LABOUR MARKET AND GENDER ROLE STEREOTYPES: THE EFFECTS OF THE PANDEMIC¹

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Abstract. Women have always participated in the labour market, though their roles and the social recognition have varied across different periods and cultures. Despite major changes from the industrial revolution, the world wars, women's rights movements, and laws promoting equal opportunities, gender stereotypes and inequalities persist and seem deeply rooted even in societies regarded as "advanced" and democratic. From an occupational and social perspective, the pandemic may have been a turning point. The shift towards flexible work and increased demand in certain sectors may have given women more job opportunities and encouraged them to rethink gender stereotypes. This study aims to explore the social and occupational impacts of the pandemic. To achieve this, the study will use official statistical data and apply normative, positive, and statistical analysis methods.

1. Introduction

The idea of male "dominion" over women traces back to the corruption of the original design: "Your desire will be for your husband, and he will rule over you" (Genesis 3:16), to the extent that, even today, traits of the female universe are well represented by the metaphor of "The Chained Elephant". One need only consider gender stereotypes, and that "terrible day for her story" when a young woman, accepting these stereotypes and their real-world consequences, resigns herself to the fate of her grandmother and, later, her mother—whose stories become her own. She "never ever tried to test his powers again", even as an adult. I closed my eyes, and I tried to imagine the small, newborn elephant, chained to the ground. The small elephant would push, pull and struggle with all his strength, trying to free himself, but he would fail. Despite all his efforts, he would fail again and again, because that stake and chain was too big for his strength. [...] Then one day would come that he would just give up, and accept his fate [...] He never ever tried to test his powers again. [...] We do the same thing to ourselves that the elephant did, we printed into our minds the message: "I can't — I can't and I will never can." (Bucay, 2008). This paper aims to study the impact of COVID-19 on gender inequality.

¹ Even if the article is the joint responsibility of the authors, the following individual contributions can be distinguished: paragraph 2 and 5 (up to figure 2) is attributable to Chiodini; paragraph 3 and 4 (third subsection after table 1B onwards) is attributable to Carra; paragraph 4 (first subsection) is attributable to Impallomeni; paragraph 4 (second subsection up to table 1B) is attributable to Sorba; paragraph 5 (after Figure 2 onwards) is attributable to Verrecchia.

While several dimensions related to gender inequality can be observed through official statistics and administrative sources—such as the presence of stereotypes, different contributions to domestic and paid work, and horizontal and vertical segregation in the labour market—only some of these dimensions have recent data available from which initial insights into the impact of COVID-19 on gender disparities can be drawn. After the literature review (para. 2) and an overview of the data and methods used in the paper (para. 3), gender inequality will be studied through official statistics (para. 4) and original findings (para. 5). Concluding remarks will be presented in the conclusions.

2. Literature review

A stereotype is a conventional pattern of speech or attitude—a cliché—a preconstituted, generalized and simplistic opinion, not based on personal evaluation of individual cases rather mechanically repeated, often regarding people, events, or situations. However, recognizing that we are using them is not always straightforward. Stereotypes are part of common sense and learned culture, reflecting socio-historical beliefs and conditions. Not only do they enshrine power differences between social groups, but they also shape expectations regarding the groups' social behaviour. This, in turn, leads those who are subjected to the stereotype to conform to these expectations (Farinella, 2019). This creates a normative function that tends to resist change. Stereotypes generate prejudices that not only define what people are but also dictate what they should be. A classic example of this is gender stereotypes and the associated gender gap, which in the labour market result in both horizontal segregation—where women are concentrated in specific sectors—and vertical segregation, where it is significantly more difficult for women to advance in their careers. The accepted and internalized stereotype becomes reality to such an extent that, in the fourth quarter of 2022, the female employment rate in Italy (Chamber of Deputies, 2023) was the lowest among the member states of the European Union. The international policy framework highlights key strategies, such as the 2030 Agenda, the EU Gender Equality Strategy 2020-2025, and the European Parliament and Council Directive (EU) 2023/970 of May 10, 2023, on equal pay. At the national level, commitments are reflected in the National Recovery and Resilience Plan (PNRR), the Gender Equality Strategy 2021-2026, and the Gender Budget. It becomes clear that women's freedom in the old continent is still not on par with that of men. Despite better academic performance in both school and university, women continue to face challenges in entering and remaining in the labour market (AlmaLaurea and AlmaDiploma University Consortium, 2024). One observed effect of the gender gap is low fertility. Italian women are often forced to either abandon or, at the very least revise and scale back their reproductive plans in order to avoid marginalisation in the labour market. COVID-19 (Ferrario, Profeta, 2020; Ferrario, Profeta, 2021) has exacerbated pre-existing and persistent gender inequalities that were already the subject of international debate prior to the pandemic (EU Parliament Resolution, 2016; UN, Sustainable Development Agenda, Goal no. 5 "Gender Equality"). Menniti and Demurtas (2012) observe that the time spent on housework is influenced by the level of education. In fact, as women's level of education increases, the amount of time spent on such activities tends to decrease. In contrast, an inverse pattern is observed in men. Similarly, higher income leads to the same result (Kofman et al., 2000; Sarti, 2006, Farvague, 2013) namely, a reduction in the time spent on domestic activities, which are often delegated to external workers (i.e. domestic workers). This is particularly true in families with high income, where the woman also holds a high level of educational qualification (Lagomarsino, 2004; Farvaque, 2013; Todesco, 2013). It follows that in couples where both partners have high educational qualifications, more equitable gender dynamics emerge, where it is not assumed that the woman should be responsible for housework. However, women continue to spend more time on routine domestic work than men, even when they have high levels of education and income (Carriero, Todesco, 2016) highlighting how deeply entrenched the gender stereotype is that women are expected to care for the home and family. Nyman, Reinikainen and Eriksson (2018) argue that even in couples where there is an apparent commitment to gender equality, there remains a tendency to reproduce and perpetuate gender inequalities.

3. Data and methods

The data on gender stereotypes come from the surveys "on gender stereotypes and the social image of violence" conducted by Italian National Institute of Statistics (Istat) in 2018 and 2023 (the data of which are provisional as, at the time of their publication, the survey had not yet been completed (Istat, 2023) and the final estimates have not yet been released). This is a survey that Istat implemented on the basis of a Cooperation Agreement with the Department of Equal Opportunities (Dipartimento delle pari opportunità e Istat, 2019). On both occasions, the samples originally consisted of approximately 15,000 individuals aged between 18 and 74, who were interviewed using the CATI technique in 2018 and invited to complete a questionnaire using the CAWI method in 2023, with the option of a CATI interview if they were unable to respond online. In 2018, individuals were selected from families interviewed using the CATI technique in the Labour Force survey during the period June-November 2018 (two-stage random sampling without stratification of the I and II stage units). In 2023, respondents were drawn from municipal registry lists to create a random and statistically representative sample of the population residing in Italy. For the purposes of this work, the focus will be exclusively on the stereotype that men are less suited to housework. Data from the Labour Force Survey (Istat, 2024) are also used for ex-post forecasts and to understand the type of outlier caused by COVID-19 on female employment. For the study of segregation, rather than labour force data, it is necessary to use official statistics from administrative databases on businesses (Istat, 2022). This is because, in terms of economic activity, a correct classification is provided by sources where the sectoral

specialization is declared by the entrepreneur and verified by Istat according to international standards. Two distinct methodological approaches were used to test the effects of COVID-19 on stereotype spillovers and related gender inequalities. The first employs the Cochran-Mantel-Haenszel (CMH) test (Cochran, 1954; Mantel and Haenszel, 1959). The CMH test is a generalization of the Mantel-Haenszel (MH) test. It is used to study the association between two binary variables while controlling for a third nominal confounding variable. It allows testing the association between a binary predictor (treatment) and a binary outcome in the presence of stratification. In practice, it tests the null hypothesis of equality of the odds ratios (ORs) of the contingency tables under consideration against the alternative hypothesis that at least one of the ORs considered is statistically different. The CMH is a commonly used technique in biostatistics, particularly in case-control studies. The second approach aims to identify any structural change in the dynamics of female participation in the labour market using an automatic modelling routine based on the TRAMO method (time series regression with ARIMA noise, missing values and outliers) and the specification of different types of outliers (Gómez and Maravall, 1997).

4. Official statistics on gender inequality

Entrenched stereotypes and cultural legacies continue to sustain significant gender differences, despite a slow trend toward convergence. Consequently, the increasing participation of women in the labour market highlights their growing presence in society while reflecting dual roles: the traditional role of wife and homemaker on one hand, and that of a worker on the other. This combination of roles reveals distinct repercussions on women's life policies and the organisation of life time. Labour participation, with an employment rate of 52.5 percent in 2023 (up from 48.9 percent in 2017), demonstrates the growing presence of women in the labour market.

However, significant gender differences persist. Horizontal segregation—referring to the concentration of female workers in specific sectors—remains evident, particularly in non-market service sectors, which account for 56 percent of the total. These sectors include, among others, education, health care, social assistance, and artistic, sporting and entertainment activities (Table 1A). Although women have gradually gained ground in tertiary education and the labour market over the years, the traditional division of gender roles has largely remained unchanged. Despite higher productivity in sectors where women are most employed — such as services — wages in these areas remain disproportionately lower compared to other sectors. (Table 1B). Regarding vertical segregation—i.e. the concentration of female workers in certain job positions—despite the fact that Marilyn Loden coined the term "glass ceiling" in 1978, over 40 years ago, women managers still represent only 15.5 percent of the total while the share of female workers is 40.7 percent (Table 1A).

Table 1A – Female employees and managers, by economic activity, Italy, 2017 (% of total males and females).

NACE	Female employees (%)	Female managers (%)	
Total	40.7	15.5	
Industry in the strict sense (B-E)	27.5	11.5	
Construction (F)	10.9	7.1	
Wholesale and retail trade, transportation and			
storage, accommodation and food service activities (G-I)	43.7	17.4	
Other service activities (J-S excluding O)	56.0	19.3	

Table 1B – Wages and salaries per employee and apparent labour productivity, by economic activity, Italy, 2017 (euro per employee).

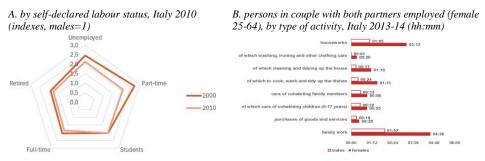
NACE	Salaries	and	wages	Productivity
	(euro)			(euro)
Total		26	,058.18	47,152.19
Industry in the strict sense (B-E)		31	,958.77	70,197.35
Construction (F)		25	,988.80	37,207.28
Wholesale and retail trade, transportation and				
storage, accommodation and food service		23	,431.72	37,965.56
activities (G-I)				
Other service activities (J-S excluding O)		22	,965.74	42,301.04

Notes: Based on our elaborations on Istat Asia-employment data. NACE Rev.2: [B] Mining and quarrying, [C] Manufacturing, [D] Electricity, gas, steam and air conditioning supply, [E] Water supply, sewerage, waste management, [F] Construction, [G] Wholesale and retail trade, repair of motor vehicles and motorbikes, [H] Transportation and storage, [I] Accommodation and food service activities, [J] Information and communication services, [L] Real estate activities, [M] Professional, scientific and technical activities, [N] Rental, travel agencies, business support services, [P] Education, [Q] Human health and social work activities, [R] Arts, sporting activities and amusement and recreation activities, [S] Other service activities.

Women remain bound by cultural legacies and stereotypes, which lead them to make more consistent contributions to domestic work, even when employed full-time. In 2010, women devoted on average twice as many hours to housework and family care as men (more than 5 hours and 21 minutes compared to 2 hours and 22 minutes), even -and especially- when the man was unemployed or working part-time (Figure 1A). The unequal gender division within housework is a widespread phenomenon across almost all European countries. Housework and family care responsibilities are predominantly shouldered by women. The 2014 Istat Time-Use Survey also revealed that, on average, 3 hours and 46 minutes per day were spent on unpaid work. This includes "activities related to caring for one's home and the people living in it —whether children, adults or elderly family members—as well as organised voluntary work, informal assistance between families and all the travel associated with these activities" (Istat, 2019). However, the extent of gender-specific involvement revealed significant disparities: in general, men participated in 74.6 percent of cases, contributing an average of 2 hours

and 16 minutes, while women were involved in 92.3 percent of cases, dedicating an average of 5 hours and 9 minutes. This disparity, as can easily be inferred, affects both the opportunities to engage in other areas of daily life, such as paid work, and leads to a reduction in available leisure time. When focusing solely on the housework of couples where both partners were employed and the woman was aged between 25 and 64, the imbalance remained, particularly in the domain of domestic work (Figure 1B).

Figure 1 – Average daily time spent on family work.



Notes: Based on our elaborations on Harmonised European time use surveys (A), Istat time use survey data (B).

5. Results of analyses of the impact of COVID-19 on gender inequality

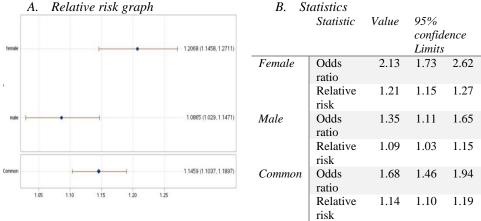
In this study, two applications were used to examine the structural impact of COVID-19 on stereotypes and women's participation in the labour market. According to the data of the 2023 edition of the survey Gender stereotypes and the social image of violence (Istat, 2023), agreement with the statement that men are less suited to do housework has significantly decreased. The general average is now 21.4 percent. Among men, the proportion of those who "strongly or somewhat agree" falls to 24.6 percent. Among women, the change is significant, both in quantitative terms "settling" at 18.3 percent (a decrease of 14 percentage points compared to 2018) and in structural terms (in 2018, more women than men agreed with the stereotype).

Due to data limitations, the analysis relies solely on percentage compositions. The pandemic period (hereafter COVID) is treated as an exposure factor for changes in the status of the stereotype2. According to this strategy, it is assumed that subjects of both sexes were "unexposed" in 2018 and "exposed" in 2023. Their response to exposure is coded as "change" (i.e. they no longer believe that men are less suited to do housework) or "no change" (i.e. they still believe that men are less suited to do housework). Cochran-Mantel-Haenszel (CMH) test allows for the observation of the overall relative risks in order to assess the effectiveness of COVID exposure. The CMH yields a strongly significant p-value (<0.0001), indicating that the association between COVID exposure

² The "COVID" label encompasses a multiplicity of factors that manifested themselves over the period.

and response remains strong even after adjustment for gender. The relative risk graph (Figure 2A) displays the relative risks and confidence intervals for both genders and overall (common) relative risk. The probability of change due to COVID exposure shows an overall improvement of about 15 percent across the entire population, with significant gender differences (about 9 percent for men vs. about 21 percent for women). In addition, considering odds ratios (Figure 2B), the homogeneity test—i.e., the Breslow-Day Test—is used to assess the hypothesis that all strata are equal. The Breslow-Day Test p-value (0.0018) provides strong empirical evidence in favour of the alternative hypothesis of non-homogeneity, i.e., there are differences in the odds ratios strata. In other words, gender differences regarding the stereotype in question were evident.

Figure 2 – *COVID exposure response for the stereotype men are less suited to do housework.*



Notes: Based on our elaborations on Istat data. Control by gender. Risks calculated for response equal to "Change". Wald 95% confidence limits. Odds ratios and relative risks are calculated by the MH and CMH method.

While COVID may have influenced the perception of stereotypes, there is no empirical evidence of structural changes in female labour market participation. The growth paths of female labour market participation seem to have started earlier and are consistent with the dynamics of more critical turnover in the working population. Using both monthly (Figure 3A) and quarterly (Figure 3B) data, the automatic modelling routine based on the TRAMO method identifies outliers, which are characterized as Level Shift (LS) outliers, i.e. models are specified that reflect structural changes in female employment expressed by multiple LS outliers identified exclusively in the pandemic year. However, further in-depth analyses reveal that these changes are temporary. In contrast to this result, an alternative strategy of using correctly specified forecasting models is to use them in terms of non-expected outcomes (Verrecchia, 1993).

In particular, when considering data up to and including 2020, the automatic model specification identifies an LS-type outlier (Figure 4A), which results in forecasts with a level shift that over time underestimate the cyclical trend component of female employment. On the contrary, forecasts based solely on pre-COVID data (Figure 4B) reject the structural change hypothesis in favour of TC (Temporary Change) outliers. Confirmation of this result can also be obtained by specifying ex-ante LS-type outliers versus TC-type outliers, even when considering data from the pandemic year. In this case, the automatically identified outliers (Figure 3B) were specified, if significant, as additive outliers (AO), i.e., outliers whose duration is limited to a period defined by the following expression

$$AO_t = \begin{cases} 1 & t = t_0 \\ 0 & t \neq t_0 \end{cases}$$
 (1)

and, in addition, in the period immediately following, a level shift outlier was alternatively specified (Figure 4C), i.e., whose duration spans the entire period, including and following the event, with uniform intensity

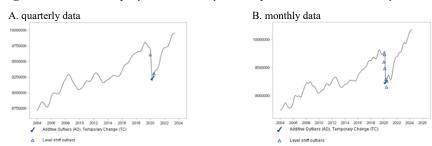
$$LS_t = \begin{cases} -1 & t < t_o \\ 0 & t \ge t_o \end{cases}, \tag{2}$$

and of the temporary change type (Figure 4D), i.e., whose duration spans the entire period, including and following the event, but with intensity halved in each successive period

$$TC_{t} = \begin{cases} 0 & t < t_{o} \\ \frac{1}{2^{(t+i-t_{0})}} & t \ge t_{o} & (con i = 0, 1, 2, ...) \end{cases}$$
 (3)

The forecasts confirm the previously obtained results, therefore, the analyses show that COVID had a temporary, rather than structural, effect on female employment. These dynamics can be summarized (Figure 5A and 5B).

Figure 3 – Female employment, trend cycle component and outliers, Italy 2004-2023.



Notes: Based on our elaborations (SAS X11) on Istat Labour Force Survey data.

Figure 4 – Female employment, automatic selection model and forecasts, Italy.

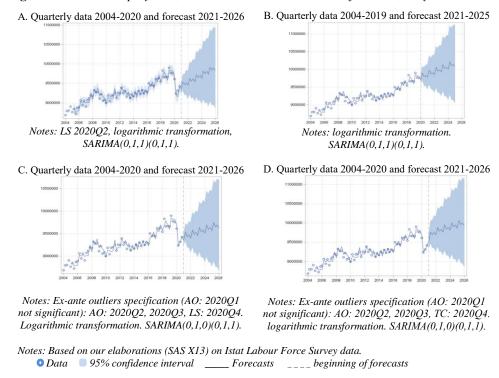
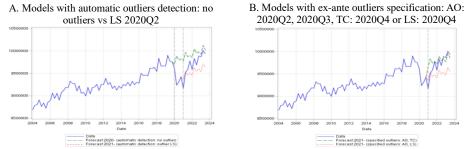


Figure 5 – Female employment data and forecasts synthesis, Italy, 2004-2023(Q3).



Notes: Based on our elaborations (SAS X13) on Istat Labour Force Survey data.

6. Conclusion

The pandemic period has acted as a catalyst for the widespread adoption of new technologies enabling remote work, the emergence of novel forms of employment, and a significant shift towards flexible working arrangements (Rapanelli, 2023, p. 187). Additionally, it has prompted a reevaluation of gender stereotypes (see para. 5, Figure 2), largely due to the work environment itself—the domestic sphere—(Del Boca et al., 2020, p. 1013) which has exposed the emperor's new clothes. From this perspective, the decline in employment, which was also observed among the male population during the pandemic (ISTAT, 2021, p. 12), coupled with the lockdown periods that not only affected parents but also children and young people—who were engaged in distance learning and required, especially at younger ages, parental support— may have shed light on and raised awareness of the unequal distribution of domestic and caregiving responsibilities (Rapanelli, 2023, p. 196). The Istat findings and the analysis presented (para. 4) highlight how stereotypes may be far from disappearing. The disruptive impact of the pandemic, along with the subsequent lockdown, has contributed to a more accurate understanding of the unequal (para. 5, figure 2) and generally unjustified distribution of domestic and family responsibilities. However, the long-term effects of this shift should be assessed over time. Furthermore, new employment opportunities for women appear to arise not so much from exogenous events such as COVID (para. 5, figure 5), but from the challenges facing contemporary society. The demographic decline and the associated challenges regarding the structure and turnover of the active population are examples of factors that accelerate the shift away from traditional family roles, driven by the growing demand for greater female participation in the labour market (Istat, 2014, p. 1; Poletti, 2023). From a qualitative perspective, however, the new forms of work introduced by COVID could represent both an opportunity and a double-edged sword for women. On one hand, they might be encouraged to transition from personal services to corporate services (where remote work is more prevalent), leading to a reduction in occupational segregation (para. 4). On the other hand, the potential for better work-life balance could reinforce their attachment to the 'pole' of domestic responsibilities (Rapanelli, 2023, p. 195). Some limitations must be considered when interpreting the results of the present study. Indeed, although the comparison of the levels of sharing of stereotypes provides interesting insights (para. 5, figure 2), please note that the data for 2023 remain provisional. Future official data will allow further development of the study.

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