SARA CARIA, MATTEO RINALDINI E JORGE YEPEZ

Labour Market Fragmentation and Gender Inequalities: A Warning for Deindustrializing Countries, like Italy, from the Case of Ecuador

Abstract. The study explores the interconnections of precarious work, gender discrimination, and vulnerability as mutually reinforcing phenomena. To illustrate this connection, we examine the significant case of Ecuador, where the interplay between the prevalence of unregulated jobs, precarious employment, and gender inequalities is particularly evident. We estimate the gender wage gap in Ecuador over the past decade and a half through various working conditions (formal/informal, full employment/underemployment, short-term/long-term, with/without tenure) and personal characteristics of workers (education level, age, presence of children). The findings reveal: a) a persistent gender pay gap, with significant heterogeneity across the different dimensions considered; b) minimal reduction in the earnings disparity between men and women over time; c) an increase in wage inequality among workers exposed to precarious and unregulated jobs. These results highlight the need to address the other side of labour market fragmentation: its connection to greater gender inequalities. They also sound an alarm about the consequences of progressive labour market fragmentation on gender inequality, especially in semi-peripheral developed countries facing deindustrialization. In parts of Europe, long-term economic stagnation and the loss of qualified employment are becoming structural issues, presenting challenges similar to those in middle-income peripheral countries. Italy exemplifies these countries, having progressively lost significant portions of its industrial base while pursuing cost-competitiveness strategies and increasing labour market liberalization. In this context, our findings raise a warning about the consequences of labour market fragmentation on gender inequality, a critical issue for Italy. The results advocate for active policies aimed not only at mitigating the negative effects of traditional gender divisions in the family but also at improving labour law enforcement, reducing job precarity, and decreasing worker turnover.

Keywords: Gender pay gap, precarious job, labour market fragmentation, Ecuador, Italy

1. Introduction

The Sustainable Development 2030 Agenda, a roadmap to development signed by the large majority of countries in the world, dedicates SDG Goal 5 to "Achieve gender equality", as a multidimensional process, which entails equal opportunities and rights in the personal, political, economic and public life spheres. The gender gap is a persistent phenomenon, observed in most countries worldwide. According to the 2023 Global Gender Gap Index, none of the 146 countries covered has yet reached gender parity:

S. Caria, M. Rinaldini, J. Yepez, *Labour Market Fragmentation and Gender Inequalities: A Warning for Deindustrializing Countries, like Italy, from the Case of Ecuador*
Jura Gentium, ISSN 1826-8269, XXI, 2024, 2, pp. 260-293.

countries with the best scores (top ten list include Northern Europe, but also Nicaragua and Namibia) still have to close about 20% of their gap.[1] The index is built on several dimensions with different degrees of inequality: Health and Survival together with Education Attainment show significant advances, having closed 96% and 95,2% of the gap respectively while Economic Participation and Opportunities lags behind with 60% of the gap closed and Political Empowerment is the worst dimension with only 22%. When global labour market is considered, women face higher unemployment rate and their participation is mostly concentrated in jobs with "substandard working conditions", specifically the informal economy.[2] Europe, despite being the most advanced region in the world, sets its gender parity at 76%, with still 24% to be achieved: Italy ranks 79 over 146 countries, behind a consistent number of developing countries. A closer glimpse on Latin America and the Caribbean reveals that the region has managed to close about 74% of its gender gap: the remaining 26% is still a significant challenge. If we focus on the gender wage gap, despite a long-term trend towards reduction, we observe that disparity between males and females is still substantial around the world.[3]

Gender inequality in labour markets is a complex phenomenon and it is characterised by different intertwined features. An important part of the wage gap can be explained by the fact that males and females are different in characteristics that the labour market rewards, such as experience and education. As a second element, the literature emphasizes that traditional gender roles have a great influence, relegating women to part-time and informal jobs and increasing the gap while ageing, especially after having children. This is particularly important in a developing country, where informality in the labour market is significant and labour stability is scarce. Additionally, gender participation varies greatly according to industry: females are often overrepresented in low productivity sectors, adding a further driver of difference in wages. Analysing this

---

[1] World Economic Forum (2023), *Global Gender Gap Report 2023*, https://www3.weforum.org/docs/WEF_GGGR_2023.pdf.
[2] *Ibid.*, p. 23.
[3] F.D. Blau, L.M. Kahn, "The Gender Wage Gap: Extent, Trends, and Explanations", *Journal of Economic Literature*, 55 (2017), 3, pp. 789-865, https://doi.org/10.1257/jel.20160995.

heterogeneity is key to understand the extent of the gender gap in each dimension, so that policies can be targeted and contribute more effectively to the SDG 5 achievement, according to each countries specific characteristics.

This study aims to estimate the gender wage gap in Ecuador and analyse its evolution over the past decade and a half, exploring its heterogeneity across different working conditions (formal/informal, full employment/underemployment, short-term/long-term, with or without tenure) and workers' personal characteristics (education level, age, presence of children). In general, the results highlight the need to address the issue of gender equality through the construction of active equality policies aimed not only at containing the negative effects of the traditional division of labour within the family, but also at improving the enforcement of labour law, mitigating precariousness and the rapid turnover of workers.

However, what emerges from the analysis is not exclusively circumstantial to the Ecuadorian case, nor only to developing countries. Indeed, the findings raise a warning about the consequences of a progressive fragmentation of the labour market, leading to increased gender inequalities, even in semi-peripheral developed countries undergoing deindustrialization, where productivity stagnation and growing precariousness of working conditions are evident.[4]

In this sense, Italy is a representative case in point. Recent analyses highlight the consistent and persistent exclusion of women from the labour market. Although a process of feminization of the labour market has also occurred in Italy, Italian female employment rates are among the lowest in the European Union and female unemployment continues to be significantly high.[5] Moreover, what is particularly interesting is that while until the end of the XX century the Italian labour market was exclusionary toward women, but not

---

[4] IMF (International Monetary Fund), "Productivity in Italy: Scope for Improvement, Selected Issues", *IMF Country Report* No. 22/256, 2022.
[5] L. Maestripieri, V. Insarauto, *Più uguali, ma non troppo: i problemi irrisolti del lavoro femminile tra fragilità territoriali e squilibri nella divisione dei lavori familiari*, Milano, Fondazione Giangiacomo Feltrinelli, 2020.

particularly discriminatory,[6] in the third millennium, the traditional exclusionary dynamics have been accompanied by a strengthening of the dynamics of occupational segregation.[7] In other words, women tend to work in less skilled jobs, in sectors characterized by the presence of temporary and part-time employment contracts.[8]

After this brief introduction, the following section of the paper reviews relevant related literature on the Ecuadoran case. The third section presents the data used in this study and methodology adopted for analysis. Results are presented in section fourth. Finally, sections fifth and sixth present the conclusive remarks on Ecuador and some considerations on the Italian case.

2. The socio-occupational roots of gender inequality: The Ecuadorian case

Blau and Kahn present a comprehensive review on the literature on gender pay gap, where they identify the extent of such gap, the main variables that explain it and the trend followed across approximately four decades.[9] The authors evidence that the gap has fallen dramatically in the USA, from about 38% in 1970 to 21% in 2010. Two important human capital factors are mostly responsible for this reduction: the reversed gender gap in education, where females report, on average, more years of school attainment than males and a narrowing in the difference of years of working experience, due to the progressive increase in women participation in labour market. Previous studies had already found evidence of a substantial reduction of the gender wage gap internationally,

---

[6] E. Reyneri, *Sociologia del mercato del lavoro, Vol. 2: Le forme dell'occupazione*, Bologna, il Mulino, 2005.
[7] I. Fellini, *Il terziario di consumo. Occupazione e professioni*, Roma, Carocci editore, 2017.
[8] G. Cavalca, E. Mingione, E. Pugliese, *Il lavoro. Dalla rivoluzione industriale alla transizione digitale*, Roma, Carocci editore, 2024.
[9] F.D. Blau, L.M. Kahn (2017), *op. cit.*

also mainly due to improvements in females' education and experience.[10] Although, Blau and Kahn emphasise that this reduction was more pronounced during the 1980s and occurred at a slower pace thereafter.[11]

By 2010, human capital factors appear to be relatively unimportant in explaining the gender wage gap, while other traditional dimensions remain significant. Differences in occupation and industry still mark important wage inequalities: empirical studies confirm that women tend to be segregated to low wages occupation and low productivity industries, due to socially shaped personal choices and employers' perception of desirable workers' attributes.[12] Although occupational segregation is decreasing, some studies conclude it is still important.[13] Informality seems to play a relevant role: women are generally overrepresented in the most vulnerable segments of informal employment, such as domestic and home-based jobs or contributing family workers, so that the lack of social protection and the vulnerability associated to those jobs affect women disproportionally.[14]

From the perspective of traditional gender division of labour, women face discontinuous work lives as a consequence of their family responsibilities. Skills capital depreciation during workforce interruptions and under investment in skills development usually further affect women's wages negatively. In addition to that, family roles tend to

---

[10] D. Weichselbaumer, R. Winter-Ebmer, "A Meta-Analysis of the International Gender Wage Gap: Meta-Analysis of the International Wage Gap", *Journal of Economic Surveys*, 19 (2005), 3, pp. 479-511, https://doi.org/10.1111/j.0950-0804.2005.00256.x.
[11] F.D. Blau, L.M. Kahn (2017), *op. cit.*
[12] A.H. Prokos, I. Padavic, S.A. Schmidt, "Nonstandard work arrangements among women and men scientists and engineers", *Sex Roles*, 61 (2009), 9-10, pp. 653-666; D. Hatmaker, "Engineering identity: gender and professional identity negotiation among women engineers", *Gender, Work and Organization*, 20 (2013), 4, pp. 382-396; M. Segovia-Perez, R.B. Castro Nunez, R. Santero Sanchez, P. Laguna Sanchez, "Being a woman in an ICT job: an analysis of the gender pay gap and discrimination in Spain", *New Technology, Work and Employment*, 35 (2020), 1, pp. 20-39; M.S. Stockdale, J.T. Nadler, "Paradigmatic assumptions of disciplinary research on gender disparities: The case of occupational sex segregation", *Sex Roles*, 68 (2013), pp. 207-215.
[13] F.D. Blau, L.M. Kahn, "Female Labor Supply: Why Is the United States Falling Behind?", *The American Economic Review*, 103 (2013), 3, pp. 251-256; A. Hegewisch, H. Liepmann, J. Hayes, H. Hartmann, "Separate and not equal? Gender segregation in the labor market and the gender wage gap", *IWPR Briefing Paper*, 16 (2010), pp. 1-16.
[14] ILO (International Labour Office), *Women and men in the informal economy: A statistical picture*, Geneva, International Labour Office, 2018.

affect women even in high paid occupations and industries and at high educational level.[15] Goldin evidences a premium reward in some occupations and firms for working long hours, while workers face high penalties when jobs permit more flexibility.[16] Bertrand et al. using data on MBAs,[17] and Noonan et al. on Law School graduates,[18] show that the pay gap between men and women appeared to be relatively small at the outset of their careers but increase substantially after some years. The authors show that the gap is largely explained by the greater propensity of woman to work shorter hours, more flexible work schedules, and have more career interruptions, evidencing career-family trade-offs.

Shifting the attention to Latin America, there is evidence of a trend towards closing the educational attainment gap during the 90s and 2000s; in most countries women have higher educational attainments than men.[19] However, a significant and heterogeneous gender pay gap still persists across the region;[20] Ñopo finds that elements such as ethnicity, traditional gender roles and job segregation are still important drivers of earnings disparities across the region.[21]

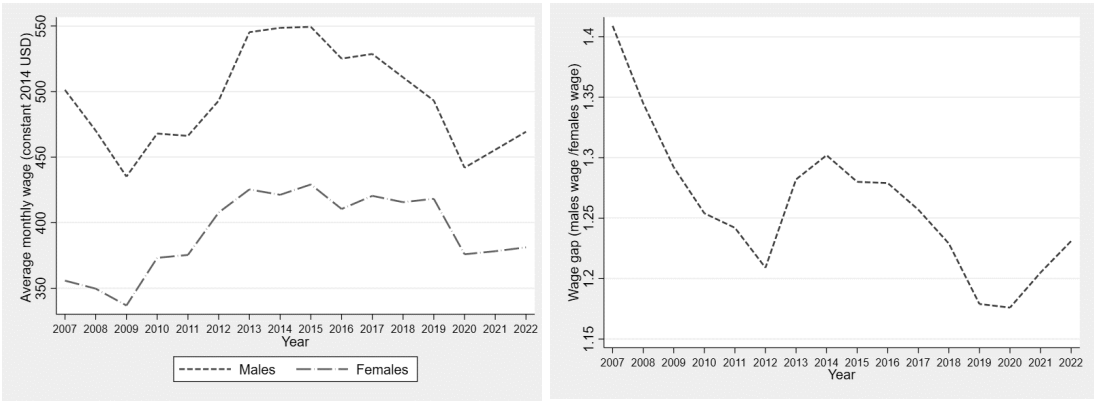
The particular case of Ecuador is no exception to this pattern. Figure 1 shows the trend of the monthly individual wage in the main job of people aged 18 to 60 years old.

---

[15] C. Shen, R. Ratan, Y.D. Cai, A. Leavitt, "Do men advance faster than women? Debunking the gender performance gap in two massively multiplayer online games", *Journal of Computer-Mediated Communication*, 21 (2016), 4, pp. 312-329.
[16] C. Goldin, "A Grand Gender Convergence: Its Last Chapter", *American Economic Review*, 104 (2014), 4, pp. 1091-1119, https://doi.org/10.1257/aer.104.4.1091.
[17] M. Bertrand, C. Goldin, L.F. Katz, "Dynamics of the Gender Gap for Young Professionals in the Financial and Corporate Sectors", *American Economic Journal: Applied Economics*, 2 (2015), 3, pp. 228-255, https://doi.org/10.1257/app.2.3.228.
[18] M.C. Noonan, M.E. Corcoran, P.N. Courant, "Pay Differences Among the Highly Trained: Cohort Differences in the Sex Gap in Lawyers' Earnings", *Social Forces*, 84 (2005), 2, pp. 853-872, https://doi.org/10.1353/sof.2006.0021.
[19] S. Duryea, S. Galiani, H. Ñopo, C. Piras, "The Educational Gender Gap in Latin America and the Caribbean", in *Research Department Publications* (N. 4510; Research Department Publications), Inter-American Development Bank, Research Department, 2007, https://ideas.repec.org/p/idb/wpaper/4510.html.
[20] R. Bando, "Evidence-based gender equality policy and pay in Latin America and the Caribbean: progress and challenges", *Latin American Economic Review*, 28 (2019), 10, https://doi.org/10.1186/s40503-019-0075-3.
[21] H. Ñopo, *New Century, Old Disparities. Gender and Ethnic Earnings Gaps in Latin America and the Caribbean*, Washington, The World Bank, 2012.

Although the country has narrowed the gender wage inequality, a significant gap remains to be closed: males' average wage is at least 1.25 times larger than females', as reported in the National Employment, Unemployment and Underemployment Survey (ENEMDU).

FIGURE 1: MONTHLY AVERAGE WAGE BY GENDER, AGED 18-60. ECUADOR. SOURCE: ENEMDU



In the following pages we examine the gender inequality gap in Ecuador for the period 2007-2022 using propensity score matching, considering factors such as ageing, parenthood, informality and job flexibility. The contribution to existing literature is manifold: in the first place, studies which specifically refer to the Ecuadorian gender wage gap case are scarce, perpetuating the lack of accurate evidence for the country. In the second place, the period studied is extended until 2022, providing an actualised analysis of the wage gap trend. Finally, includes a focus on informality, which has been widely studied as a key driver in the pay gap between males and females mainly with traditional decomposition methods;[22] this paper applies a matching technique in order to offer a

[22] C.C. Williams, A. Gashi, "Evaluating the wage differential between the formal and informal economy: a gender perspective", *Journal of Economic Studies*, 49 (2022), 4, pp. 735-750; OECD/ILO, *Tackling Vulnerability in the Informal Economy*, Development Centre Studies, OECD Publishing, Paris, 2019, https://doi.org/10.1787/939b7bcd-en; B.S. Yahmed, "Formal but Less Equal. Gender Wage Gaps in Formal and Informal Jobs in Urban Brazil", *World Development*, 101 (2018), pp. 73-87.

richer understanding of the way in which different sources of disadvantages interact when explaining the gender pay inequality.

3. Data and methodology

This study uses cross-sections samples taken from the National Employment, Unemployment and Underemployment Survey (ENEMDU) data set of from 2007 until 2022. Restricting the sample to people between 18 and 60 years old, the average of full numbers of observations for the whole period is 43,983. Table 1 provides average employment rates of males and females for the samples, using the survey weights.

TABLE 1: EMPLOYMENT RATES FOR MALES AND FEMALES AGED FROM 18 TO 60 YEARS OLD (AVERAGE VALUE FROM 2007 TO 2022)

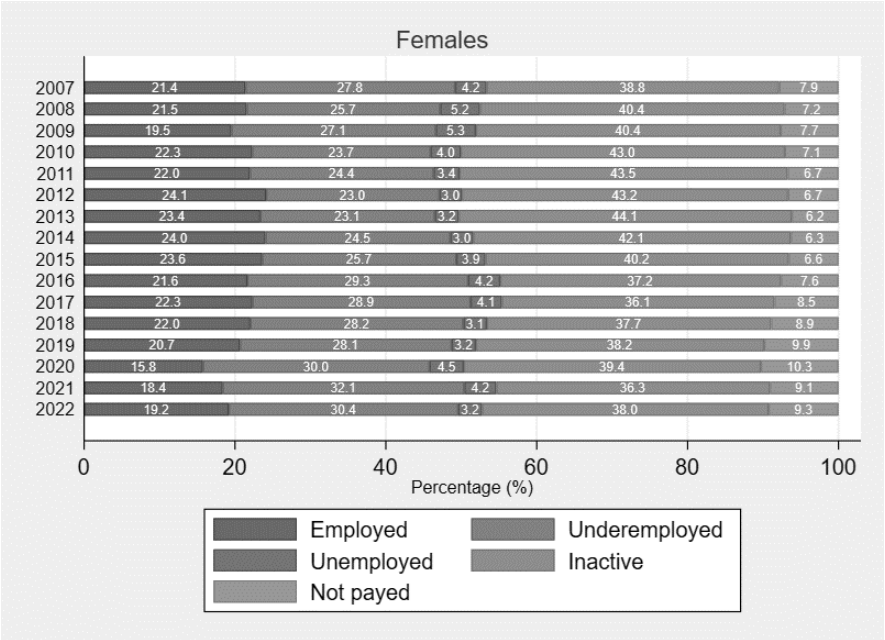
	Male	**Female**	**Total**
(a) By working time			
Full-time	71.35	34.82	52.51
Part-time	15.3	17.47	16.42
Not in labour force	13.34	47.7	31.06
Total	100	100	100
(b) By employment type			
Employed	46.38	21.29	33.44
Underemployed	36.76	27.16	31.81
Unemployed	3.51	3.84	3.68
Inactive	10.2	39.76	25.45
Not paid	3.14	7.94	5.62
Total	100	100	100
(c) By level of formality			
Formal	55.82	52.99	54.67
Informal	44.18	47.01	45.33
Total	100	100	100
(d) By contract duration type			

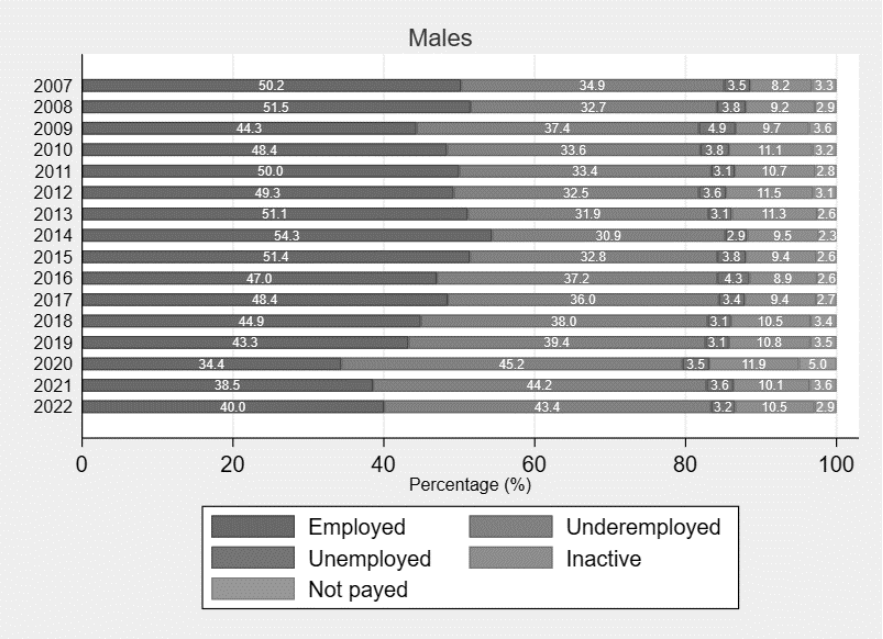
No tenure	73.16	73.6	73.34
Tenure	26.84	26.4	26.66
Total	100	100	100

Source: ENEMDU

Figure 2 classifies the population into employed, unemployed, underemployed not paid and inactive, following the categories established by the Ecuadorian Instituto de Estadística y Censo (INEC). Under this classification employed workers are those who earn an income greater than the minimum wage. Underemployed workers are the ones that work less than 40 hours per week and/or have an income less than minimum wage and want to work more hours per week; this group also includes other types of employed workers that have an income smaller than the minimum wage but don't want to work more hours per week.

FIGURE 2: EMPLOYMENT, UNEMPLOYED, UNDEREMPLOYED AND INACTIVE RATES FOR MALES AND FEMALES AGED FROM 18 TO 60 YEARS OLD, 2007-2022.





It can be seen that the share of males that are fully employed is more than twice than that of women; the portion of underemployed is also higher, while, correspondingly, the portion of inactive or not paid women is by far greater than men's. Approximately half of women are either not part of the labour force (inactive) or not paid workers, compared to 11-14% of men.

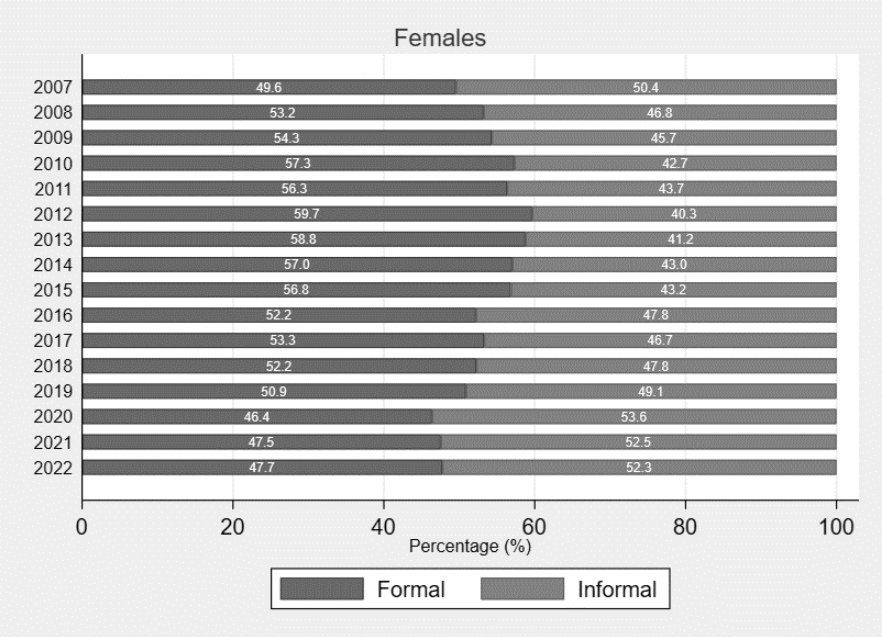
Precarious jobs and job insecurity in Ecuador remains high compared to other countries.[23] Informality is usually associated with negative phenomena such as unprotected workers, tax evasion, illegal activities, low productivity, low investment rates and also with poorer economic performance:[24] worldwide, countries with high informality are generally characterised by low Human Development Index values and

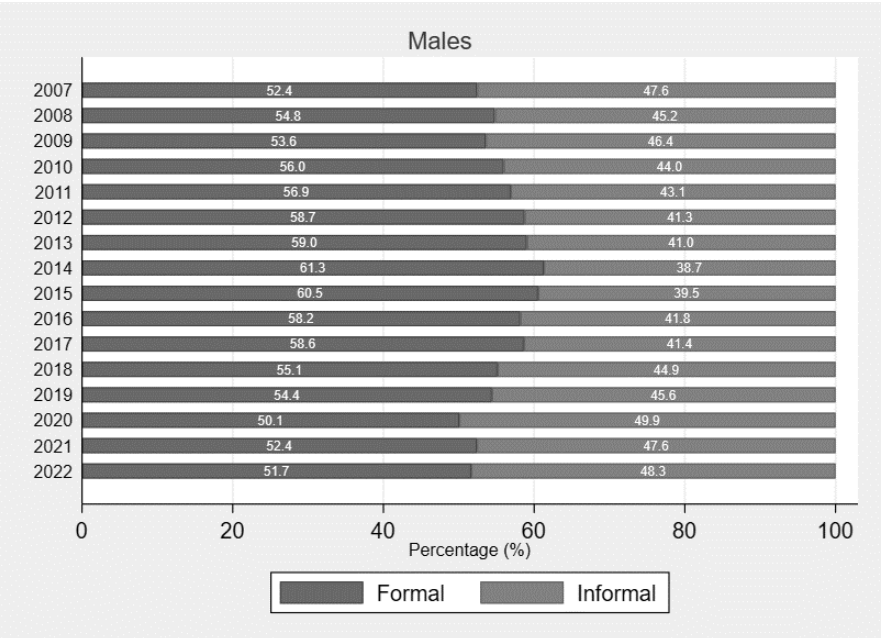
[23] ILO (International Labour Office), *op. cit.*; World Bank, *Ecuador: The Faces of Informality (Las Caras de La Informalidad)*, World Bank, 2012, https://openknowledge.worldbank.org/handle/10986/13252.
[24] Economic Commission for Latin America and the Caribbean, *Analysis of formal-informal transitions in the Ecuadorian labour market*, CEPAL, 2017, https://www.cepal.org/en/publications/43454-analysis-formal-informal-transitions-ecuadorian-labour-market.

GDP growth rates,[25] Ecuador represents no exception to that relationship.[26] In Latin America informal employment accounts for 53% of total employment, while in Ecuador the global share is 59%, 57,8 for men and 60,9 for women.[27] Unregistered firms accounted for 37% of total employment in Ecuador in 2011.[28] This is reflected on our sample. As we can see in the Figure 3, almost half of wage earners work on informal jobs.[29] This contrasts what happens in developed economies, where this number is approximately 18%.[30] The share of women in informal jobs is slightly higher than men's in all years.

[25] ILO (International Labour Office), *op. cit.*
[26] I. Acevedo, F. Castellani, G. Lotti, M. Székely, "Informalidad en los tiempos del COVID-19 en América Latina: implicaciones y opciones de amortiguamiento", *IDB-WP*-01232, 2021, DOI: https://doi.org/10.18235/0003220.
[27] ILO (International Labour Office), *op. cit*.
[28] World Bank (2012), *op. cit.*
[29] Employment in the formal sector is defined as the set of people who work in establishments that are registered in the internal rent services, thus having a taxpayer registration (in Spanish RUC). While employment in the informal sector is defined as the set of people who work on firms with no taxpayer registration. See INEC (Instituto Nacional de Estadística y Censo), *Actualización metodológica: el empleo en el sector informal*, INEC, 2015, https://www.ecuadorencifras.gob.ec/empleo-en-el-sector-informal/.
[30] ILO (International Labour Office), *op. cit*.

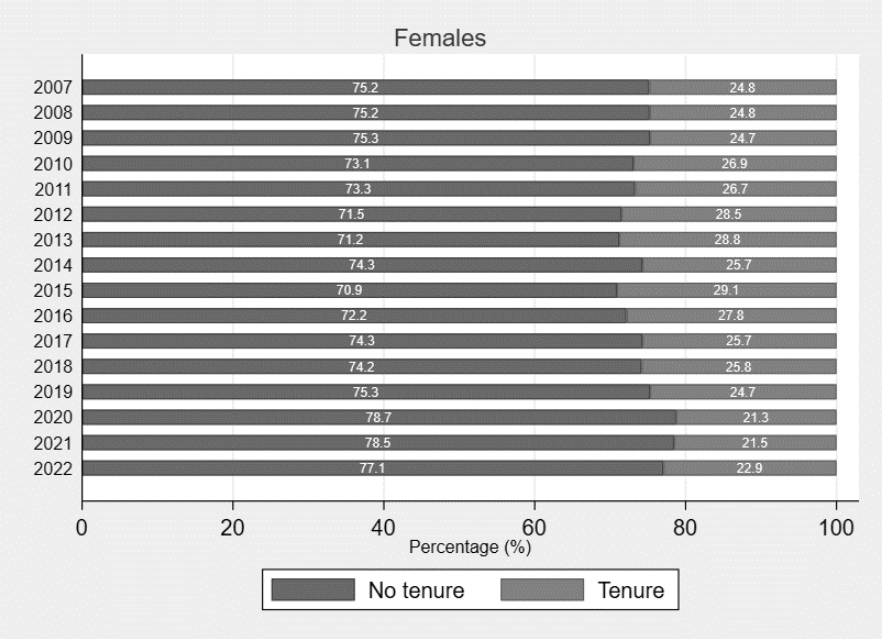
FIGURE 3: FORMAL AND INFORMAL EMPLOYMENT RATES FOR MALES AND FEMALES AGED FROM 18 TO 60 YEARS OLD, 2007-2022.



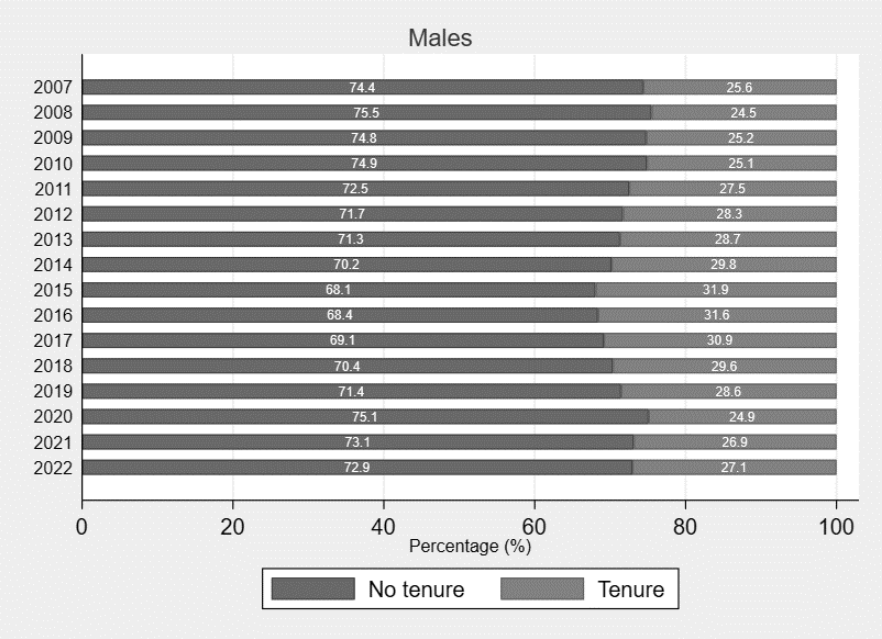


As an additional factor of vulnerability, in Latin America, a large segment of the labour force is subject to high employment turnover, precarious employment conditions, no union representation, and low skills. A much smaller segment, a labour elite of workers have long job tenure and are protected under labour regulations.[31] In line with the following table, workers are classified into a tenured group, representing workers with labour stability, indefinite or long-term contracts and a non-tenured group, with temporary, occasional or eventual contracts. We can observe that the great majority of both men and women belong to the latter; again, women exposure to unstable working conditions is higher than men's (Figure 4).

FIGURE 4: TENURED AND NO TENURED EMPLOYMENT RATES FOR MALES AND FEMALES AGED FROM 18 TO 60 YEARS OLD, 2007-2022.

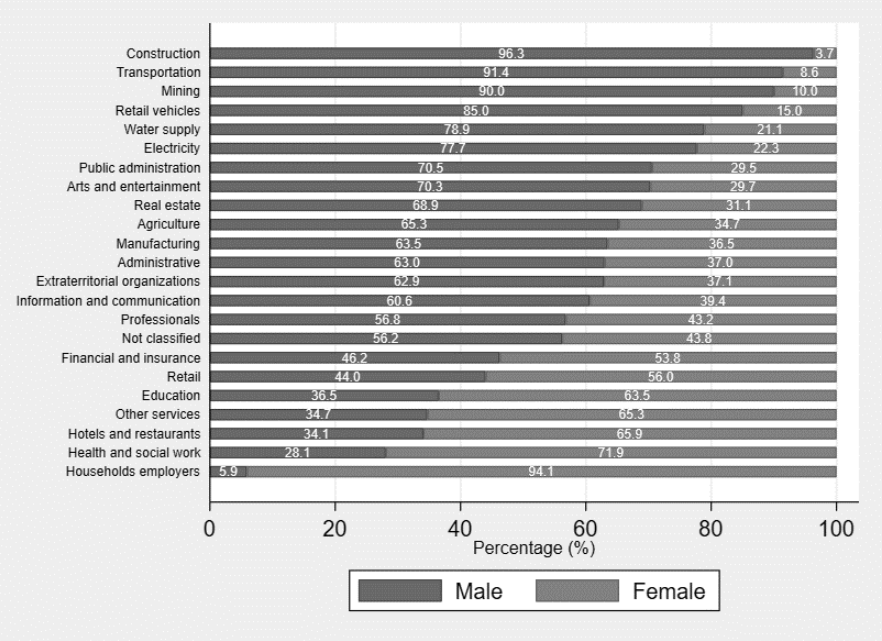


[31] B.R Schneider, *Hierarchical Capitalism in Latin America: Business, Labor, and the Challenges of Equitable Development*, Cambridge, Cambridge University Press, 2013, https://doi.org/10.1017/CBO9781107300446.



As already mentioned, males' and females' participation through industries and occupations varies significantly, evidencing gender segregation. Figure 5 presents the share of males and females, classified under the International Standard Industrial Classification of All Economic Activities (ISIC Rev. 4). Gender industry segregation is important in Ecuador. Sectors like construction, transportation, mining or repair and retail of motor vehicles are male dominated; while in other activities females prevail, such as domestic services, human health and social work activities, education, accommodation and food services activities.

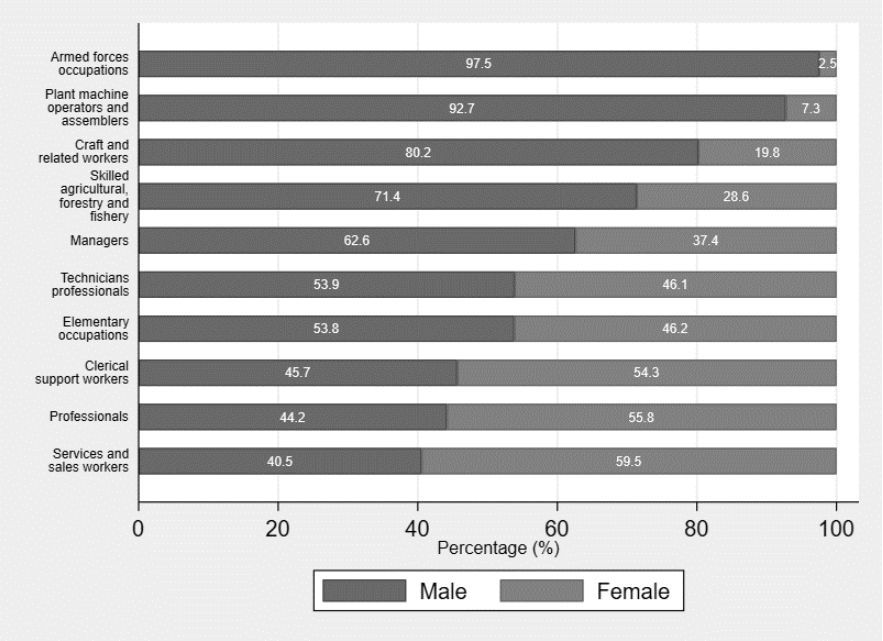
FIGURE 5: SHARE OF EMPLOYMENT BY INDUSTRY, 2007-2022.



A similar picture can be seen if we classify workers under occupation, defined by the Structure of the International Standard Classification of Occupations (ISCO-08), where armed forces, plant and machine operators, craft and skilled agricultural occupations are dominated by men. Interestingly, professionals are dominated by females; as pointed out by a recent World Bank report, this might be a reflection of the fact that in Ecuador males and females have similar levels of education.[32] Yet a lower share of females are technicians and associate professionals and managers (Figure 6).

[32] World Bank, *Gender Gaps in Ecuador: An Overview*, World Bank, 2018, https://doi.org/10.1596/31821.

FIGURE 6: SHARE OF EMPLOYMENT BY OCCUPATION, 2007-2022.



This study examines the effect of gender on wages. For this, we employed the log of hourly earnings of females and males as the dependent (outcome) variable. Earnings were corrected for inflation, and hourly wage was obtained by dividing the monthly income from the primary job by the total working hours of that job. Consequently, for most of the analysis, the effective sample was necessarily limited to those individuals with only a single job, with positive income and positive working hours, and between 18 and 60 years old. Non-responses, inactive and not paid workers, as well as outliers, were excluded. The treatment variable was female (0 if male, 1 if female).

The following variables were used as covariates:

1 Age
2 Married, 1 if married, 0 if not
3 Divorced, 1 if divorced, separated or widow, 0 if not
4 Education, numbers of years of education
5 Hours, working hours per month
6 Experience, years of experience at the current job
7 Regional dummies, Coast or Amazon, living in the Highlands is excluded dummy

8 Ethnic minority dummy, 1 if minority (afro, montubio or indigenous), 0 if mestizo (or white)
9 Urban, 1 if living in an urban area, 0 if not
10 Firm size dummies, one, two to five, six to 10 and 11 to 50, firms with more than 50 people is the excluded dummy.
11 Part-time, 1 if part-time, 0 otherwise
12 Young, 1 if under 25 years old, 0 otherwise
13 Kid, 1 if there is at least one person under 15 years old living in the same home.
14 Tenure, 1 if have tenure or has an indefinite or permanent contract, 0 otherwise.
15 Formal, 1 if employed at the formal sector, 0 if employed at the informal sector
16 Underemployed, 1 if underemployed or other employment type, 0 if fully employed

As described by Blau and Kahn and Meara et al., the effects of factors that are not explicitly included in a traditional regression analysis may be taken into account to some extent.[33] For example, on average women are considered to be more risk averse than men, which could reflect their preference towards less risky jobs, with consequently lower wages. Though this point is controversial, due to the socially determined character of such perception, we control for this and other possible factors (for example, physically demanding jobs) including both occupation and industry dummies. A complete and detailed description of the sample used can found in Caria and Yepez.[34]

Frölich and Ñopo stress the need to contrast like with like when comparing gender pay differences, advocating the use of matching estimators.[35] This procedure starts by

[33] F.D. Blau, L.M. Kahn (2017), *op. cit.*; K. Meara, F. Pastore, A. Webster, "The gender pay gap in the USA: A matching study" *Journal of Population Economics*, 33 (2020), 1, pp. 271-305, https://doi.org/10.1007/s00148-019-00743-8.
[34] S. Caria, J. Yepez, "The intersection between traditional roles and a fragmented labor market: a propensity score matching analysis of gender wage gap in Ecuador", *Journal of Economic Studies*, forthcoming, https://doi.org/10.1108/JES-01-2024-0002.
[35] M. Frölich, "Propensity score matching without conditional independence assumption – With an application to the gender wage gap in the United Kingdom", *The Econometrics Journal*, 10 (2007), 2, pp. 359-407, https://doi.org/10.1111/j.1368-423X.2007.00212.x; H. Ñopo, "Matching as a Tool to Decompose Wage Gaps", *The Review of Economics and Statistics*, 90 (2008), 2, pp. 290-299.

defining an outcome variable, in our case the log of hourly earnings and a treatment variable. In this study, female earners constitute the treatment group, while their male counterparts represent the untreated group. The procedure selects a control group from the untreated (male) group which is selected to be as close as possible in all other key observable characteristics to the treated (female) group. This procedure helps to restrict the analysis in two subsamples of males and females with the same characteristics; thus, constructing a counterfactual wage for the common support.[36] This study uses PSM techniques to investigate the gender pay gap in Ecuador. The PSM methodology can be understood as a way of weighting the observations of the control group so that the distribution of their observable characteristics, X, is as similar as possible to that of the treatment group. The estimators contrast the outcome variable of a treated individual with the outcomes of one or more members of the control group that most closely resemble the treated individual, based on the propensity score measure, P(X). As usual, a probit model is used to estimate the propensity score.

The technique is used to establish whether a statistically significant difference exists in the log of hourly pay between males and females who share the same characteristics. This procedure is conducted from 2007 to 2022 (last available year) to analyse the change in gap during this period. This study uses nearest neighbour matching and kernel density matching estimators.

The main parameter in this study is the average treatment effect for the treated (ATT), which represents the pay gap between the treated (females) and the control (males) groups. Let Y be the log of the hourly pay of an individual, T is a dummy variable indicating 1 if the individual is treated (females) and 0 if the individual is untreated (males); thus, the ATT is given by

$$ATT = E(Y_{1i} - Y_{0i}|T_i = 1 = E(\beta \vee T_i = 1)$$

[36] See *Appendix* in S. Caria, J. Yepez, *op. cit.*

According to Frölich and Ñopo, the difference in income between males and females can be decomposed into two components, one due to differences in relevant attributes to the labour market, Δ_χ, and another not explained by this attributes;[37] therefore, indicating different marginal return of these attributes, Δ_β, usually associated to discrimination or the effects of unobservable characteristics. Denoting M for males and F for females, the pay gap, Δ, can be expressed in a simple way as follows

$$\hat{\Delta}= (\bar{X}_M - \bar{X}_F)\hat{\beta}_F + (\hat{\beta}_M - \hat{\beta}_F)\bar{X}_M = \hat{\Delta}_\chi + \hat{\Delta}_\beta$$

Generally, obtained by linear regressions, $\hat{\beta}_M$ and $\hat{\beta}_F$, as in the O-B methods, the procedure assumes fully common support; therefore, ignores the possibility that there might be combinations of individuals characteristics for which it is possible to find females but not males, or vice-versa. To avoid inconsistent estimates, the calculation of the differences is limited to the common support subsamples, as the matching technique described above requires. Thus, $\hat{\Delta}_\beta$ corresponds to the ATT.

As an additional element, as King and Nielsen have pointed out, the inclusion of a large set of covariates can create a risk of bias from matching irrelevant variables.[38] As in Meara et al., to limit that risk, all covariates included in the probit (treatment) model were tested for statistical significance in a regression model with the outcome as the dependent variable.[39]

For the estimators to be unbiased, they need to include all relevant variables, also covariates that affect the difference in gender wages. Therefore, to estimate the gender wage gap on a subsample as close to a like for like as possible, besides including traditional human capital variables such as experience or education, variables such as part-time working, tenure contract and parenthood (proxied by the kid variable) are included. As Blau and Kahn and Meara et al. recognize, considering this last set of

---

[37] M. Frölich, *op. cit*.; H. Ñopo, *op. cit.*
[38] G. King, R. Nielsen, "Why Propensity Scores Should Not Be Used for Matching"*, Political Analysis*, 27 (2019), 4, pp. 435-454.
[39] K. Meara, F. Pastore, A. Webster, *op. cit.*, for more details.

variables will help to depurate the estimation of the direct consequence of gender on wages;[40] hence, ignoring other indirect mechanisms that affect gender wages. Therefore, to shed a light on how the gender gap changes when these indirect effects of being female are taken into account, the PSM procedure is applied to the full sample as well as various subsamples based on those key characteristics in order to evaluate the influences of each selected characteristics on the gender gap.

4. Results

This section presents the matching estimates for the gender pay gap in Ecuador, through the period 2007-2022 using samples based on ENEMDU. Since the outcome variable is the log of hourly wages, the ATT is the difference in the log of wages between, females and males. However, the interpretation of this difference as a percentage difference in wages is only accurate when this difference is small. Hence, the precise percentage difference, derived from the matching output, is reported together with the relevant ATT throughout this section. The results provide strong evidence of a statistically significant gender pay gap between males and females that share more or less the same observable characteristics. The inequality estimated is 16,6% in 2007 and 17,3 % in 2022, using both estimators previously mentioned, (Figure 7), evidencing no substantial improvement. It is important to notice that the gap is much smaller for the unmatched groups, meaning that males in the control group, who are matched to the females in terms of identical characteristics, on average, earn more than unmatched males. This implies that matched women who possess characteristics that would lead to considerably higher earnings, were treated unequally.

[40] F.D. Blau, L.M. Kahn (2013), *op. cit.*; K. Meara, F. Pastore, A. Webster, *op. cit.*

FIGURE 7: PSM RESULTS FOR THE FULL SAMPLES 2007 AND 2022. KERNEL ESTIMATIONS. GAP IN PERCENTAGE

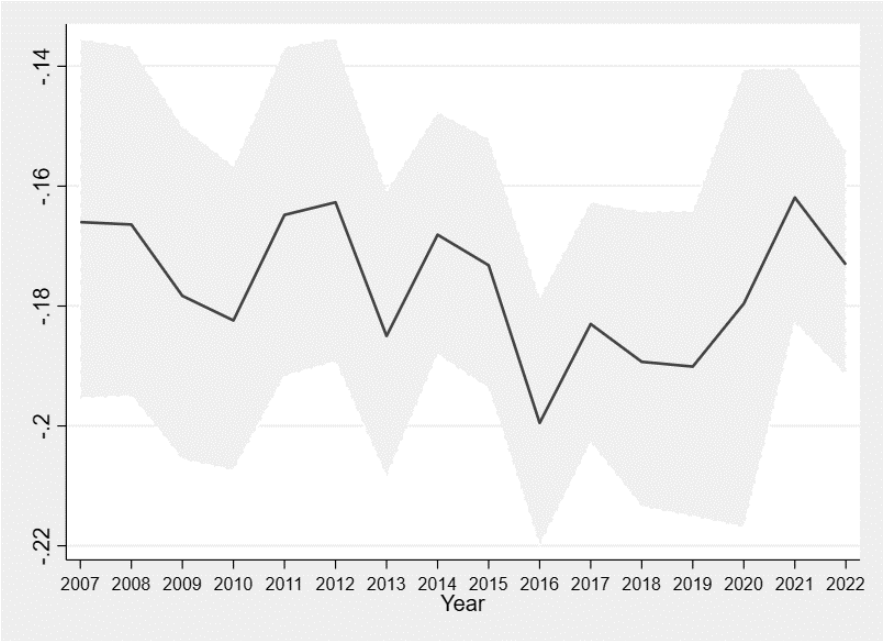


TABLE 2: PSM RESULTS FOR THE FULL SAMPLES 2007 AND 2022. KERNEL ESTIMATIONS.

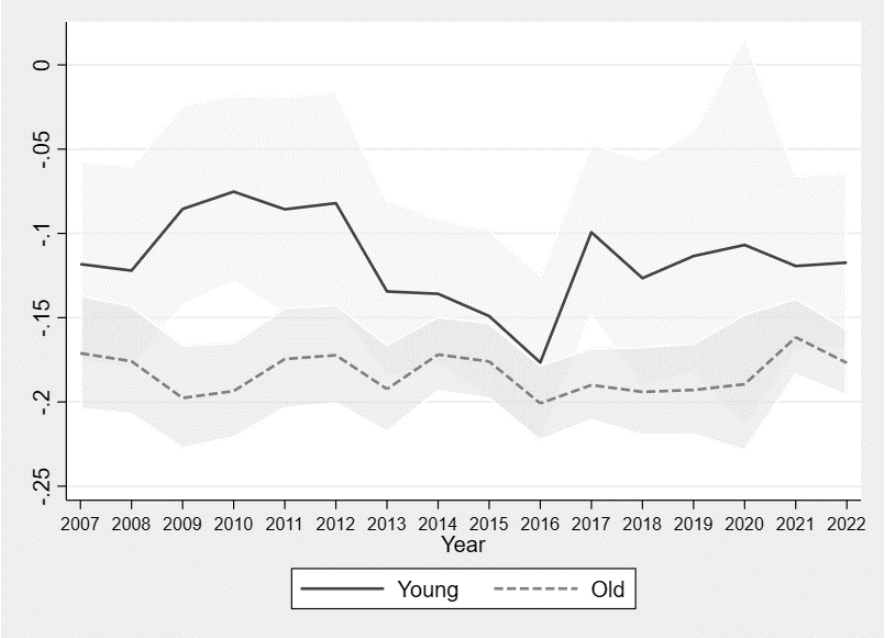
Sample 2007						
	T	**C**	**Diff**	**S.E.**	**Observations on support**	
Unmatched	0.331	0.415	-0.083	0.013	C	11971
ATT	0.342	0.523	-0.181	0.018	T	6170
Gap (%)			**-0,166**			
Sample 2022						
	T	**C**	**Diff**	**S.E.**	**Observations on support**	
Unmatched	0.783	0.841	-0.059	0.009	C	16580
ATT	0.793	0.983	-0.190	0.012	T	10217
Gap (%)			**-0,173**			

As the existing literature indicates, the gender gap can vary by parenthood, age group, or type of contract. It was already mentioned that traditional or family roles can

considerably affect gender wage differences through indirect channels, such as segregating women to flexible part-time, underemployment or no tenure jobs. The following figures show results for some selected sub samples; gaps are expressed in percentages.

In Figure 8 shows the effect of age on the gender wage differences trough two sub-samples, young (under 25) and older.

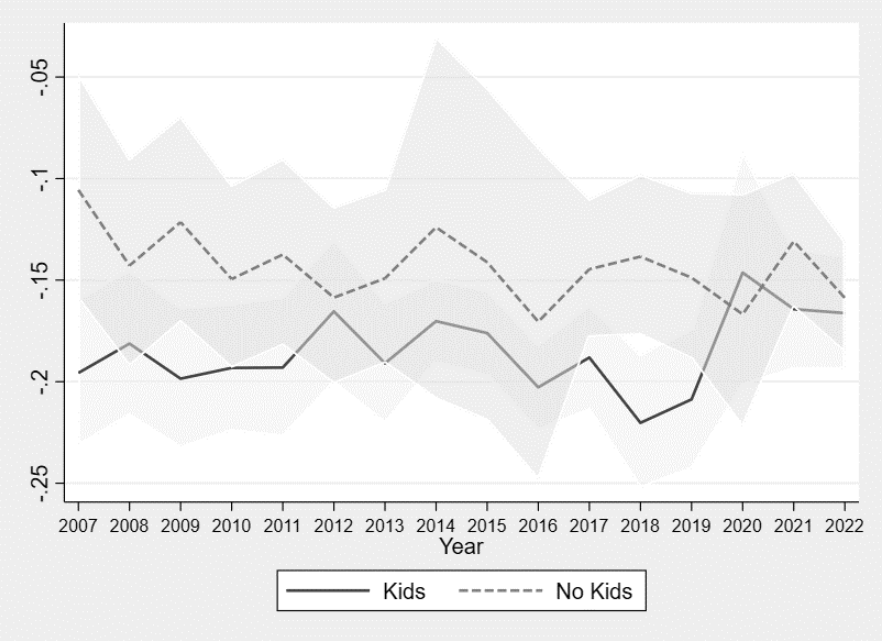
FIGURE 8: GENDER GAP ACROSS DIFFERENT SUB-SAMPLES: YOUNG (<25 YEARS) AND OLD (>25 YEARS).



As we expected, the gender gap increases with age. Young workers' gender pay swayed between 19% and 12% all through the period, while for older workers the gap has fallen slightly below 20% only in the past two years.

A similar picture is shown when the sample is divided into individuals with and without kids at home. The gender wage gap for workers with kids at home is greater, although it tends to converge with the gap for workers with no kids in the last years of the period studied, as shown in Figure 9.

FIGURE 9: GENDER GAP ACROSS DIFFERENT SUB-SAMPLES: KIDS/NO KIDS

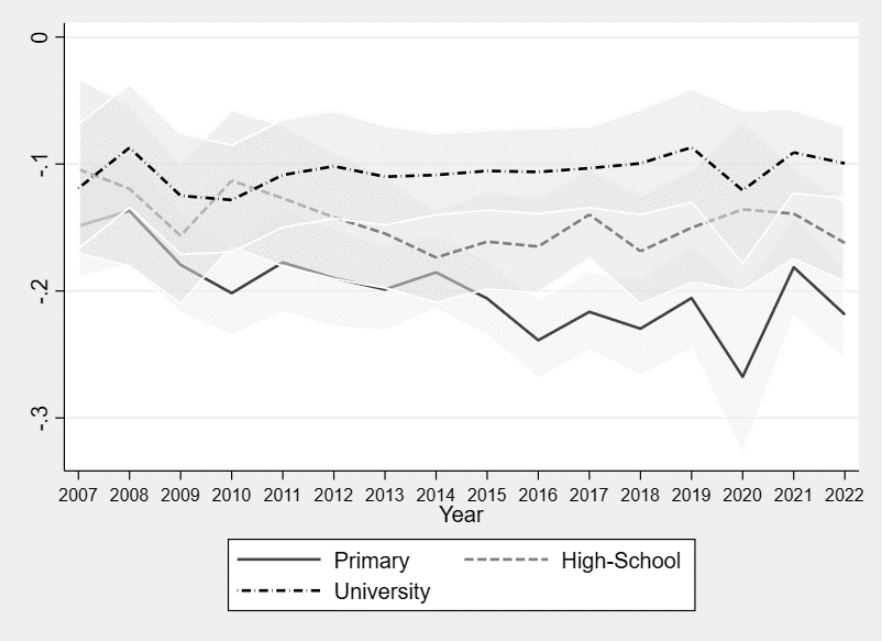


These differences in gender pay gap when the sample is divided by age and parenthood confirm the relevance of family roles in gender inequality.

In terms of education, less educated females face greater differences in earnings: the gender wage gap for individuals with primary and high school education is around 20%, and it is reduced by the half for workers with undergraduate or higher studies[41] (Figure 10). Furthermore, while the gap for women with higher education remains substantially stable, the gap tends to increase for workers with high school degree and even more for women with only primary education: this trend reaffirms the importance of education in enhancing women's human capital and reducing gender inequality in labour markets.

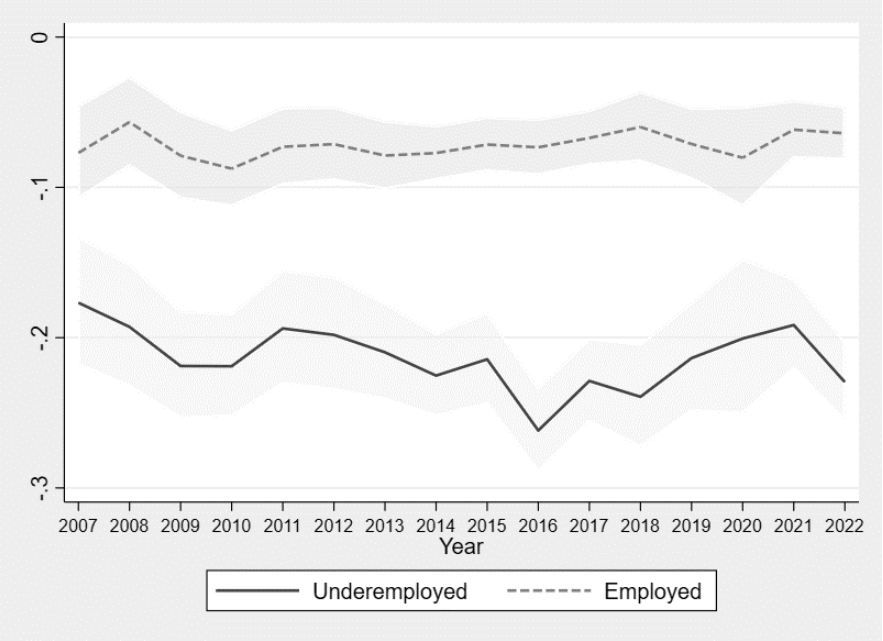
[41] It is worth mentioning that it is not possible to estimate the effect on the upper tail of the educational distribution, meaning that number of workers with post-graduate education in the sample are considerably smaller than the other sub-groups, therefore were included in a single group with undergraduates.

FIGURE 10: GENDER GAP ACROSS DIFFERENT SUB-SAMPLES: EDUCATION DEGREE.



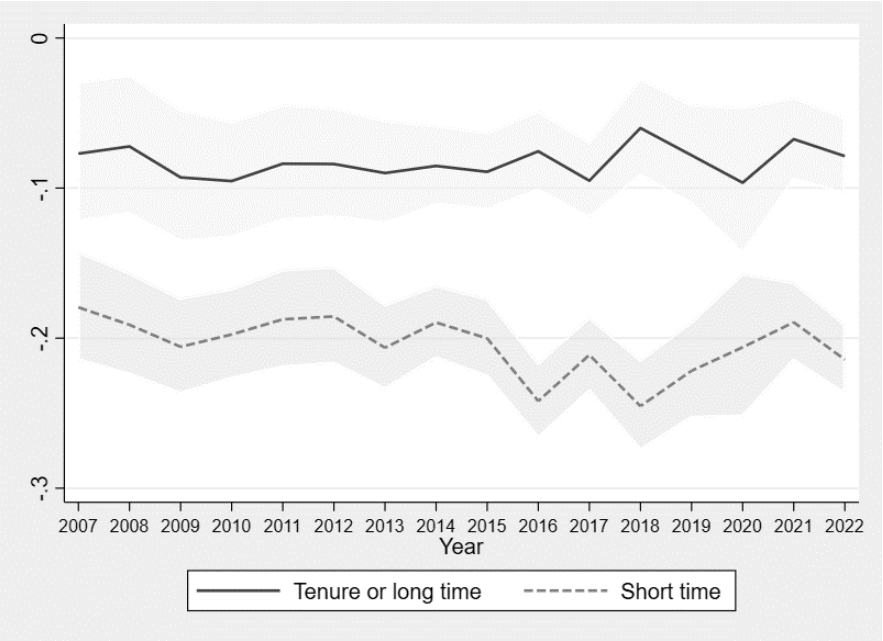
Sub-dividing the sample by employment type gives further interesting insights. Underemployed female workers suffer a gender wage gap that is more than twice than employed workers: the former group on average expect a gender payment gap of more than 20%, compared to the latter group with a gap of roughly 7-8% through all the years analysed. In addition, the difference in the gap doesn't seem to be reducing: on the contrary, the distance between the two gap at the end of the period is larger than at the beginning (Figure 11).

FIGURE 11: GENDER GAP ACROSS DIFFERENT SUB-SAMPLES: UNDEREMPLOYED/EMPLOYED



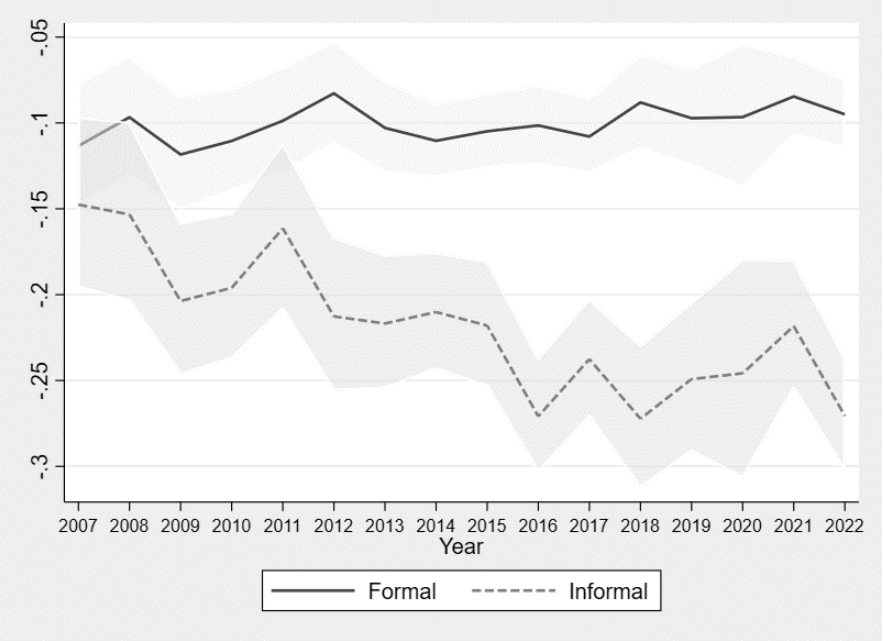
Underemployed workers represent a high share in the Ecuadorian labour force and are mainly occupied in informal low skilled jobs, characterized by atomistic labour relations, low productivity and low or irregular income: estimations account for a double gap for female underemployed workers. This relation is similar to what we obtain when dividing the sample into contract types. The gender pay gap is smaller for workers with tenure/long term contracts, on average less than 9% compared to 22%, respectively (Figure 12); again, there is no trend towards a closing of such gap over the past decade and a half. This results evidence the role of employment stability and regulated jobs, under tenure in the public sector or long-term contracts in the private sector. It is important to notice that, in our sample, only an elite of workers, less than 35% of total labour force, is covered by these types of contracts, showing that only a small portion of workers benefit from a regulation that can limit their earnings gap.

FIGURE 12: GENDER GAP ACROSS DIFFERENT SUB-SAMPLES: TYPE OF CONTRACT, TENURE/SHORT TIME



Finally, if we compare informal workers with formal workers, we find the largest difference in earnings: although on average informal female workers face a gap of 21%, on recent years the gap borders 30%, showing that the gap associated with informality seems to widen across the period considered (Figure 13). This is particularly worrying, due to the high share of informal workers that characterises the Ecuadorian labour force. Actually, while the pay gap between male and female formal workers seems to be slowly reducing, the gap that informal female workers can expect is widening, suggesting that informality is an important driver of precarity and discrimination. The condition of being female and informal worker is the one where the largest wage gap can be expected of all the dimensions analysed.

FIGURE 13: GENDER GAP ACROSS DIFFERENT SUB-SAMPLES: FORMAL/INFORMAL



5. Concluding remarks on Ecuador…

In order to estimate the gender wage gap in Ecuador and its evolution across the last decade and a half, propensity score matching is employed, using the ENEMDU data set from 2007 to 2022. Results show a persistent gender pay gap both in the sample as a whole and in the different sub-samples analysed, evidencing a significant heterogeneity through the different dimensions taken into account, in terms of working conditions and workers' personal characteristics. Looking at the trend towards the closing of the gender gap, in line with SDG 5, we observe a trivial reduction of differences in earnings between men and women; on the contrary, women exposure to precarious and unregulated jobs seems to be increasing wage inequality. This is consistent with other empirical studies in different parts of the world, that explain how improving women' education and working experience, as human capital enhancers, contributes far less to closing the gender gap than

it did in the last decades of the previous century.[42] Traditional gender roles seem to be still important in determining women wage penalization: the gap is smaller for younger than for older workers, and for workers without kids at home than for workers with kids at home, evidencing traditional gender career-family trade-offs. It is worth noting, though, that the difference in the pay gap in these latter categories seems to be reducing and almost disappearing, in the case of women with or without children, in the very last years. Women might face a double cost when taking up traditional family roles: Bertrand et al. point to possible extensive effects of the adherence to traditional gender roles in terms of implications of identity;[43] departures from these norms are perceived as generating costs and hence people tend to stick to their socially assigned roles. As far as education is concerned, it is confirmed as an important factor in reaching equality, as demonstrated by the smaller gap that characterizes women with university studies with respect to high school and, even more, to primary education diplomas.

However, working conditions and labour market structure play an apparently more important role. The difference in gender wage gaps observable in women that are underemployed and have short term jobs with respect to their colleagues that enjoy greater labour stability is significant and larger than the gap ascribable to workers' personal characteristics. Labour market conditions in Ecuador, like the majority of developing countries, are structurally very fragmented and precarious. In contrast to the conviction that the main factor in explaining the gender gap relies on corporate changes (2014) and, therefore, there is no need for public policy, we advocate for an active role of Ecuadorian policy makers. The share of informal employment in Ecuador, which is typical of developing, peripheral countries, requires especial attention; informality, associated with greater flexibility, is also linked to lower social protection, rapid workers' turnover and higher precarious employment conditions.[44] Previous studies on Ecuador evidenced that the gender wage gap is stronger at the lower tail of the wage distribution, confirming that

[42] F.D. Blau, L.M. Kahn (2013), *op. cit.*; World Economic Forum, *op. cit.*
[43] M. Bertrand, C. Goldin, L.F. Katz, *op. cit.*
[44] B.R Schneider, *op. cit.*

poverty and gender discrimination are connected and reaffirming the need to include a gender perspective in development policies.[45] Traditionally, in Latin America labour market institutionality has been weak and the high degree of informality has represented an for social and economic cohesion: how to increase formalization to reduce workers vulnerability has been a long run regional debate.[46] In Ecuador, there have been recent efforts, between 2007 and 2015, to improve working conditions: active policies were enforced aimed at increasing the share of workers affiliated to social security, the establishment of a minimum wage and the strengthening of work inspection by the Ministry of work, accompanied by the prohibition of tertiarization.[47] However, the economic and political turbulence that affected the country after the fall of oil prices in 2015 determined a pushback of the state from labour regulation.

The present work's contribution, though, is to offer a richer understanding of the way in which different sources of disadvantages interact when explaining the gender pay inequality. The picture drawn below can be complemented by future studies, which may focus on informality more in depth, exploring more systematically past efforts in terms of labour and gender discrimination regulation. A focus on the lower part of wage distribution, to explore the connection between gender discrimination and poverty, could represent a useful insight to understand gender inequality in the most vulnerable sectors of the society. Also, it could be useful to adopt a regional approach in order to put in evidence heterogeneity across different regions of the country, in order to reflect on more targeted policies. At the same time, the results highlighted in Ecuador place a spot light on the general need to consider the other coin of labour market fragmentation, i.e. its connection to greater gender inequalities, an issue that is already critical for Italy.[48] The

---

[45] S. Canelas, S. Salazar, *Gender and Ethnicity in Bolivia, Ecuador, and Guatemala*, DEPOCEN Working Papers 11, 2014, p. 26; H. Ñopo, L. Gallardo, *Ethnic and Gender Wage Gaps in Ecuador* (SSRN Scholarly Paper N. 1821916), Social Science Research Network, 2009, https://doi.org/10.2139/ssrn.1821916.
[46] J. Weller, *El nuevo escenario laboral latinoamericano: regulación, protección y políticas activas en los mercados de trabajo*, Santiago, Comisión Económica para América latina y el Caribe, 2009.
[47] M. Leon, "Políticas públicas y empleo informal en Ecuador: 2007-2015", *Revista Economía*, 67 (2015), 106, pp. 11-35.
[48] World Economic Forum, *op. cit.*

results reaffirm the link between precarity, discrimination and vulnerability as mutually reinforcing, and can propose elements for a wider analysis of the process of de-industrialization and stagnation of semi-peripheral advanced economies.

… and some lessons for Italy

For some parts of Europe, long-term economic stagnation and qualified employment losses are becoming structural characteristics, posing challenges that can somehow be considered similar to those of middle-income peripheral countries.[49] Italy is emblematic of these countries, that have progressively been losing important parts of their industrial structure, while opting for cost-competitiveness strategies, accompanied by an increasingly liberalization of labour market.[50] Such liberalization not only did not succeed in terms of expected outcome on employment, but can actually be an obstacle for the implementation of effective policies for reverting de-industrialisation.[51]

In Italy, legal reforms occurred in the mid-1990s (the "Pact for Employment" of 1996 and the "Treu Package" of 1997), introduced different typologies of temporary and no tenure contracts, allowing companies to hire workers more flexibly. These measures aimed at contrasting two traditional peculiarities of Italian labour market: the widespread unemployment and informal work. In continuity with the above-mentioned reforms, in 2003 the "Biagi law" introduced a thorough organic reform of labour law and labour market regulation, aiming at adapting labour supply to an increasingly dynamic labour demand and the flexibility needs of companies. One of the most significant innovations introduced by the "Biagi Law" is the introduction of new a-typical contracts, greater

[49] A. Diemer, S. Iammarino, A. Rodríguez-Pose, M. Storper, "The Regional Development Trap in Europe", *Economic Geography*, 98 (2022), 5, pp. 487-509.
[50] M. Fana, D. Guarascio, V. Cirillo, "Did Italy Need More Labour Flexibility?", *Intereconomics*, 51 (2016), 2, pp. 79-86, https://doi.org/10.1007/s10272-016-0581-3.
[51] D. Guarascio, A. Simonazzi, "A polarized country in a polarized Europe: an industrial policy for Italy's renaissance", *Econ Polit Ind*, 43 (2016), pp. 315-322, https://doi.org/10.1007/s40812-016-0042-9.

possibilities for companies to use temporary forms of labour, and regulations aimed at encouraging outsourcing.

However, by the early 2000s, the socioeconomic literature was already documenting the failure of these interventions to directly impact on informal work and employment.[52] At the same time, that period witnessed a strengthening of under-employment and widespread precariousness: to compensate the lack of economic security and social protections generally granted by permanent employment, many workers seek additional income through informal channels.[53] Indeed, all these legislative interventions on labour contracts were not accompanied by welfare reforms and mainly resulted in both increased social vulnerability of workers and soared informal work. Moreover, it would become soon evident that the "traditional informal labour," typical of a backward industrial economy characterized by high unemployment, such as that of Southern Italy, would be overlaid by a "new kind of informal and precarious labour," the result of the processes of deindustrialization, the growth of private demand for personal services (e.g. the increase in private demand for care giving for the elderly), the widening of subcontracting chains and, last but not least, the spread of jobs related to new digital technologies (the so-called gig economy and platform economy).[54] The Jobs Act of 2015 represents the latest step in this trend toward the deregulation of the Italian labour market. Again, the guiding principle of the reform is the idea that unemployment and the emergence of informal labour are phenomena that can be contrasted with more flexibility:[55] however, the innovative character of the Jobs Act is represented by the target it addresses. As has been pointed out by Cavalca et al., while previous policies tended to allow flexibility "at the margins of the labour market" (i.e., mainly aimed at the so-called

---

[52] E. Reyneri, *op. cit.*
[53] F. Berton, M.G. Richiardi, S. Sacchi, *Flex-insecurity. Perché in Italia la flessibilità diventa precarietà*, Bologna, il Mulino, 2009.
[54] M. Samek Lodovici, R. Semenza, "L'articolazione dei rapporti di impiego in una regione forte: il caso della Lombardia", *Sociologia del lavoro*, 90 (2003), pp. 103-122.
[55] F. Patriarca, R. Tilli, "Job security, flexicurity o insecurity? Il mercato del lavoro in Italia fra dualismo e riforme", *Rivista delle Politiche Sociali*, 2016, 3-4, pp. 203-223; V. Cirillo, M. Fana, D. Guarascio, "Labour market reforms in Italy: evaluating the effects of the Jobs Act", *Economia Politica*, 34 (2017), pp. 211-232.

"secondary labour market"), the Jobs Act aims to change the rules regulating labour relations and reduce the protections of so-called insiders, reducing the protection of workers with an open-ended contract, which were considered excessive, hostile to outsiders and detrimental to the flexibility of the entire labour market.[56] The result of the Jobs Act, therefore, is not to be understood simply in terms of an increase in atypical contracts or an increase in a precarious component of the labour market; it has had consequences on the precarisation of the entire labour market, eroding the centrality of the open-ended labour contract in the Italian labour law system. This prolonged process of labour market destructuring was accompanied by an increasing percentage of temporary workers (5% of the employed in 1990, 17% at the end of 2023) and a growing underemployment (part-time alone increased from about 9% in 1990 to 16% in 2023; involuntary part-time from about 2 percent in 1990 to 10 percent in 2023); these figures foreshadowing not only higher rates of informal work as a form of income supplement, but also by a generalized social and economic vulnerability throughout the world of work.[57] It is worth taking into consideration that while the labour law was de-regulating the labour market, the Italian industrial relations system has been going through deep transformations, which were also the result of hostile policies toward unions. The representativeness of the main Italian unions has shown signs of crisis (a trend common to many European countries), putting workers in a position of further vulnerability: over the past 40 years, the unionization rate decreased from 50% in the early 1980s, to 33% in 2020, half of whom are retired.[58] In the same years there has been a crisis in collective bargaining, linked to the proliferation of national and sectoral collective agreements (889 collective agreements were registered with CNEL in 2023) and the so-called "pirate"

---

[56] G. Cavalca, E. Mingione, E. Pugliese, *op. cit.*
[57] G. Travaglini, A. Bellocchi, "Il mercato del lavoro italiano 30 anni dopo: più occupati, più precari, più poveri", *Menabò Etica ed Economia*, 2024, p. 215.
[58] D. Carrieri, P. Feltrin, *Al bivio: lavoro, sindacato e rappresentanza nell'Italia d'oggi*, Roma, Donzelli Editore, 2016.

collective agreements.[59] Such agreements have had a defensive (and rarely acquisitive) nature with respect to new rights and protections, and have been aimed at eroding their regulatory capacity, consolidating a strong tendency toward a "disorganized decentralization" of collective bargaining (i.e., a decentralization of bargaining to the firm-level and the tendency to spill over from the higher level of bargaining).

Given what has been described above, it is not surprising that the average real wage of Italian workers today is -2% lower than it was in 1990, if nominal wages are calculated using the GDP deflator, or even plummets to -8%, if the consumer price deflator is used, which then takes into account actual purchasing power.[60]

As the Ecuador case makes clear, increasingly precarious employment cannot but have an important impact on gender inequality: the less structured the labour market and the lower the social and employment protections for workers, the higher the risk of gender pay inequality. In the Ecuadorian case, socio-occupational vulnerability and the fragmented labour market represent a "structural condition" (not to be intended as immutable) rooted in the geo-political/economic world order inherited from the past. It follows that in Ecuador addressing the connection between gender discrimination and socioeconomic vulnerability entails to challenge the traditional character of the labour market.

In the Italian case the increase in workers' vulnerability and the destructuring of the labour market represent, similarly to other countries of the so-called Global North, an involution from a previous period when workers enjoyed higher protections and security. Of course, this involution must be placed within broader socioeconomic transformations that have occurred in recent decades and the broader shaping of a "new world order". However, contrary to those who tend to present these processes as a natural outcome driven by "external forces", we believe that it is not possible to ignore that it is also the result of political choices and social struggles (with winners and losers) on how to deal

---

[59] C. Lucifora, D. Vigani, "Losing control? Unions' representativeness, pirate collective agreements, and wages", *Industrial Relations: A Journal of Economy and Society*, 60 (2021), 2, pp. 188-218.
[60] D. Di Nunzio (ed.), *Inchiesta sul lavoro. Condizioni e aspettative*, Roma, Futura Editrice, 2024.

with new challenges and "how to stand in the new world order". In the light of the evidence linking gender discrimination to socioeconomic vulnerability and if the trend towards reduced socio-occupational protections is to be consider as inevitable, one major issue within the newly generated social order – and more broadly, within the "new world order" – is if gender equality still has citizenship.

Sara Caria
Università di Modena e Reggio Emilia
sara.caria@unimore.it

Matteo Rinaldini
Università di Modena e Reggio Emilia
matteo.rinaldini@unimore.it

Jorge Yepez
Università Ca' Foscari
jorge.yepez@unive.it