Exploring the Determinants of Gig Economy Wages in a Digitalized Emerging Market

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Abstract

This article explores the wage determinants of Chile's gig economy, a prominent sector in the developing world characterized by its algorithm-driven and flexible nature. Utilizing official survey data spanning from 2020 to 2022, we analyze the wages of 67,570 workers, including 2.1% who are engaged in gig work. This approach offers a novel perspective compared to previous studies that have primarily focused on single-platform analysis. Contrary to common assumptions about the gig economy, our analysis reveals that gig workers do not experience a negative wage premium compared to traditional sector workers, particularly when adjusting for formality status. Furthermore, our study finds a more subdued correlation between education and income in the gig economy than in traditional employment. We also find similar gender wage gaps between both sectors, suggesting that technological advancements have not changed gender inequalities. These findings challenge existing narratives and offer valuable information for policymakers in developing economies.

1. Introduction

The advent of technology-driven employment, epitomized by the gig economy, has markedly reshaped labor markets globally, with profound implications for developing economies. Characterized by flexible, on-demand work facilitated largely through digital platforms (Graham and Woodcock, 2018), the gig economy encompasses a wide array of services from ride-sharing to online freelancing. This shift has not only altered work patterns but also fundamentally redefined traditional employer-employee relationships, signaling a departure from classical economic intermediation towards a new form of capitalism (Boyer, 2022). Within this context, digital platform workers exhibit a "subordinated agency" in which individuals play a dual role as both workers in relation to the platform and entrepreneurs in dealings with clients (Wood and Lehdonvirta, 2021).

The gig economy's societal impact has been the subject of extensive discussion, with Vallas and Schor (2020) identifying its potential to extend entrepreneurship by increasing access to potential consumers and facilitating the conditions to start a business, but also its contribution to the expansion of precarious jobs, the challenges associated with the "digital cage" phenomenon and the disruptive adaptability of platforms, which pose significant obstacles for workers and regulators alike.

Particularly, in developing economies, where unique socio-economic landscapes intersect with significant informal labor markets, the gig economy represents both a beacon of employment opportunities (Graham and Anwar, 2019) and a sector of remarkable job insecurity and wage disparities (Arriagada et al. 2023). Although recent evidence suggests that digital platforms could serve as a means to formalize workers (Weber and Lehdonvirta, 2021), the interaction of informal labor markets and digital platforms remains understudied.

This article aims to fill this gap by exploring the determinants of wages for digital platform workers in Chile, an emerging economy where the gig economy has witnessed significant growth, fueled by factors including the pandemic and regional migration (Fuentes and González, 2022). With approximately 200,000 individuals, or 2.4% of the workforce, earning their livelihood from digital platforms, understanding the effects of this labor market transformation is crucial, especially considering that the gig economy's share in developed economies approaches 5% (Huws et al. 2017).

We offer a unique approach compared to existing literature, as we examine gig economy workers from a comprehensive perspective rather than focusing on a single digital platform as past research has done (e.g., Wu et al. 2019, Cook et al. 2021, Asenjo et al. 2023, Herrmann et al. 2023). Thus, we explore individuals engaged across various platforms, from workers using delivery and ride-hailing apps to others using social media to sell services online—which are also considered gig workers by Chile's Statistics Office (INE)—offering a more comprehensive perspective on the digital platform landscape within a developing economy context. Additionally, our analysis uses data from a nationwide employment survey allowing us to conduct a comparative analysis between gig workers and traditional sector workers—a methodology not commonly employed in related research. This comparative aspect enables us to evaluate the wage conditions of gig workers relative to other sectors in the Chilean economy, shedding light on the broader implications of this emergent work paradigm.

To address our research question, we analyze the National Employment Survey merged with the Supplementary Income Survey containing employment patterns and wages of thousands of individuals involved in Chile's gig economy. By analyzing the wages of 67,570 Chilean workers, 2.1% of them are involved in digital platform work, we find that contrary to the common perception of lower wages in the gig economy in developing economies (Wood et al. 2019, Arriagada et al.

2023), when controlling for formality status, gig workers do not earn significantly less than their counterparts in traditional sectors. We also find that, while there is a positive correlation between education and income in the gig economy, this relationship is notably weaker than in traditional employment. Additionally, we observed that gender wage disparities in the gig economy mirror those in traditional sectors, indicating that the gig economy has not significantly altered existing gender-based wage gaps.

The findings of our study on Chile's gig economy wages offer broader social implications, underscoring the evolving nature of work in the face of technological advancements. Our research challenges the prevalent notion of gig work as uniformly low paying, illustrating a more complex wage landscape shaped by factors like formality status, education, and gender. This nuanced understanding highlights the need for a reevaluation of how gig work is perceived and valued in the socio-economic context. Furthermore, the persistence of gender wage disparities in the gig economy reflects deeper societal norms and inequities, suggesting that technology alone may not be a panacea for existing labor market biases. These insights have significant implications for policy formulation, emphasizing the need for inclusive strategies that recognize the diversity of gig work and address the disparities and challenges unique to this burgeoning sector. Our study thus contributes to a broader discourse on the future of work, equitable wage distribution, and the role of education in an increasingly digital and flexible employment landscape.

2. Background

2.1 Gig economy in developing economies

Understanding the gig economy's impact on developing economies presents unique challenges, primarily due to the absence of a standardized global definition. For instance, in Chile, the National Statistics Office (INE), the government agency responsible for collecting employment data, defines gig work as "*an occupation that is carried out through a mobile application or web platform when*

it offers goods and services using exclusively or predominantly some means that involves remote contact with customers, either through the internet (web platform) or from a mobile phone (mobile application or app)" (INE, 2022). This definition includes traditional gig roles facilitated by platforms like Uber, which use algorithms to match workers with users, as well as jobs using apps such as WhatsApp, Facebook, or Instagram, where the application is more of a functional tool for business operations than a simple connector of service providers and clients.

Despite the definitional challenges, various reports provide valuable insights into the gig economy's role in developing regions. For instance, the ILO (2022) report highlights the growing popularity of gig work in China, particularly among women, due to its flexibility and compatibility with domestic responsibilities. The report also found a significant portion of couriers working long hours, with 95% of couriers working more than eight hours daily, 66.8% exceeding 11 hours, and 28% going beyond 12 hours per day. Aleksynska (2021) explores the rise of digital platform work in Eastern Europe, categorizing gig work into offline tasks (like delivery) and online services (internet-based sales), similarly to the definition adopted by Chile's INE. She finds that gig workers in Eastern Europe typically fall between 25 and 36 years old, with balanced gender representation, where the offline gig sector accounts for roughly two thirds of all gig economy jobs.

Turning to Chile, data collection on gig workers by INE began in January 2020, with gig workers initially comprising about 1% of the employed population. Fuentes and González (2022) document a decline in this percentage to 0.5% during the early months of the pandemic, mirroring a broader 20% reduction in overall employment. However, from June to September 2020, gig employment saw a remarkable surge, growing by 235% compared to a modest 3% in other employment sectors. By June 2022, the gig worker proportion stabilized at approximately 2.3%. In terms of worker demographics, Chile aligns with Eastern European patterns (Aleksynska, 2021) in age and gender

distribution but differs in the proportion of offline gig work, which constitutes less than a fifth of all gig jobs in Chile.

Informal employment plays a crucial role in developing economies particularly within the sector of digital platform work. In the context of Chile, Fuentes and González (2022) report that approximately 77% of workers in the digital platform sector have formal employment contracts, which is notably lower than the nearly 89% contract rate in the traditional economy. Furthermore, the extent of social security coverage also differs significantly, with about 66% of digital platform workers receiving social security benefits, compared to around 85% in the traditional sector. This disparity between digital platform work and traditional employment in terms of formalization is not unique to Chile. Aleksynska (2021) points out a similar trend in Eastern Europe, where a significant portion of gig workers, estimated between 66% and 75%, are engaged in informal work arrangements. This pattern underscores the broader global trend of informal employment being prevalent in the gig economy.

2.2 Theoretical framework

The theoretical framework used in this paper closely follows the human capital accumulation approach formally presented by Mincer (1958) and discussed by Schultz (1962), Becker (1964), and Mincer (1975). This framework posits that a worker's wage can be decomposed into several individual characteristics and human capital measures. On the one hand, personal characteristics, such as gender, age, and marital status, play a role as they correlate with each individual's life cycle stage. On the other hand, human capital factors, encompassing educational attainment and work experience, account for the wage variances among individuals with comparable life cycle attributes.

The theory has spurred debates regarding its applicability in explaining wage behaviors in an economy. In particular, the theory assumes a world with markets close to perfect information and

competition, in which a worker's salary is a close measure of their marginal productivity. Spence (1973), Meyer (1977), Card (1999), Bills (2003), and Rivera (2012), among others, have provided alternative frameworks in which human capital variables are not exclusively used as proxies of marginal productivity but could also serve screening and signaling functions, particularly pertinent in contexts where educational credentials and work histories play crucial roles.

Regardless of the chosen theoretical perspective—whether focused on human capital accumulation or signaling/screening—education and job experience are important in wage determination in traditional labor markets and the gig economy, as highlighted by Herrmann et al. (2023).

From an empirical point of view, the Mincerian approach, with its capacity to integrate controls for relevant attributes, allows for nuanced explorations of wage determinants. This approach is especially valuable in comparative analyses, as evidenced by studies investigating public wage premiums in which researchers aim to address whether individuals with comparable attributes receive higher compensation in the public sector (Adamchik and Bedi, 2000; Melly, 2005; Mizala et al., 2011).

Applying a similar rationale, our research aims to explore the wage dynamics within the gig economy. Specifically, we are interested in whether gig workers with attributes comparable to those in traditional sectors experience a distinct wage premium or penalty. This topic is particularly pertinent as current literature offers limited insights into wage structures in the gig economy in both developed and developing economies, especially in the latter.

2.3 Wages in the Gig Economy

The literature on wage determinations among gig workers, particularly ride-hailing drivers, presents a diverse range of findings, especially in the United States. A study by Hall and Krueger (2018), commissioned by Uber, estimated the hourly earnings of drivers in 2015 across six U.S. cities - Boston, Chicago, Washington, D.C., Los Angeles, San Francisco, and New York - to be between USD 16.20 and 23.70, with hourly costs ranging from USD 2.90 to 6.50. Conversely, Henao and Marshall (2019) found that ride-hailing drivers (Uber and Lyft) in Denver earned between USD 5.70 and 10.50 per hour after costs, which is not only lower than in other states but also below Colorado's minimum wage. Fielbaum and Tirachini (2021) focused on Santiago de Chile, estimating that drivers' net income varied between USD 4.50 and 6.10 per hour, higher than drivers' self-reported earnings but significantly lower than Uber's stated figures for the region.

Considering the theoretical framework of human capital accumulation and this empirical evidence, we posit our first hypothesis:

H1: *In the Chilean gig economy, workers with comparable education and work experience to those in traditional sectors will experience a wage penalty, even after controlling for factors such as formality status, part-time employment, and sectoral differences.*

Addressing this hypothesis requires accounting for factors like part-time employment, informality, and sectoral differences, ensuring a comprehensive understanding of the gig economy's wage dynamics.

2.4 Educational Premium in the Gig Economy

Research on wage determinants across the gig economy, other than ride-hailing drivers, has revealed interesting insights. Herrmann et al. (2023) surveyed 1,607 gig workers across 14 Western economies engaged in high-skilled online services, such as programming and design. Their findings

indicate that wage levels are more influenced by factors such as work experience, review scores, and gender, rather than educational attainment (which appears to be non-significant in this context), challenging the traditional positive correlation between education and income.

Building upon these findings, van Slageren and Herrmann (2024) study skill specificity among high-skilled workers within the gig economy. They find that more educated workers within this group possess more specific skills, aligning with expectations from traditional employment markets. Nevertheless, they also observe that workers with relatively lower skill levels gain access to jobs requiring greater specificity than would typically be available to them in conventional labor markets. This suggests that the gig economy might offer a different dynamic in terms of educational wage premiums, possibly leading to a diminished importance of educational attainment in these digital marketplaces.

Contrasting these studies, which focus on high-skilled professionals, the gig workforce in Chile is predominantly engaged in lower-skilled tasks such as online sales and vehicle-based delivery services. This contrast in skill levels and job types suggests that the education-income relationship might differ among Chilean gig workers may diverge from the trends observed in the studies by Herrmann et al. (2023) and van Slageren and Herrmann (2024), thus challenging the universality of the absence of educational premium in the gig economy. Thus, we posit this hypothesis:

H2: *In the Chilean gig economy, characterized by lower-skilled tasks, educational attainment will have a more pronounced positive correlation with income compared to the pattern observed in higher-skilled gig sectors in developed economies.*

2.5 Gender Wage Gap in the Gig Economy

The gig economy is often assumed to be gender-neutral based on the premise that the algorithmic nature of gig economy platforms, purportedly neutral in terms of gender, should result in smaller wage disparities between men and women compared to those found in the traditional labor market. Thus, gender pay differences in the gig economy have been a focal point of study. Cullen et al. (2018) examined a low-skill gig platform, where workers agree to one-time gigs for tasks such as delivery, laundry, and carpentry, finding that women tend to choose lower-paying tasks, highlighting a sorting pattern rather than direct pay disparities within tasks. Cook et al. (2021) analyzed over a million Uber drivers, uncovering a 7% hourly earnings gap favoring male drivers. This gap was attributed to men driving in more lucrative areas, accumulating more experience, and driving at higher average speeds. Adams-Prassl et al. (2023) investigated Amazon Mechanical Turk, noting no gender differences in task selection or experience. However, they found a significant gender wage gap, with women earning 20% less per hour on average, largely due to interruptions in work, especially among women with children, affecting their task completion speed.

Thus, in order to explore whether the gender-neutral promise of gig economy platforms effectively translates into more equitable wages for men and women, we posit the following hypothesis:

H3: *In the Chilean gig economy, the gender wage gap will be narrower than in the traditional economy.*

To the best of our knowledge, no other studies have delved into the wage premium of digital platform workers in Chile nor in a comprehensive manner as we do here by considering a wide range of digital platforms and apps, instead of focusing on a single platform. Nevertheless, existing evidence sheds light on various aspects of the Chilean labor market, providing valuable context for

the findings in the country. Notably, Chile exhibits a significant gender wage gap. Estimates indicate that the gap ranges between 18 and 23%, positioning the country at the 60th percentile for higher gender wage gaps among OECD nations (Perticará and Bueno, 2009). Despite a gradual reduction from 1990 at approximately 39%, the gender wage gap has been stable at around 20% since 2006 (Fuentes and Vergara, 2018). Finally, Cruz and Rau (2022) show that a relevant share of the gender wage gap is generated at the firm level, close to 38% of the total effects.

2.6 The Chilean labor market and Gig Economy regulation

Between 2020 and 2022, the Chilean labor market encompassed approximately 9 to 10 million workers. The unemployment rate hovered around 10% in 2020 but decreased to 8% by 2022. Notably, it was argued that the unemployment rate was underestimated during this period due to individuals hesitating to actively seek employment amid the pandemic (Bravo and Castillo, 2021).

Chile, being a developing economy, exhibits a significant presence of informal labor, accounting for approximately 27% of total employment. This proportion has remained relatively stable over the period under consideration. The criteria used to define labor informality in this context follow the standards set by Chile's Statistics Office (INE). This definition leans towards a strict approach to informality, requiring a job to meet specific conditions on the worker's side (e.g., access to the social security system) and the firm's side (e.g., registration with the Tax Office) to be classified as formal.

Amid the COVID-19 pandemic, the Chilean government enacted policies to mitigate job losses and support the unemployed. A key measure was the "Ley de Protección del Empleo" (Employment Protection Law), allowing businesses to partially or entirely reduce employee working hours while maintaining social security contributions. This law provided partial wage compensation through the

unemployment insurance system for workers affected by reduced hours. Additionally, the government launched the "Ingreso Familiar de Emergencia" (Emergency Family Income) program, disbursing approximately USD 130 per household member to families of the unemployed.

The expansion of digital platform work, combined with challenging working conditions during the pandemic, led to escalating conflicts between workers and platforms. This tension peaked in late 2020, marked by three significant strikes in delivery platforms (Arriagada et al., 2023). These events spurred legislative discussions on digital platform work and gig economy employment, resulting in the passage of law N° 21.431. This law revised labor regulations to offer better protection to digital platform workers, including limitations on working hours, minimum payment standards, and unionization rights.

However, the law distinguishes a digital platform employer as an entity managing a system on mobile devices for a fee, thus excluding those using platforms like Facebook, Instagram, or WhatsApp for commercial activities. This distinction means that a significant portion of gig economy workers, potentially three-quarters (Fuentes and González, 2022), are not covered by this law, creating a legal differentiation within the gig economy in Chile, raising questions about the wage structures for each group. Thus, we posit the following hypothesis:

H4: *In Chile's gig economy, workers in the regulated category will experience a higher wage premium compared to their counterparts in the unregulated segment, reflecting the impact of legislative protections on wage structures within the gig economy.*

2.7 Full time and part time Gig workers

The use of digital platforms varies significantly among workers, with some engaging in part-time jobs while others commit to full-time roles (Fuentes and González, 2022). Piasna and Drahokoupil (2021) document that this is indicative of the workers' preferences over flexibility but also over autonomy and control. Considering the differences in hours dedicated to platform work and the potential learning curve associated with increased work intensity (greater familiarity with platform-specific operations), an important question arises about the variation in wage premiums. In order to explore that, we formulate the following hypothesis:

H5: *Wage premiums in the gig economy will vary based on the intensity of work, with full-time gig workers experiencing higher wage premiums compared to their part-time counterparts.*

2.8 Income Inequality and the Gig Economy

Considering the high-income inequality in Chile, which ranks among the highest in OECD countries, it is crucial to investigate whether the wage premium for gig workers varies across different levels of the wage distribution. Although little research exists about the impact of digital platforms on inequality, previous literature has focused on the effects on employment and income. Understanding these effects is relevant, as changes in inequality stem from the interaction of both employment and income dynamics. Regarding employment, Horton (2017) finds that algorithms can improve hiring in firms, particularly where applicant pools are small. Conversely, van Slageren et al. (2022) argue that the gig economy does not fulfill the idea of a frictionless labor market, often overstating job accessibility. Regarding income, an intriguing aspect is whether participation in digital labor markets mirrors traditional employment patterns, such as the replication of parental occupations and status. Martindale and Lehdanvirta (2023) observe that gig economy workers tend to come from more privileged backgrounds than traditional workers. However, they note a lesser extent of occupational inheritance and class-based job segmentation, suggesting that while the gig economy maintains disparities in job access, it may reduce biases in the selection process.

Drawing upon existing research on the gig economy and the Chilean labor market, we hypothesize that the effect of being a gig worker on wages should be consistent across lower, middle, and upper segments of the wage spectrum, indicating a uniform impact of gig work across various income levels. To explore that empirically, we posit the following hypothesis:

H6: *Despite the overall high income inequality in Chile, the relationship between gig work and wages is uniform across different segments of the wage distribution.*

3. Data and Method

Our study uses merged data from two key surveys: the National Employment Survey (ENE) and the Supplementary Income Survey (ESI).

The ENE is a conventional monthly survey that tracks households over six quarters, collecting demographics and employment information. It targets the working-age population (15 years and older) residing in private dwellings across urban and rural areas, excluding collective dwellings and the homeless. The survey classifies individuals as employed, unemployed, or outside the labor force, following international standards. Its sampling frame is based on 2017 census data. Households are selected using a two-stage, stratified probabilistic approach.

The ESI, conducted in the last quarter of every year, complements the ENE by focusing on labor-related income. It provides data on various income streams, including main and secondary labor activities and dependent/independent labor relationships. Both surveys share identifiers, allowing for a merger of household labor and wage data at the individual level.

Data collection for both surveys involves face-to-face interviews conducted monthly, with respondents participating six times over an 18-month period. This rotation ensures a continuous refresh of the sample, maintaining a total annual sample size of 68,400 dwellings.

For our analysis, we specifically use merged ENE-ESI data from the last quarters of 2020, 2021, and 2022. These years encompass the core and latter stages of the COVID-19 pandemic. The sample sizes for these years are 19,258, 25,905, and 22,407 individuals, respectively.

3.1 Dependent variable

Our primary dependent variable is the logarithm of hourly wages. Hourly wages are chosen as they provide a more precise measure of earnings, accounting for the varying number of working hours among different employment types, following Cook et al. (2021)'s approach. We use the logarithmic transformation to hourly wages, which is also a standard practice in economic research, because they typically exhibit a log-normal distribution. It is important to note that this log-transformation modifies how the coefficients should be interpreted. Rather than interpreting them on a simple level basis, they should be understood as a semi-elasticity.

3.2 Independent variables

Our key independent variable is a dichotomous variable identifying whether a worker's main occupation is associated with digital platforms. This information comes from the ENE survey. When workers report their engagement in the digital platform sector, they are prompted to provide details about the specific platform they are involved with. Thus, we further refine our analysis by creating two additional binary variables. These variables serve to distinguish between jobs related to transport and delivery services and those involved in the trade of goods and general services. This nuanced classification allows for a more detailed examination of the impact of various types of digital platform employment.

Additionally, we include several control variables. Gender is considered to address potential wage disparities related to gender. Age and its square are included to factor in the influence of labor experience and the diminishing effect of age as individuals near retirement. Education is accounted for by a set of dichotomous variables that distinguish workers with primary education, secondary education, higher vocational education, and college education. Tenure in the main occupation and its square, measured in months, are included to adjust for specific human capital accumulation. The impact of immigration on wages is considered through a binary variable equal to one when the respondent is a non-Chilean citizen, zero otherwise. The prevalence of informal labor markets is addressed with a variable indicating informal job status, considering specific conditions on the worker's side and the firm's side, following INE's criteria. Finally, to account for variations across economic sectors, regions, and over time, fixed effects for each of these components are included.

[Insert Table 1 here

Table 1: Descriptive Statistics]

Table 1 shows the descriptive statistics for the variables used in this study, encompassing a substantial dataset of 67,570 Chilean workers from the years 2020 to 2022. Gig economy workers, interestingly, make up an average of 2.1% of our sample. To ensure year-to-year comparability, the logarithm of hourly wages is annually adjusted based on the Consumer Price Index (CPI) variation relative to 2022.

The dataset is somewhat balanced in terms of gender, with women constituting around 42% of the total observations. The average age of workers in the sample is 41 years. Notably, the proportion of individuals with a college education in our dataset is higher than the general population average, indicative of labor participation and unemployment rate biases. On average, workers in our sample

have held their current job for about 66 months. Additionally, the proportion of immigrants in our data, at around 12%, exceeds their overall population share, likely due to similar biases in labor participation and unemployment rates. In terms of job classification, about 77% of the primary jobs reported are deemed formal.

To check how different traditional and gig economy workers are, Table 2 presents similar descriptive statistics as Table 1 but segregated by each group. This breakdown provides a clearer understanding of the differing characteristics inherent to each sector within the Chilean labor market.

[Insert Table 2 here

Table 2: Descriptive statistics of gig and non-gig workers]

Table 2 shows a prominent disparity lies in the average logarithm of hourly wages among gig and non-gig workers: traditional sector workers earn, on average, about 25% more than their counterparts in the gig economy. Regarding gender distribution, the gig economy maintains a balanced representation, in contrast to the traditional sector where male workers are more predominant. In terms of educational attainment, the gig economy tends to attract workers with slightly higher education levels, while the traditional sector has a more diverse educational profile, with higher representations at both the lower and higher ends of the educational spectrum.

Tenure differences are also evident as workers in the traditional sector have an average tenure of 66 months, which is notably longer than the 46-month average in the gig economy. Immigration status further distinguishes the two sectors. While 11.5% of workers in the traditional sector are immigrants, this proportion rises to 19% in the gig economy.

A striking difference is observed in the formality status of jobs. In the traditional sector, a significant majority (78%) of the positions are formal. Contrastingly, in the gig economy, the proportion of formal jobs is markedly lower at only 40%. This comparison underlines the structural differences between these two sectors of the Chilean labor market.

3.3 Empirical Strategies

Our main objective is to estimate the wage premium of being a digital platform worker in Chile. To achieve this, we apply Ordinary Least Squares (OLS) regression to the logarithm of hourly wages, focusing on workers aged 18 to 65 years, with robust standard errors. Given that our dataset forms a rotating panel, there is a potential for workers to be included twice due to the scheduling of the ESI survey. To mitigate any bias this might introduce, we restrict our analysis to workers who are interviewed only once in the survey.

4. Main Results

Table 3 presents the findings from our OLS regression analysis, which analyzes the logarithm of hourly wages for workers aged 18 to 65 years. The results are organized across five columns, each adding a new set of variables in order to assess whether there are wage premiums associated with gig work after controlling for the potential influence of several variables we believe are relevant in the Chilean context.

[Insert table 3 here

Table 3: OLS hourly wages]

Notes: Ordinary least square regression for log hourly wages. Unstandardized coefficients. Robust standard errors reported. *** $p < .01$. ** $p < .5$, * $p < .1$.

Model 1 shows the wage premium without any controls. Here, we observe a negative wage premium of 25% for gig workers. Model 2 includes sociodemographic controls in the model. With these controls, the negative wage premium for digital platform workers drops to 13%. This reduction suggests that sociodemographic factors account for a portion of the initially observed negative wage premium. Model 3 adds tenure and tenure squared to the socio-demographic controls. The negative wage premium remains relatively unchanged at 11.9%. This minimal change indicates that, while tenure is statistically significant, it contributes marginally to explaining the wage penalty among digital platform workers. Model 4 further includes the variable for immigrant status along with tenure, tenure squared, and sociodemographic controls. The negative wage premium adjusts slightly to 11.5%. This minor change suggests that the inclusion of immigrant status, like tenure, makes a small contribution to the overall wage premium of digital platform workers.

Finally, Model 5 in Table 1 includes the variable for formality status into Model 4. This is our main model and provides the estimates to test our first hypothesis. In Model 5, we observe that the negative wage premium decreases to 4.8% and is not statistically significant at the 95% confidence level. This substantial reduction suggests that the inclusion of formality status, alongside other controls, accounts for a significant part of the negative wage premium observed in digital platform workers. Consequently, the results derived from Model 5 lead us to reject Hypothesis 1. It appears that, when accounting for individual characteristics and human capital factors, gig economy workers do not experience a wage penalty.

This analysis also yields other relevant findings. Notably, the coefficient from Model 5 identifies a gender wage gap of 18%, aligning with existing estimates for Chile (see section 2.5). Another point worth mentioning is the wage premium associated with immigration status, showing a -10% differential, which is less severe than the -17% premium reported by Fuentes and Vergara (2019)

for 2017. It is important to consider that the working conditions for immigrants might have improved since 2017, particularly due to changes brought about by the pandemic, which could partly account for this discrepancy.

Regarding labor informality, our findings show that formally employed workers earn approximately 20% more than those in informal employment. This observation is consistent with the findings of Barrero et al. (2018), who reported that formal workers receive between 19% and 22% higher wages than informal workers, depending on whether they are compared with dependent or self-employed individuals.

To test Hypothesis 2, which posits that gig economy workers in Chile, mainly engaged in unskilled labor, would experience a positive educational wage premium, differing from patterns observed in higher-skilled gig sectors in developed economies, we introduced an interactive variable in Model 5 (as shown in Table 3). This variable combines educational levels with a gig economy worker dummy to assess if the education premium varies for gig workers, in line with the findings of Herrmann et al. (2023).

The results of this analysis, detailed in Table 4, show that the interaction between educational level and gig work is not statistically significant for workers with secondary and higher vocational education. However, for college-educated workers, the interaction is negatively significant. This suggests that college-educated gig workers in Chile tend to earn less than their peers in traditional sectors.

[Insert Table 4 here

Table 4: Education premium for gig and non-gig workers]

Notes: Ordinary least square regression for log hourly wages. Unstandardized coefficients. Robust standard errors reported. *** p < .01. ** p < .5, * p < .1.

Figure 1 further illustrates the average marginal effects of education on wages, comparing gig and non-gig workers. The figure shows that, while there is a positive correlation between education and income for Chilean gig workers, this relationship is less pronounced than for non-gig workers. This finding suggests that, although educational attainment is positively associated with wages in the gig economy, its impact is less significant compared to traditional employment sectors.

[Insert figure 1 here

Figure 1: Marginal effects of education levels on log hourly wages by type of worker]

Note: 95% confidence intervals estimated via the delta method, and with variables set at their observed values.

The results presented in Table 4, along with the marginal effects shown in Figure 1, offer evidence in favor of Hypothesis 2. In the context of Chile's gig economy, our findings demonstrate that educational attainment is positively correlated with income, a pattern that contrasts with the trends observed in higher-skilled gig sectors of developed economies, as reported by Herrmann et al. (2023). This suggests a distinct dynamic in Chile where education plays a more significant role in influencing income within the gig economy.

[Insert table 5 here

Table 5: Gender wage gap in the Chilean gig economy]

Notes: Ordinary least square regression for log hourly wages. Unstandardized coefficients. Robust standard errors reported. *** p < .01. ** p < .5, * p < .1.

To test Hypothesis 3, which posits that the gender wage gap in the gig economy is smaller compared to the traditional economy, we introduced an interactive variable in Model 5 (Table 3). This variable combines gender with a gig economy worker dummy to assess the gender wage disparity within the gig economy.

Our analysis yielded a small and statistically insignificant coefficient for this interactive variable. This outcome indicates that the gender wage gap in Chile's gig economy is not markedly different from the gap observed in traditional employment sectors. Based on these findings, we conclude that Hypothesis 3 is not supported by our analysis.

[Insert table 6 here

Table 6: Wage premium comparison between regulated and unregulated gig economy sectors in Chile]

Notes: Ordinary least square regression for log hourly wages. Unstandardized coefficients. Robust standard errors reported. *** $p < .01$. ** $p < .5$, * $p < .1$.

In order to evaluate Hypothesis 4, which asserts that the wage premium in regulated gig economy jobs is greater than in unregulated ones, we adjust Model 5 (as shown in Table 3). Instead of employing a single dummy variable to represent participation in the gig economy, we introduced two separate dichotomous variables. One variable accounts for workers engaged in app-based transportation of goods and passengers (regulated sector), and the other represents those involved in selling goods and services online via social media platforms (unregulated sector). The results of this modification are outlined in Table 6.

Our analysis indicates no substantial wage difference between workers in the regulated and unregulated sectors of the gig economy. This finding implies that legal distinctions within the gig

economy do not significantly impact wage premiums across these two types of gig work in Chile. However, it is important to note that our dataset contains limited observations for estimating the impact in the regulated sector, resulting in relatively large confidence intervals. Consequently, while we must reject Hypothesis 4 based on our analysis of the current dataset, we acknowledge the possibility that the hypothesis might be valid if analyzed with a more extensive dataset.

[Insert table 7 here

Table 7: Wage premium comparison between full time and part time gig workers in Chile]

Notes: Ordinary least square regression for log hourly wages. Unstandardized coefficients. Robust standard errors reported. *** $p < .01$. ** $p < .5$, * $p < .1$.

To evaluate Hypothesis 5, which posits that full-time workers in the gig economy receive a higher wage premium compared to part-time workers, we conduct separate OLS regressions for both groups. These regressions were based on Model 5, with full-time defined as individuals working 30 to 60 hours per week and part-time as those working 29 hours per week or less, as shown in Table 7. Our findings reveal no significant differences in wage premiums between full-time and part-time workers within the gig economy. This result means that, after accounting for factors such as formality status, the negative wage premium typically associated with gig work does not reach statistical significance at the 95% confidence level for either group. Consequently, Hypothesis 5 is not supported by our analysis.

[Insert table 8 here

Table 8: Quantile regressions for 25, 50, and 75th quantiles]

Notes: Ordinary least square regression for log hourly wages. Unstandardized coefficients. Robust standard errors reported. *** $p < .01$. ** $p < .5$, * $p < .1$.

To test Hypothesis 6, which suggests that the impact of gig work on wages is consistent across different levels of the wage distribution, we use quantile regression, a method that enables us to analyze whether the association between gig work and wages remains consistent across various wage distribution quantiles. We re-estimate Model 5 for the 25th, 50th, and 75th quantiles of the log hourly wage distribution. The findings from this analysis are presented in Table 8.

Our analysis shows no statistically significant differences in the estimated coefficients representing gig work across these wage quantiles. Furthermore, we find no notable differences in the wage impact of gig work at these distinct distribution points. These findings imply that, even after controlling for formality status, the lack of a significant negative wage premium among gig workers is consistent at the 95% confidence level throughout the 25th, 50th, and 75th quantiles of the wage distribution. This consistency across various wage levels indicates that the absence of a wage premium for gig workers is a uniform phenomenon, irrespective of their position within the wage spectrum. Hence, we cannot reject Hypothesis 6.

5. Discussion and Conclusions

Contrary to claims that gig workers typically earn lower wages, our findings in the Chilean context reveal a more complex reality. The observed negative wage premium among gig workers is largely attributed to formality status. In essence, when controlling for sociodemographic and job-related factors, gig workers in Chile do not, on average, earn less than their counterparts in more traditional sectors of the economy. This insight is particularly significant for gig workers in developing economies, where informal employment is widespread (e.g. Perry, 2007; La Porta and Shleifer, 2014), suggesting that wage dynamics in the gig economy are closely tied with broader labor market characteristics.

This result sheds light on a crucial debate surrounding the regulation of digital platforms in Chile. Our findings show that workers on digital platforms receive wages comparable to those in similar, informal sector jobs. This insight could be interpreted as an argument against imposing stringent regulations on digital platforms, under the premise that these workers are not at a wage disadvantage compared to their counterparts in the informal labor market. However, it is important to consider the nature of these comparable jobs. Workers in the informal sector typically lack fundamental labor rights, including access to social security, regulated work hours, and the right to take vacation or health leave, as well as unionization privileges. This raises a significant policy dilemma: Should the focus be on expanding employment opportunities through lightly regulated digital platforms that mirror the informal sector's conditions, or should there be a move towards formalizing these digital platform jobs? Formalization would mean enhanced worker protections and benefits, as shown by Weber and Lehdonvirta (2021), but it might also lead to a reduction in the number of available jobs and the level of job flexibility that currently exists in the sector. At this point, it is important to clarify that the purpose of this article is not to resolve this complex debate definitively. Rather, our aim is to provide empirical evidence that can inform policymakers and stakeholders as they navigate the challenges and opportunities of regulating digital platform work in Chile.

Our study also underscores a persistent positive correlation between education and income among Chilean gig workers, although the relationship is less pronounced than in non-gig sectors. This is a notable deviation from the findings of Herrmann et al. (2023), who reported no significant link between educational attainment and income. The discrepancy in results can be attributed to differences in our sample, which is representative of the broader Chilean workforce and includes low-skilled gig workers engaged in delivery, ride-hailing, and online sales, compared to Herrmann et al. (2023)'s focus on high-skilled workers in Western economies.

Regarding gender wage disparities, our findings show that the gig economy in Chile does not significantly deviate from traditional employment sectors in terms of the gender wage gap. This suggests that despite the potential of algorithm-driven digital platforms to reduce gender biases in pay, the gig economy has not yet contributed to narrowing the persistent gender wage gap in Chile, which is notably high compared to other OECD countries (Perticará and Bueno, 2009).

However, previous studies typically show a gender-based earnings gap in the gig economy, with male gig workers often earning more, a trend linked to gender-specific behaviors on digital platforms (as discussed in section 2.5). This pattern may also be present in the Chilean context. Additionally, a significant portion of the gig economy in Chile, as defined by the National Statistics Office, involves individuals engaging in commerce on platforms like Facebook, Instagram, and WhatsApp, accounting for about three-quarters of this sector (Fuentes and González, 2022). Currently, there seems to be a lack of research focusing on wages of individuals engaged in commercial activities via social media platforms. This area remains an open field for future research, particularly to comprehend why, despite the supposed gender-neutrality of algorithms ruling the gig economy, a gender wage gap still persists in Chile's gig economy.

Our findings shed light on, at least, two important issues, particularly relevant in understanding income inequalities within the gig economy. First, the association between education and income, though present, is less pronounced compared to traditional sectors, suggesting that educational attainment in the gig economy may not translate into proportionate economic benefits as it does in other sectors. Such a scenario raises critical questions about the value and role of formal education in emerging labor markets, especially in economies with significant informal sectors. Second, the persistence of gender wage disparities, even in a supposedly neutral platform-driven gig economy, points towards deep-rooted societal norms and gender roles influencing economic outcomes. These insights are crucial for policymakers and stakeholders in devising strategies that address not only

the technological and economic aspects of the gig economy but also its broader social impact, particularly in terms of equitable income distribution and the recognition of skills and qualifications in this evolving employment landscape.

The emergence of digital platforms, while creating new employment opportunities, also brings to the fore complex dynamics in wage structures. Our study reveals that while there is no significant wage premium for gig workers, technological advancements have not entirely disrupted traditional wage determinants, such as education premium and the gender wage gap. This persistence suggests a nuanced integration of technology in the labor market, where new forms of work coexist with conventional determinants of income. Looking ahead, the increasing digitization and prevalence of gig work could potentially reshape labor markets in developing economies, highlighting the need for policies that address the unique challenges and opportunities presented by these technological shifts. Such policies should consider not only how to leverage technology for economic growth but also how to ensure equitable wage distribution and protect workers in an increasingly digital and flexible employment landscape.

Finally, it is important to acknowledge certain limitations inherent in our approach. First, while our analysis provides valuable insights into the wage dynamics within the gig economy, it primarily relies on self-reported income and employment data, which may carry biases or inaccuracies (e.g., Yan et al., 2010). Second, our empirical strategies focus on observable characteristics and may not fully capture unobservable factors that could influence wages, such as individual motivation, work intensity, or quality of service. Some of them are addressed in studies focusing on one specific platform, but it is not the case here. Third, the gig economy's diverse and rapidly evolving nature also means that our findings might not comprehensively represent all types of gig work, particularly emerging forms not captured in the current data. Furthermore, the legal and regulatory environment surrounding gig work in Chile is dynamic, and any changes post-study could affect the applicability

of our findings. These limitations underscore the necessity for continuous research and data collection to keep pace with the changing landscape of the gig economy, ensuring a more comprehensive understanding of its wage structure.

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