Gender Gap among Microentrepreneurs in Brazil[i]

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Abstract

This paper estimates the gender revenue gap among Brazilian microentrepreneurs and shed a light on the factors behind these disparities. We collect payment data from all individual microentrepreneur businesses that remained open throughout the entire year of 2023, and from the owners of the businesses. The empirical approach consists in regressions comparing this revenue estimate for men and women, controlling for a set of variables, like geographic location and economic activity. Our results indicate that women microentrepreneurs have revenues 26% lower than those of men without any control. When controlling for economic activity, this gap decreases to 19%, so that occupation choices account for a quarter of the original gender gap. Other controls like microentrepreneur age, firm age, and geographical location do not materially change this estimate. Additionally, we compare revenue differentials among microentrepreneurs with the wage differentials of individuals who had a previous formal employment.

Keywords: Gender Gap; Entrepreneurship; Microentrepreneur; Job market.
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1) Introduction

There is an extensive empirical literature about gender wage gap in formal job market, documenting a lower salary for women. The factors behind this gap include differences in the occupation and industry, part-time jobs and education. These factors are unable to explain all the gender salary gap, so that some gender discrimination is probably the cause for the remaining gap (Blau and Khan 2017, Gharehgozli and Atal 2020). Results on the gender wage gap are also found in Brazil, such as in the article by Tenoury, Madalozzo, and Martins (2021), which observes a relationship between gender wage gap and labor market participation rates.

Among entrepreneurs, there is also evidence of a gender gap. Nix, Gamberoni and Heath (2015), Bardasi et al. (2011) and Hardy and Kagy (2018) document that lower performance of women in entrepreneurs, even after accounting for several possible explanation factors. However, the evidence for microentrepreneurs is scarce, especially for Brazil.

This study aims to explore the revenue differences between men and women by analyzing the revenues of microentrepreneurs in Brazil, as well as attempting to determine the factors behind these disparities. Additionally, the study compares these revenue differentials among microentrepreneurs with the wage differentials of individuals who had formal employment.

For this purpose, we perform two empirical analyses with different datasets. The first comprises payment data from microentrepreneurs to estimate their revenues and estimate the gender revenue gap; while the second analysis adds data from formal employment, in order to make a comparison of the gender gap of microentrepreneurs and employers.

In our main analysis, we collect transaction data from all Individual Microentrepreneurs (MEI)[1] that remained open throughout the entire year of 2023. To estimate the revenues of the microentrepreneurs, four receipt flows were aggregated: instant payments (Pix) received, debit card payments, credit card payments, and bank slips. For these very small entrepreneurs, it is common to use their personal bank accounts

[1] MEI are a specific type of enterprise in Brazil that can have at maximum one employee besides the owner. It is similar to a self-employed professional, but with a business tax identification.

for running the business. For this reason, we consider receipts from both personal and business accounts. Our main empirical approach consists in regressions comparing this revenue estimate for men and women, controlling for a set of variables, like geographic location and economic activity.

Our results indicate that gender inequality is also present among microentrepreneurs. Women microentrepreneurs have revenues 26% lower than those of men without using any controls. There are no meaningful changes in this estimate upon the addition of microentrepreneur age and firm age, as well as geographical location. However, when controlling for economic activities (CNAE), either alone or interacted with municipalities, there is a drop of about 6 percentage points in the women dummy. Controlling for economic activities, the coefficients for women are close to 19%, indicating that Economic Activities explains about a quarter of the original income differential.

This can be partially explained by occupational segmentation, where there is a tendency for workers to concentrate in certain sectors. Men and women tend to be concentrated in different activity sectors, with men present in segments with higher revenues than women's typical segments.

This main analysis does not include two important control variables: formal educational level and the number of hours worked by the entrepreneurs. While controlling for education would increase the gender gap, since women have a higher education, the number of hours worked would decrease the gap, since men have a higher workload.

Our second empirical approach adds previous formal employment of our sample of microentrepreneurs that are present in the main dataset. We collect employment data from RAIS, an employer-employee dataset maintained by Brazilian Ministry of Labor. We check whether those microentrepreneurs in 2023 had formal employment in 2019. We collect information about wages[2], age of the worker, tenure in the job, municipality, formal education and occupation classification. In this way, we build a subsample of the 2023 microentrepreneurs who had formal employment in 2019.

With this subsample, we carry out regressions to estimate the formal wage gender gap, employing econometric specifications similar to our main approach. In this

[2] We adjust the wages by the number of weekly hours of the job contract.

subsample, the unconditional gender revenue gap is around 14%, and thus smaller than in the main sample. However, when controlling for education, the gap increases to 17%. The revenue gap decreases to approximately 13% when including economic activities as a fixed effect.

Moreover, we examine gender wage differences in the formal labor market using 2019 data, finding a smaller unconditional gap of 6%, which widens when education is accounted for, reaching nearly 14%. When controlling occupation along with education, the gap decreases to approximately 9.5%. In our most saturated specification, the gap remains around 10%. Thus, this gap estimate is smaller than those of microentrepreneurs. However, some caution is needed. While in the formal job market, we are able to adjust for the number of hours in the job contract, we do not have information regarding the number of hours entrepreneurs effectively work in their business. There is evidence that women work less in their business, because they are responsible for taking care of family's children and elderly people. It may be the case that, when accounting for the number of hours worked, the entrepreneur revenue gap will be materially lower.

Our study contributes to the literature by providing evidence on the gender gap from very small microentrepreneurs, who are in fact in the borderline with self-employed professionals. Using administrative data from several payment types, we are able to estimate revenues from a large sample of microentrepreneurs (approx. 5 million) spread by a wide range of economic activities (550), giving robustness and representativeness to our results.

In this segment of very small microentrepreneurs, often personal bank accounts are used for receiving business revenues. Our study innovates by considering payments from both personal and business banks accounts, giving a more comprehensive view of revenues.

The identification of the potential determinants of gender revenue differentials can help in the development of public policies, especially regarding occupation choices counselling for women.

The paper proceeds as follows: Section 2 contains a review of the literature; Section 3 describes data; section 4 provides our methodology; section 5 shows and analyses the results; and Section 6 concludes the paper.

2) Literature Review

Small, medium, and micro enterprises (SMMEs) represent 90% of the total number of businesses, 60 to 70% of employment and 50% of GDP worldwide (World Bank, 2024). However, despite its relevance, unfortunately, gender inequalities are also present in the revenues of microentrepreneurs. In fact, in all the countries (Ghana, Rwanda, Tanzania and the Republica of Congo) analyzed by Nix, Gamberoni, and Heath (2016), gender income disparities are larger for self-employed workers compared to salaried workers.

The reasons behind the gender profit gap remain largely unknown. Key owner characteristics, such as industry, marital status, experience, education, number of children, and average monthly hours worked, fail to account for most of this gap (Hardy and Kagy, 2018).

The gender earnings gap can be divided into a compositional effect and a structural effect. The compositional effect represents the portion of the earnings disparity that can be explained by observable factors such as marital status, experience, education, number of children, average weekly hours worked, and sector/industry. In Nix, Gamberoni, and Heath (2016), regarding the composition effect, industry and monthly hours worked play more significant roles than human capital (education and experience) in explaining gender differences.

The structural effect accounts for the part of the gap that can be attributed to the returns on these factors, suggesting discrimination, as it represents the "unexplained" portion of the gap (Nix et al., 2016).

Most of the gap is explained by structural effects. However, discrimination is influenced by local conditions, and there is no single model that fully explains the earnings differentials between men and women.

In the study by Hardy and Kagy (2018), it was found that the significant and persistent gender profit gap cannot be explained by the extensive set of firm and owner characteristics in the analysis. This suggests that external factors, beyond those related to the firm and its owner, are likely contributing to the disparity.

This earnings disparity among microentrepreneurs by gender varies across locations analyzed in different studies, but it is usually present. Hardy and Kagy (2018) show that, in Ghana, even within the same industry/sector, businesses owned by men earn nearly twice the profits of those owned by women. In their study, the average woman earns 53% of what the average man earns. In this case, observable factors explain 25% of the difference, while 22% remains unexplained.

In the study by Daniels and Mead (1998), in Kenya, micro and small businesses owned by women earned 1,478 Ksh less in profits than those owned by men, even after controlling for industry, education, credit, age, capital, and location. Similarly, Rijkers and Costa (2012) found that businesses owned by women had significantly lower sales on average than those owned by men across Bangladesh, Ethiopia, Indonesia and Sri Lanka.

Gender revenue disparities can be partially explained by several factors. The first is related to the constraints women face when entering entrepreneurship. Studies indicate that women encounter more difficulty in obtaining loans, face asymmetric access to capital, and often start businesses with less financial capital than those led by men (Campos, 2011; Sabarwal and Terrell, 2008; El-Hamidi, 2011; Chaudhuri, Sasidharan and Raj, 2020). Furthermore, according to Brixiová and Kangoye (2016), female entrepreneurs are significantly less likely to seek formal financing compared to men in Swaziland.

Because of these factors, women-owned businesses tend to be relatively smaller and younger, grow at a slower rate, exhibit higher informality rates, and have lower productivity (Campos, 2011; Sabarwal and Terrell, 2008; Rijkers and Costa, 2012). In Chaudhuri, Sasidharan, and Raj (2020), it is found that the average annual production of a woman-owned firm is 32 percentage points lower than that of a man-owned firm in India.

Based on Bardasi et al. (2011), analyzing for Eastern Europe and Central Asia, Latin America, and Sub-Saharan Africa, revenue differences could also be driven by disparities in human capital between men and women. Finally, a third explanation for these differentials is the preferences of female entrepreneurs. Some women seek to balance work and family responsibilities, leading them to choose less productive but more flexible industries that allow for a better integration of domestic activities and market work (Nordman and Vaillant, 2014).

Thus, the selection of the occupational sector emerges as an important determinant of returns. There is evidence that female entrepreneurs tend to concentrate in industries with small but highly competitive businesses, which reduces opportunities for growth and performance (Nix, Gamberoni, and Heath, 2016).

However, empirical evidence shows that part of the revenue disparity between men and women persists even after controlling for industry/sector, the entrepreneur's human capital, and the firm's level of physical capital (Nordman and Vaillant, 2014; Daniels and Mead, 1998). Furthermore, McKenzie and Woodruff (2015) identified in Bangladesh, Chile, Ghana, Kenya, Mexico, Nigeria and Sri Lanka, a positive relationship between being a male entrepreneur and higher sales and profits, even after accounting for business practices.

Bernhardt et al. (2019) highlight that both men and women invest in businesses within their household in India, Sri Lanka and Ghana. However, these businesses are typically male owned. As a result, women often use their loans to invest in family businesses that they do not directly own.

Thus, women may choose to work in low-income industries within micro and small enterprises due to their limited access to credit and greater domestic responsibilities. This also encourages them to opt for occupations that can be performed from home.

3) Data

We build two datasets. The main one is a dataset with microentrepreneurs information in 2023, while the secondary dataset includes formal jobs information from 2019, but only for those who present in the 2023 microentrepreneurs dataset.

The main dataset contains individual microentrepreneurs information in 2023. To estimate the income of microentrepreneurs, we collect transaction data from all individual microentrepreneur businesses (MEIs) that were active throughout the entire year of 2023, as well as from the owners of the businesses. As one individual can have only one MEI at a time, we have exactly one individual tax id for each business id. We aggregate our data at the tax id level. Moreover, we collected information about the owner’s gender, birth year and municipality, as well as the Economic Classification of the business. This data comes from the registry of the Brazilian Tax Authority.

Our revenue estimation has four sources: Pix, debit card, credit card, and payment slip (the so-called “*boleto*” in Brazil). We consider receipts from both the business

account and the owner's individual account. The sum of these components is our estimation of the MEI income.

Our revenue proxy has some limitations. It might be overestimated, as some transactions may not be revenue, but merely a financial transfer that the microentrepreneur is receiving personally or as a business. Moreover, our data does not have transactions made via Pix where both sender and receiver have the same bank or Pix participant[3]. This can underestimate revenue. Additionally, cash payments received by microentrepreneurs are also not accounted for, even though they constitute revenue.

We exclude from our dataset observations identified as "*pejotização*", that is, workers who use an individual company (legal entity) to provide labor services exclusively to another company. This exclusion is justified because this relationship is more similar to that of an employment than to the provision of services by an entrepreneur to a diversified base of clients. We exclude cases where transaction values of debit cards, credit cards and *boletos* had a value equal to zero and, in addition, the total number of transactions through PIX did not exceed 120 in the year. This filter will also exclude inactive firms.

Our second dataset consists of information about formal employment of the microentrepreneurs that are present in the main dataset. We collect data from RAIS, an employer-employee dataset maintained by Brazilian Ministry of Labor. We check whether those microentrepreneurs in 2023 had a formal employment in 2019, the last pre pandemic year. We collect information about wages[4], age of the worker, tenure in the job, municipality, formal education and occupation classification. The idea is to compare the gender gap in business revenues with the gap in wages.

Table I shows the summary statistics of our two samples. In Panel A, we see that we have approximately 5 million microentrepreneurs in 2023, covering 550 different Economic Activities across 5,568 municipalities. In Panel B, we see that approximately 1.2 million of these entrepreneurs had a formal employment 4 years before, in 2019.

Table I - Summary Statistics
Panel A – Microentrepreneurs statistics

	Mean	Std. Dev.	1st Quartile	Median	3rd Quartile	Number of Observations
Male						2,781,905

[3] This represents approximately 10% of the Pix transactions.
[4] We adjust the wages by the number of weekly hours of the job contract.

Revenue (R$ thousand)	118.34	120.81	40.34	77.33	147.69	
Entrepreneur Age (Years)	39.53	11.20	31	38	47	
Firm Age (Years)	4.10	3.65	1	3	5	
Female						2,511,012
Revenue (R$ thousand)	90.35	97.64	31.87	58.48	108.97	
Entrepreneur Age (Years)	40.20	11.15	31	39	48	
Firm Age (Years)	4.34	3.63	2	3	6	
Total						5,292,917
Revenue (R$ thousand)	105.06	111.31	35.71	67.50	128.82	
Entrepreneur Age (Years)	39.84	11.18	31	39	47	
Firm Age (Years)	4.21	3.64	2	3	6	

Panel B – Formal Wages statistics

	Mean	**Std. Dev.**	**1st Quartile**	**Median**	**3rd Quartile**	**Number of Observations**
Male						705,411
Wage (R$ thousand)	21.96	20.21	13.81	17.67	24.47	
Employee Age (Years)	32.35	9.16	25	31	38	
Female						489,846
Wage (R$ thousand)	21.43	25.30	13.08	16.09	22.46	
Employee Age (Years)	32.76	9.23	26	31	38	
Total						1,195,257
Wage (R$ thousand)	21.75	22.43	13.44	16.97	23.77	
Employee Age (Years)	32.52	9.19	25	31	38	

4) Methodology

Our econometric specifications are based on the cross-section comparison of revenue or wages. We have one set of econometric specifications for each dataset.

For the first dataset, we estimate cross-section linear regressions with various levels of fixed effects, with the log of revenue as the dependent variable. Our baseline specification is the following:

$$R_i = \beta_1 G_i + \mathbf{\Lambda}\, \mathbf{C_i} + \mu_i + v_i + \varepsilon_i \,, \qquad (1)$$

where:

R_i is estimated revenue of microenterprise *i* in 2023;

G_i is the gender of the owner of microenterprise *i*;

$\mathbf{C_i}$ is a set of microenterprise characteristics, including those from its owner. These characteristics are the following: age of the owner and age of the microenterprise;

μ_i are fixed effects for the municipality of *i*;

v_i are fixed effects for the economic activity classification of *i*; and

ε_i is the error term.

For the second dataset, we estimate cross-section linear regressions with various levels of fixed effects, with the log of wages as the dependent variable. Our specification is the following:

$$W_i = \beta_1 G_i + \mathbf{\Lambda}\, \mathbf{C_i} + \mu_i + v_i + \delta_i + \varepsilon_i\,, \qquad (2)$$

where:

W_i is reported wage individual *i* in 2019;

G_i is the gender of the individual *i*;

$\mathbf{C_i}$ is a set of individual characteristics. These characteristics are the following: age of the worker and tenure in the job;

μ_i are fixed effects for the municipality of *i*;

δ_i are fixed effects for the formal education[5] of *i*;

v_i are fixed effects for the occupation classification[6] of *i*'s job; and

ε_i is the error term.

5) Results

For revenue results, five econometric specifications were estimated using linear regression, with the log of revenue as the dependent variable. The first model included only the binary variable for being female, which takes a value of 1 if the individual is female and 0 otherwise. Starting with the second model, the individual's age and firm age variables were added. The first two regressions did not include fixed effects, whereas in regressions 3, 4, and 5, municipalities, CNAE, and the interacted variable municipalities x CNAE were included as fixed effects, respectively. The results are presented on the table II.

Table II – Revenue Differential Regressions of MEIs

Dependent Variable: Log(Revenue)	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**

[5] There are eleven classifications for formal education: no Schooling, some Elementary, Elementary, some Middle school, Middle school, some High School, High School (the base case dummy), some university study, bachelor degree, master degree and doctoral degree.

[6] We use 3-digit occupation classification - *Classificação Brasileira de Ocupações* (CBO) from 2002.

Female	-0.258*** (0.0009)	-0.258*** (0.0009)	-0.257*** (0.0008)	-0.191*** (0.0011)	-0.188*** (0.0011)
Entrepreneur Age		-0.006*** (0.0000)	-0.006*** (0.0000)	-0.006*** (0.0000)	-0.006*** (0.0000)
Firm Age		0.018*** (0.0001)	0.020*** (0.0001)	0.017*** (0.0001)	0.021*** (0.0001)
Fixed Effects					
CNAE	No	No	No	Yes	N/A
Municipality	No	No	Yes	No	N/A
Municipality*CNAE	No	No	No	No	Yes
# Municipalities	5,568	5,568	5,567	5,568	5,558
# CNAEs	511	511	511	452	369
# Observations	5,292,917	5,292,916	5,292,915	5,292,857	5,102,401
R^2	0.0169	0.0227	0.0420	0.0661	0.1427

*** statistically significant at 1%. Robust standard error in parentheses.

The coefficients for the female variable in regressions 1 and 2 indicate that female microentrepreneurs, on average, have 26% lower revenues than men, with no significant changes after adding age and firm age as controls. Additionally, the coefficient in the third regression, which includes municipality fixed effects, remains largely unchanged compared to the earlier models. However, the last two models suggest that incorporating CNAE fixed effects, either alone or interacted with municipalities, reduces the average revenue gap by approximately 7 percentage points. In other words, when controlling for CNAE, the female coefficients drop to around 19%, implying that CNAE accounts for about one-quarter of the original revenue gap.

This can be explained by occupational segmentation, where there is a tendency for workers to concentrate in specific sectors. Men and women tend to cluster in different industries.

To illustrate this point, data on predominantly female and male sectors were identified to compare their median revenues. The results highlight that female-dominated sectors tend to have lower earnings.

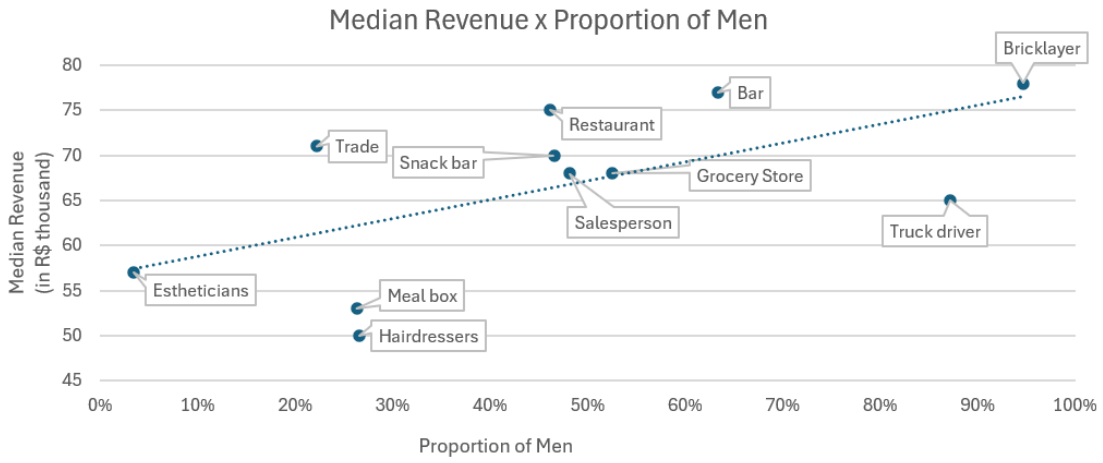
Proportionally, the sector with the highest share of women was "Esthetician activities and other beauty care services," with 96.6% female participation and a median annual revenue of R$ 57k. In contrast, "Masonry contractors" had the highest male

participation at 94.7%, with a median annual revenue of R$ 78k, a significantly higher amount.

Numerically, the CNAE with the highest number of women is "Hairdressers, manicurists, and pedicurists", with 355k observations and a median annual revenue of R$ 50k. For men, the largest CNAE is also "Hairdressers, manicurists, and pedicurists", with 128,5k observations.

Graph I illustrates the distribution of the main CNAEs in relation to the proportion of men and median revenue. From this, it is observed that CNAEs with a higher proportion of men tend to have higher median revenues.

Graph I



This primary analysis is not controlling for two important control variables: the formal educational level and the quantity of hours worked by entrepreneurs. Accounting for education would likely amplify the gender gap, given that women generally possess a higher level of education, whereas considering the hours worked is likely to narrow the gap, as men typically have a greater workload.

Regarding workload, according to a study by Sebrae-MG (2024) on parenting and entrepreneurship, the difference between hours dedicated to business between men and women is less than 10%. Calculations using PNAD for self-employed professionals suggests men work about 11% more than women.[7] Therefore, accounting for workload

[7] The PNAD (National Household Sample Survey) is a survey conducted by IBGE (Brazilian Institute of Geography and Statistics) that aims to monitor quarterly fluctuations in the labor force and other

would partially explain the gender gaps estimated on Table II, but it is unlikely to fully explain it.

Regarding educational level, we are able to control for it in a subsample of entrepreneurs. As we will see next, controlling for education widens the gap by about 3 percentage points.

For the second dataset, five econometric specifications were also estimated using linear regression, with log revenue as the dependent variable once again. The goal here was to analyze the gender revenue gap but focusing only on individuals who had formal employment in 2019, comparing them to those who had an active MEI throughout 2023.

Table III – Revenue Differential Regressions of MEIs – RAIS Subsample

Dependent Variable: Log(Revenue)	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
Female	-0.143*** (0.0017)	-0.144*** (0.0017)	-0.107*** (0.0021)	-0.175*** (0.0018)	-0.129*** (0.0021)	-0.131*** (0.0021)
Entrepreneur Age		-0.003*** (0.0001)	-0.004*** (0.0001)	-0.004*** (0.0000)	-0.004*** (0.0001)	-0.003*** (0.0001)
Firm Age		0.020*** (0.0004)	0.016*** (0.0004)	0.017*** (0.0004)	0.014*** (0.0004)	0.016*** (0.0004)
Fixed Effects						
CNAE	No	No	Yes	No	Yes	Yes
Municipality	No	No	No	No	No	Yes
Education	No	No	No	Yes	Yes	Yes
# Municipalities	5,554	5,554	5,554	5,554	5,554	5,554
# CNAEs	430	430	430	430	430	430
# Observations	1,195,257	1,195,257	1,195,218	1,195,257	1,195,218	1,195,218
R^2	0.0057	0.0081	0.0562	0.0151	0.0617	0.0794

*** statistically significant at 1%. Robust standard error in parentheses.

The results are presented on table III. In the first model, only the female binary variable was included, while the second model adds microentrepreneur age and firm age as controls. The first two regressions show that female microentrepreneurs earn, on average, 14% less than men, with no significant variation after including the additional

information. The 11% estimate was calculated by comparing the average number of hours usually worked per week in all jobs between the two genders.

controls. In the third regression, which incorporates CNAE fixed effects, the female coefficient decreases by approximately 4 percentage points, reducing the average revenue gap. In other words, when controlling for CNAE, the female coefficient drops to around 10%.

In the fourth model, which includes education fixed effects, the female coefficient reaches 17%, suggesting that previous estimates were underestimated by not controlling for education. In the fifth model, which includes both CNAE and education fixed effects, the female coefficient drops to 12%, indicating that women tend to be concentrated in lower-revenue sectors. Finally, in the last model, which controls for CNAE, municipality, and education fixed effects, female microentrepreneurs earn, on average, 13% less than men.

Comparing these results with those from the table II, we see that the revenue gap between men and women is smaller for individuals who had formal employment in 2019.

Table IV – Wage Differential Regressions

Dependent Variable: Log(Formal Wage)	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
Female	-0.063*** (0.0009)	-0.072*** (0.0008)	-0.080*** (0.0009)	-0.139*** (0.0008)	-0.095*** (0.0009)	-0.102*** (0.0009)
Employee Age		0.008*** (0.0000)	0.006*** (0.0000)	0.008*** (0.0000)	0.006*** (0.0000)	0.006*** (0.0000)
Job Tennure		0.003*** (0.0000)	0.003*** (0.0000)	0.003*** (0.0000)	0.003*** (0.00004	0.003*** (0.0000)
Fixed Effects						
Occupation	No	No	Yes	No	Yes	Yes
Municipality	No	No	No	No	No	Yes
Education	No	No	No	Yes	Yes	Yes
# Municipalities	5,529	5,529	5,529	5,529	5,529	5,529
# CNAEs	194	194	194	194	194	194
# Observations	1,195,257	1,195,257	1,195,255	1,195,257	1,195,255	1,195,178
R^2	0.0040	0.1778	0.3447	0.2996	0.3818	0.4444

*** statistically significant at 1%. Robust standard error in parentheses.

In the second dataset, five linear regression models were also estimated, this time using the log of wages as the dependent variable. The objective is to examine gender wage

differences in the formal labor market. Results are on Table IV. In the first model, it is observed that women earn, on average, 6% less than men in the formal labor market.

With the inclusion of employer age and job tenure, the wage gap increases to approximately 7%. The third model, which includes occupation fixed effects, indicates that women earn, on average, 8% less than men. In the fourth model, which incorporates education fixed effects, the average gender wage gap reaches nearly 14%.

In the fifth regression, the inclusion of occupation fixed effects reduces the wage gap to 9.5%, partially explaining the gender pay difference. These results suggest that education may be correlated with an individual's occupation. Finally, with the addition of all three fixed effects (occupation, municipality, and education), the gender wage gap remains at 10%.

6) Final Remarks

The study identifies a gender wage gap between men and women not only on the formal job market, but also among entrepreneurs. For microentrepreneurs, the results indicate that women earn about 26% less than men. When controlling for economic activity, this difference drops to around 19%.

For microentrepreneurs who had formal employment in 2019, the gender revenue gap was smaller, around 14%. However, when controlling for education, the gap increases to 17%. Examining gender wage differences in the formal labor market using 2019 data, a smaller initial gap of 6% is observed, which widens when education is accounted for.

A limitation of this study is the lack of information on hours worked in business activities. Women's presence in the labor market is profoundly impacted by family context and the roles they assume within their families. Thus, although women have taken on greater economic responsibilities in recent decades, work in what is known as the care economy[8]—such as domestic work and caregiving for children and the elderly—is still predominantly performed by them. Therefore, it is possible that part of the wage differential may be explained by the greater number of hours worked by men, as women may be more occupied with care economy tasks compared to men. However, it is unlikely

[8] See Stampini et al.(2020).

that the gender gap estimated in this paper could be totally explained by the lower number of hours worked by women.

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