to the firms, female firms are smaller and more likely to operate with no employees (39% of sampled female-led firms have no employees versus 23% male-led firms).²⁵ On average, 64% of female-led enterprises in the sample have at least one employee, relative to 80% of male-led enterprises. In terms of firm size defined by the number of employees: male enterprises in the sample comprise of: 7.5% medium/large, 33.5% small, 39% micro, and 20% zero employees; and female enterprises comprise of 5% medium/large, 20% small, 39% micro, and 36% zero employees. The survey asked retrospective questions on firm revenues to capture firm size before the pandemic and the pre-pandemic average annual revenues (2019) for a female-led business is USD74,102 which is approximately 35% lower than a male-led business at USD114,392. In terms of the role in the business, 47% of respondents reported to both own and manage their business, 38% own the business; and 15% manage the business. In terms of industry, approximately 45% of male-led firms operate in the services and retail/wholesale sectors compared to 55% of female-led firms; with a greater proportion of men operating in the professional services and ICT sectors compared to women.

The sample of respondents of the Future of Business survey should be considered entrepreneurs with at least some digital access and the survey sample was designed to be representative of the Facebook Business Page administrator population and not of any country's business population. Nevertheless, the level of geographic coverage and sample size on the variables collected by the survey allow us a unique chance to examine the COVID-19 shock for a group of micro, small and medium enterprises on a global scale. Importantly, this survey was done at a time when traditional data collection methods were not possible. Since internet bandwidth and Facebook coverage have increased dramatically in recent years, with an approximate 2.9 billion monthly active users on Facebook at the time of writing, there is considerable scope to learn from this survey.²⁶

²⁵Throughout this paper we define the size of an enterprise using the number of employees of the firm in 2019 as follows: no employees if a number of employees is zero, a micro enterprise if number of employees is 1 to 4, small if number of employees is 5 to 49 and medium/large if the number of employees is 50 or over.

²⁶Total number of individuals on Facebook are estimated to be equal to the number of monthly active users worldwide as of the 4th quarter 2021 that were using Facebook Source: <https://www.statista.com/statistics/264810/number-of-monthly-active-facebookusers-worldwide/>

Furthermore, in terms of the representativeness of the business owners in the study sample, we are reassured that phone-based surveys of small businesses sampled from national business registries conducted by the World Bank and partners across 51 countries from April-August 2020 document similar impacts on business closures, sales and employment among small and medium enterprises as we find in this paper using the Future of Business survey (Apedo-Amah, 2020; Adian, 2020). Additionally, Torres et al. (2021) analyze the World Bank Business Pulse Survey data by gender and corroborate the findings in this paper that women-led businesses (micro) were disproportionately hit by the COVID-19 shock compared to businesses led by men.

While our measure of business closure is self-reported by the respondent in the survey, an additional concern might be that business owners who close their business could immediately unpublish their Facebook Business Page, and therefore be excluded from the sampling frame. The sample for the FoB survey is restricted to those who have active, published Pages, where active means they had some kind of activity in the previous 28 days. Business owners are not required to unpublish a Page if they close their business nor does Facebook require a Page to be unpublished after a business is closed. Activity and published status are assessed two weeks before fielding of the survey to minimize this concern. However, we do contend that results on business closures may only offer a lower-bound estimate on the true rate of closure. Appendix A includes further details of the Future of Business survey, as well as a detailed description of the main variables used in the analysis.

4 Empirical Strategy

In this section we first outline the empirical strategy to examine the differential effect of the overall COVID-19 pandemic for male- and female-led firms. Next, we turn to the empirical strategy used to analyze the impact of school closure policies related to COVID-19 for male- and female-led businesses. We begin the analysis for all business owners and managers in the sample and go on to also restrict the sample to those who report that they live with any

child dependents (18 years or younger) in their household.

We start our analysis with an examination of the overall male/female closure gap using:

$$Y_{ijt} = \beta_0 + \beta_1 Female_{ijt} + \gamma_1' X_{ijt} + \delta_r + \epsilon_{ijt} \quad (1)$$

where Y_{ijt} is the outcome of interest for firm i in country j at time t (seven waves of data where a random sample of business owners on Facebook were sampled each month). $Female_{ijt}$ is a dummy variable equal to 1 if the business owner is female; 0 if male. X_{ijt} is a set of controls for firm and entrepreneur characteristics, δ_r indicates region-of-the-world fixed effects and ϵ_{ijt} is the error term.²⁷ Equation 1 allows us to explore the time path by examining the gender gap in business during COVID-19 at the time of each survey wave for the six 2020 survey waves separately before we proceed in pooling the waves. We always present wave 7 collected in 2021 as a cross-section. We allow for general heteroskedasticity and use robust Eicker-Huber-White (EHW) standard errors throughout our analysis.

The main data are a repeated cross-section of firms. As discussed below, there is not much variation in the effects across rounds, so in equation 2, we pool the data for 2020 and add time fixed effects:

$$Y_{ijt} = \beta_0 + \beta_1 Female_{ijt} + \gamma_1' X_{ijt} + \delta_r + \alpha_t + \epsilon_{ijt} \quad (2)$$

where Y_{ijt} is the outcome of interest for firm i in country j at time t . $Female_{ijt}$ is a dummy variable equal to 1 if the business owner is female; 0 if male. X_{ijt} is a set of controls for firm and entrepreneur characteristics, δ_r indicates region-of-the-world fixed effects, α_t are time fixed effects in the form of the survey wave dummy variables. ϵ_{ijt} is the error term.

Next, we proceed to estimate the effect of school closures. To do this, we add the UNESCO school closure data and interact school closure with female business ownership:

²⁷Country fixed effects are not included since there is low variation in the school closure policy across time for each country.

$$\begin{aligned}
Y_{ijt} = & \beta_0 + \beta_1 Female_{ijt} + \beta_2 SchoolClosed_{jt} + \beta_3 SchoolClosed_{jt}xFemale_{ijt} \\
& + \beta_4 AcademicBreak_{jt} + \beta_5 AcademicBreak_{jt}xFemale_{ijt} \\
& + \gamma_1'X_{ijt} + \gamma_2V_{jt} + \gamma_3lnGDP_{2019} + \delta_r + \alpha_t + \epsilon_{ijt}
\end{aligned} \tag{3}$$

where Y_{ijt} is the outcome of interest for firm i in country j at time t . $Female_{ijt}$ is a dummy variable equal to 1 if the business owner is female; 0 if male. $SchoolClosed_{jt}$ is a dummy variable equal to 1 if schools were fully or partially closed in the country due to COVID-19 at time t of the survey wave. X_{ijt} is a vector of controls of firm i which includes controls for sector of business, firm size and age, role in the business, and demographics of the business owner, including marital status and types of dependents. In order to control for other factors that may be influencing both school closure and firm outcomes, we also control for $AcademicBreak_{jt}$ and $AcademicBreak_{jt}xFemale_{jt}$ that indicates whether the country j was in a scheduled academic break at the time of survey wave t . V_{jt} is a set of mobility controls in country j at time t . $lnGDP_{2019}$ is the natural log of the Gross Domestic Product (GDP) per capita in country j for the year 2019 i.e. before the pandemic. δ_r indicates region-of-the-world fixed effects, α_t are time fixed effects in the form of survey wave dummy variables. ϵ_{ijt} is the error term. We use robust Eicker-White (EHW) standard errors throughout.

Finally, we look at whether the school closure shock is either mitigated or accentuated by gender norms through the OLS estimation of equation 4:

$$\begin{aligned}
Y_{ijt} = & \beta_0 + \beta_1 Norms_{j2019} + \beta_2 SchoolClosed_{jt} + \beta_3 SchoolClosed_{jt}xNorms_{j2019} \\
& + \beta_4 AcademicBreak_{jt} + \beta_5 AcademicBreak_{jt}xFemale_{ijt} \\
& + \gamma_1'X_{ijt} + \gamma_2V_{jt} + \gamma_3lnGDP_{2019} + \delta_r + \alpha_t + \epsilon_{ijt}
\end{aligned} \tag{4}$$

Variables are defined as in equation 3, with the addition of norms from the 2019 round of the FoB data set. In this analysis we split the sample by gender of the firm owner for ease of interpretation. It is worth noting that the control for GDP here helps control not only for pre-existing economic conditions, but also any effect that levels of national wealth might have on norms.

$Norms_j$ variable encapsulates 4 different measures of progressiveness: men’s individual beliefs, women’s individual beliefs, men’s perceived community norms, and women’s perceived community norms. Men’s (Women’s) Individual Belief (0-1) is the proportion of men(women) in the country who agreed with the statement that *men and women should have equal opportunities* measured prior to the COVID-19 pandemic. Men’s (Women’s) Community Norm is the country-level aggregate of the perceived gender norm as reported by men(women) in the sample towards gender equality rescaled to be a continuous variable between 0 and 1 (in increments of 0.1). Higher values of the norms measures all indicate more progressive or egalitarian views within the country i.e. a more liberal society. Alternatively, a lower value indicates more regressive or discriminatory views i.e. a more conservative society. The beliefs and norms were collected before the pandemic in December 2019 and aggregated at the country level among both men and women.²⁸ Moreover, since this sample is not nationally representative, we also show how these data correlate with a comparable gender equality statement collected in the World Values Survey (WVS). Overall, this correlation is strong, giving us assurance that, in this vein, our sample is not unrepresentative.

5 Results

5.1 Gender Differentials in Firm Closure

Before presenting results on the impact of school closure policies, we examine the overall gender gaps in firm closures and performance during the 2020-2021 COVID-19 pandemic. Tables 1a and 1b show that the COVID-19 pandemic did indeed impact female-led businesses differently than male-led businesses throughout the 2020 survey period and continues to persist into 2021.

The repeated cross-section results, following equation 1, are presented in Table 1a. The time path results suggest that more female-led businesses were closed during COVID-19 than male-led businesses for each wave of the survey. We define closure as when the respondent

²⁸See Appendix D for a full description of the norms constructs used in the analysis.

reports that the firm closed sometime after January 31, 2020. When asked, about 90 percent of the entrepreneurs say they have some expectation of re-opening in the future.

[Table 1a about here]

For every survey wave in 2020 from May 2020 through October 2020, women entrepreneurs were more likely to have closed their business; and at the intensive margin, women who remained open spent less time on paid work activities than men.²⁹ For example, in May 2020, we find globally female-led businesses were 7.2 percentage points more likely to have closed their businesses than male-led businesses. The gender gap persists throughout the year 2020 and in October 2020 we find female-led businesses were 3.9 percentage points more likely to have closed their businesses than male-led businesses. The survey wave conducted one year later in September 2021 suggests that the gender gap persists into 2021 where we find female-led businesses were 4.6 percentage points more likely to have closed their businesses than male-led businesses. We find a similar pattern at the intensive margin; the gender gap narrows but persists throughout 2020 and into 2021. Conditional on being operational, on average, women entrepreneurs spend almost one hour less on paid work per day than male entrepreneurs.

[Table 1b about here]

Table 1b columns 1 to 6 pools the different rounds of data and displays the results for the OLS specification with time fixed effects for the business closure, time spent on paid work, as well as additional key business performance indicators in 2020.³⁰ The results in Table 1b suggest that, on average, more female-led businesses were closed during the COVID-19 pandemic and, if they stayed open, experienced greater sales and employment reductions than male-led businesses throughout the 2020 survey period. Table 1b Panel A column

²⁹The outcome variable time spent on paid work activities was measured from July 2020 onwards i.e. waves 3-7.

³⁰The sales and employment outcomes presented here are conditional on the business being in operation. For robustness we run the regressions for unconditional outcomes and the main results hold.

(1) presents business closure rates disaggregated by gender, where, on average, female-led businesses were 4 percentage points more likely to close their business during 2020 than male-led businesses. The wave-time fixed effects are not shown in Table 1b but the overall trend points to a reduction in business closure rates over time from wave 1 to wave 7: globally, 25% of male businesses were closed during the May 2020 survey wave, 18% in June, 15% in July, 14% in August, September and October 2020; and 12% in September 2021.³¹ However, the gender gap in business closures persists across the survey waves even as the trend in overall closure rates improves over time.

McKenzie and Paffhausen (2019) find that firm death is, on average, higher for female-led firms than male-led firms.³² However, once they account for business sector, size and other owner characteristics they show that the higher death rate of firms owned by women is no longer statistically significant. In line with this analysis, in Table 1b panels B to C we sequentially add potential explanatory factors to the regression that may explain the gender gap in business closures and performance, including controls for: business sector (Panel B), business size, age and role in the business (Panel C). Women entrepreneurs may be more likely to be concentrated in consumer-facing sectors (services, hospitality, retail trade) where a demand shock is likely to hit hardest.³³ However, Table 1b Panel B column 1 suggests that while accounting for sectoral differences in the regression narrows the gender gap in business closures slightly to 3.7 percentage points it does not fully explain the difference. Similarly, in Panel C column 1 controlling for business size (dummy variables for self-employed, micro, small, medium and large firms), business age (dummy variable if business is less than 5 years old), and role in the business (business owner, manager or both) explains some of the gender gap in closures but not all: controlling for business size, age and role narrows the gender gap to 2.9 percentage points.

³¹Wave 1 can be considered the peak of the lockdown in many countries when closure rates and the gap was highest.

³²Research conducted on small firms across 12 developing countries (McKenzie and Paffhausen, 2019).

³³Globally, the sectors with the most business closures were travel or tourism agencies, hospitality and event services, education and childcare services, performing arts and entertainment, and hotels, cafes, and restaurants. The biggest gender differences were in the type of services that men and women operate in.

In Table 1b columns 2 to 6 we also present results on gender gaps in additional business outcomes, including: time spent on work activities, revenues, and employment for those businesses that are operational. The results show a similar pattern to the business closure rates. On the intensive margin, female entrepreneurs whose firms are operating spend less time in work activities than male entrepreneurs. Women entrepreneurs are also 1.2 percentage points more likely to report a reduction in revenues than male entrepreneurs (an average of 68% of businesses reported experiencing lower year-on-year revenues, relative to pre-COVID-19 levels in 2019). Women-led businesses also indicate a larger drop in sales: an average 12.9% lower sales relative to 2019, compared to male-led businesses. In terms of employees, we find no gender difference in the likelihood of reducing workers (an average of 44% of businesses reported a reduction in employees).³⁴ However, women-led businesses were 3.9 percentage points more likely to completely cut their workforce than male-led businesses.³⁵ While firm sector, size and age (Panel C) explain some of the gender gap in business revenues and employment outcomes, a gap still persists once we control for these factors.

The final two columns of Table 1b replicate the business closure and time spent on work outcomes for the 2021 data where globally 12% of male businesses were closed during the September 2021 survey wave.³⁶ As was seen in 2020, in column (7) Panel C we show a similar pattern in 2021: controls for firm sector, size, age, and role helps explain some of the gender gap in business closures but not all: in 2021 we find a statistically significant gender gap in business closures of 2.8 percentage points even after controlling for these firm characteristics.

The persistence of the gender gap in firm closures and performance even after accounting for firm level characteristics suggests there are other potential factors driving the gender gap that are not accounted for. Women entrepreneurs may be disproportionately affected by a

³⁴COVID-19-focused phone-based surveys across 51 countries in 2020 that sample from national business registries find similar widespread negative impacts on sales and employment among small and medium enterprises (see Apedo-Amah (2020); Adian (2020)). The cross-country average suggests the probability of a business being closed was 26%, average sales reduction was -49%, and 57% of firms adjusted employment levels, evaluated after 6 weeks from the peak of the COVID-19 shock.

³⁵This result is conditional on the business reporting a reduction in their workforce.

³⁶This is slightly lower than the business closure rate in the previous survey wave in October 2020 where 14% of businesses were found to be closed.

contraction in economic activities as a result of COVID-19 for a number of reasons. The hypothesis that we focus on is that women have to shoulder the extra care responsibilities that are likely to result from government-mandated coronavirus containment policies and therefore are having to close their business. For example, the extra burden may come from staying home during a quarantine or caring for children out of school or family members who have fallen ill or who no longer have access to family or non-family caregiving.

In the rest of this paper, we use national school closure policies related to COVID-19 to examine the impact of a large negative childcare shock on the gender gap in time spent on care and domestic activities such as cleaning and cooking, and on business performance outcomes by gender.³⁷ We show that the increased burden of domestic work through school and childcare facility closures has a disproportionate effect on women entrepreneurs. In the following analysis we report results for all entrepreneurs in the sample and then examine the motherhood penalty by focusing the analysis on entrepreneurs who have any child dependents in the household. In addition to presenting the main business outcomes for entrepreneurs, we also explore intrahousehold dynamics by utilizing time-use data as reported by entrepreneurs about themselves and their spouse. We show that a significant proportion of entrepreneurs are having to devote time to domestic and care responsibilities after a school closure shock, with women doing the bulk of this work. The majority of the following analysis focuses on the 2020 survey waves. However, we supplement the 2020 results in Table 4a by showing the 2021 survey wave separately in Table 4b to examine whether any COVID-19 related school closure impacts persisted one year later.

³⁷While data on the closure of childcare facilities within a country is unknown, in general, a national school closure policy due to COVID-19 is likely to be correlated with a closure in nurseries and day-care facilities too.

5.2 The Impact of COVID-19 School Closure Policies on Business and Time Spent on Care and Chores

To explore the impact of a national school closure policy related to COVID-19 on business outcomes by gender of the firm owner we follow equation 3 and present the results in Table 2. In column 1, we examine the effect of a school closure policy on business closures, controlling for firm characteristics (sector, size and age of business as described in Table 1b) and to distinguish from a COVID-19 related school closure policy shock, we control for whether the country was on a scheduled academic break. We find that a school closure related to COVID-19 is associated with an overall increase in business closures, and women entrepreneurs are more likely close their business than male entrepreneurs. However, this is a naïve estimate since it does not control for all the other COVID-19 related containment policies that might exist in a country at the same time as the school closure policy.

[Table 2 about here]

For instance, school closure policies related to COVID-19 are likely to be coupled with other coronavirus containment policies such as stay-at-home restrictions, workplace closures or cancelling public events, so, among other things, we might expect overall business demand to be lower. In column 2 of Table 2 we add controls for mobility most closely aligned with business within a country to the regression (i.e. movement related to workplaces and retail and recreation) in order to control for the overall economic impact of COVID-19 on business outcomes at the time of the survey. The coefficients in column 2 for the mobility indices show a negative relationship between mobility and business closures, as one might expect - the higher the movement in a country at the time of the survey, the less likely businesses were closed at that time. Even with these controls, the coefficient on school closure remains significant, as does its interaction with female.

It is also possible that other factors may be associated with the decision of governments to close schools that could also be driving the firm closure results. In Appendix table E1, we

regress a number of national characteristics on whether or not governments close schools. By far, the strongest and most robust result is for GDP per capita prior to the pandemic; richer nations were significantly less likely to close schools. Hence, in column 3 of Table 2 we add a control for the natural log of GDP per capita in each country in 2019 as a control. With this control, column 3 tells a different story on the effects of school closure on firm closure: for men (the base coefficient) there is no longer a significant effect, and the coefficient is close to zero. However, the gender gap persists: female firms are 1.8 percentage points more likely to close in response to a school closure policy. Table 2 columns 4 to 8 present the impact on additional business outcomes at the intensive margin i.e. among those businesses that were still operational.³⁸ While a school closure policy related to COVID-19 is associated with a small increase in the time spent on paid work for male entrepreneurs, we find no similar impact for female entrepreneurs. We can only speculate that perhaps male entrepreneurs devote more time to work in order to make up for wives having to exit the labor market or perhaps men are afforded more time to try to find ways to boost business revenues at a time when business demand is low. We find male-owned businesses are 3.3 percentage points more likely to reduce their workforce as a result of a COVID-19 school closure, with significantly lower effects resulting in no net change in this for women (an average of 44% of businesses report a reduction in employees even in countries with no school closure policy related to COVID-19). A school closure related to COVID-19 does not lead to a greater reduction in sales for male- or female-owned businesses. The impact of a school closure on business appears to be concentrated at the extensive margin – more women exit the labor market by closing their business in response to the school closure shock.

In Table 3 we examine the impact of school closure on time spent on care. Column 1 indicates that, controlling for dependents and marital status, a school closure leads to an increase in the time spent on domestic and care responsibilities by women entrepreneurs

³⁸Results for the business outcomes are presented for the specification that includes all controls: firm characteristics, mobility indices, and GDP per capita as was included in Table 2 column 3.

by about 0.5 hours per day, but not for male entrepreneurs.³⁹ To help put this effect into context, the first row of Table 3 indicates that female entrepreneurs on average already spend an additional hour in care work per day – the school closure increases this gap by 50 percent. In addition, it is important to note in Table 3 column 1 that the coefficient on school closure policy related to COVID-19 interacted with female is almost double the coefficient on academic break interacted with female. This perhaps indicates that the school closure policy related to COVID-19 is being felt as a shock, which in turn leads women entrepreneurs to respond by closing their business. However, an academic break is typically scheduled well in advance and while women entrepreneurs devote more time to care during an academic break, they tend to not close their business (as can be seen in Table 2).

[Table 3 about here]

In Table 3 columns 2 and 3 we split the sample from column 1 to examine those entrepreneurs who are unmarried (self/single) and married or living with a partner (self/married). Results suggest a school closure policy related to COVID-19 leads to an increase in the time spent on domestic and care responsibilities for both unmarried and married women entrepreneurs alike, albeit at a larger magnitude for women who are married, controlling for the other demographic characteristics of the household (we return to look at children more explicitly below). Table 3 column 4 indicates that school closure leads the wives of male entrepreneurs to increase the amount of time spent on domestic and care responsibilities. However, female entrepreneurs do not report receiving the same help from their husbands – indeed, female entrepreneurs who are married report getting approximately 0.5 hours less help on domestic and care activities from their spouse when schools close. In column 5 we

³⁹Note that time use and demographics questions come later in the questionnaire and are therefore subject to greater survey dropout so the outcomes in Table 3 have a smaller sample size than outcomes reported in Table 2. In Appendix F Table F1 we also show the effect of a school closure policy on the gender gaps in business outcomes are robust to restricting the sample to the 79,631 firms who also answered the time use and demographic characteristics questions. We analyze whether survey dropout is driven by any particular characteristics and find women entrepreneurs with closed businesses are more likely to drop out of the survey before answering demographics questions than male entrepreneurs with closed businesses. This finding suggests that our results on business closures offer a conservative lower-bound estimate on the true effect size.

look at the entrepreneur’s share of total household care, for the married part of the sample. Here we can see that men show no change in their share, but female entrepreneurs significantly increase their share when faced with school closure – so female entrepreneurs are not only doing more care work, they are doing an increasing share of the total household provision of care.

[Table 4 about here]

In order to examine further whether school closure leading to higher care is an important channel to explain why female firms are more likely to close during the pandemic, in Table 4 we split the sample into those who have any child dependents (aged 0-18) versus those that do not. As we can see, the female-firm closure effect is concentrated entirely in those who have children (column 1) with insignificant and close to zero effects for those without (column 2). Indeed, women with children are 3.2 percentage points more likely to close than men. Given a male average closure rate of 15 percent, this indicates that female run firms are more than 20% more likely to close. The care effects also line up with closure: female entrepreneurs with children are doing close to an additional hour of care per day. Male entrepreneurs are getting help from their spouse, but female entrepreneurs are not.⁴⁰ Note that these results are robust to the inclusion of controls for age and level of education.⁴¹

[Table 5 about here]

Table 5 provides further evidence that increased demand for care is particularly disruptive for female firms. Women entrepreneurs are significantly more likely to report caring for children, household chores and home-schooling activities affected their ability to focus on their work than men irrespective of a school closure policy.⁴² The school closure shock

⁴⁰Table F2 in Appendix F shows that these results are robust if we split the data by the age of the child - we find similar female firm closure rates for households with children in the 0-5 and 6-18 age group categories.

⁴¹In Table F5 in Appendix F we show that the age of the business owner is not correlated with firm closure. However, the more highly educated, the less likely the entrepreneur is to close their business. We did not include controls for age and education in the main results since these variables come late in the survey and to maximize sample size, we confirm results are robust once we account for age and education in Table F5.

⁴²On average, as many as 60% of women entrepreneurs reported that caring for children and household chores affected their ability to focus on their work. Home-schooling disruptions affected 48% of women versus 36% of men, and 20% of women (24% of men) report caring for adults, affected their ability to focus on their work.

makes this markedly more pronounced, for example doubling the effect of caring for children and more than doubling the home-schooling effect. Men show no significant disruption for these reasons (although they do show a small effect for caring for adults).

[Table 6 about here]

In Table 6 we examine whether effects persisted into 2021. In 2021 the school closure variable takes on a somewhat different meaning than it did in 2020. In Appendix B, Table B1 we present the school closure policies by country at each survey wave to show that in September 2021 (wave 7) there are only 4 countries with schools that are fully closed due to COVID-19 in 2021.⁴³ There are a significant number of countries that have schools partially open in 2021, however, the extent to which this is still considered a shock in 2021 is likely reduced. It is interesting that in 2021 that we no longer find evidence of a gender differential in the impact of the school closure policy itself. However, the female coefficient in Table 6 suggests that, irrespective of a school closure policy, women-led firms are more likely to be closed. We speculate that this could mean that women revert to a new equilibrium in 2021 where their businesses are more likely to be closed (the female coefficient for women with children was an insignificant 0.002 in 2020 and a statistically significant 0.037 in 2021) and the time spent on care is higher (female coefficient was 1.66 in 2020 versus 2.253 in 2021).

5.3 Conservative versus Liberal Societies: Heterogeneous Impacts of COVID-19 School Closure Policies

In this section we conduct heterogeneity analysis using gender beliefs and norm constructs to examine how living in a more conservative or liberal society with respect to gender equality may have mitigated or exacerbated a COVID-19 school closure shock for male and female entrepreneurs. In Tables 7a and 7b we estimate equation 4 for the heterogeneous effects of a school closure policy by gender beliefs on the following main outcome variables: whether

⁴³The 4 countries that had schools fully closed due to COVID-19 during the September 2021 wave 7 include Malaysia, Myanmar, Pakistan and Philippines.

the business was closed, hours per day spent on paid work, hours per day spent on care and domestic responsibilities by the respondent, and hours spent on care by the respondent's spouse. We conduct this analysis among the relevant sample of entrepreneurs i.e. those who are married or living with a partner and have child dependents in their household.

Data on norms towards gender equality in opportunities were collected from both male and female entrepreneurs in 2019 prior to the onset of the COVID-19 pandemic and these measures are described and analyzed in the Data Section and Appendix C of the paper. In Table 7a Men's Individual Beliefs is a country-level continuous variable between 0 and 1 indicating the attitudes of men in the country towards gender equality in opportunities i.e. the proportion of men that agreed with the statement "men and women should have equal opportunities." Higher values of Men's Individual Beliefs indicate that a higher proportion of men in that country agree with gender equality i.e. the gender attitudes of men are more liberal. In the sample the mean for Men's Individual Beliefs is 89.69% and the observed scores range between 74.49% in Egypt and 99.22% in Canada.

[Table 7a about here]

Table 7a examines whether the effects of school closure differ by Men's Individual Beliefs separately for female and male firms. Overall, these beliefs do seem to be correlated with behavior – in more liberal societies both men and women report that men do more care work (columns 6 and 7). In column 1 we can see that with a coronavirus-induced school closure, female firms are significantly more likely to close than men. As societies become more liberal (in terms of men's beliefs on gender equality) this effect declines. Indeed, moving from Egypt to Canada would diminish the effect by around 12 percentage points. The care mechanism tracks the closure effect as women in more liberal societies show a significantly lower increase in the amount of care they provide in response (column 5). Their spouses, however, also provide significantly less (column 7) – suggesting in these societies there was more outside-the-couple provided care than in more conservative societies. Overall, these results indicate

that the school closure shock had higher impacts on both the care burden and firm closure of female entrepreneurs in societies with more conservative men.

In Table 7b we consider women’s beliefs about gender equality. Women’s Individual Beliefs is a continuous variable indicating the share of women in the country that agreed with the statement “men and women should have equal opportunities” measured prior to the onset of the pandemic. Higher values of Women’s Individual Beliefs indicate higher levels of agreement among female respondents sampled i.e. more liberal attitudes of women towards equality in the country. In the sample the mean of Women’s Individual Beliefs is 93.68% and the observed scores range between 75.86% in Saudi Arabia and 98.95% in Greece. It should be noted though, that there is much less overall variation in women’s beliefs (see graph D3). In Table 7b we find no evidence of a relationship between a school closure policy and business outcomes for women in conservative versus liberal societies as defined by women’s beliefs towards gender equality. However, in terms of outcomes related to domestic and care responsibilities, the same pattern emerges as was presented in Table 7a.

[Table 7b about here]

Tables F3a and F3b in Appendix F replicates this analysis using the perceived community norms measures (Men’s Community Norm and Women’s Community Norm). While the direction of the coefficients are the same as in Table 7a, the results on business closures are not statistically significant. In terms of care, the results again suggest that women entrepreneurs were burdened with a greater share of the domestic and care responsibilities as a result of a COVID-19 related school closure policy in the most conservative societies, irrespective of how the norm was measured (significant at 95% confidence for Men’s Community Norm and 99% for Women’s Community Norm). Taken together, these results suggest that the average individual beliefs that men hold are an important part of our story. Countries with more conservative men experienced a greater care burden on women and higher rates of firm closure when schools closed.

6 Conclusion and Discussion

Throughout 2020 and 2021 there have been frequent media reports that a greater proportion of women are exiting the workforce during the COVID-19 pandemic than men because of competing demands on their time due to increased domestic and care work as a result of the closure of schools and childcare facilities. The COVID-19 pandemic worked to illuminate the unequal gender norms around domestic and care responsibilities that still exist in today's society and its contribution to the gender gap in earnings. In this paper we utilize data on COVID-19 related school closure policies to explore the impact of an exogenous shock to the domestic and care-related activities within a country on the gender gaps in entrepreneurship.

Using high-frequency monthly data collected from over 150,000 firms across 50 countries surveyed on Facebook, we present evidence that female entrepreneurs were indeed more likely to have closed their business during the COVID-19 pandemic than male entrepreneurs. The closing of schools, a key part of the care infrastructure, leads to higher business closures, and women were more likely to close their business than men. Part of what is driving a significant amount of this disproportionate female closure is care work. Women entrepreneurs spend more time on care when schools closed and they do not get help from their spouses. Male entrepreneurs, on the other hand, do not increase the hours they spend on care, and get help from their spouses. In order to show that the excess female closure is due to childcare, we separately examine patterns for women with children and those who do not. The pattern of higher firm closure rates associated with school closure and increased care is significant and economically meaningful for women with children, it is not significant for women without children.

Finally, we show that female entrepreneurs in the most gender conservative societies, as defined by male individual beliefs, are significantly more likely to increase their time spent on care and chores, and close their business in response to a school closure policy, relative to women in more gender liberal societies.

While the COVID-19 pandemic provides a unique lens to examine the effect of childcare provision, our paper contributes to the broader literature on the constraints to female labor force participation and reinforces the need for effective childcare policies to help improve female labor market outcomes beyond the pandemic. Previous literature documents the impact of improved access to childcare on female labor force participation, but it is largely limited to high and middle-income countries and wage labor settings (see Devercelli and Beaton-Day (2020) and Morrissey (2017) for a review).

In this paper, we provide evidence that a negative childcare shock hurt female-led businesses significantly more than male-led businesses. Our results are directly relevant to the ongoing policy debate on advocating for care-related policies; as well as programs addressing gender norms in unpaid domestic and care work. Normalizing men taking a greater role in parenting their children as part of an inclusive workplace for all will help enable couples to feel comfortable in sharing the care duties. In addition, businesses in sectors that demand a culture of long hours, and that do not accommodate flexibility for care, forces many mothers to quit while likewise discouraging fathers from helping out at home. Governments can play an active role in the promotion of social dialogue that challenge norms around the traditional male breadwinner and female caretaker roles and workplace flexibility. Programs could include measuring and valuing the gender gap, supporting childcare services and early childhood programs, providing time- and labor-saving household devices, advocating for care-related policies, addressing social norms around care and engaging men in care duties.

In closing, we turn to the words of Claudia Goldin (2021):

“If schools remain shuttered, a large fraction of parents, mainly women, will be unable to work effectively, if at all. This has been the first major economic downturn during which the care sector will determine the fate of the economic sector. It wasn’t always that way in major downturns, but it is now because women are almost half the total labor force in the US.”

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Table 1a: Gender Gap in Firm Closures: Time Series Repeated Cross-Section for 7 Survey Waves in 2020 and 2021

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Business closed (1=Yes; 0=No)							Time Spent on Paid Work Activities (Hours per day)				
Wave	Wave 1 May 2020	Wave 2 June 2020	Wave 3 July 2020	Wave 4 Aug 2020	Wave 5 Sept 2020	Wave 6 Oct 2020	Wave 7 Sept 2021	Wave 3 July 2020	Wave 4 Aug 2020	Wave 5 Sept 2020	Wave 6 Oct 2020	Wave 7 Sept 2021
Female Respondent	0.072*** [0.01]	0.014* [0.01]	0.036*** [0.01]	0.030*** [0.01]	0.040*** [0.01]	0.039*** [0.01]	0.046*** [0.01]	-0.997*** [0.11]	-1.024*** [0.10]	-0.847*** [0.10]	-0.649*** [0.11]	-0.747*** [0.13]
Constant	0.188*** [0.01]	0.126*** [0.01]	0.084*** [0.01]	0.085*** [0.01]	0.081*** [0.01]	0.104*** [0.01]	0.093*** [0.01]	8.398*** [0.09]	8.376*** [0.09]	8.463*** [0.09]	8.127*** [0.10]	7.776*** [0.11]
Observations	24397	20612	21961	22266	21093	21010	23119	12281	12409	11746	10982	14361
Adjusted R-squared	0.04	0.03	0.04	0.03	0.03	0.02	0.01	0.04	0.04	0.04	0.04	0.03
Mean Male	0.25	0.18	0.15	0.14	0.14	0.14	0.12	7.83	7.86	7.87	7.75	6.97

Notes: * significant at 10% level, ** significant at 5% level, *** significant at 1% level.

[1] OLS regression where Female is a dummy variable where 1 = female-led firm and 0 = male-led firm. Regression includes region of the world fixed effects.

[2] Outcome Business Closed = 1 if the firm owner reported their firm was closed at the time of the survey. Outcome Time spent on paid work activities in hours per day was only collected from July 2020 survey wave (wave 3) onwards.

Table 1b: Gender Gap in Business Outcomes: Pooled Specification – Accounting for Firm Sector, Size and Age

	2020						2021	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
			Conditional on Business Being in Operation					
	Business closed (1=Yes; 0=No)	Time Spent on Paid Work Activities (Hours per day)	Likelihood reduced workers (1=Yes; 0=No)	100% employees laid off in last 30 days (1=Yes; 0=No)	Sales reported to be lower than last year (1=Yes; 0=No)	Lower Sales % lower compare to previous year (%)	Business closed (1=Yes; 0=No)	Time Spent on Paid Work Activities (Hours per day)
Pooled OLS								
<i>Panel A: Gender Gap (Raw)</i>								
<i>Female</i>	0.040*** [0.00]	-0.888*** [0.05]	-0.005 [0.01]	0.039*** [0.01]	0.012** [0.00]	0.129*** [0.03]	0.046*** [0.01]	-0.747*** [0.13]
<i>Panel B: Gender Gap + Sector Controls</i>								
<i>Female</i>	0.037*** [0.00]	-0.849*** [0.05]	-0.006 [0.01]	0.033*** [0.01]	0.005 [0.00]	0.106*** [0.03]	0.042*** [0.01]	-0.727*** [0.13]
<i>Panel C: Gender Gap + Sector + Firm Size + Firm Age + Role in Business Controls</i>								
<i>Female</i>	0.029*** [0.00]	-0.665*** [0.05]	0.004 [0.01]	0.024*** [0.01]	0.011** [0.00]	0.076** [0.03]	0.028*** [0.01]	-0.528*** [0.14]
Constant	0.008 [0.01]	8.896*** [0.14]	0.349*** [0.01]	0.054*** [0.01]	0.562*** [0.01]	4.275*** [0.08]	0.063*** [0.02]	8.932*** [0.29]
Observations	130912	47346	64106	18156	81727	54112	19572	12025
Adjusted R-squared	0.05	0.06	0.06	0.04	0.03	0.02	0.01	0.05
Mean Male	0.17	7.83	0.44	0.08	0.68	4.68	0.10	7.08
Wave	Pooled 2020	Pooled 2020	Pooled 2020	Pooled 2020	Pooled 2020	Pooled 2020	Wave 7 2021	Wave 7 2021

Notes: * significant at 10% level, ** significant at 5% level, *** significant at 1% level.

[1] Female is a dummy variable where 1 = female-led business and 0 if male-led business

[2] Regression adds controls for Business Sector (Panel B); and controls for Business Sector + Firm Size, Firm Age and Role in Business (Panel C).

[3] OLS regressions in Columns (1) to (6) Panels A-C using 2020 data include Region of the world Fixed Effects and controls for the 6 waves in 2020-time dummy variables.

[4] OLS regressions in Columns (7) to (8) Panels A-C are for 2021 data and includes Region of the world Fixed Effects.

Table 2: Gender Disaggregated Impact of COVID-19 School Closures on Business Outcomes in 2020

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Business closed (1=Yes; 0=No)			Conditional on Business Being in Operation				
				Time Spent on Paid Work Activities (Hours per day)	Likelihood reduced workers (1=Yes; 0=No)	100% employees laid off in last 30 days (1=Yes; 0=No)	Sales reported to be lower than last year (1=Yes; 0=No)	Lower Sales % lower compared to previous year (%)
Female Respondent	0.022*** [0.01]	0.018*** [0.01]	0.018*** [0.01]	-0.409*** [0.10]	0.023** [0.01]	0.031* [0.02]	0.028*** [0.01]	0.062 [0.07]
School closure due to COVID-19	0.038*** [0.00]	0.019*** [0.00]	0.005 [0.01]	0.276*** [0.10]	0.033*** [0.01]	-0.007 [0.01]	0.013 [0.01]	0.059 [0.06]
School closure due to COVID-19*Female	0.014* [0.01]	0.017** [0.01]	0.018** [0.01]	-0.275** [0.13]	-0.026* [0.01]	-0.006 [0.02]	-0.025** [0.01]	-0.031 [0.08]
Academic Break	0.021*** [0.01]	0.021*** [0.01]	0.003 [0.01]	0.602*** [0.12]	0.040*** [0.01]	-0.015 [0.01]	0.017* [0.01]	-0.111 [0.07]
Academic Break*Female	0.002 [0.01]	0.003 [0.01]	0.004 [0.01]	-0.468*** [0.13]	-0.014 [0.02]	-0.012 [0.02]	-0.011 [0.01]	0.114 [0.09]
Change in movement related to workplaces		-0.000** [0.00]	-0.001*** [0.00]	0.024*** [0.00]	-0.001* [0.00]	-0.001*** [0.00]	0.001*** [0.00]	-0.002 [0.00]
Change in movement related to retail/recreation		-0.003*** [0.00]	-0.003*** [0.00]	-0.006** [0.00]	-0.001*** [0.00]	0.001* [0.00]	-0.001*** [0.00]	-0.008*** [0.00]
GDP per capita (Ln)			-0.018*** [0.00]	0.293*** [0.04]	-0.044*** [0.00]	-0.009** [0.00]	-0.030*** [0.00]	-0.019 [0.02]
Constant	0.091*** [0.01]	-0.006 [0.01]	0.182*** [0.03]	6.240*** [0.45]	0.725*** [0.05]	0.120*** [0.04]	0.889*** [0.04]	4.835*** [0.27]
Observations	131265	131265	131265	47701	64299	18156	82020	54227
Adjusted R-squared	0.05	0.07	0.07	0.06	0.06	0.04	0.03	0.02
SC+SC*FEMALE(Coeff)	0.05	0.04	0.02	0.00	0.01	-0.01	-0.01	0.03
SC+SC*FEMALE(SE)	0.01	0.01	0.01	0.11	0.01	0.02	0.01	0.07
SC+SC*FEMALE (P value)	0.00	0.00	0.00	0.99	0.61	0.47	0.22	0.70
Mean Male	0.17	0.17	0.17	7.83	0.44	0.08	0.68	4.68
Region FE	YES	YES	YES	YES	YES	YES	YES	YES
Firm Controls: Sector + Size, Age and Role	YES	YES	YES	YES	YES	YES	YES	YES
Mobility Controls: Movement Retail/workplaces	NO	YES	YES	YES	YES	YES	YES	YES
Gross Domestic Product (GDP) Per Capita Control	NO	NO	YES	YES	YES	YES	YES	YES

Notes: * significant at 10% level, ** significant at 5% level, *** significant at 1% level.

[1] Female is a dummy variable where 1 = female-led business and 0 if male-led business. School Closure due to COVID-19 is a dummy variable where 1 = schools closed in country at time of survey wave.

[2] OLS pooled regressions include Region of the world Fixed Effects and Time Fixed Effects. Controls for mobility and GDP sequentially added for *Business Closed* outcome from Columns (1) to (3).

Columns (4) to (8) contain the full set of controls are described at the bottom of Table 2.

[3] *Time Spent on Paid Work* (column (4)) has a smaller sample size since data for outcome was only collected from July 2020 onwards i.e. waves 3-6 only.

Table 3: Gender Disaggregated Impact of COVID-19 School Closures on Intrahousehold Time Spent on Domestic and Care Activities in 2020

	(1)	(2)	(3)	(4)	(5)
	Time Spent on (Hours per day)...				Share of Care
	Care and Domestic Work (Self/All)	Care and Domestic Work (Self/Single)	Care and Domestic Work (Self/Married)	Care and Domestic Work (Spouse/Married)	Intrahousehold Share of Care (Self/Self+Spouse if Married)
Female Respondent	1.073*** [0.07]	0.770*** [0.14]	1.159*** [0.08]	-1.647*** [0.08]	0.209*** [0.01]
School closure due to COVID-19	-0.003 [0.06]	0.101 [0.13]	-0.060 [0.07]	0.423*** [0.09]	-0.008 [0.01]
School closure due to COVID-19*Female	0.519*** [0.08]	0.333** [0.17]	0.639*** [0.10]	-0.551*** [0.10]	0.032*** [0.01]
Academic Break	-0.062 [0.07]	0.170 [0.15]	-0.155* [0.08]	0.040 [0.10]	0.001 [0.01]
Academic Break*Female	0.302*** [0.09]	0.049 [0.19]	0.420*** [0.11]	-0.094 [0.11]	0.012 [0.01]
Change in movement workplaces	-0.009*** [0.00]	-0.004 [0.00]	-0.012*** [0.00]	-0.008** [0.00]	0.000 [0.00]
Change in movement retail & rec	-0.008*** [0.00]	-0.006* [0.00]	-0.009*** [0.00]	-0.003 [0.00]	-0.000* [0.00]
GDP per capita (Ln)	-0.103*** [0.03]	0.026 [0.05]	-0.152*** [0.03]	-0.284*** [0.04]	0.011*** [0.00]
Constant	3.457*** [0.31]	2.522*** [0.56]	4.087*** [0.36]	6.931*** [0.41]	0.284*** [0.03]
Observations	79631	21996	57635	43556	29141
Adjusted R-squared	0.13	0.10	0.15	0.19	0.30
SC+SC*FEMALE(Coeff)	0.52	0.43	0.58	-0.13	0.02
SC+SC*FEMALE(SE)	0.08	0.14	0.09	0.09	0.01
SC+SC*FEMALE(P-value)	0.00	0.00	0.00	0.15	0.00
Mean Male	3.65	3.47	3.72	5.31	0.41

Notes:* significant at 10% level, ** significant at 5% level, *** significant at 1% level.

[1] Female is a dummy variable where 1 = female-led business and 0 if male-led business.

[2] School Closure due to COVID-19 is a dummy variable where 1 = schools closed in a country at the time of survey wave.

[3] OLS pooled regressions include Region of the world Fixed Effects and Time Fixed Effects and full set of controls including Firm Controls (Sector + Size, Age and Role in Business); Mobility Controls (Movement around retail & recreation/workplaces); GDP Per Capita; and Demographic Controls (Married and Types of Dependents).

Table 4: Gender Disaggregated Impact of COVID-19 Related School Closures with/without Child Dependents in the Household in 2020

	2020							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Business closed (1=Yes; 0=No)		Paid Work		Care and Domestic Responsibilities (Self/Married)		Care and Domestic Responsibilities (Spouse/Married)	
	Children	No Children	Children	No Children	Children	No Children	Children	No Children
Female Respondent	0.002 [0.01]	0.011 [0.01]	-1.012*** [0.13]	-0.249* [0.14]	1.662*** [0.11]	0.659*** [0.10]	-2.304*** [0.11]	-0.924*** [0.11]
School closure due to COVID-19	0.001 [0.01]	-0.003 [0.01]	0.297** [0.13]	0.237 [0.15]	0.007 [0.09]	-0.024 [0.10]	0.444*** [0.12]	0.283** [0.12]
School closure due to COVID-19*Female	0.032*** [0.01]	0.001 [0.01]	-0.194 [0.17]	-0.227 [0.19]	0.855*** [0.14]	0.073 [0.12]	-0.444*** [0.14]	-0.437*** [0.14]
Academic Break	0.008 [0.01]	-0.009 [0.01]	0.585*** [0.16]	0.579*** [0.18]	-0.091 [0.10]	-0.149 [0.12]	-0.008 [0.14]	0.135 [0.14]
Academic Break*Female	0.012 [0.01]	-0.004 [0.01]	-0.314* [0.18]	-0.501** [0.20]	0.567*** [0.15]	0.029 [0.14]	0.123 [0.15]	-0.274* [0.15]
GDP per capita (Ln)	-0.016*** [0.00]	-0.018*** [0.00]	0.430*** [0.06]	0.061 [0.06]	0.029 [0.04]	-0.453*** [0.04]	-0.154*** [0.05]	-0.445*** [0.06]
Constant	0.251*** [0.04]	0.254*** [0.05]	4.153*** [0.63]	7.641*** [0.65]	2.290*** [0.48]	6.806*** [0.48]	6.109*** [0.52]	7.383*** [0.58]
Observations	44438	36676	25612	21246	35408	22451	26862	16853
Adjusted R-squared	0.08	0.08	0.07	0.03	0.14	0.08	0.14	0.13
SC+SC*FEMALE(Coeff)	0.03	-0.00	0.10	0.01	0.86	0.05	0.00	-0.15
SC+SC*FEMALE(SE)	0.01	0.01	0.15	0.17	0.13	0.11	0.12	0.12
SC+SC*FEMALE(P value)	0.00	0.89	0.50	0.96	0.00	0.65	1.00	0.22
Mean Male	0.15	0.14	7.83	7.86	4.09	3.11	6.21	3.81

Notes:* significant at 10% level, ** significant at 5% level, *** significant at 1% level.

[1] Female is a dummy variable where 1 = female-led business and 0 if male-led business. School Closure due to COVID-19 is a dummy variable where 1 = schools closed in country at time of survey wave.

[2] OLS pooled regressions include Region of the world Fixed Effects and Time Fixed Effects and full set of controls including Firm Controls (Sector + Size, Age and Role in Business); Mobility Controls (Movement around retail & recreation/workplaces); GDP Per Capita; and Demographic Controls (Married and Types of Dependents).

[3] Full sample is split among those business owners with any child dependents aged 18years or less in the household = 1 (Columns (1), (3), (5), and (7)) versus no children dependents aged 18years or less in the household (Columns (2), (4), (6), and (8)).

Table 5: Gender Disaggregated Impact of COVID-19 School Closures on Activities Distracting from Work in 2020

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Tasks that affected your ability to focus on work responsibilities in the past 30days...						
	Caring for children (1=Yes; 0=No)	Household chores (1=Yes; 0=No)	Home-schooling of children (1=Yes; 0=No)	Caring for adults (1=Yes; 0=No)	Other tasks a male HH member asked me to do (1=Yes; 0=No)	Other tasks a female HH member asked me to do (1=Yes; 0=No)	Other tasks a non-HH member asked me to do (1=Yes; 0=No)
Female Respondent	0.054*** [0.01]	0.124*** [0.01]	0.037*** [0.01]	0.051*** [0.01]	-0.002 [0.01]	-0.085*** [0.01]	-0.007 [0.01]
School closure due to COVID-19	0.011 [0.01]	-0.012 [0.01]	0.019 [0.01]	0.017*** [0.01]	-0.014 [0.01]	0.005 [0.01]	-0.007 [0.01]
School closure due to COVID-19*Female	0.048*** [0.02]	0.029* [0.02]	0.053*** [0.02]	-0.036*** [0.01]	-0.014 [0.01]	-0.030*** [0.01]	-0.013 [0.01]
Academic Break	0.012 [0.02]	-0.026* [0.02]	-0.022 [0.02]	0.010 [0.01]	-0.002 [0.01]	0.013 [0.01]	-0.007 [0.01]
Academic Break*Female	0.058*** [0.02]	0.072*** [0.02]	0.067*** [0.02]	-0.011 [0.01]	-0.006 [0.01]	-0.056*** [0.01]	0.002 [0.01]
Change in movement workplaces	0.000 [0.00]	-0.001 [0.00]	0.000 [0.00]	0.001** [0.00]	0.000 [0.00]	-0.001*** [0.00]	-0.000 [0.00]
Change in movement retail & recreation	0.000 [0.00]	-0.001*** [0.00]	-0.001*** [0.00]	-0.001*** [0.00]	-0.001*** [0.00]	-0.000 [0.00]	0.000 [0.00]
GDP per capita (Ln)	0.064*** [0.01]	0.017*** [0.01]	0.037*** [0.01]	-0.004 [0.00]	0.006* [0.00]	0.002 [0.00]	0.000 [0.00]
Constant	-0.237*** [0.06]	0.079 [0.06]	-0.202*** [0.06]	0.088** [0.04]	0.057 [0.04]	0.111*** [0.04]	0.105*** [0.04]
Observations	35118	35118	35118	35118	35118	35118	35118
Adjusted R-squared	0.27	0.19	0.19	0.04	0.13	0.07	0.03
SC+SC*FEMALE(Coeff)	0.06	0.02	0.07	-0.02	-0.03	-0.02	-0.02
SC+SC*FEMALE(SE)	0.01	0.01	0.01	0.01	0.01	0.01	0.01
SC+SC*FEMALE(P-value)	0.00	0.24	0.00	0.04	0.00	0.00	0.02
Mean Male	0.43	0.33	0.34	0.08	0.17	0.17	0.09

Notes: * significant at 10% level, ** significant at 5% level, *** significant at 1% level.

[1] Female is a dummy variable where 1 = female-led business and 0 if male-led business. School Closure due to COVID-19 is a dummy variable where 1 = schools closed in country at time of survey wave.

[2] OLS pooled regressions include Region of the world Fixed Effects and Time Fixed Effects and full set of controls including Firm Controls (Sector + Size, Age and Role in Business); Mobility Controls (Movement around retail & recreation/workplaces); GDP Per Capita; and Demographic Controls (Married and Types of Dependents).

[3] Outcomes refer to the specific activities that had an impact on the entrepreneur's ability to focus on their work in the past 30days.

Table 6: Gender Disaggregated Impact of COVID-19 Related School Closures with/without Child Dependents in the Household in 2021

	2021							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Business closed (1=Yes; 0=No)		Paid Work		Care and Domestic Responsibilities (Self/Married)		Care and Domestic Responsibilities (Spouse/Married)	
	Children u18	No Children u18	Children u18	No Children u18	Children u18	No Children u18	Children u18	No Children u18
Female Respondent	0.037**	0.008	-1.202***	0.028	2.253***	0.418**	-2.141***	-1.175***
	[0.02]	[0.02]	[0.26]	[0.27]	[0.22]	[0.18]	[0.20]	[0.20]
School closure due to COVID-19	0.028	-0.011	0.103	0.984**	0.535*	0.314	-0.291	-0.276
	[0.03]	[0.03]	[0.37]	[0.45]	[0.32]	[0.34]	[0.32]	[0.43]
School closure due to COVID-19*Female	-0.041	0.044	0.698*	-0.850**	-0.552	1.168***	1.020***	0.746*
	[0.03]	[0.03]	[0.37]	[0.41]	[0.36]	[0.35]	[0.36]	[0.39]
Academic Break	-0.1	-0.015	2.191**	0.853	-0.147	0.430	-0.724	1.356
	[0.06]	[0.09]	[0.97]	[1.06]	[0.79]	[1.35]	[0.89]	[1.40]
Academic Break*Female	-0.029	-0.134	-2.319	-0.638	1.063	-0.886	-1.045	-2.607
	[0.08]	[0.11]	[1.53]	[1.58]	[1.08]	[1.92]	[1.09]	[2.51]
GDP per capita (Ln)	-0.012	-0.019*	0.558***	0.376**	0.219*	-0.290**	-0.154	-0.373***
	[0.01]	[0.01]	[0.15]	[0.16]	[0.12]	[0.12]	[0.13]	[0.14]
Constant	0.217	0.352***	4.026**	5.654***	0.090	7.371***	6.561***	8.743***
	[0.13]	[0.12]	[1.60]	[1.78]	[1.42]	[1.37]	[1.43]	[1.57]
Observations	6333	6608	5576	5678	5294	4168	5026	3919
Adjusted R-squared	0.03	0.03	0.07	0.06	0.13	0.09	0.11	0.09
Mean Male	0.09	0.08	7.23	6.94	4.17	3.43	5.93	4.11
Region FE	YES	YES	YES	YES	YES	YES	YES	YES

Notes:* significant at 10% level, ** significant at 5% level, *** significant at 1% level.

[1] Female is a dummy variable where 1 = female-led business and 0 if male-led business. School Closure due to COVID-19 is a dummy variable where 1 = schools closed in country at time of the survey wave.

[2] OLS pooled regressions include Region of the world and Time Fixed Effects and full set of controls including Firm Controls (Sector + Size, Age and Role in Business); Mobility Controls (Movement around retail & recreation/workplaces); GDP Per Capita; and Demographic Controls (Married and Types of Dependents).

[3] Full sample is split among those business owners with any child dependents aged 18years or less in the household = 1 (Columns (1), (3), (5) and (7)) versus no children dependents aged 18years or less in the household (Columns (2), (4), (6) and (8)).

[4] Survey in 2021 is one survey wave that was completed in September 2021.

Table 7a: Heterogeneous Impact of COVID-19 School Closures by Men's Beliefs on Gender Equality (Conservative versus Liberal Societies)

Married Sample with child dependents

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Time Spent on (Hours per day)...							
	Business closed (1=Yes; 0=No)	Paid Work		Care and Domestic Responsibilities (Self)		Care and Domestic Responsibilities (Spouse)		
	MARRIED FEMALE	MARRIED MALE	MARRIED FEMALE	MARRIED MALE	MARRIED FEMALE	MARRIED MALE	MARRIED FEMALE	MARRIED MALE
School closure due to COVID-19 (Yes=1)	0.483**	0.025	1.196	-4.772**	7.505***	-0.080	6.792***	2.221
	[0.22]	[0.14]	[3.65]	[2.39]	[2.86]	[1.54]	[2.25]	[2.10]
Men's Individual Beliefs (Share 0-1)	0.054	0.044	9.633***	1.033	-1.351	2.304*	3.300*	-5.397***
	[0.14]	[0.12]	[3.09]	[2.01]	[2.66]	[1.40]	[1.95]	[1.87]
School closure due to COVID-19*Men's Individual Beliefs (Share)	-0.491**	-0.032	-1.074	5.710**	-7.448**	0.251	-7.390***	-2.044
	[0.24]	[0.15]	[3.96]	[2.64]	[3.09]	[1.70]	[2.44]	[2.32]
GDP per capita (Ln)	0.006	-0.026***	0.055	0.377***	0.193**	-0.029	-0.302***	0.112
	[0.01]	[0.00]	[0.10]	[0.09]	[0.09]	[0.05]	[0.08]	[0.07]
Constant	-0.094	0.183	-1.022	4.225**	3.288	1.456	3.077	8.758***
	[0.16]	[0.12]	[3.25]	[2.12]	[2.53]	[1.39]	[1.94]	[1.92]
Observations	11692	23578	6794	13759	11692	23578	8806	17960
Adjusted R-squared	0.10	0.09	0.07	0.09	0.14	0.04	0.06	0.07
Mean	0.14	0.13	6.83	7.95	6.38	4.09	3.60	6.21
Sample	FEMALE	MALE	FEMALE	MALE	FEMALE	MALE	FEMALE	MALE

Notes:* significant at 10% level, ** significant at 5% level, *** significant at 1% level.

[1] School Closure due to COVID-19 is a dummy variable where 1 = schools closed in country at time of survey wave. Men's Individual Belief is the proportion of men in the country who agreed with the statement that *men and women should have equal opportunities* measured prior to the COVID-19 pandemic.

[2] OLS pooled regressions include Region of the world and Time Fixed Effects in 2020 and full set of controls including Firm Controls (Sector + Size, Age and Role in Business); Mobility Controls (Movement around retail & recreation/workplaces); GDP Per Capita; and Demographic Controls (Married and Types of Dependents). Academic Break control is included in the regressions but not shown in the table.

[3] Sample is restricted to business owners who are married or living with a partner with any child dependents aged 18 years or younger in the household and is split by gender with FEMALE (Columns (1), (3), (5), and (7)) versus MALE (Columns (2), (4), (6), and (8)).

Table 7b: Heterogeneous Impact of COVID-19 School Closures by Women's Beliefs on Gender Equality (Conservative versus Liberal Societies)

Married Sample with Child Dependents

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Business closed (1=Yes; 0=No)		Time Spent on (Hours per day)...					
			Paid Work		Care and Domestic Responsibilities (Self)		Care and Domestic Responsibilities (Spouse)	
	MARRIED FEMALE	MARRIED MALE	MARRIED FEMALE	MARRIED MALE	MARRIED FEMALE	MARRIED MALE	MARRIED FEMALE	MARRIED MALE
School closure due to COVID-19=1	0.007 [0.35]	-0.124 [0.13]	10.186 [6.82]	-1.072 [3.36]	15.769*** [4.45]	0.289 [1.82]	9.871** [3.97]	-5.878** [2.76]
Women's Individual Beliefs (Share 0-1)	-0.087 [0.16]	0.068 [0.10]	11.150*** [3.25]	5.201** [2.12]	2.510 [3.24]	4.295*** [1.28]	4.456** [2.00]	-5.570*** [1.72]
School closure due to COVID-19*Women's Individual Beliefs	0.031 [0.37]	0.128 [0.15]	-10.726 [7.18]	1.476 [3.58]	15.868*** [4.67]	-0.166 [1.94]	-10.364** [4.18]	6.715** [2.93]
GDP per capita (Ln)	-0.001 [0.01]	-0.025*** [0.00]	0.196* [0.11]	0.535*** [0.09]	0.160* [0.09]	0.027 [0.05]	-0.280*** [0.08]	-0.079 [0.07]
Constant	0.099 [0.18]	0.150 [0.11]	-4.134 [3.47]	-1.471 [2.31]	-0.068 [3.15]	-1.060 [1.35]	1.749 [2.05]	11.082*** [1.88]
Observations	11692	23578	6794	13759	11692	23578	8806	17960
Adjusted R-squared	0.10	0.09	0.07	0.09	0.14	0.04	0.06	0.06
Mean	0.14	0.13	6.83	7.95	6.38	4.09	3.60	6.21
Sample	FEMALE	MALE	FEMALE	MALE	FEMALE	MALE	FEMALE	MALE

Notes:* significant at 10% level, ** significant at 5% level, *** significant at 1% level.

[1] School Closure due to COVID-19 is a dummy variable where 1 = schools closed in country at time of survey wave. Women's Individual Belief is the proportion of women in the country who agreed with the statement that *men and women should have equal opportunities* measured prior to the COVID-19 pandemic.

[2] OLS pooled regressions include Region of the world and Time Fixed Effects and full set of controls including Firm Controls (Sector + Size, Age and Role in Business); Mobility Controls (Movement around retail & recreation/workplaces); GDP Per Capita; and Demographic Controls (Married and Types of Dependents). Academic Break control is included in the regressions but not shown in the table.

[3] Sample is restricted to business owners who are married or living with a partner with any child dependents aged 18 years or younger in the household and is split by gender with FEMALE (Columns (1), (3), (5), and (7)) versus MALE (Columns (2), (4), (6), and (8)).

Appendix A: Description of the Future of Business Survey

The Future of Business survey (FoB) is a collaboration between Facebook, the Organization for Economic Co-operation and Development (OECD), and the World Bank to survey the 150 million businesses on Facebook.¹ This initiative began in 2016 to leverage the Facebook platform to administer surveys to micro, small and medium-sized businesses (MSMEs) globally in a timely and cost-effective manner.

In May 2020, the Future of Business survey adapted its standard bi-annual approach to run six monthly waves of the Future of Business survey to provide timely insights on the impact of the COVID-19 pandemic on small businesses and to take the pulse of the needs and challenges of these businesses. The COVID-19 monthly waves sample from 50 countries around the world where the Facebook small business penetration is sufficient to achieve a meaningful sample.² The first of these monthly surveys (Wave 1) from 28-31 May 2020 (Wave 2 from 24-30 June, Wave 3 from 23-31 July, Wave 4 from 24-31 August, Wave 5 from 23-30 September, and Wave 6 from 23-31 October) surveyed around 26,000 small businesses. Survey wave 7 was conducted a year later from 15-30 September, 2021. The monthly survey waves are a repeated cross-section of approximately 25,000 businesses sampled across 50 countries from the target population. The collaborators developed a brief enterprise survey instrument to collect data measuring the impact of the COVID-19 pandemic on business owners. The questionnaire is designed to measure the impact on some critical dimensions: operation of the business, revenues, employee adjustments, firms' expectations and uncertainty about the future, and preferred mechanisms of public support. A number of gender-specific questions around time spent on domestic and care responsibilities were also included.

The target population of the Future of Business Survey are Facebook Page administrators that are identified as business owners and managers. There are over 80 million businesses estimated to be represented in this sampling frame (Facebook, 2018). A Facebook Page serves as a key interface for business activity on the Facebook platform and is most commonly used by small businesses to engage in advertising or generating content for Facebook audiences. The probability of the same business being resampled in any given wave has been calculated to be less than 0.06% among this population.

Facebook implements a modified simple random sample for survey invitations within each country. Surveys at Facebook are randomly sampled and once a respondent has been invited to a survey, they are ineligible for another survey for six months. This is to reduce response burden and maintain response quality. Sampling proceeds until country-level start quotas are met (quota for the monthly surveys were set to approximately 400 business owners and managers replying to the survey in most of the countries). Lower targets were set for countries where the population is not large enough to sustain 400 business owners and managers responding to the survey. Sampling weights are determined for survey non-response patterns using characteristics most closely associated with non-response to Facebook surveys.³ Non-response weights are constructed using an inverse-probability weighting approach (IPW) and a logistic regression is used to predict the probability of response given eligibility for the survey (i.e. being in the target population). Initial weights are constructed using the inverse of the predicted probability of responding to the survey for every respondent and final weights are then created by trimming the initial weights the 1st and 99th percentiles for each country. The data are intended to be representative of the Facebook Page

¹ The country level aggregated dataset from the Future of Business Survey is provided for free through a Creative Commons license and is available on the [World Bank Data Catalog](#) as well as on [Humanitarian Data Exchange](#).

² The bi-annual FoB surveys typically are done June and December of every year and cover a larger set of over 100 countries due to being less constrained by sample.

³ These characteristics include, but are not limited to: app language setting, recent frequency of app use, time since joining Facebook, gender, age, approximate sub-national region, country, main mobile device operating system and main mobile device age.

admin population, rather than any national business population and represents populations in countries with sufficient internet penetration.

The data, tools, and further details on the methodology of the Future of Business survey can be found on the Facebook Data For Good website <https://dataforgood.facebook.com/dfg/tools/future-of-business-survey>.

In Table A1 we show all the countries that were included in the Future of Business COVID-19 surveys, and for which waves they were surveyed. Most countries were surveyed in all seven waves; however, sample size constraints meant some countries could only be included for a subset of the waves.

Table A1: Economies included in the Future of Business High Frequency COVID-19 Surveys

<i>Country Name</i>	Wave of Facebook Fob Data							<i>Total</i>
	<i>Wave 1</i>	<i>Wave 2</i>	<i>Wave 3</i>	<i>Wave 4</i>	<i>Wave 5</i>	<i>Wave 6</i>	<i>Wave 7</i>	
Argentina	1	1	1	1	1	1	1	7
Australia	1	1	1	1	1	1	1	7
Bangladesh	1	1	1	1	1	1	1	7
Belgium	1	1	1	1	1	1	1	7
Brazil	1	1	1	1	1	1	1	7
Cambodia	1	1	1	1	1	1	1	7
Canada	1	1	1	1	1	1	1	7
Colombia	1	1	1	1	1	1	1	7
Czech Republic	1	1	1	1	1	1	1	7
Denmark	1	1	1	1	1	1	1	7
Ecuador	1	1	1	1	1	1	1	7
Egypt	1	1	1	1	1	1	1	7
France	1	1	1	1	1	1	1	7
Germany	1	1	1	1	1	1	1	7
Ghana	1	1	1	1	1	1	1	7
Greece	1	1	1	1	1	1	1	7
Hong Kong	1	0	0	0	0	0	1	2
Hungary	1	1	1	1	1	1	1	7
India	1	1	1	1	1	1	1	7
Indonesia	1	1	1	1	1	1	1	7
Iraq	1	1	1	1	1	1	1	7
Ireland	1	0	0	0	0	0	1	2
Israel	1	1	1	1	1	1	1	7
Italy	1	1	1	1	1	1	1	7
Japan	1	1	1	1	1	1	1	7
Kenya	1	1	1	1	1	1	1	7
Malaysia	1	1	1	1	1	1	1	7
Mexico	1	1	1	1	1	1	1	7
Myanmar	1	1	1	1	1	1	1	7
Netherlands	1	1	1	1	1	1	1	7
Nigeria	1	1	1	1	1	1	1	7
Norway	1	1	1	1	0	0	1	5
Pakistan	1	1	1	1	1	1	1	7
Peru	1	1	1	1	1	1	1	7
Philippines	1	1	1	1	1	1	1	7
Poland	1	1	1	1	1	1	1	7
Portugal	1	1	1	1	1	1	1	7
Romania	1	1	1	1	1	1	1	7

Russia	1	1	1	1	1	1	1	7
Saudi Arabia	1	1	1	1	1	1	1	7
Singapore	1	0	0	0	0	0	1	2
South Africa	1	1	1	1	1	1	1	7
South Korea	1	1	1	1	0	0	1	5
Spain	1	1	1	1	1	1	1	7
Sweden	1	1	1	1	1	1	1	7
Switzerland	1	1	1	1	1	1	1	7
Thailand	1	1	1	1	1	1	1	7
Turkey	1	1	1	1	1	1	1	7
United Arab Emirates	1	1	1	1	1	1	1	7
United Kingdom	1	1	1	1	1	1	1	7
United States	1	1	1	1	1	1	1	7
Vietnam	1	1	1	1	1	1	1	7
Total	52	49	49	49	47	47	52	345

In Table A2 we include the specific survey question used to construct the main outcomes of interest used in the analysis.

Table A2. Main Outcomes Description

Outcomes	Question	Additional description
Business closed (1=Yes; 0=No)	Is this business currently operational or engaging in any revenue-generating activities?	We exclude businesses that closed prior to January 1 st , 2020.
Self: Time Spent on Paid Work Activities (Hours per day)	How many hours per day do you spend on paid work activities? (For example, business activities, wage or salaried work)	Continuous (number of hours)
Likelihood reduced workers (1=Yes; 0=No)	How has the number of employees/workers changed as a result of the coronavirus (COVID-19) pandemic? Select: Reduced, Increased or Same number of workers?	Yes, if reduced number of workers.
100% employees laid off in last 30 days (1=Yes; 0=No)	In the last 30 days, how many employees (if any) did this business have to lay-off	1=if answer is 100% of employees
Sales reported to be lower than last year (1=Yes; 0=No)	Comparing your business sales for the last 30 days (in 2020) with the same month last year (in 2019), are your sales higher, lower or the same as last year?	Yes, if answer is sales are lower than last year
Lower Sales: % lower compared to previous year (%)	If sales lower, compared to the same month last year (2019), how much lower were your sales in [last month] 2020?	Percentage in intervals of 10%
Care and Domestic Responsibilities (Self)	How many hours per day do you spend on domestic tasks or family care activities? (For example, taking care of children, cooking and cleaning)	Continuous (number of hours)
Care and Domestic Responsibilities (Spouse/Married)	How many hours per day does your spouse or partner spend on domestic tasks or family care activities? (For example, taking care of children, cooking and cleaning) (If married).	Continuous (number of hours)

Appendix B: Global Monitoring of School Closures Related to the COVID-19 Pandemic

To determine the status of the school closure policy in each country we use the information gathered by UNESCO on school closures due to COVID around the world (UNESCO, 2020). UNESCO has monitored the status of the schooling system on a daily basis and categorized each country in one of the following 4 classifications:⁴

1. Closed due to COVID-19: Government-mandated closures of educational institutions affecting most or all of the student population.
2. Academic break: Schools across the country are on scheduled academic breaks for most or all the student population. All instructional activities are suspended during this period.
3. Fully open: Schools are open and deliver classes exclusively face-to-face for most or all of the student population.
4. Partially open: Schools are: (a) open in certain regions and closed in others; and/or (b) open for some grades, levels, or age groups and closed for others; and/or (c) open with reduced in-person class time, combined with distance learning (hybrid approach).

Table B1 below presents the status of the school closure policies for each of the countries included in our sample at the time of each survey wave. In the analysis for this paper we classify countries in our sample into three categories: (1) Schools closed partially or fully due to COVID-19, (2) Schools fully open, or (3) On academic break.

Graphs B1 to B3 plot the percentage of countries in each region that had a school closure policy in place at the time of each survey wave and shows there was significant variation in school closure policies over time. For example, at the time of the first survey wave in May 2020, approximately 82% of countries in Europe had a school closure policy in place due to COVID-19 (fully closed or partially closed); 18% of countries had schools fully open and no countries were on Academic Break. In July 2020, most of the countries surveyed in Europe were on a scheduled Academic Break. By the time of the final survey wave in October 2020, the school closure policies within Europe had changed whereby approximately 19% of European countries had a school closure policy related to COVID-19 in place and 81% of European countries had schools fully open. However, the pattern is not the same in all regions. For example, in the South Asia region the policies show a more constant trend whereby schools were closed in the majority of countries throughout the six month study period. Notably, in Latin America, Sub-Saharan Africa and South Asia there was a higher average rate of school closures due to COVID-19 (approximately 80% of countries had schools fully or partially closed due to COVID-19 averaged across the survey period) compared with Europe, Middle East and Asia and Oceania (approximately 40% of countries had schools fully or partially closed due to COVID-19 averaged across the survey period).

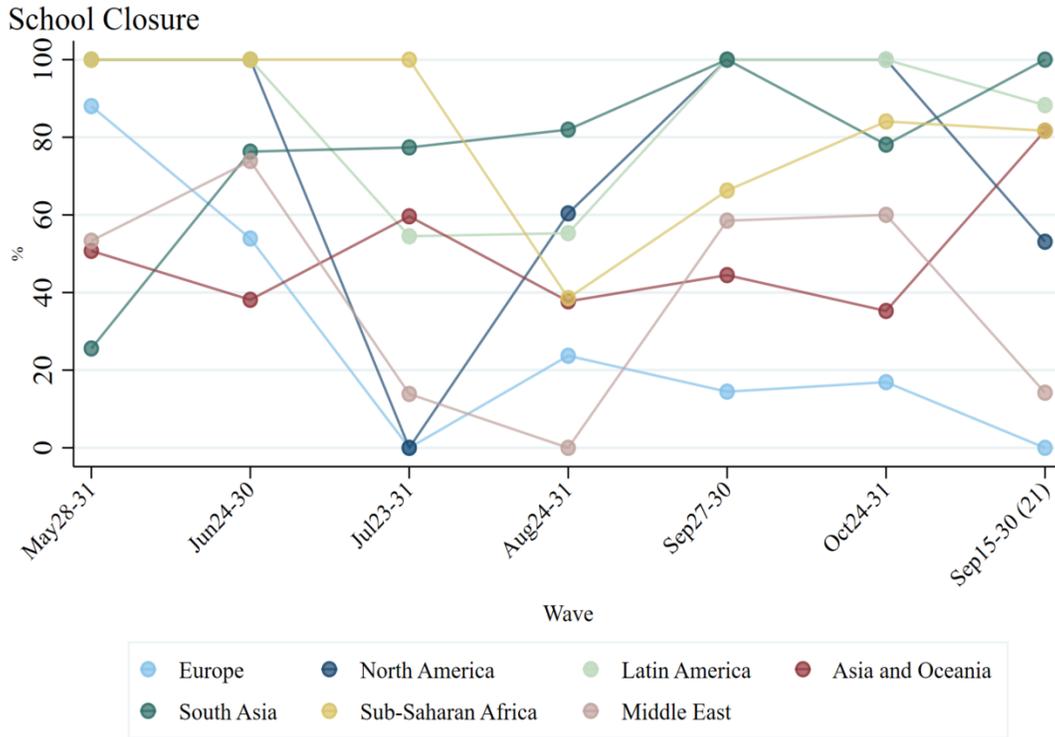
⁴ Please refer to the methodological note “[Global Monitoring of School Closures caused by the COVID-19 Pandemic](#)”

Table B1: School Closure Policies related to COVID-19 at the time of each survey wave.

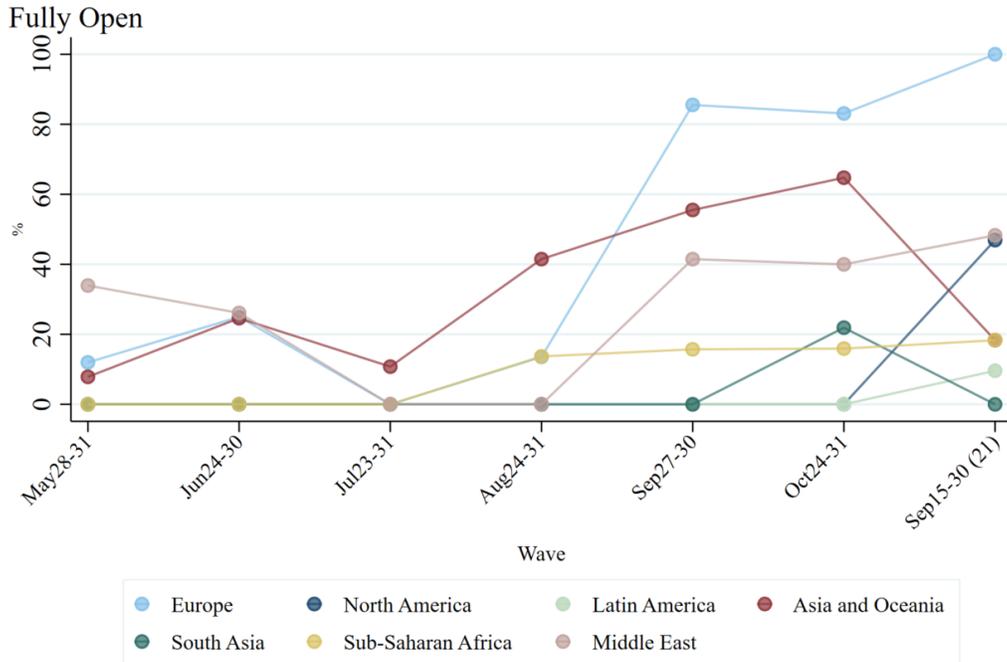
COUNTRY	WAVE 1	WAVE 2	WAVE 3	WAVE 4	WAVE 5	WAVE 6	WAVE 7
	<i>20-May</i>	<i>20-Jun</i>	<i>20-Jul</i>	<i>20-Aug</i>	<i>20-Sep</i>	<i>20-Oct</i>	<i>21-Sep</i>
Argentina	Closed due to COVID-19	Closed due to COVID-19	Academic break	Closed due to COVID-19	Partially open	Partially open	Partially open
Bangladesh	Academic break	Closed due to COVID-19	Closed due to COVID-19	Academic break	Closed due to COVID-19	Closed due to COVID-19	Partially open
Canada	Closed due to COVID-19	Closed due to COVID-19	Academic break	Academic break	Partially open	Partially open	Fully open
Colombia	Closed due to COVID-19	Partially open	Partially open	Partially open			
Denmark	Partially open	Fully open	Academic break	Fully open	Fully open	Fully open	Fully open
Egypt	Closed due to COVID-19	Closed due to COVID-19	Academic break	Academic break	Academic break	Partially open	Academic break
France	Fully open	Fully open	Academic break	Academic break	Fully open	Fully open	Fully open
Germany	Partially open	Partially open	Academic break	Fully open	Fully open	Fully open	Fully open
Ghana	Closed due to COVID-19	Partially open	Partially open	Partially open	Academic break	Partially open	Partially open
India	Closed due to COVID-19	Partially open	Partially open				
Iraq	Closed due to COVID-19	Closed due to COVID-19	Closed due to COVID-19	Academic break	Closed due to COVID-19	Closed due to COVID-19	Academic break
Ireland	Closed due to COVID-19	Not Surveyed	Fully open				
Israel	Fully open	Fully open	Academic break	Academic break	Closed due to COVID-19	Closed due to COVID-19	Fully open
Italy	Closed due to COVID-19	Academic break	Academic break	Academic break	Fully open	Fully open	Fully open
Japan	Partially open	Fully open	Fully open	Fully open	Fully open	Fully open	Fully open
Kenya	Closed due to COVID-19	Partially open	Fully open				
Malaysia	Closed due to COVID-19	Partially open	Partially open	Fully open	Fully open	Fully open	Closed due to COVID-19
Mexico	Closed due to COVID-19	Closed due to COVID-19	Closed due to COVID-19	Academic break	Closed due to COVID-19	Closed due to COVID-19	Partially open
Myanmar	Academic break	Closed due to COVID-19	Partially open	Partially open	Closed due to COVID-19	Closed due to COVID-19	Closed due to COVID-19
Netherlands	Partially open	Fully open	Academic break	Fully open	Fully open	Fully open	Fully open
Nigeria	Closed due to COVID-19	Closed due to COVID-19	Closed due to COVID-19	Academic break	Partially open	Partially open	Partially open
Norway	Fully open	Fully open	Academic break	Fully open	Not Surveyed	Not Surveyed	Fully open
Pakistan	Closed due to COVID-19	Academic break	Academic break	Closed due to COVID-19	Partially open	Fully open	Closed due to COVID-19
Peru	Closed due to COVID-19	Closed due to COVID-19	Partially open				
Philippines	Academic break	Academic break	Academic break	Closed due to COVID-19			
Poland	Partially open	Partially open	Academic break	Academic break	Fully open	Fully open	Fully open
Portugal	Partially open	Partially open	Academic break	Academic break	Fully open	Fully open	Fully open
Romania	Closed due to COVID-19	Closed due to COVID-19	Academic break	Academic break	Partially open	Partially open	Fully open
Russia	Partially open	Partially open	Academic break	Academic break	Fully open	Fully open	Fully open

Saudi Arabia	Academic break	Closed due to COVID-19	Academic break	Academic break	Closed due to COVID-19	Closed due to COVID-19	Partially open
Singapore	Academic break	Not Surveyed	Fully open				
South Africa	Closed due to COVID-19	Partially open	Partially open	Fully open	Fully open	Fully open	Partially open
South Korea	Partially open	Fully open	Fully open	Fully open	Not Surveyed	Not Surveyed	Fully open
Spain	Closed due to COVID-19	Partially open	Academic break	Academic break	Fully open	Fully open	Fully open
Sweden	Partially open	Fully open	Academic break	Fully open	Fully open	Fully open	Fully open
Switzerland	Fully open	Fully open	Academic break	Fully open	Fully open	Fully open	Fully open
Thailand	Academic break	Academic break	Closed due to COVID-19	Fully open	Fully open	Fully open	Partially open
Turkey	Closed due to COVID-19	Academic break	Academic break	Closed due to COVID-19	Partially open	Partially open	Fully open
UAE	Closed due to COVID-19	Closed due to COVID-19	Academic break	Academic break	Closed due to COVID-19	Closed due to COVID-19	Fully open
United Kingdom	Closed due to COVID-19	Partially open	Academic break	Partially open	Fully open	Fully open	Fully open
United States	Partially open	Partially open	Academic break	Partially open	Partially open	Partially open	Partially open
Vietnam	Fully open	Academic break	Academic break	Academic break	Fully open	Fully open	Partially open

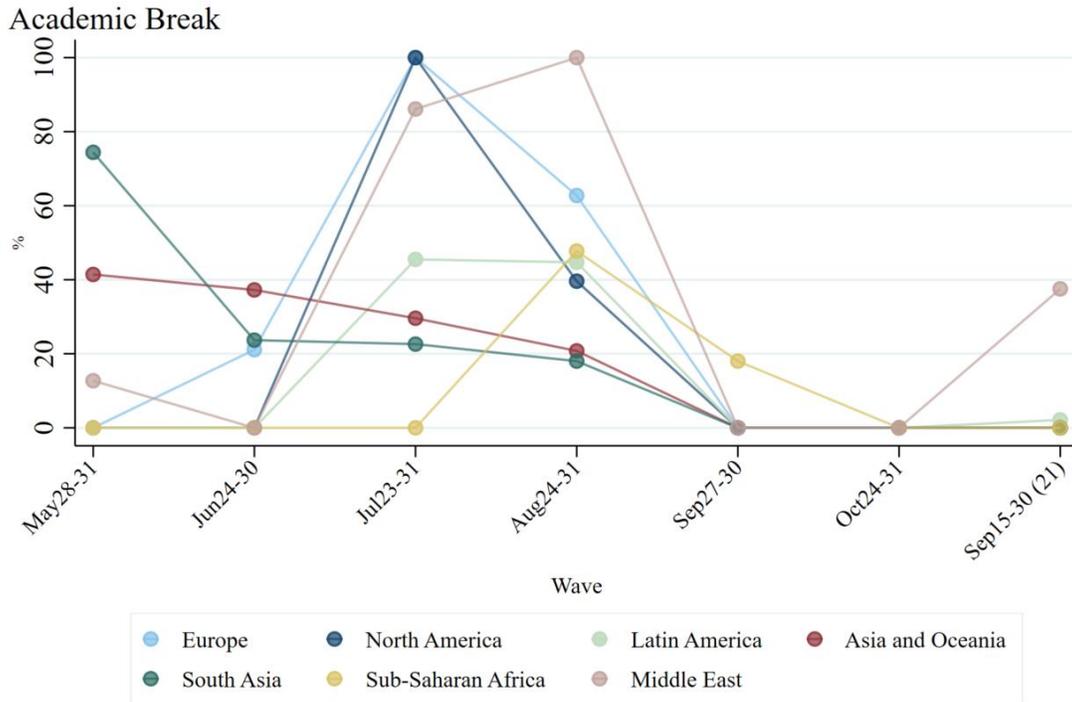
Graph B1. Proportion of Countries with a School Closure Policy over time by Region



Graph B2. Proportion of Countries with Schools Fully Open over time by Region



Graph B3. Proportion of Countries on Academic Break over time by Region



Source: UNESCO (2020/2021)
School Closure includes partial or total closure

Appendix C: Google Mobility Data

To study how mobility patterns have evolved worldwide, we use the Google Community Mobility Reports (Google, 2020). The Google mobility data are created with aggregated, anonymized sets of data from users who have turned on the Location History setting on their phone and show how visits and length of stay at different types of places change compared to the median value, for the corresponding day of the week, during the 5-week period from January 3, 2020 to February 6, 2020. Google's ability to accurately locate phones and to correctly categorize places varies both across countries as well as within (urban vs. rural areas). The data contains information on various epidemiologically relevant categories of places such as: i) retail and recreation, ii) grocery and pharmacy, iii) parks, iv) workplaces, v) transit stations, and vi) residential areas. In this paper we focus on mobility indices related to retail and recreation and workplaces since they are the most relevant for business related outcomes. Retail and recreation capture visits to restaurants, cafes, shopping centers, theme parks, museums, libraries, and movie theaters.

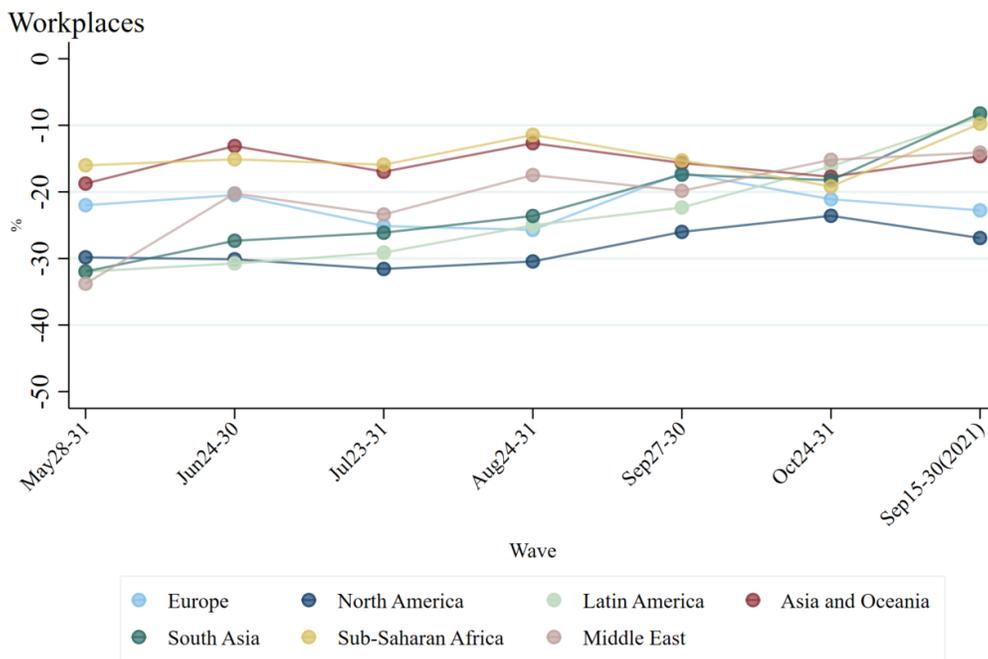
In Table C1 we show the average mobility for each index at the time of each survey wave for the countries in the sample. During the wave 1 survey in May 2020, the retail and recreation index has a mean of -37, suggesting a 37 percentage points drop in movement relative to baseline levels for the countries in the sample. During the wave 6 survey in October 2020, retail and recreation index has a mean of -22, suggesting a 22 percentage points drop in movement relative to baseline levels. This suggests over time there was an increase in the movement within retail and recreation as the survey waves progressed. However, movement never reached the levels seen prior to the COVID-19 pandemic for the countries included in the sample. Similarly, for the workplaces index the mean of the index goes from -24 to -19 from wave 1 to wave 6 which suggests movement increased slightly but never reached pre-pandemic levels.

Table C1: Google Mobility Indices for Workplaces and Retail & Recreation

		<i>N</i>	<i>Mean</i>	<i>SD</i>	<i>Min</i>	<i>Max</i>
Wave 1	Workplaces	26797	-23.77	12.06	-58.40	10.80
	Retail and recreation	26797	-36.76	18.11	-81.00	-1.60
Wave 2	Workplaces	22930	-20.69	10.06	-52.71	8.14
	Retail and recreation	22930	-23.02	18.22	-69.71	8.29
Wave 3	Workplaces	24321	-23.58	9.17	-44.57	-2.43
	Retail and recreation	24321	-17.71	17.56	-59.29	16.00
Wave 4	Workplaces	24423	-21.07	9.85	-41.88	0.88
	Retail and recreation	24423	-16.48	14.66	-56.00	10.00
Wave 5	Workplaces	23320	-18.12	9.98	-52.75	7.00
	Retail and recreation	23320	-21.28	13.64	-65.25	-3.25
Wave 6	Workplaces	23616	-18.99	9.16	-41.22	3.89
	Retail and recreation	23616	-22.08	12.19	-57.67	2.22
Wave 7	Workplaces	29805	-16.70	9.36	-34.83	8.92
	Retail and recreation	29805	-20.23	14.00	-55.08	5.83

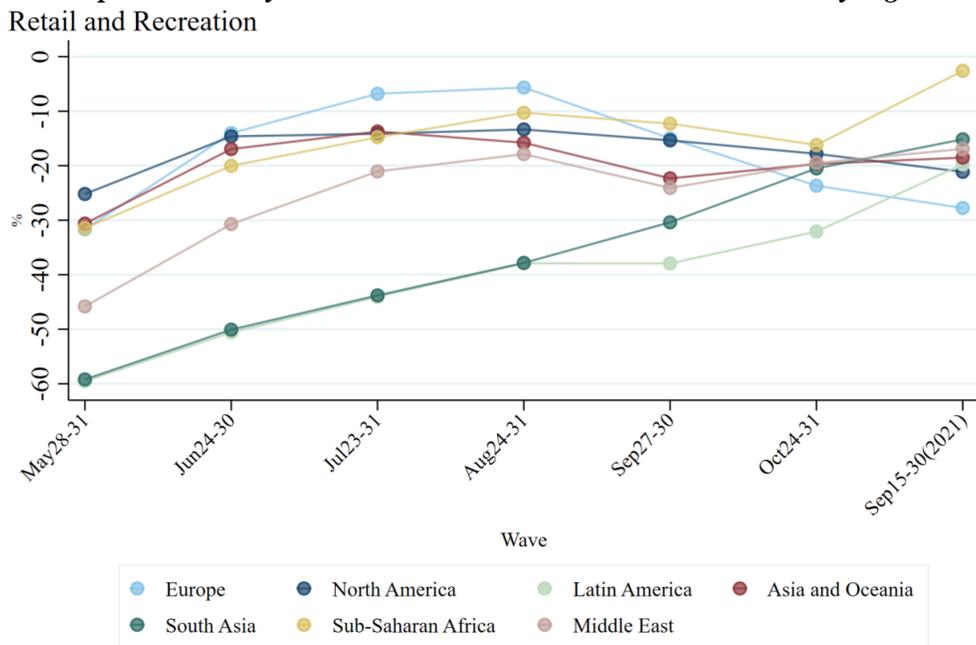
In graphs C1 and C2 below we show the variation in mobility for the two indices separately over time and by region. Countries in Sub-Saharan Africa and Asia Oceania had higher movement in retail and recreation relative to some of the other regions and remained approximately 20 percentage points below pre-pandemic levels of movement throughout the survey period. In South Asia and Latin America there is a greater increase in the level of movement in retail and recreation in the countries over time. In the countries in South Asia during wave 1 the movement in retail and recreation was -60 percentage points lower than pre-pandemic levels which increased over time to -20 percentage points lower than pre-pandemic levels by wave 6.

Graph C1. Mobility Data in Workplaces over time and by region



Source: COVID-19 Community Mobility from Google
Mobility trends for places of work

Graph C2. Mobility Data in Retail and Recreation over time and by region



Source: COVID-19 Community Mobility from Google
Mobility trends for places like restaurants, cafes, shopping centers, theme parks, museums, libraries, and movie theaters

Appendix D: Gender Norms in the Future of Business Survey

In the December 2019 Future of Business Survey, we included a set of questions to business owners and managers on Facebook to capture beliefs and norms towards gender equality.

- i. Individual Beliefs: Do you agree or disagree with the following statement: “*Men and women should have equal opportunities.*” from strongly agree, agree, disagree or strongly disagree.
- ii. Perceived Community Norm: Out of 10 of your neighbors, how many do you think believe that men and women should have equal opportunities?

The sample included data from 108 countries with at least 30 female respondents. In this paper we use these norms constructs for the 52 countries in our analysis to examine whether the more gender conservative/liberal societies helped mitigate or exacerbate the gendered economic impacts of the COVID-19 crisis for businesses.

Graphs D1 and D2 present the individual beliefs for men and women separately to show the percentage of people in a country that agree or strongly agree with the gender equality statement versus the average perceived community norm aggregated at the country level. Overall, the surveyed female and male entrepreneurs’ own beliefs about gender equality tend to be more progressive than what they believe their community thinks about gender equality. The distance between the individual belief and the community norm may capture to a degree the level of misperception of the norm at the country level or perhaps the entrepreneurs sampled by the FoB survey may have more progressive beliefs than the communities that surround them. Countries in graphs D1 and D2 have been sorted by the level of the gap between individual beliefs and the perceived norm. For example, Norway has the smallest gap between individual and community norm for both men and women and Iraq has the largest gap. In Iraq, while 89% of women entrepreneurs surveyed agreed that men and women should have equal opportunities, they perceive that only 33% of their community would agree with the gender equality statement. Similarly, for Iraqi male entrepreneurs 77% agree that men and women should have equal opportunities and perceive that only 38% of their community would agree with the gender equality statement. In graph D3 we show the overall correlation between individual beliefs and the community norm for male and female entrepreneurs. We show that there is a linear relationship whereby the more progressive the country is in terms of individual beliefs, the higher is the community perceived norm. A simple correlation coefficient tells us that this relationship is stronger for men ($\rho:75$) than for women ($\rho:43$).

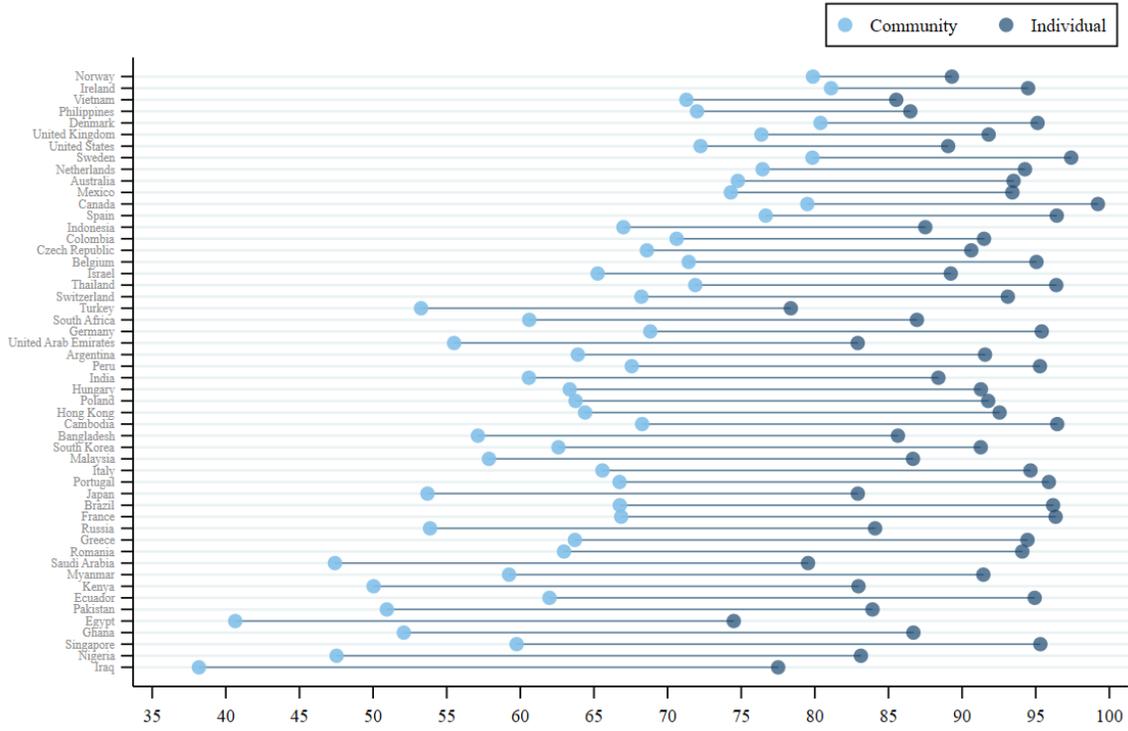
In graph D4 we examine how men and women differ in their beliefs and norms. The line is the 45-degree line that shows where there is equality between the norm variable measured for women (vertical axis) and the norm measured for men (horizontal axis). Countries on the 45-degree line are those in which the norms are the most similar between men and women. Overall, community perceptions about gender equality are more similar among women and men and have a higher correlation coefficient ($\rho:0.85$) compared to the individual beliefs of men and women ($\rho:0.61$). In general, in the majority of countries women’s individual beliefs are skewed to the left of men’s individual beliefs – that is, women have on average more progressive views than men in the sample. In terms of perceived community norms, the panel on the right of graph D4 suggest that men and women in the sample have very similar beliefs i.e. most countries are very close to the 45-degree line.

In the next section we use a similar measure of gender equality from the World Values Survey (WVS) that draws from a representative sample from a country’s population to show that the ranking of gender progressiveness across countries for the sample in the Future of Business survey is similar to the ranking from a general population from the WVS.

Graph D1. Men's Individual Beliefs versus Perceived Community Norm by Country

Men and women should have equal opportunities

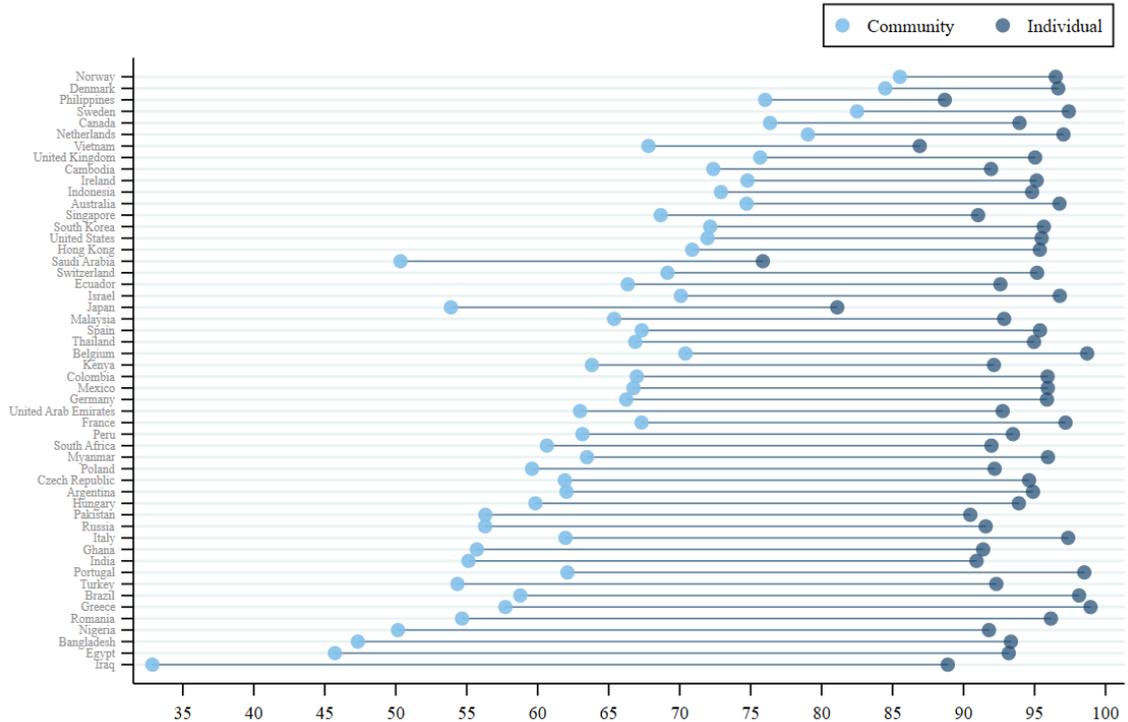
Men's response



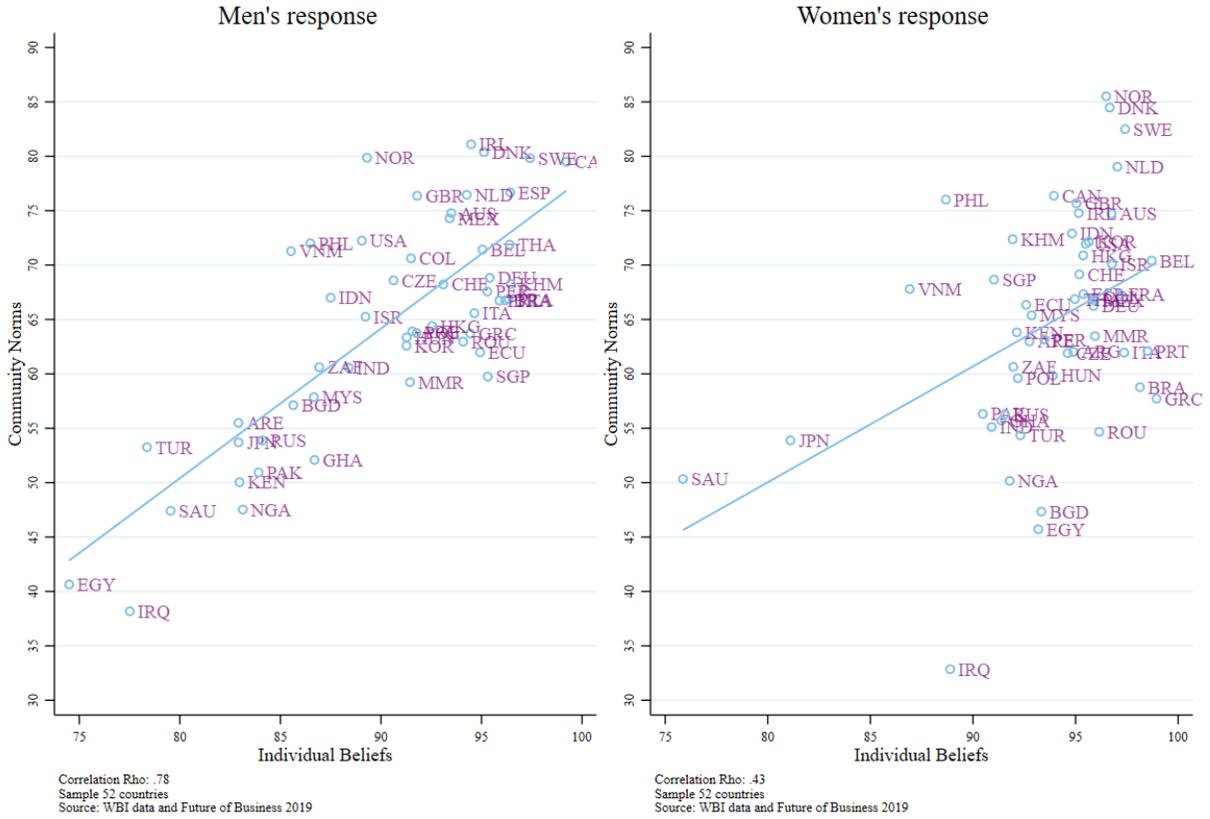
Graph D2. Women's Individual Beliefs versus Perceived Community Norm by Country

Men and women should have equal opportunities

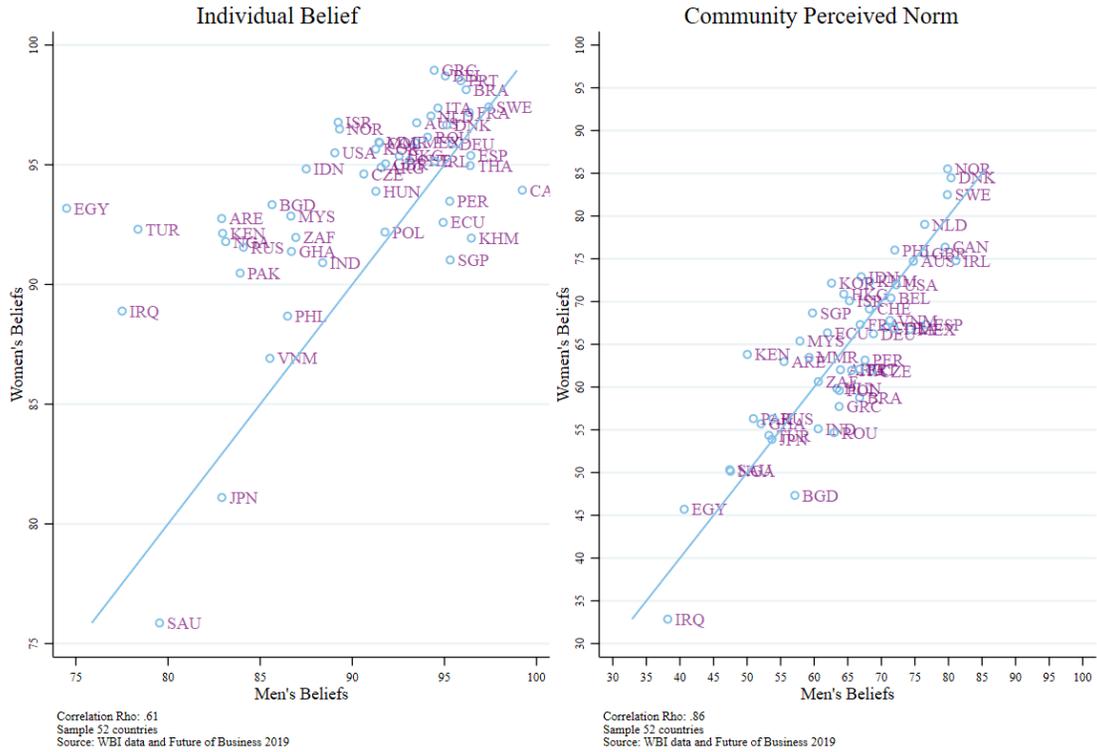
Women's response



Graph D3. Relationship between Individual Beliefs and Community Norms for Men and Women
Individual Beliefs vs Community Norms (2019)



Graph D4. Comparison of Men and Women for Individual Beliefs and Perceived Community Norm
Individual Beliefs and Community Norms (2019)



Comparing the Country Rank of Gender Beliefs in the Future of Business and World Values Surveys

In Table D1 we compare the ranking of countries using the gender equality norms measures within the Future of Business (FoB) survey with a similar normative statement on gender equality in the nationally representative World Values Survey (WVS) for the sample of countries that can be found in both surveys (29 countries = 68% of sample).⁵ To run the correlation we first aggregate within a country the percentage who agree with the statement and then define quintiles of the country's rank within the WVS and the FoB survey. Where a quintile rank of 1 is least progressive to 5 is most progressive. We then examine whether there are any discrepancies of how a country would rank in terms of gender progressiveness across the two surveys by taking the difference in the rank. A difference of 0 in the rank suggests that particular country falls in the same quintile rank in the FoB and the WVS.

While the WVS does not include a community norm construct we also compare how the perceived community norms in the FoB sample correlate with the individual beliefs in the WVS by comparing where a country would rank across both surveys. For example, Argentina would rank in the 4th quintile in terms of progressiveness in both the FoB and the WVS in survey respondents' individual beliefs. However, Argentinian men and women in the FoB survey perceive their community as less progressive than the aggregated beliefs from the WVS (they are one quintile lower in rank than the WVS).

Overall, in Table D1 we show a strong correlation in the rank with the Future of Business survey norms measures and the World Values Survey. Men's individual beliefs in the FoB are, on average, very similar to those reported by men in the WVS. The outlier countries in terms of men's individual beliefs include the Netherlands, The United States of America and Taiwan, China who have a differential rank greater than 1 quintile. That is, men in the Netherlands and The United States of America who respond to the Future of Business Survey are less progressive than those that responded to the WVS; and men in Taiwan in the FoB are more gender progressive than in WVS. In terms of women's individual beliefs, although there appears to be little variation in the percentage who agree with the gender equality statement, the correlation in the ranking of countries between the FoB and WVS is strong. Turkish women are the greatest outlier where the women responding to the FoB are, on average, 4 quintiles more gender progressive than those responding to the WVS. Similarly, perceived community norms as reported by both men and women in the Future of Business correlate strongly with the actual beliefs in the WVS. This suggests that reports from men and women in the FoB accurately reflect perceptions on gender equality in their communities. Men and women in the Philippines responding to the FoB generally perceive their community as more progressive than the beliefs revealed in the WVS.

As a robustness check for the results showed in Tables 7a and 7b in the main paper we rerun the same analysis excluding the countries with a differential rank of 2 quintiles or more between the FoB and WVS results in Tables D2a and D2b to show that the results are not simply driven by sample selection of respondents into the FoB survey.

⁵ The indicator from the WVS is "men should have more right to a job than women do."

Table D1: Correlation of Future of Business Norms Constructs with the Country Ranking in the World Values Survey

Country	PERCENTAGE IN COUNTRY WHO AGREE WITH STATEMENT						RANK QUINTILES (1: less progressive/5:more progressive)						Differences in Rank			
	World Values Survey: Men should have more right to a job than women (INDIVIDUAL BELIEFS)		Future of Business: Men and women should have equal opportunities (INDIVIDUAL BELIEFS)		Future of Business: Men and women should have equal opportunities (COMMUNITY NORM)		World Values Survey: Men should have more right to a job than women (INDIVIDUAL BELIEFS)		Future of Business: Men and women should have equal opportunities (INDIVIDUAL BELIEFS)		Future of Business: Men and women should have equal opportunities (COMMUNITY NORM)		INDIVIDUAL		COMMUNITY	
	WOMEN	MEN	WOMEN	MEN	WOMEN	MEN	WOMEN	MEN	WOMEN	MEN	WOMEN	MEN	WOMEN	MEN	WOMEN	MEN
ARG	12.2%	16.4%	94.89	91.56	62.03	63.91	4	4	4	4	3	3	0	0	1	1
AUS	7.5%	9.7%	96.75	93.50	74.72	74.77	5	5	4	4	5	5	1	1	0	0
BRA	13.7%	20.3%	98.14	96.18	58.77	66.76	4	4	5	5	2	3	-1	-1	2	1
COL	20.6%	24.3%	95.92	91.49	66.98	70.62	4	4	5	4	4	4	-1	0	0	0
DEU	12.2%	17.0%	95.88	95.41	66.24	68.82	4	4	4	4	3	4	0	0	1	0
ECU	21.6%	21.8%	92.59	94.93	66.35	61.98	3	3	4	4	3	3	-1	-1	0	0
EGY	84.3%	87.8%	93.18	74.49	45.71	40.64	1	1	2	1	1	1	-1	0	0	0
ESP	11.6%	13.0%	95.38	96.43	67.33	76.67	5	5	5	5	4	5	0	0	1	0
GHA	36.7%	60.5%	91.38	86.70	55.71	52.09	3	2	1	2	2	1	2	0	1	1
HKG	28.9%	26.4%	95.37	92.55	70.88	64.40	2	3	2	3	4	3	0	0	-2	0
IND	48.2%	63.3%	90.91	88.39	55.12	60.58	2	2	2	3	1	2	0	-1	1	0
IRQ	49.7%	79.9%	88.89	77.51	32.86	38.18	1	1	3	1	1	1	-2	0	0	0
JPN	31.4%	33.0%	81.10	82.92	53.88	53.70	2	2	1	2	1	2	1	0	1	0
MEX	14.6%	19.0%	95.93	93.41	66.75	74.29	4	4	4	5	3	5	0	-1	1	-1
MYS	41.8%	70.4%	92.86	86.67	65.38	57.87	2	1	1	1	3	2	1	0	-1	-1
NGA	50.9%	71.8%	91.79	83.13	50.16	47.53	1	1	1	1	1	1	0	0	0	0
NLD	5.8%	9.8%	97.04	94.27	79.03	76.45	5	5	3	2	5	5	2	3	0	0
PAK	71.7%	75.7%	90.48	83.91	56.32	50.94	1	1	1	1	2	1	0	0	-1	0
PER	15.9%	19.9%	93.48	95.29	63.15	67.57	4	4	4	5	3	4	0	-1	1	0
PHL	53.8%	62.6%	88.68	86.49	76.03	72.00	1	1	2	2	5	4	-1	-1	-4	-3
POL	29.6%	23.6%	92.19	91.77	59.60	63.75	3	3	3	3	2	3	0	0	1	0
RUS	23.5%	36.0%	91.56	84.09	56.29	53.87	3	2	2	2	2	2	1	0	1	0
SGP	26.8%	30.4%	91.03	95.31	68.67	59.75	2	3	2	3	4	2	0	0	-2	1
SWE	1.1%	3.7%	97.41	97.41	82.50	79.84	5	5	5	5	5	5	0	0	0	0
THA	27.0%	35.7%	94.96	96.40	66.88	71.88	3	3	1	3	4	4	2	0	-1	-1
TUR	53.4%	62.6%	92.31	78.37	54.35	53.26	1	2	5	1	1	1	-4	1	0	1
TWN	39.2%	45.3%	96.83	95.63	69.12	62.87	2	2	3	4	4	3	-1	-2	-2	-1
USA	5.0%	6.5%	95.50	89.05	71.96	72.24	5	5	3	3	5	4	2	2	0	1
ZAF	23.4%	35.2%	91.96	86.93	60.65	60.61	3	3	3	2	2	2	0	1	1	1
Average													0.83	0.55	0.90	0.48

Note: Country rankings between the Future of Business and World Values Survey is presented for the countries sampled in both surveys. The absolute average difference in rank between the two surveys is presented at the bottom of the table.

Table D2a. Heterogeneity by Men's Beliefs: Married Child Dependent Sample and restricted to those countries for which we information on WVS

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Time Spent on (Hours per day) ...							
	Business closed (1=Yes; 0=No)	Paid Work		Care and Domestic Responsibilities (Self/Married)		Care and Domestic Responsibilities (Spouse/Married)		
	<i>MARRIED FEMALE</i>	<i>MARRIED MALE</i>	<i>MARRIED FEMALE</i>	<i>MARRIED MALE</i>	<i>MARRIED FEMALE</i>	<i>MARRIED MALE</i>	<i>MARRIED FEMALE</i>	<i>MARRIED MALE</i>
School closure due to COVID-19=1	0.745** [0.32]	-0.210 [0.21]	-7.517 [4.98]	-2.995 [3.39]	6.339 [3.99]	0.071 [2.38]	3.530 [3.12]	1.353 [2.92]
Agree Men and women should have equal opportunities (Men)	0.290* [0.17]	0.086 [0.12]	7.900** [3.31]	0.737 [2.35]	0.950 [3.28]	7.048*** [1.72]	3.865* [2.25]	-3.131 [2.18]
School closure due to COVID-19=1 # Agree Men and women should have equal opportunities (Men)	-0.802** [0.35]	0.239 [0.23]	8.816 [5.46]	3.462 [3.78]	-6.288 [4.32]	-0.146 [2.68]	-3.803 [3.42]	-1.334 [3.24]
Constant	-0.212 [0.22]	0.232 [0.17]	7.649** [3.89]	9.396*** [2.89]	2.426 [3.28]	0.798 [1.94]	5.105** [2.42]	7.899*** [2.62]
Observations	5652	13245	3311	7869	5652	13245	4295	10196
Adjusted R-squared	0.11	0.09	0.12	0.13	0.13	0.04	0.06	0.06
Mean	0.16	0.16	6.80	7.62	6.50	4.05	3.70	6.51

Notes: * significant at 10% level, ** significant at 5% level, *** significant at 1% level.

[1] School Closure due to COVID-19 is a dummy variable where 1 = schools closed in country at time of survey wave. Men's Individual Belief is the proportion of men in the country who agreed with the statement that *men and women should have equal opportunities* measured prior to the COVID-19 pandemic. Men's Community Norm is the country-level aggregate of the perceived social norm as reported by men in the sample towards gender equality.

[2] OLS pooled regressions include Region of the world and Time Fixed Effects and full set of controls including Firm Controls (Sector + Size, Age and Role in Business); Mobility Controls (Movement around retail & recreation/workplaces); GDP Per Capita; and Demographic Controls (Married and Types of Dependents). Academic Break control is included in the regressions but not shown in the table.

[3] Sample is restricted to business owners who are married or living with a partner with any child dependents aged 18 years or younger in the household and is split by gender with FEMALE (Columns (1), (3), (5), and (7)) versus MALE (Columns (2), (4), (6), and (8)).

Table D2b. Heterogeneity by Women's Beliefs: Married Child Dependent Sample and restricted to those countries for which we information on WVS

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Time Spent on (Hours per day) ...							
	Business closed (1=Yes; 0=No)	Paid Work		Care and Domestic Responsibilities (Self/Married)		Care and Domestic Responsibilities (Spouse/Married)		
	<i>MARRIED FEMALE</i>	<i>MARRIED MALE</i>	<i>MARRIED FEMALE</i>	<i>MARRIED MALE</i>	<i>MARRIED FEMALE</i>	<i>MARRIED MALE</i>	<i>MARRIED FEMALE</i>	<i>MARRIED MALE</i>
School closure due to COVID-19=1	0.692 [0.57]	-0.306 [0.19]	2.098 [8.48]	-14.549** [6.24]	17.871*** [6.40]	0.605 [2.78]	7.361 [5.98]	2.663 [5.39]
Agree Men and women should have equal opportunities (Women)	0.252 [0.18]	0.142 [0.10]	10.419*** [3.53]	3.017 [2.62]	8.317** [4.07]	10.109*** [1.69]	7.495*** [2.25]	-1.543 [2.16]
School closure due to COVID-19=1 # Agree Men and women should have equal opportunities (Women)	-0.724 [0.61]	0.331 [0.21]	-2.079 [9.00]	15.534** [6.67]	-18.409*** [6.78]	-0.855 [3.02]	-7.852 [6.34]	-2.542 [5.76]
Constant	-0.120 [0.26]	0.079 [0.14]	3.145 [4.28]	7.648** [3.26]	-4.467 [4.14]	-4.672** [1.91]	1.512 [2.58]	6.823** [2.73]
Observations	5652	13245	3311	7869	5652	13245	4295	10196
Adjusted R-squared	0.11	0.09	0.11	0.13	0.13	0.04	0.06	0.06
Mean	0.16	0.16	6.80	7.62	6.50	4.05	3.70	6.51

Notes: * significant at 10% level, ** significant at 5% level, *** significant at 1% level.

[1] School Closure due to COVID-19 is a dummy variable where 1 = schools closed in country at time of survey wave. Women's Individual Belief is the proportion of women in the country who agreed with the statement that *men and women should have equal opportunities* measured prior to the COVID-19 pandemic. Women's Community Norm is the country-level aggregate of the perceived social norm as reported by women in the sample towards gender equality.

[2] OLS pooled regressions include Region of the world and Time Fixed Effects and full set of controls including Firm Controls (Sector + Size, Age and Role in Business); Mobility Controls (Movement around retail & recreation/workplaces); GDP Per Capita; and Demographic Controls (Married and Types of Dependents). Academic Break control is included in the regressions but not shown in the table.

[3] Sample is restricted to business owners who are married or living with a partner with any child dependents aged 18 years or younger in the household and is split by gender with FEMALE (Columns (1), (3), (5), and (7)) versus MALE (Columns (2), (4), (6), and (8)).

Table D3: Firm Composition in Conservative versus Liberal Societies: Men and Women Individual Beliefs

	(1)	(2)	(3)	(4)	(5)	(6)
	Annual Firm Revenues in 2019 (IHS)	Firm age: less than 5 years in operation (Yes=1; No=0)	Firm Size (defined by pre-pandemic number of employees)			
			Medium and large (50 and over)	Small (5 to 49)	Micro (1 to 4)	No Employees (0)
GDP per capita (Ln)	0.967*** [0.05]	-0.035*** [0.00]	-0.019*** [0.00]	-0.010*** [0.00]	-0.006** [0.00]	0.034*** [0.00]
Female	0.213 [1.15]	-0.045 [0.06]	0.061 [0.04]	-0.249*** [0.06]	0.060 [0.07]	0.127** [0.06]
Men's Individual Beliefs	6.409*** [0.94]	-0.004 [0.05]	-0.012 [0.03]	-0.270*** [0.05]	0.116** [0.05]	0.165*** [0.05]
Men's Individual Beliefs*Female	-1.782 [1.26]	0.094 [0.07]	-0.079* [0.04]	0.169*** [0.06]	-0.084 [0.07]	-0.006 [0.07]
Constant	-5.968*** [0.86]	0.688*** [0.05]	0.216*** [0.03]	0.517*** [0.05]	0.418*** [0.05]	-0.151*** [0.04]
Observations	44645	139085	134838	134838	134838	134838
Adjusted R-squared	0.16	0.02	0.04	0.05	0.01	0.06
Mean	8.22	0.35	0.09	0.30	0.38	0.23
Region FE	YES	YES	YES	YES	YES	YES

Notes:* significant at 10% level, ** significant at 5% level, *** significant at 1% level.

	(1)	(2)	(3)	(4)	(5)	(6)
	Annual Firm Revenues in 2019 (IHS)	Firm age: less than 5 years in operation (Yes=1; No=0)	Firm Size (defined by pre-pandemic number of employees)			
			Medium and large (50 and over)	Small (5 to 49)	Micro (1 to 4)	No Employees (0)
GDP per capita (Ln)	1.082*** [0.05]	-0.034*** [0.00]	-0.019*** [0.00]	-0.014*** [0.00]	-0.004 [0.00]	0.037*** [0.00]
Female	0.460 [2.06]	0.030 [0.11]	0.017 [0.06]	-0.180* [0.09]	0.260** [0.11]	-0.097 [0.11]
Women's Individual Beliefs	1.717 [1.30]	0.132** [0.07]	-0.180*** [0.04]	-0.248*** [0.07]	0.397*** [0.07]	0.031 [0.07]
Women's Ind Beliefs*Female	-1.949 [2.19]	0.010 [0.11]	-0.029 [0.06]	0.089 [0.10]	-0.295** [0.12]	0.234** [0.11]
Constant	-2.860** [1.33]	0.556*** [0.07]	0.381*** [0.04]	0.545*** [0.07]	0.127* [0.07]	-0.054 [0.07]
Observations	44645	139085	134838	134838	134838	134838
Adjusted R-squared	0.16	0.02	0.04	0.05	0.01	0.06
Mean	8.22	0.35	0.09	0.30	0.38	0.23
Region FE	YES	YES	YES	YES	YES	YES

Notes:* significant at 10% level, ** significant at 5% level, *** significant at 1% level.

[1] Top Panel: Men's Individual Belief is the proportion of men in the country who agreed with the statement that men and women should have equal opportunities measured prior to the COVID-19 pandemic. Bottom panel: Women's Individual Belief is the proportion of women in the country who agreed with the statement that men and women should have equal opportunities measured prior to the COVID-19 pandemic.

[2] OLS pooled regressions include Region of the world and Time Fixed Effects.

[3] Questions on revenues and employees were asked retrospectively to reflect a time period before the COVID-19 pandemic. The sample size for revenues is smaller since the question was asked at the end of the survey so is subject to greater survey dropout.

Table D4: Firm Composition in Conservative versus Liberal Societies: Men and Women Community Norms

	(1)	(2)	(3)	(4)	(5)	(6)
	Annual Firm Revenues in 2019 (IHS)	Firm age: less than 5 years in operation (Yes=1; No=0)	Firm Size (defined by pre-pandemic number of employees)			
			Medium and large (50 and over)	Small (5 to 49)	Micro (1 to 4)	No Employees (0)
GDP per capita (Ln)	1.096*** [0.05]	-0.039*** [0.00]	-0.021*** [0.00]	-0.013*** [0.00]	0.000 [0.00]	0.034*** [0.00]
Female	-0.551 [0.49]	0.078*** [0.03]	-0.005 [0.02]	-0.135*** [0.02]	0.078*** [0.03]	0.062** [0.03]
Men's Community Norm	-0.011 [0.54]	0.146*** [0.03]	0.057*** [0.02]	-0.034 [0.03]	-0.072** [0.03]	0.049 [0.03]
Men's Community Norm*Female	-1.265* [0.76]	-0.060 [0.04]	-0.009 [0.02]	0.058 [0.04]	-0.143*** [0.04]	0.094** [0.04]
Constant	-1.355** [0.53]	0.634*** [0.03]	0.193*** [0.02]	0.324*** [0.03]	0.512*** [0.03]	-0.028 [0.03]
Observations	44645	139085	134838	134838	134838	134838
Adjusted R-squared	0.16	0.02	0.04	0.05	0.01	0.06
Mean	8.22	0.35	0.09	0.30	0.38	0.23
Region FE	YES	YES	YES	YES	YES	YES

	(1)	(2)	(3)	(4)	(5)	(6)
	Annual Firm Revenues in 2019 (IHS)	Firm age: less than 5 years in operation (Yes=1; No=0)	Firm Size (defined by pre-pandemic number of employees)			
			Medium and large (50 and over)	Small (5 to 49)	Micro (1 to 4)	No Employees (0)
GDP per capita (Ln)	1.096*** [0.05]	-0.039*** [0.00]	-0.021*** [0.00]	-0.013*** [0.00]	0.000 [0.00]	0.034*** [0.00]
Female	-0.551 [0.49]	0.078*** [0.03]	-0.005 [0.02]	-0.135*** [0.02]	0.078*** [0.03]	0.062** [0.03]
Women's Community Norm	-0.011 [0.54]	0.146*** [0.03]	0.057*** [0.02]	-0.034 [0.03]	-0.072** [0.03]	0.049 [0.03]
Women's Community Norm*Female	-1.265* [0.76]	-0.060 [0.04]	-0.009 [0.02]	0.058 [0.04]	-0.143*** [0.04]	0.094** [0.04]
Constant	-1.355** [0.53]	0.634*** [0.03]	0.193*** [0.02]	0.324*** [0.03]	0.512*** [0.03]	-0.028 [0.03]
Observations	44645	139085	134838	134838	134838	134838
Adjusted R-squared	0.16	0.02	0.04	0.05	0.01	0.06
Mean	8.22	0.35	0.09	0.30	0.38	0.23
Region FE	YES	YES	YES	YES	YES	YES

Notes: * significant at 10% level, ** significant at 5% level, *** significant at 1% level.

[1] Top Panel: Men's Community Norm is the country-level aggregate of the perceived social norm as reported by men in the sample towards gender equality expressed as a proportion between 0 and 1. Bottom panel: Women's Community Norm is the country-level aggregate of the perceived social norm as reported by women in the sample towards gender equality expressed as a proportion between 0 and 1.

[2] OLS pooled regressions include Region of the world and Time Fixed Effects.

[3] Questions on revenues and employees were asked retrospectively to reflect a time period before the COVID-19 pandemic. The sample size for revenues is smaller since the question was asked at the end of the survey so is subject to greater survey dropout.

Appendix E. Political Economy and COVID-19-Related School Closure Policies

Political, financial, and healthcare factors may have influenced the way countries around the world handled the initial outbreak of the COVID-19 pandemic and the policies put in place to limit the spread of the virus. In this section, we examine how certain macroeconomic factors, measured before the pandemic, could have influenced a government's decision whether or how long to mandate a school closure policy due to COVID-19. In this section we use this analysis to support the claim that school closures related to COVID-19 can be considered an exogenous shock.

In Table E1 we present country level regression analysis to estimate how a set of macroeconomic indicators in a country may be correlated with the likelihood that a school closure policy due to COVID-19 was put in place at any point during the survey period. First, we examine female labor force participation⁶ prior to the pandemic as one might be concerned that countries that value women's work more highly may be more likely to keep schools open or reopen schools early despite the ongoing COVID-19 pandemic. Second, we examine the correlation of the Freedom House Index (modified) and the likelihood of a school closure policy⁷ since if women can vote and exert political power in their country, they may have a greater influence on political leaders to keep schools open. A third macro indicator we examine is the percentage of individuals using the internet within a country⁸ as one might expect that those countries with greater internet penetration have more opportunities to shift toward home-based learning during the pandemic and therefore are more likely to keep schools closed. In Table E1 we also include the relationship between the gender norms constructs from the FoB survey as described in Appendix D and the likelihood of a school closure policy related to COVID-19 as countries with more liberal attitudes towards gender equality before the pandemic may have been influenced to open schools. Finally, we examine the correlation between a country's wealth as measured by GDP per capita⁹ and the likelihood of a school closure policy. Richer countries may face different pressures to relatively poorer countries to keep schools open/closed.

The results in Table E1 show that overall school closure policies related to COVID-19 are independent of the macro indicators for female labor force participation, Freedom House Index and the beliefs towards gender equality.¹⁰ We find that a greater internet penetration within a country means a school closure policy related to COVID-19 was less likely to be mandated. In addition, we find that GDP per capita of a country is also negatively associated with a school closure policy related to COVID-19. Countries with greater wealth are expected to have higher internet penetration and once we control for GDP, we find that the correlation is no longer statistically significant.

In graphs E1-E3 below we show the relationship between GDP and our main outcomes of interest. In graph E1 we can see there is a negative relationship between GDP and business closure rates. We show a positive correlation between GDP and the progressiveness of the society. Throughout the analysis of the school closure shock on business outcomes our preferred specification includes a control for log of GDP per capita.

⁶ Measured as the rate (% of female population ages 15+. Source: <https://data.worldbank.org/indicator/SL.TLF.CACT.FE.ZS>

⁷ This is estimated using the Freedom House Index which measures how unrestricted a country is in terms of its electoral process. It is modified because we restrict to use 3 components: electoral process, political pluralism and participation, and function of government. Source: <https://freedomhouse.org/report/freedom-world>

⁸ Percentage of population with access to internet. Source: <https://data.worldbank.org/indicator/IT.NET.USER.ZS>

⁹ Transformed to natural logarithm and in US dollars. <https://data.worldbank.org/indicator/NY.GDP.PCAP.CD>.

¹⁰ Only the perceived community norm by women entrepreneurs shows a negative relationship with school closure (significant at the 10% level) that is no longer statistically significant once we control for GDP per capita.

Table E1: Correlation between Macroeconomic Indicators and School Closure Policies due to COVID-19 in 2020

	School closure due to COVID-19															
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	
Labor force participation rate, female (% of female population ages 15+)	-0.004 [0.00]								-0.002 [0.00]							
Freedom House Index		-0.008 [0.03]								0.065* [0.04]						
Individuals using the Internet (% of population)			-0.005** [0.00]								0.000 [0.00]					
Men's Individual Beliefs (Share 0-1)				-0.901 [0.67]								-0.310 [0.66]				
Women's Individual Beliefs (Share 0-1)					0.683 [0.79]								0.839 [0.77]			
Men's Perceived Community Norm (0(0.1)1)						-0.589 [0.38]									-0.094 [0.40]	
Women's Perceived Community Norm(0(0.1)1)							-0.538* [0.31]									-0.117 [0.32]
GDP per capital (Ln USD)								-0.102*** [0.04]	-0.094** [0.04]	-0.149*** [0.04]	-0.115** [0.05]	-0.097*** [0.04]	-0.105*** [0.03]	-0.099** [0.04]	-0.097** [0.04]	
Constant	0.793*** [0.15]	0.592*** [0.13]	1.042*** [0.21]	1.399** [0.63]	-0.091 [0.76]	0.968*** [0.27]	0.924*** [0.22]	1.623*** [0.38]	1.657*** [0.38]	1.877*** [0.40]	1.816*** [0.37]	1.858*** [0.67]	0.844 [0.85]	1.650*** [0.40]	1.648*** [0.38]	
Observations	289	289	259	289	289	289	289	289	289	289	259	289	289	289	289	
Adjusted R-squared	0.3	0.29	0.34	0.3	0.29	0.3	0.3	0.32	0.32	0.33	0.36	0.32	0.32	0.32	0.32	
Region FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	
Sample	Wave 1-6	Wave 1-6	Wave 1-6	Wave 1-6	Wave 1-6	Wave 1-6	Wave 1-6	Wave 1-6	Wave 1-6	Wave 1-6	Wave 1-6	Wave 1-6	Wave 1-6	Wave 1-6	Wave 1-6	

Note [1] OLS pooled regressions at the country level includes Region of the world Fixed Effects and Time Fixed Effects.

Graph E1: Relationship between Country Wealth (GDP per capita) and Business Closure Rates

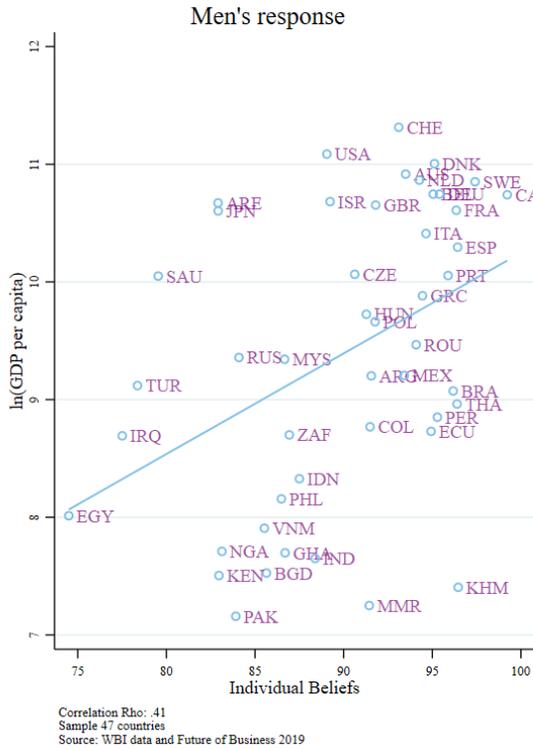
Business Closure Rate vs Gross Domestic Product (2019)
(47 countries)



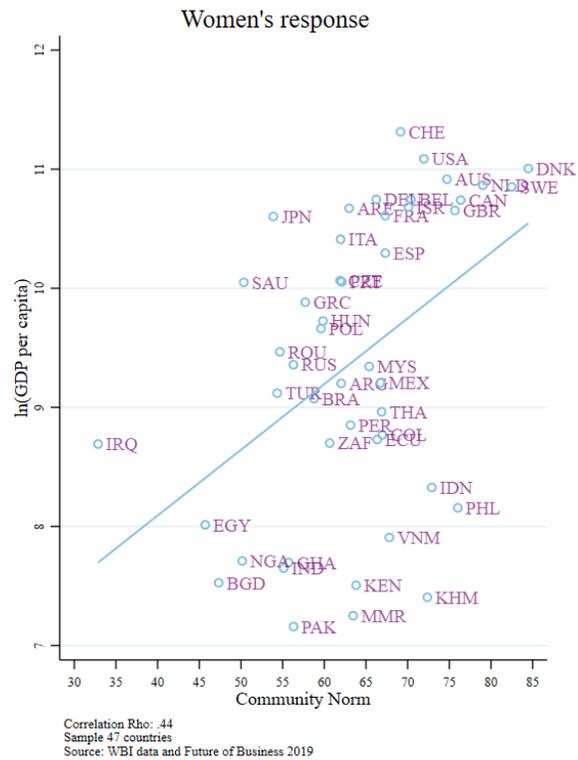
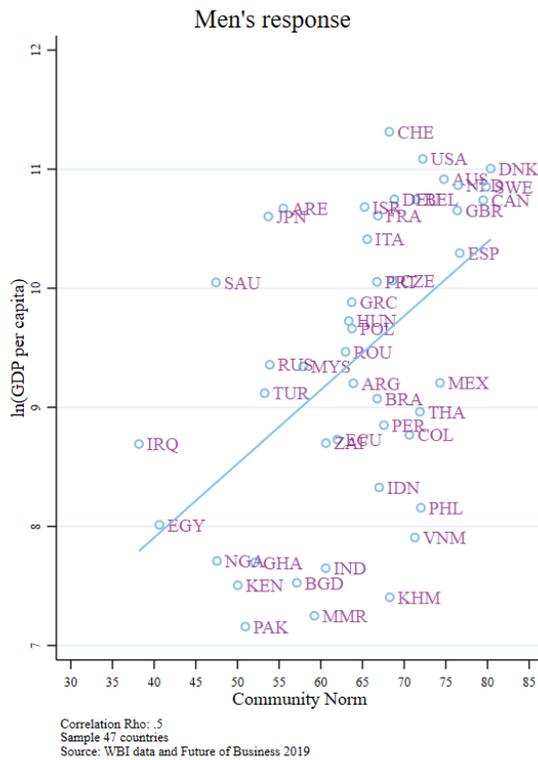
Correlation Rho: -.62
 Sample: Countries in 6 waves
 Source: WBI (2019) data and Future of Business (2020)

Graph E2: Relationship between Country Wealth (GDP per capita) and Gender Progressiveness

Individual Beliefs vs Gross Domestic Product (2019)



Community Norm vs Gross Domestic Product (2019)



Appendix F: Other Tables

Table F1: Impact of COVID-19 Related School Closures for Business Owners (Sample restricted to same as N in Table 2)

	(1)	(2)	(3)	(4)
	Business closed (1=Yes; 0=No)	Conditional on Business Being in Operation		
		Time Spent on Paid Work Activities (Hours per day)	Likelihood reduced workers (1=Yes; 0=No)	Sales reported to be lower than last year (1=Yes; 0=No)
Female Respondent	0.002 [0.01]	-0.429*** [0.10]	0.014 [0.01]	0.028** [0.01]
School closure due to COVID-19	-0.002 [0.01]	0.305*** [0.10]	0.028** [0.01]	0.011 [0.01]
School closure due to COVID-19*Female	0.018** [0.01]	-0.298** [0.13]	-0.017 [0.02]	-0.028** [0.01]
Academic Break	0.001 [0.01]	0.611*** [0.12]	0.038*** [0.01]	0.020* [0.01]
Academic Break*Female	0.004 [0.01]	-0.451*** [0.13]	-0.008 [0.02]	-0.009 [0.02]
Change in movement workplaces	-0.002*** [0.00]	0.025*** [0.00]	-0.001* [0.00]	0.001** [0.00]
Change in movement retail & recreation	-0.003*** [0.00]	-0.007*** [0.00]	-0.001** [0.00]	-0.001*** [0.00]
GDP per capita (Ln)	-0.018*** [0.00]	0.299*** [0.04]	-0.037*** [0.00]	-0.032*** [0.00]
Constant	0.195*** [0.03]	6.182*** [0.46]	0.663*** [0.06]	0.901*** [0.05]
Observations	79631	46512	45716	57338
Adjusted R-squared	0.09	0.06	0.07	0.04
SC+SC*FEMALE(Coeff)	0.02	0.01	0.01	-0.02
SC+SC*FEMALE(SE)	0.01	0.11	0.02	0.01
SC+SC*FEMALE(Pvalue)	0.03	0.95	0.49	0.17
Mean Male	0.15	7.85	0.44	0.70

Notes: * significant at 10% level, ** significant at 5% level, *** significant at 1% level.

[1] Female is a dummy variable where 1 = female-led business and 0 if male-led business. School Closure due to COVID-19 is a dummy variable where 1 = schools closed in country at time of survey wave.

[2] OLS pooled regressions include Region of the world and Time Fixed Effects and full set of controls as described at the bottom of the table.

[3] Business outcomes from Table 2 are presented again here to match the sample for the care outcomes presented in Table 3 to show results are robust even when restricting the sample to those that answered the care + demographic questions.

Table F2: Child Age Breakdown: Impact of COVID-19 Related School Closures for Business Owners with Children aged 0-5years and 6-18years

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Time Spent on (Hours per day)...							
	Business closed (1=Yes; 0=No)	Paid Work		Care and Domestic Responsibilities (Self/Married)		Care and Domestic Responsibilities (Spouse/Married)		
	Children 0 to 5 years	Children 6 to 18 years	Children 0 to 5 years	Children 6 to 18 years	Children 0 to 5 years	Children 6 to 18 years	Children 0 to 5 years	Children 6 to 18 years
Female Respondent	0.003 [0.01]	-0.002 [0.01]	-1.189*** [0.21]	-0.969*** [0.15]	2.286*** [0.19]	1.397*** [0.11]	-2.669*** [0.19]	-2.096*** [0.13]
School closure due to COVID-19	-0.008 [0.01]	0.002 [0.01]	0.544*** [0.20]	0.213 [0.15]	-0.080 [0.13]	0.130 [0.10]	0.205 [0.19]	0.586*** [0.14]
School closure due to COVID-19*Female	0.036** [0.02]	0.034*** [0.01]	-0.454* [0.26]	-0.072 [0.19]	0.973*** [0.23]	0.760*** [0.15]	-0.419* [0.23]	-0.516*** [0.16]
Academic Break	-0.003 [0.02]	0.004 [0.01]	0.878*** [0.23]	0.492*** [0.19]	-0.228 [0.16]	0.018 [0.12]	-0.254 [0.22]	0.188 [0.17]
Academic Break*Female	0.026 [0.02]	0.015 [0.01]	-0.422 [0.28]	-0.148 [0.21]	0.693*** [0.25]	0.437*** [0.16]	0.330 [0.26]	-0.158 [0.17]
GDP per capita (Ln)	-0.012** [0.01]	-0.019*** [0.00]	0.457*** [0.09]	0.461*** [0.07]	0.240*** [0.07]	-0.088* [0.05]	-0.068 [0.08]	-0.233*** [0.06]
Constant	0.207*** [0.06]	0.270*** [0.05]	3.783*** [0.92]	4.027*** [0.72]	1.392* [0.72]	3.868*** [0.53]	6.949*** [0.78]	6.989*** [0.59]
Observations	20413	31952	11764	18413	17025	24968	12927	18934
Adjusted R-squared	0.08	0.09	0.08	0.06	0.18	0.10	0.11	0.13
SC+SC*FEMALE(Coeff)	0.03	0.04	0.09	0.14	0.89	0.89	-0.21	0.07
SC+SC*FEMALE(SE)	0.01	0.01	0.23	0.17	0.22	0.14	0.19	0.13
SC+SC*FEMALE (P value)	0.05	0.00	0.70	0.42	0.00	0.00	0.27	0.60
Mean Male	0.15	0.14	7.76	7.90	4.39	3.97	7.05	5.86
Wave	Pooled	Pooled	Pooled	Pooled	Pooled	Pooled	Pooled	Pooled

Notes:* significant at 10% level, ** significant at 5% level, *** significant at 1% level.

[1] Female is a dummy variable where 1 = female-led business and 0 if male-led business. School Closure due to COVID-19 is a dummy variable where 1 = schools closed in country at time of survey wave.

[2] OLS pooled regressions include Region of the world and Time Fixed Effects and full set of controls including Firm Controls (Sector + Size, Age and Role in Business); Mobility Controls (Movement around retail & recreation/workplaces); GDP Per Capita; and Demographic Controls (Married and Types of Dependents).

[3] Sample is restricted to CHILD DEPENDENTS sample and is split among those business owners with any child dependents aged 0-5years (Columns (1), (3), (5), and (7)) versus those with any child dependents aged 6-18years (Columns (2), (4), (6), and (8)).

Table F3a: Heterogeneous Impact of COVID-19 School Closures by Men's Perceived Norms (Conservative versus Liberal Societies)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Time Spent on (Hours per day)...							
	Business closed (1=Yes; 0=No)	Paid Work		Care and Domestic Responsibilities (Self)		Care and Domestic Responsibilities (Spouse)		
	MARRIED FEMALE	MARRIED MALE	MARRIED FEMALE	MARRIED MALE	MARRIED FEMALE	MARRIED MALE	MARRIED FEMALE	MARRIED MALE
School closure due to COVID-19=1	0.151 [0.10]	0.002 [0.06]	0.159 [1.59]	-2.337** [1.12]	2.655** [1.26]	0.127 [0.70]	1.673* [0.98]	0.617 [0.98]
Men's Community Norm (Aggregate 0-1)	0.030 [0.08]	0.040 [0.07]	2.952* [1.71]	0.778 [1.22]	1.315 [1.51]	3.969*** [0.82]	3.539*** [1.06]	-3.147*** [1.08]
School closure due to COVID-19*Men's Community Norm	-0.172 [0.15]	-0.010 [0.10]	-0.072 [2.32]	4.088** [1.69]	-2.818 [1.82]	0.109 [1.06]	-2.412* [1.43]	-0.166 [1.47]
GDP per capita (Ln)	0.005 [0.01]	-0.027*** [0.00]	0.034 [0.11]	0.317*** [0.09]	0.126 [0.09]	-0.131** [0.05]	-0.405*** [0.08]	0.159** [0.08]
Constant	-0.076 [0.10]	0.206*** [0.08]	6.266*** [1.70]	5.342*** [1.33]	1.629 [1.30]	1.991** [0.84]	4.796*** [1.06]	5.422*** [1.15]
Observations	11692	23578	6794	13759	11692	23578	8806	17960
Adjusted R-squared	0.10	0.09	0.07	0.09	0.13	0.04	0.06	0.07
Mean	0.14	0.13	6.83	7.95	6.38	4.09	3.60	6.21
Sample	FEMALE	MALE	FEMALE	MALE	FEMALE	MALE	FEMALE	MALE

Notes:* significant at 10% level, ** significant at 5% level, *** significant at 1% level.

[1] School Closure due to COVID-19 is a dummy variable where 1 = schools closed in country at time of survey wave. Men's Community Norm is the country-level aggregate of the perceived social norm as reported by men in the sample towards gender equality expressed as a proportion between 0 and 1.

[2] OLS pooled regressions include Region of the world and Time Fixed Effects and full set of controls including Firm Controls (Sector + Size, Age and Role in Business); Mobility Controls (Movement around retail & recreation/workplaces); GDP Per Capita; and Demographic Controls (Married and Types of Dependents). Academic Break control is included in the regressions but not shown in the table.

[3] Sample is restricted to business owners who are married or living with a partner with any child dependents aged 18 years or younger in the household and is split by gender with FEMALE (Columns (1), (3), (5), and (7)) versus MALE (Columns (2), (4), (6), and (8)).

Table F3b: Heterogeneous Impact of COVID-19 School Closures by Women's Perceived Norms (Conservative versus Liberal Societies)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Time Spent on (Hours per day)...							
	Business closed (1=Yes; 0=No)	Paid Work		Care and Domestic Responsibilities (Self)		Care and Domestic Responsibilities (Spouse)		
	MARRIED FEMALE	MARRIED MALE	MARRIED FEMALE	MARRIED MALE	MARRIED FEMALE	MARRIED MALE	MARRIED FEMALE	MARRIED MALE
School closure due to COVID-19=1	0.110 [0.09]	0.041 [0.06]	0.397 [1.47]	-1.794 [1.10]	3.136*** [1.19]	0.389 [0.63]	1.869** [0.93]	-1.013 [0.94]
Women's Community Norm (0-1)	-0.023 [0.07]	0.056 [0.06]	-0.656 [1.61]	0.363 [1.33]	2.183 [1.48]	3.413*** [0.77]	4.216*** [0.92]	-2.253** [1.09]
School closure due to COVID-19*Women's Community Norm	-0.117 [0.13]	-0.067 [0.08]	-0.335 [2.18]	3.277* [1.71]	-3.564** [1.75]	-0.290 [0.95]	-2.707** [1.38]	2.308 [1.43]
GDP per capita (Ln)	0.004 [0.01]	-0.025*** [0.00]	0.159 [0.11]	0.380*** [0.09]	0.108 [0.09]	-0.081 [0.05]	-0.425*** [0.08]	0.031 [0.07]
Constant	-0.035 [0.10]	0.174** [0.07]	7.421*** [1.50]	5.070*** [1.27]	1.169 [1.23]	1.934** [0.77]	4.677*** [0.96]	6.133*** [1.07]
Observations	11692	23578	6794	13759	11692	23578	8806	17960
Adjusted R-squared	0.10	0.09	0.07	0.09	0.14	0.04	0.06	0.07
Mean	0.14	0.13	6.83	7.95	6.38	4.09	3.60	6.21
Sample	FEMALE	MALE	FEMALE	MALE	FEMALE	MALE	FEMALE	MALE

Notes: * significant at 10% level, ** significant at 5% level, *** significant at 1% level.

[1] School Closure due to COVID-19 is a dummy variable where 1 = schools closed in country at time of survey wave. Women's Community Norm is the country-level aggregate of the perceived social norm as reported by men in the sample towards gender equality expressed as a proportion between 0 and 1.

[2] OLS pooled regressions include Region of the world and Time Fixed Effects and full set of controls including Firm Controls (Sector + Size, Age and Role in Business); Mobility Controls (Movement around retail & recreation/workplaces); GDP Per Capita; and Demographic Controls (Married and Types of Dependents). Academic Break control is included in the regressions but not shown in the table.

[3] Sample is restricted to business owners who are married or living with a partner with any child dependents aged 18 years or younger in the household and is split by gender with FEMALE (Columns (1), (3), (5), and (7)) versus MALE (Columns (2), (4), (6), and (8)).

Table F4: Gender Disaggregated Impact of COVID-19 School Closures on Care if Working from Home

	(1)	(2)	(3)	(4)	(5)	(6)
	Who looks after the children or dependent(s) most if you are quarantined and/or working from home...					
	Self	They take care of themselves	Non-household member care	Spouse or partner care	Household member care	Other Care
Female Respondent	0.281*** [0.02]	0.015 [0.01]	0.008 [0.01]	-0.277*** [0.02]	0.002 [0.01]	-0.002 [0.01]
School closure due to COVID-19	0.002 [0.01]	-0.012 [0.01]	-0.003 [0.00]	0.009 [0.02]	0.010 [0.01]	0.001 [0.01]
School closure due to COVID-19*Female	0.003 [0.02]	0.004 [0.01]	0.002 [0.01]	-0.019 [0.02]	0.005 [0.02]	0.000 [0.01]
Academic Break	-0.009 [0.01]	-0.006 [0.01]	0.002 [0.01]	0.016 [0.02]	0.007 [0.01]	-0.006 [0.01]
Academic Break*Female	0.001 [0.02]	0.007 [0.01]	-0.006 [0.01]	-0.026 [0.02]	0.013 [0.02]	0.006 [0.01]
Change in movement workplaces	-0.001** [0.00]	-0.001*** [0.00]	-0.000 [0.00]	0.002*** [0.00]	-0.001 [0.00]	-0.000 [0.00]
Change in movement retail & recreation	0.001*** [0.00]	-0.000 [0.00]	-0.000 [0.00]	-0.001*** [0.00]	0.001** [0.00]	0.000 [0.00]
GDP per capita (Ln)	0.010** [0.00]	0.006* [0.00]	-0.001 [0.00]	0.011** [0.01]	-0.029*** [0.00]	-0.001 [0.00]
Constant	0.062 [0.05]	-0.026 [0.04]	0.037 [0.03]	0.410*** [0.06]	0.413*** [0.05]	0.039* [0.02]
Observations	34327	34327	34327	34327	34327	31370
Adjusted R-squared	0.14	0.01	0.01	0.12	0.04	0.00
SC+SC*FEMALE(Coeff)	0.01	-0.01	-0.00	-0.01	0.01	0.00
SC+SC*FEMALE(SE)	0.02	0.01	0.01	0.02	0.01	0.00
SC+SC*FEMALE(P-value)	0.77	0.37	0.91	0.52	0.27	0.88
Mean Male	0.14	0.07	0.03	0.47	0.18	0.02

Notes:* significant at 10% level, ** significant at 5% level, *** significant at 1% level.

[1] Female is a dummy variable where 1 = female-led business and 0 if male-led business. School Closure due to COVID-19 is a dummy variable where 1 = schools closed in country at time of survey wave.

[2] OLS pooled regressions include Region of the world and Time Fixed Effects and full set of controls as indicated at the bottom of the table.

[3] Outcomes for individuals who are responsible for care within the household.

Table F5: Gender Disaggregated Impact of COVID-19 Related School Closures with/without Child Dependents in the Household in 2020 (Age + Education)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Time Spent on (Hours per day)...									
	Business closed (1=Yes; 0=No)		Paid Work		Care and Domestic Responsibilities (Self)		Care and Domestic Responsibilities (Self/Married)		Care and Domestic Responsibilities (Spouse/Married)	
	Children u18	No Children u18	Children u18	No Children u18	Children u18	No Children u18	Children u18	No Children u18	Children u18	No Children u18
Female Respondent	-0.008	0.004	-0.918***	-0.231	1.496***	0.564***	1.478***	0.607***	-2.284***	-0.803***
	[0.01]	[0.01]	[0.14]	[0.15]	[0.11]	[0.09]	[0.12]	[0.11]	[0.12]	[0.12]
School closure due to COVID-19	0.002	-0.006	0.221	0.130	0.049	-0.055	-0.063	-0.056	0.460***	0.317**
	[0.01]	[0.01]	[0.14]	[0.16]	[0.09]	[0.10]	[0.09]	[0.10]	[0.13]	[0.13]
School closure due to COVID-19*Female	0.037***	0.013	-0.228	-0.155	0.716***	0.262**	0.948***	0.223*	-0.451***	-0.431***
	[0.01]	[0.01]	[0.18]	[0.20]	[0.13]	[0.11]	[0.14]	[0.14]	[0.15]	[0.16]
Academic Break	0.004	-0.013	0.537***	0.473**	-0.050	0.017	-0.135	-0.042	0.038	0.153
	[0.01]	[0.01]	[0.16]	[0.19]	[0.10]	[0.11]	[0.11]	[0.13]	[0.15]	[0.15]
Academic Break*Female	0.021	0.005	-0.328*	-0.468**	0.427***	0.062	0.593***	0.081	0.060	-0.295*
	[0.01]	[0.01]	[0.19]	[0.21]	[0.14]	[0.13]	[0.16]	[0.16]	[0.16]	[0.16]
GDP per capita (Ln)	-0.016***	-0.018***	0.467***	0.194***	0.135***	-0.244***	0.087*	-0.372***	-0.145***	-0.473***
	[0.00]	[0.00]	[0.06]	[0.07]	[0.04]	[0.04]	[0.05]	[0.05]	[0.05]	[0.06]
Age (Excluded Category:Over 60)										
Under 20	-0.036	0.018	0.082	0.361	0.895***	0.906***	0.568	0.893**	0.643	-0.066
	[0.03]	[0.03]	[0.47]	[0.37]	[0.29]	[0.25]	[0.50]	[0.35]	[0.59]	[0.41]
20-29	0.006	-0.002	1.522***	1.400***	1.394***	0.305***	1.417***	0.343***	0.909***	-0.194
	[0.03]	[0.01]	[0.39]	[0.17]	[0.20]	[0.10]	[0.23]	[0.12]	[0.33]	[0.15]
30-39	-0.002	-0.018	1.374***	1.593***	1.318***	0.126	1.210***	0.213*	0.995***	-0.235*
	[0.02]	[0.01]	[0.38]	[0.16]	[0.19]	[0.09]	[0.22]	[0.11]	[0.32]	[0.13]
40-49	-0.010	-0.014	1.333***	1.485***	0.957***	0.201**	0.862***	0.273**	0.838***	-0.166
	[0.02]	[0.01]	[0.38]	[0.17]	[0.19]	[0.09]	[0.21]	[0.11]	[0.32]	[0.13]
50-59	0.008	-0.010	1.093***	1.197***	0.515***	0.155*	0.383*	0.161	0.515	-0.094
	[0.03]	[0.01]	[0.40]	[0.16]	[0.20]	[0.09]	[0.23]	[0.10]	[0.33]	[0.12]
Education (Excluded category:University or college)										
More than secondary, including vocational training or apprenticeship	0.013**	0.016**	-0.008	-0.037	-0.075	0.012	-0.120*	-0.012	0.090	0.128
	[0.01]	[0.01]	[0.08]	[0.10]	[0.06]	[0.05]	[0.07]	[0.06]	[0.08]	[0.08]
Secondary	0.022***	0.009	-0.249**	-0.104	-0.112*	0.086	-0.150**	0.018	0.245***	0.231**
	[0.01]	[0.01]	[0.10]	[0.12]	[0.07]	[0.07]	[0.07]	[0.08]	[0.09]	[0.10]
Primary	0.038**	0.021	-0.449*	-0.989***	-0.061	0.038	-0.201	0.074	0.004	0.483
	[0.02]	[0.02]	[0.24]	[0.29]	[0.14]	[0.17]	[0.15]	[0.20]	[0.20]	[0.33]
No formal schooling completed	0.059**	0.033	-0.647	0.009	-0.131	0.504	0.206	0.153	-0.124	-0.167
	[0.03]	[0.03]	[0.46]	[0.51]	[0.32]	[0.33]	[0.36]	[0.45]	[0.41]	[0.58]
Constant	0.170***	0.200***	3.371***	5.960***	0.451	4.839***	1.274**	6.462***	5.702***	8.842***
	[0.05]	[0.05]	[0.77]	[0.75]	[0.51]	[0.43]	[0.56]	[0.56]	[0.63]	[0.73]
Observations	36660	29750	22761	18571	36660	29750	29617	18167	23284	14194
Adjusted R-squared	0.08	0.09	0.09	0.07	0.14	0.08	0.16	0.09	0.15	0.14
SC+SC*FEMALE(Coeff)	0.04	0.01	-0.01	-0.02	0.77	0.21	0.88	0.17	0.01	-0.11
SC+SC*FEMALE(SE)	0.01	0.01	0.16	0.18	0.12	0.10	0.14	0.12	0.13	0.14
SC+SC*FEMALE(Pvalue)	0.00	0.59	0.97	0.89	0.00	0.04	0.00	0.15	0.94	0.40
Mean Male	0.14	0.14	7.86	7.89	4.10	3.05	4.07	3.05	6.25	3.77
Region FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

[1] Female is a dummy variable where 1 = female-led business and 0 if male-led business. School Closure due to COVID-19 is a dummy variable where 1 = schools closed in country at time of survey wave.

[2] OLS pooled regressions include Region of the world and Time Fixed Effects and full set of controls as described at the bottom of the table.

Table F6: Gender Disaggregated Impact of COVID-19 Related School Closures with/without Child Dependents in the Household in 2021 (Age + Education)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(10)	(11)
	Time Spent on (Hours per day)...									
	Business closed (1=Yes; 0=No)		Paid Work		Care and Domestic Responsibilities (Self)		Care and Domestic Responsibilities (Self/Married)		Care and Domestic Responsibilities (Spouse/Married)	
	Children u18	No Children u18	Children u19	No Children u19	Children u20	No Children u20	Children u21	No Children u21	Children u22	No Children u22
Female Respondent	0.036**	0.012	-1.168***	0.041	2.194***	0.504***	2.326***	0.490***	-2.097***	-1.070***
	[0.02]	[0.02]	[0.26]	[0.27]	[0.22]	[0.14]	[0.21]	[0.17]	[0.21]	[0.19]
School closure due to COVID-19	0.026	-0.013	0.171	1.272***	0.732**	0.307	0.439	0.202	-0.377	-0.427
	[0.03]	[0.03]	[0.37]	[0.41]	[0.33]	[0.24]	[0.31]	[0.33]	[0.32]	[0.40]
School closure due to COVID-19*Female	-0.042	0.043	0.620*	-0.902**	-0.580*	0.756***	-0.518	1.132***	1.024***	0.698*
	[0.03]	[0.03]	[0.37]	[0.40]	[0.33]	[0.26]	[0.35]	[0.35]	[0.36]	[0.38]
Academic Break	-0.098	-0.016	2.246**	1.166	-0.409	1.437	0.134	0.583	-0.581	1.373
	[0.07]	[0.09]	[0.97]	[1.06]	[0.72]	[0.89]	[0.79]	[1.33]	[0.92]	[1.31]
Academic Break*Female	-0.035	-0.132	-2.227	-0.518	0.710	-1.041	1.045	-1.299	-1.122	-2.862
	[0.08]	[0.11]	[1.54]	[1.60]	[0.90]	[1.45]	[1.15]	[1.75]	[1.14]	[2.12]
GDP per capita (Ln)	-0.010	-0.017*	0.611***	0.408**	0.243**	-0.328***	0.196	-0.375***	-0.201	-0.561***
	[0.01]	[0.01]	[0.15]	[0.17]	[0.12]	[0.10]	[0.13]	[0.13]	[0.13]	[0.14]
<i>Age (Excluded Category: Over 60)</i>										
Under 20	-0.064	0.103	0.042	-0.253	-2.120*	0.979	-2.956**	-0.235	-1.507	-0.262
	[0.09]	[0.07]	[1.46]	[0.89]	[1.24]	[0.64]	[1.40]	[1.01]	[1.07]	[1.40]
20-29	-0.048	0.008	0.595	0.367	-1.064	0.280	-1.039	0.117	-0.724	-0.872***
	[0.08]	[0.02]	[1.20]	[0.38]	[0.94]	[0.24]	[1.11]	[0.31]	[0.94]	[0.33]
30-39	-0.069	0.027	0.422	0.822**	-0.649	0.271	-0.820	0.268	-0.152	-0.103
	[0.08]	[0.02]	[1.18]	[0.35]	[0.92]	[0.23]	[1.07]	[0.28]	[0.90]	[0.31]
40-49	-0.088	0.024	0.531	0.325	-0.840	0.002	-0.961	0.113	-0.347	-0.660**
	[0.08]	[0.02]	[1.18]	[0.35]	[0.92]	[0.20]	[1.07]	[0.24]	[0.89]	[0.27]
50-59	-0.078	0.004	0.047	0.523	-1.268	0.105	-1.242	0.111	-0.570	-0.062
	[0.08]	[0.02]	[1.21]	[0.35]	[0.94]	[0.20]	[1.07]	[0.24]	[0.90]	[0.30]
<i>Education (Excluded category: University or college)</i>										
More than secondary, including vocational training or apprenticeship	-0.004	0.001	-0.353	0.037	0.260	0.592***	0.315	0.561***	0.331	0.559***
	[0.02]	[0.01]	[0.23]	[0.25]	[0.20]	[0.15]	[0.20]	[0.18]	[0.22]	[0.20]
Secondary	0.013	0.036**	-0.609**	-0.057	0.171	0.460***	0.051	0.209	0.226	0.494**
	[0.02]	[0.02]	[0.24]	[0.26]	[0.20]	[0.17]	[0.21]	[0.23]	[0.23]	[0.24]
Primary	0.013	0.021	-0.182	-0.603	0.684	0.309	0.801	0.570	-0.203	0.855
	[0.04]	[0.03]	[0.70]	[0.58]	[0.62]	[0.38]	[0.71]	[0.49]	[0.55]	[0.59]
No formal schooling completed	0.034	0.013	-0.132	-1.392*	0.591	1.058*	-0.241	1.935***	-1.150*	1.986***
	[0.05]	[0.04]	[0.82]	[0.76]	[0.75]	[0.55]	[0.69]	[0.66]	[0.62]	[0.74]
Constant	0.254	0.305**	3.118	5.027***	1.073	6.157***	1.047	7.860***	7.135***	10.638***
	[0.17]	[0.12]	[2.09]	[1.90]	[1.74]	[1.18]	[1.87]	[1.51]	[1.75]	[1.61]
Observations	6249	6523	5511	5620	6249	6523	5221	4118	4961	3880
Adjusted R-squared	0.03	0.04	0.08	0.06	0.11	0.10	0.14	0.11	0.11	0.11
SC+SC*FEMALE(Coeff)	-0.02	0.03	0.79	0.37	0.15	1.06	-0.08	1.33	0.65	0.27
SC+SC*FEMALE(SE)	0.03	0.04	0.41	0.47	0.40	0.27	0.37	0.34	0.37	0.39
SC+SC*FEMALE(P-value)	0.65	0.41	0.05	0.44	0.71	0.00	0.83	0.00	0.08	0.49
Mean Male	0.09	0.08	7.22	6.95	4.17	3.33	4.16	3.42	5.92	4.09
Region FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

Note

[1] Female is a dummy variable where 1 = female-led business and 0 if male-led business. School Closure due to COVID-19 is a dummy variable where 1 = schools closed in country at time of survey wave.

[2] OLS pooled regressions include Region of the world and Time Fixed Effects and full set of controls as described at the bottom of the table.

Appendix G: Table G1: Sample Descriptive Characteristics by Gender

	(1)	(2)	(3)
	Male	Female	t-test Difference
Panel A: Entrepreneur Variables	Mean/SE	Mean/SE	(1)-(2)
Age of the respondent	37.48	38.49	-1.00***
Highest Education: University or college	0.59	0.62	-0.02***
Highest Education: More than secondary	0.20	0.21	-0.02***
Highest Education: Secondary	0.17	0.14	0.02***
Highest Education: Primary	0.03	0.02	0.01***
Having a long-term partner or spouse (Yes=1; No=0)	0.72	0.72	0.00
Children under 5 years live in my household (Yes=1; No=0)	0.25	0.22	0.03***
Children 6 to 18 years live in my household (Yes=1; No=0)	0.37	0.41	-0.04***
Dependents age 65+ live in this household (Yes=1; No=0)	0.18	0.15	0.03***
Household income per month USD (Winsor 0.05)	3062.30	3013.76	48.54
Main Income Earner in the household (Yes=1; No=0)	0.81	0.57	0.24***
Business has a line of credit or a loan	0.34	0.27	0.07***
Receiving any form of financial assistance COVID-19	0.18	0.22	-0.04***
Panel B: Firm Level Variables	(1)	(2)	(3)
Role: Both own and manage a business	0.47	0.49	-0.02***
Role: Manage a business	0.16	0.13	0.02***
At least one employee	0.75	0.60	0.16***
Firm Size = No Employees	0.23	0.38	-0.16***
Firm Size = Micro (1 to 4)	0.38	0.37	0.01***
Firm Size = Small (5 to 49)	0.30	0.19	0.12***
Firm Size = Medium and large (50 and over)	0.08	0.05	0.03***
Annual Revenues 2019 in USD (Winsor 0.05)	127224.24	83004.73	44219.50***
Panel C: Firm Sector	(1)	(2)	(3)
Information and communication	0.10	0.05	0.05***
Agriculture, farming, forestry, or mining	0.04	0.02	0.02***
Transportation and logistics	0.03	0.01	0.02***
Hotels, cafes and restaurants	0.09	0.09	-0.00
Construction	0.08	0.02	0.05***
Manufacturing	0.05	0.03	0.02***
Services	0.28	0.33	-0.05***
Other Sector	0.12	0.17	-0.05***
Retail and Wholesale	0.20	0.27	-0.07***

Notes: N = 154,458. The number of observations for HH income and revenues are less because they were only collected in certain survey waves and had greater non-response than indicator variables.

The value displayed in Column (3) presents the difference between columns (1) and (2) i.e. t-tests showing differences in the means across male and female entrepreneurs in the sample.

***, **, and * indicate significance at the 1, 5, and 10 percent critical level.